User's Manual

CMOS-12M Series

User's Manual: Block Library

CMOS Gate Array

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[MEMO]

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Major Revisions in this Edition

Page	Description
pp.1-42 to 1-83	**1.2 2.5 V Interface** Addition of 18 mA and 24 mA
pp.1-86 to 1-127	**1.3 3.3 V Interface** Addition of 18 mA and 24 mA
pp.1-224 to 1-245	Addition of **1.12 SSTL18**
pp.1-280 to 1-287	Addition of **1.16 Oscillator**

To obtain the latest documents when designing, contact Renesas Electronics sales office or a distributor.

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PREFACE

Please observe all items listed in this manual (general matters, cautions, limitations). If you don't observe these things, degradation in the quality and performance of LSI's or abnormal operation may occur.

When carrying out circuit design, it is requested that the **CMOS-12M Series Design Manual (R05UH0003EJ0800)** should also be read.

1. Introduction

The composition of this library is as follows.

(1) PREFACE

The usage of this library, meaning of terminology and some information are described.

(2) CONTENTS

This CONTENTS is useful when searching a block from its function.

(3) Chapter 1 Interface Block

(4) Chapter 2 Function Block

(5) Chapter 3 Scan Path Block

(6) Chapter 4 Boundary Scan Block

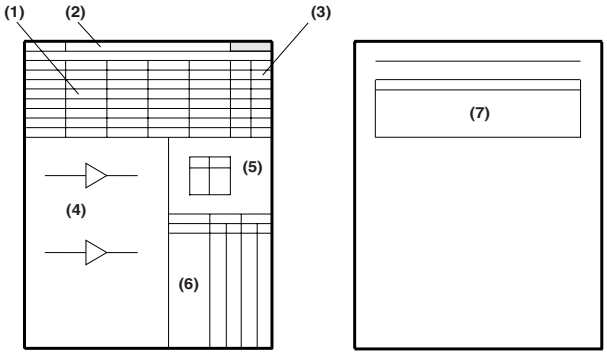
Chapters 1 to 4 list each block by function. Each page describes a logic symbol, a truth table, I/O data and delay time with an integrated format as explained in **2. Data Entered in the Block Library** of this PREFACE.

(7) INDEX

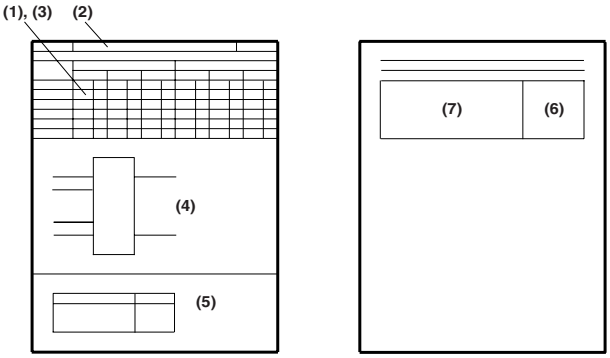
This list is useful when searching a block from its name.

2. Data Entered in the Block Library

Interface Block



Function Block



(1)	Block type	:	Name of that block
(2)	Function	:	Function of that block
(3)	Area Information	:	No. of cells used, internal grids
(4)	Logic Diagram	:	Symbol of that block
(5)	Truth table	:	Truth table of that block
(6)	Pin Information	:	Input capacitance and maximum output capacitance
(7)	Switching speed	:	Delay time of that block

Furthermore, the symbols of switching speed are as follows

$$\underbrace{A \rightarrow Y}_{\substack{\uparrow \\ (8)}} \quad \underset{\substack{\uparrow\uparrow \\ (9)\ (10)}}{(H\ L)}$$

(8) Signal path (input to output)

(9) Input signal change (H : rise L : fall Z : High impedance)

(10) Output signal change (H : rise L : fall Z : High impedance)

Setup time, Hold time, Release time, Removal time, and Minimum pulse width;

MIN : The minimum result at the minimum condition

MAX : The minimum result at the maximum condition

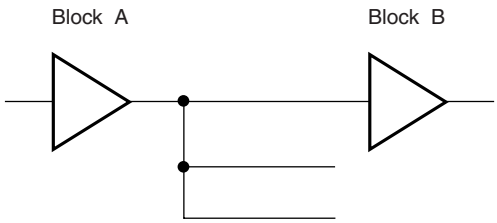
3. Propagation Delay Time (t_{PD})

The method shown here is a simplified calculation formula. This calculation method will give comparatively accurate results when the load matches the following conditions. The error becomes greater as the load capacitance increases, and the results yielded from the calculation are smaller than values obtained from the simulator. Therefore note beforehand that these values should be used mainly as a general guide.

Conditions

The total F/I of the front stage of the block for delay calculation shall be within 15% of the F/O limit of the front stage drive block.

Example



Let block B be the object of the propagation calculation. The accuracy of the simplified calculation formula is high when the sum of the F/I connected to the output of block A is within 15% of the block A F/O limit.

3.1 Calculating Propagation Delay Time

3.1.1 Delay time of Input buffer and function block

The delay time of Input buffer and function block can be estimated from the load capacitance and wiring length connected to the block. Drivability of each block is shown in **Switching speed**.

$$t_{PD} = t_{LD0} + (\Sigma C_{IN} + L \times 0.202) \times t_1 \text{ (ns)}$$

t_{LD0} : Delay time of block itself (ns)
ΣC_{IN} : Total load capacitance (pF)
L : Writing length of output pin (mm)
t_1 : Delay coefficient of output pin (ns/pF)

3.1.2 Delay time of output buffer

The delay time of an output buffer greatly depends on the load capacitance connected to the output pin. The dependency of delay time on load capacitance varies with the drive capability of the buffer.

The delay time of an output buffer can be estimated for the given load capacitance using the following formula:

$$t_{PD} = t_{LD0} + T \times C_L \text{ (ns)}$$

t_{LD0} : Delay time of block itself (ns)
T : Delay coefficient (ns/pF)
C_L : Load capacitance (pF)

3.2 Variations of Propagation Delay Time

The MAX/TYP/MIN values of delay time described in this block library are based on absolute variation and are measured on the following conditions.

Conditions for Setting Propagation Delay (Function Block)

	Supply voltage	Ambient temperature	Manufacturing Variation
MIN.	1.65 V	–40 °C	Control limit
TYP.	1.50 V	+25 °C	Design-centered
MAX.	1.35 V	+85 °C	Control limit

4. Limit of Load Capacitance

Fan-outs of function block are limited by the following equation. The value of C_{MAX} and C_{IN} of each block is shown in **Input, Output**.

$$C_{MAX} > \Sigma C_{IN} \quad \text{(pF)}$$

C_{MAX} : Limit of load capacitance (pF)
ΣC_{IN} : Total load capacitance (pF)

5. Interface Levels

The following interface levels are available.

5.1 Input Interface Levels

(1) LVTTL
(2) 1.8 V CMOS
(3) 2.5 V CMOS
(4) PCI
(5) PCI-X (mode 1)
(6) 2.5 V LVDS
(7) LVPECL
(8) 2.5 V PECL
(9) SSTL2
(10) SSTL3
(11) SSTL18
(12) 1.5 V HSTL
(13) 1.8 V HSTL
(14) Oscillator

5.2 Output Interface Levels

(1) LVTTL
(2) 1.8 V CMOS
(3) 2.5 V CMOS
(4) PCI
(5) PCI-X (mode 1)
(6) 2.5 V LVDS
(7) SSTL2
(8) SSTL3
(9) SSTL18
(10) 1.5 V HSTL
(11) 1.8 V HSTL
(12) 2.5 V RSDS
(13) Oscillator

6. Output Drive Capability

The following levels are available for output drive capability (I_{OL}):

(1) LVTTL buffer : 3 mA, 6 mA, 9 mA, 12 mA, 18 mA, and 24 mA

(2) 1.8 V CMOS buffer : 3 mA, 6 mA, 9 mA, and 12 mA

(3) 2.5 V CMOS buffer : 3 mA, 6 mA, 9 mA, 12 mA, 18 mA, and 24 mA

7. Multifunction Buffers

7.1 Buffers with Pull-up/Pull-down Resistors

Input/output/bidirectional buffers with following on-chip pull-down resistors are available. Select one suitable for the specific application.

(1) Pull-up resistor : 100 kΩ (TYP.)

(2) Pull-down resistor : 100 kΩ (TYP.)

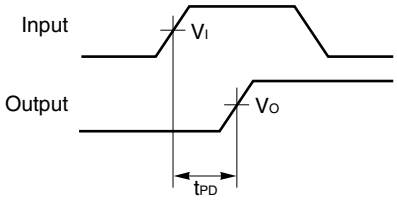
(3) Pull-up resistor : 5 kΩ (TYP.)

7.2 Low Slew-Rate Buffers

Special buffers that satisfies low noise requirement are available. In this library, these buffers are described with a word “Low-noise” at their function description.

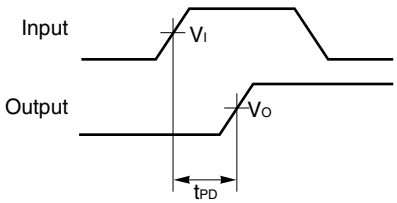
8. Definition of Propagation Delays

(1) Input Buffer



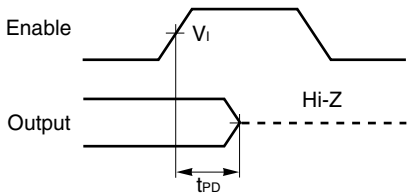
V_I = 1.5 V → V_I = (Internal voltage amplitude) × 50%

(2) Output Buffer (H→L, L→H)



V_O = (Internal voltage amplitude) × 50% → V_O = 1.5 V

(3) 3-state Output Buffer (L→Z, H→Z)

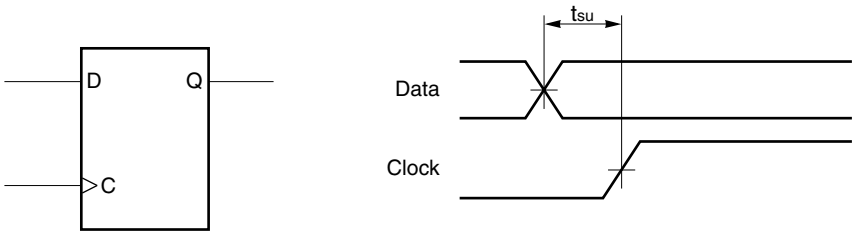


V_I = (Internal voltage amplitude) × 50% → Main buffer off

9. Timing

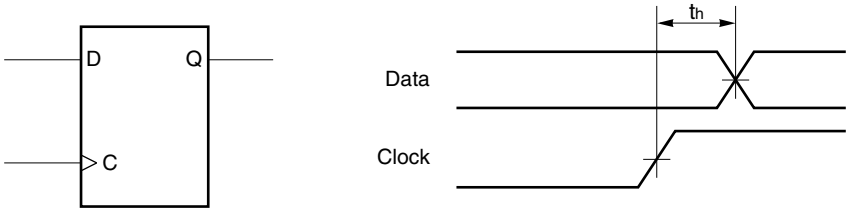
(1) Set up time (t_{su})

The data setup time required before arrival of an active edge of a clock to read data correctly.



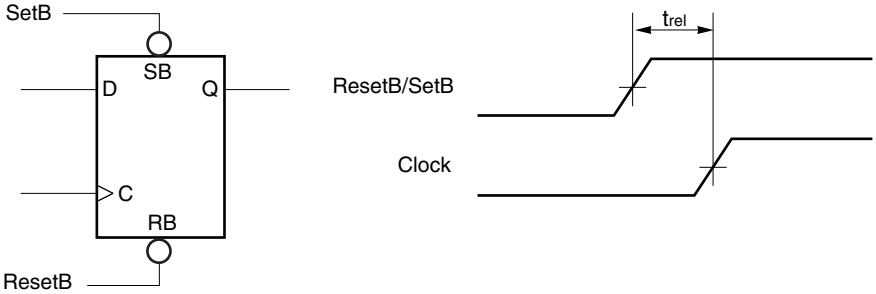
(2) Hold time (t_h)

The data hold time required after receiving an active edge of the clock to read data correctly.



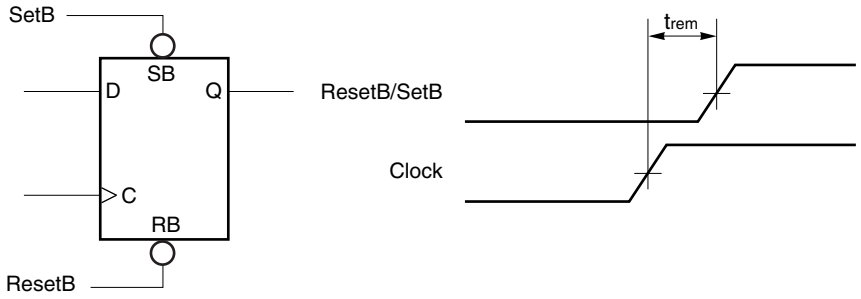
(3) Release time (t_{rel})

The time required from the release of a reset (or set) signal of a latch or flip-flop until the active edge of the next clock pulse becomes valid.



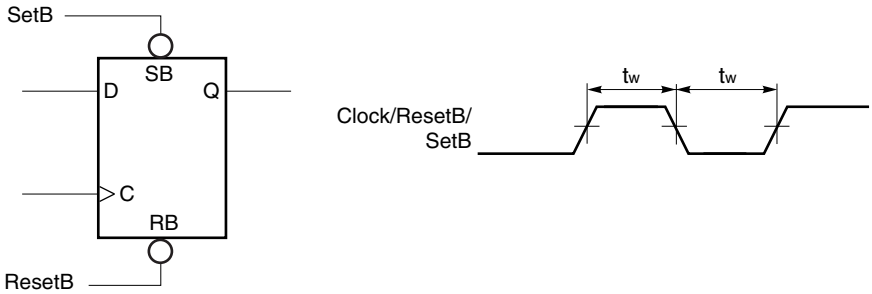
(4) Removal time (t_{rem})

The time required to invalidate an active edge of a clock when a reset (or set) signal of a latch or flip-flop is released.



(5) Minimum Pulse Width (t_w)

The minimum pulse width of Clock/Reset/Set required to read data correctly.



Related documents

The related documents indicated in this publication may include preliminary versions. However, preliminary versions are not marked as such.

- CMOS-12M Series Design Manual (R05UH0003EJ0800)
- CMOS-12M Series Block Library (This Manual)

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Chapter 1 Interface Block

1.1 1.8 V Interface

Function	Block	Description	Cells	Page
Input Buffer	FI0111	-	1	1-4
	FI0111PD100	100KΩ Pull-down	1	
	FI0111PU100	100KΩ Pull-up	1	
	FIW111	5KΩ Pull-up	1	
	FIS111	Schmitt	1	
	FIS111PD100	Schmitt 100KΩ Pull-down	1	
	FIS111PU100	Schmitt 100KΩ Pull-up	1	
	FWS111	Schmitt 5KΩ Pull-up	1	
Input Buffer with failsafe	FIA111	-	1	1-6
	FIA111PD100	100KΩ Pull-down	1	
	FIE111	Schmitt	1	
	FIE111PD100	Schmitt 100KΩ Pull-down	1	
Output Buffer	FO0911	3mA	1	1-8
	FO0411	6mA	1	
	FO0111	9mA	1	
	FO0211	12mA	1	
Low-noise Output Buffer	FE0411	6mA	1	1-10
	FE0111	9mA	1	
	FE0211	12mA	1	
3-state Buffer	B00T11	3mA	1	1-12
	B00T11PD100	3mA 100KΩ Pull-down	1	
	B00T11PU100	3mA 100KΩ Pull-up	1	
	B0WT11	3mA 5KΩ Pull-up	1	
	B00E11	6mA	1	
	B00E11PD100	6mA 100KΩ Pull-down	1	
	B00E11PU100	6mA 100KΩ Pull-up	1	
	B0WE11	6mA 5KΩ Pull-up	1	
	B00811	9mA	1	
	B00811PD100	9mA 100KΩ Pull-down	1	
	B00811PU100	9mA 100KΩ Pull-up	1	
	B0W811	9mA 5KΩ Pull-up	1	
	B00711	12mA	1	
	B00711PD100	12mA 100KΩ Pull-down	1	
	B00711PU100	12mA 100KΩ Pull-up	1	
	B0W711	12mA 5KΩ Pull-up	1	
Low-noise 3-state Buffer	BE0E11	6mA	1	1-16
	BE0E11PD100	6mA 100KΩ Pull-down	1	

Function	Block	Description	Cells	Page
Low-noise 3-state Buffer	BE0E11PU100	6mA 100KΩ Pull-up	1	1-16
	BEWE11	6mA 5KΩ Pull-up	1	
	BE0811	9mA	1	
	BE0811PD100	9mA 100KΩ Pull-down	1	
	BE0811PU100	9mA 100KΩ Pull-up	1	
	BEW811	9mA 5KΩ Pull-up	1	
	BE0711	12mA	1	
	BE0711PD100	12mA 100KΩ Pull-down	1	
	BE0711PU100	12mA 100KΩ Pull-up	1	
	BEW711	12mA 5KΩ Pull-up	1	
N-ch Open Drain Buffer	EXTH11	3mA	1	1-20
	EXTJ11	6mA	1	
	EXT111	9mA	1	
	EXT911	12mA	1	
Low-noise N-ch Open Drain Buffer	EETJ11	6mA	1	1-22
	EET111	9mA	1	
	EET911	12mA	1	
I/O Buffer	B00U11	3mA	1	1-24
	B00U11PD100	3mA 100KΩ Pull-down	1	
	B00U11PU100	3mA 100KΩ Pull-up	1	
	B0WU11	3mA 5KΩ Pull-up	1	
	B00C11	6mA	1	
	B00C11PD100	6mA 100KΩ Pull-down	1	
	B00C11PU100	6mA 100KΩ Pull-up	1	
	B0WC11	6mA 5KΩ Pull-up	1	
	B00311	9mA	1	
	B00311PD100	9mA 100KΩ Pull-down	1	
	B00311PU100	9mA 100KΩ Pull-up	1	
	B0W311	9mA 5KΩ Pull-up	1	
	B00111	12mA	1	
	B00111PD100	12mA 100KΩ Pull-down	1	
	B00111PU100	12mA 100KΩ Pull-up	1	
	B0W111	12mA 5KΩ Pull-up	1	
Low-noise I/O Buffer	BE0C11	6mA	1	1-28
	BE0C11PD100	6mA 100KΩ Pull-down	1	
	BE0C11PU100	6mA 100KΩ Pull-up	1	
	BEWC11	6mA 5KΩ Pull-up	1	
	BE0311	9mA	1	
	BE0311PD100	9mA 100KΩ Pull-down	1	
	BE0311PU100	9mA 100KΩ Pull-up	1	
	BEW311	9mA 5KΩ Pull-up	1	
	BE0111	12mA	1	
	BE0111PD100	12mA 100KΩ Pull-down	1	

Function	Block	Description	Cells	Page
Low-noise I/O Buffer	BE0111PU100	12mA 100KΩ Pull-up	1	1-28
	BEW111	12mA 5KΩ Pull-up	1	
Schmitt I/O Buffer	BSIU11	3mA	1	1-32
	BSIU11PD100	3mA 100KΩ Pull-down	1	
	BSIU11PU100	3mA 100KΩ Pull-up	1	
	BSWU11	3mA 5KΩ Pull-up	1	
	BSIC11	6mA	1	
	BSIC11PD100	6mA 100KΩ Pull-down	1	
	BSIC11PU100	6mA 100KΩ Pull-up	1	
	BSWC11	6mA 5KΩ Pull-up	1	
	BSI311	9mA	1	
	BSI311PD100	9mA 100KΩ Pull-down	1	
	BSI311PU100	9mA 100KΩ Pull-up	1	
	BSW311	9mA 5KΩ Pull-up	1	
	BSI111	12mA	1	
	BSI111PD100	12mA 100KΩ Pull-down	1	
	BSI111PU100	12mA 100KΩ Pull-up	1	
	BSW111	12mA 5KΩ Pull-up	1	
Low-noise Schmitt I/O Buffer	BFIC11	6mA	1	1-36
	BFIC11PD100	6mA 100KΩ Pull-down	1	
	BFIC11PU100	6mA 100KΩ Pull-up	1	
	BFWC11	6mA 5KΩ Pull-up	1	
	BFI311	9mA	1	
	BFI311PD100	9mA 100KΩ Pull-down	1	
	BFI311PU100	9mA 100KΩ Pull-up	1	
	BFW311	9mA 5KΩ Pull-up	1	
	BFI111	12mA	1	
	BFI111PD100	12mA 100KΩ Pull-down	1	
	BFI111PU100	12mA 100KΩ Pull-up	1	
	BFW111	12mA 5KΩ Pull-up	1	

1.2 2.5 V Interface

Function	Block	Description	Cells	Page
Input Buffer	FI0112	-	1	1-44
	FI0112PD100	100KΩ Pull-down	1	
	FI0112PU100	100KΩ Pull-up	1	
	FIW112	5KΩ Pull-up	1	
	FIS112	Schmitt	1	
	FIS112PD100	Schmitt 100KΩ Pull-down	1	
	FIS112PU100	Schmitt 100KΩ Pull-up	1	
	FWS112	Schmitt 5KΩ Pull-up	1	
Input Buffer with failsafe	FIA112	-	1	1-46
	FIA112PD100	100KΩ Pull-down	1	
	FIE112	Schmitt	1	
	FIE112PD100	Schmitt 100KΩ Pull-down	1	
Output Buffer	FO0912	3mA	1	1-48
	FO0412	6mA	1	
	FO0112	9mA	1	
	FO0212	12mA	1	
	FO0312	18mA	1	
	FO0612	24mA	1	
Low-noise Output Buffer	FE0412	6mA	1	1-50
	FE0112	9mA	1	
	FE0212	12mA	1	
	FE0312	18mA	1	
	FE0612	24mA	1	
3-state Buffer	B00T12	3mA	1	1-52
	B00T12PD100	3mA 100KΩ Pull-down	1	
	B00T12PU100	3mA 100KΩ Pull-up	1	
	B0WT12	3mA 5KΩ Pull-up	1	
	B00E12	6mA	1	
	B00E12PD100	6mA 100KΩ Pull-down	1	
	B00E12PU100	6mA 100KΩ Pull-up	1	
	B0WE12	6mA 5KΩ Pull-up	1	
	B00812	9mA	1	
	B00812PD100	9mA 100KΩ Pull-down	1	
	B00812PU100	9mA 100KΩ Pull-up	1	
	B0W812	9mA 5KΩ Pull-up	1	
	B00712	12mA	1	
	B00712PD100	12mA 100KΩ Pull-down	1	
	B00712PU100	12mA 100KΩ Pull-up	1	
	B0W712	12mA 5KΩ Pull-up	1	
	B00912	18mA	1	
	B00912PD100	18mA 100KΩ Pull-down	1	
	B00912PU100	18mA 100KΩ Pull-up	1	

Function	Block	Description	Cells	Page
3-state Buffer	B0W912	18mA 5KΩ Pull-up	1	1-52
	B00H12	24mA	1	
	B00H12PD100	24mA 100KΩ Pull-down	1	
	B00H12PU100	24mA 100KΩ Pull-up	1	
	B0WH12	24mA 5KΩ Pull-up	1	
Low-noise 3-state Buffer	BE0E12	6mA	1	1-56
	BE0E12PD100	6mA 100KΩ Pull-down	1	
	BE0E12PU100	6mA 100KΩ Pull-up	1	
	BEWE12	6mA 5KΩ Pull-up	1	
	BE0812	9mA	1	
	BE0812PD100	9mA 100KΩ Pull-down	1	
	BE0812PU100	9mA 100KΩ Pull-up	1	
	BEW812	9mA 5KΩ Pull-up	1	
	BE0712	12mA	1	
	BE0712PD100	12mA 100KΩ Pull-down	1	
	BE0712PU100	12mA 100KΩ Pull-up	1	
	BEW712	12mA 5KΩ Pull-up	1	
	BE0912	18mA	1	
	BE0912PD100	18mA 100KΩ Pull-down	1	
	BE0912PU100	18mA 100KΩ Pull-up	1	
	BEW912	18mA 5KΩ Pull-up	1	
	BE0H12	24mA	1	
	BE0H12PD100	24mA 100KΩ Pull-down	1	
	BE0H12PU100	24mA 100KΩ Pull-up	1	
	BEWH12	24mA 5KΩ Pull-up	1	
N-ch Open Drain Buffer	EXTH12	3mA	1	1-60
	EXTJ12	6mA	1	
	EXT112	9mA	1	
	EXT912	12mA	1	
	EXT512	18mA	1	
	EXTD12	24mA	1	
Low-noise N-ch Open Drain Buffer	EETJ12	6mA	1	1-62
	EET112	9mA	1	
	EET912	12mA	1	
	EET512	18mA	1	
	EETD12	24mA	1	
I/O Buffer	B00U12	3mA	1	1-64
	B00U12PD100	3mA 100KΩ Pull-down	1	
	B00U12PU100	3mA 100KΩ Pull-up	1	
	B0WU12	3mA 5KΩ Pull-up	1	
	B00C12	6mA	1	
	B00C12PD100	6mA 100KΩ Pull-down	1	
	B00C12PU100	6mA 100KΩ Pull-up	1	

Function	Block	Description	Cells	Page
I/O Buffer	B0WC12	6mA 5KΩ Pull-up	1	1-64
	B00312	9mA	1	
	B00312PD100	9mA 100KΩ Pull-down	1	
	B00312PU100	9mA 100KΩ Pull-up	1	
	B0W312	9mA 5KΩ Pull-up	1	
	B00112	12mA	1	
	B00112PD100	12mA 100KΩ Pull-down	1	
	B00112PU100	12mA 100KΩ Pull-up	1	
	B0W112	12mA 5KΩ Pull-up	1	
	B00512	18mA	1	
	B00512PD100	18mA 100KΩ Pull-down	1	
	B00512PU100	18mA 100KΩ Pull-up	1	
	B0W512	18mA 5KΩ Pull-up	1	
	B00F12	24mA	1	
	B00F12PD100	24mA 100KΩ Pull-down	1	
	B00F12PU100	24mA 100KΩ Pull-up	1	
	B0WF12	24mA 5KΩ Pull-up	1	
Low-noise I/O Buffer	BE0C12	6mA	1	1-70
	BE0C12PD100	6mA 100KΩ Pull-down	1	
	BE0C12PU100	6mA 100KΩ Pull-up	1	
	BEWC12	6mA 5KΩ Pull-up	1	
	BE0312	9mA	1	
	BE0312PD100	9mA 100KΩ Pull-down	1	
	BE0312PU100	9mA 100KΩ Pull-up	1	
	BEW312	9mA 5KΩ Pull-up	1	
	BE0112	12mA	1	
	BE0112PD100	12mA 100KΩ Pull-down	1	
	BE0112PU100	12mA 100KΩ Pull-up	1	
	BEW112	12mA 5KΩ Pull-up	1	
	BE0512	18mA	1	
	BE0512PD100	18mA 100KΩ Pull-down	1	
	BE0512PU100	18mA 100KΩ Pull-up	1	
	BEW512	18mA 5KΩ Pull-up	1	
	BE0F12	24mA	1	
	BE0F12PD100	24mA 100KΩ Pull-down	1	
	BE0F12PU100	24mA 100KΩ Pull-up	1	
	BEWF12	24mA 5KΩ Pull-up	1	
Schmitt I/O Buffer	BSIU12	3mA	1	1-74
	BSIU12PD100	3mA 100KΩ Pull-down	1	
	BSIU12PU100	3mA 100KΩ Pull-up	1	
	BSWU12	3mA 5KΩ Pull-up	1	
	BSIC12	6mA	1	
	BSIC12PD100	6mA 100KΩ Pull-down	1	

Function	Block	Description	Cells	Page
Schmitt I/O Buffer	BSIC12PU100	6mA 100KΩ Pull-up	1	1-74
	BSWC12	6mA 5KΩ Pull-up	1	
	BSI312	9mA	1	
	BSI312PD100	9mA 100KΩ Pull-down	1	
	BSI312PU100	9mA 100KΩ Pull-up	1	
	BSW312	9mA 5KΩ Pull-up	1	
	BSI112	12mA	1	
	BSI112PD100	12mA 100KΩ Pull-down	1	
	BSI112PU100	12mA 100KΩ Pull-up	1	
	BSW112	12mA 5KΩ Pull-up	1	
	BSI512	18mA	1	
	BSI512PD100	18mA 100KΩ Pull-down	1	
	BSI512PU100	18mA 100KΩ Pull-up	1	
	BSW512	18mA 5KΩ Pull-up	1	
	BSIF12	24mA	1	
	BSIF12PD100	24mA 100KΩ Pull-down	1	
	BSIF12PU100	24mA 100KΩ Pull-up	1	
	BSWF12	24mA 5KΩ Pull-up	1	
Low-noise Schmitt I/O Buffer	BFIC12	6mA	1	1-80
	BFIC12PD100	6mA 100KΩ Pull-down	1	
	BFIC12PU100	6mA 100KΩ Pull-up	1	
	BFWC12	6mA 5KΩ Pull-up	1	
	BFI312	9mA	1	
	BFI312PD100	9mA 100KΩ Pull-down	1	
	BFI312PU100	9mA 100KΩ Pull-up	1	
	BFW312	9mA 5KΩ Pull-up	1	
	BFI112	12mA	1	
	BFI112PD100	12mA 100KΩ Pull-down	1	
	BFI112PU100	12mA 100KΩ Pull-up	1	
	BFW112	12mA 5KΩ Pull-up	1	
	BFI512	18mA	1	
	BFI512PD100	18mA 100KΩ Pull-down	1	
	BFI512PU100	18mA 100KΩ Pull-up	1	
	BFW512	18mA 5KΩ Pull-up	1	
	BFIF12	24mA	1	
	BFIF12PD100	24mA 100KΩ Pull-down	1	
	BFIF12PU100	24mA 100KΩ Pull-up	1	
	BFWF12	24mA 5KΩ Pull-up	1	

1.3 3.3 V Interface

Function	Block	Description	Cells	Page
Input Buffer	FI0113	-	1	1-88
	FI0113PD100	100KΩ Pull-down	1	
	FI0113PU100	100KΩ Pull-up	1	
	FIW113	5KΩ Pull-up	1	
	FIS113	Schmitt	1	
	FIS113PD100	Schmitt 100KΩ Pull-down	1	
	FIS113PU100	Schmitt 100KΩ Pull-up	1	
	FWS113	Schmitt 5KΩ Pull-up	-	
Input Buffer with failsafe	FIA113	-	1	1-90
	FIA113PD100	100KΩ Pull-down	1	
	FIE113	Schmitt	1	
	FIE113PD100	Schmitt 100KΩ Pull-down	1	
Output Buffer	FO0913	3mA	1	1-92
	FO0413	6mA	1	
	FO0113	9mA	1	
	FO0213	12mA	1	
	FO0313	18mA	1	
	FO0613	24mA	1	
Low-noise Output Buffer	FE0413	6mA	1	1-94
	FE0113	9mA	1	
	FE0213	12mA	1	
	FE0313	18mA	1	
	FE0613	24mA	1	
3-state Buffer	B00T13	3mA	1	1-96
	B00T13PD100	3mA 100KΩ Pull-down	1	
	B00T13PU100	3mA 100KΩ Pull-up	1	
	B0WT13	3mA 5KΩ Pull-up	1	
	B00E13	6mA	1	
	B00E13PD100	6mA 100KΩ Pull-down	1	
	B00E13PU100	6mA 100KΩ Pull-up	1	
	B0WE13	6mA 5KΩ Pull-up	1	
	B00813	9mA	1	
	B00813PD100	9mA 100KΩ Pull-down	1	
	B00813PU100	9mA 100KΩ Pull-up	1	
	B0W813	9mA 5KΩ Pull-up	1	
	B00713	12mA	1	
	B00713PD100	12mA 100KΩ Pull-down	1	
	B00713PU100	12mA 100KΩ Pull-up	1	
	B0W713	12mA 5KΩ Pull-up	1	
	B00913	18mA	1	
	B00913PD100	18mA 100KΩ Pull-down	1	
	B00913PU100	18mA 100KΩ Pull-up	1	

Function	Block	Description	Cells	Page
3-state Buffer	B0W913	18mA 5KΩ Pull-up	1	1-96
	B00H13	24mA	1	
	B00H13PD100	24mA 100KΩ Pull-down	1	
	B00H13PU100	24mA 100KΩ Pull-up	1	
	B0WH13	24mA 5KΩ Pull-up	1	
Low-noise 3-state Buffer	BE0E13	6mA	1	1-100
	BE0E13PD100	6mA 100KΩ Pull-down	1	
	BE0E13PU100	6mA 100KΩ Pull-up	1	
	BEWE13	6mA 5KΩ Pull-up	1	
	BE0813	9mA	1	
	BE0813PD100	9mA 100KΩ Pull-down	1	
	BE0813PU100	9mA 100KΩ Pull-up	1	
	BEW813	9mA 5KΩ Pull-up	1	
	BE0713	12mA	1	
	BE0713PD100	12mA 100KΩ Pull-down	1	
	BE0713PU100	12mA 100KΩ Pull-up	1	
	BEW713	12mA 5KΩ Pull-up	1	
	BE0913	18mA	1	
	BE0913PD100	18mA 100KΩ Pull-down	1	
	BE0913PU100	18mA 100KΩ Pull-up	1	
	BEW913	18mA 5KΩ Pull-up	1	
	BE0H13	24mA	1	
	BE0H13PD100	24mA 100KΩ Pull-down	1	
	BE0H13PU100	24mA 100KΩ Pull-up	1	
	BEWH13	24mA 5KΩ Pull-up	1	
N-ch Open Drain Buffer	EXTH13	3mA	1	1-104
	EXTJ13	6mA	1	
	EXT113	9mA	1	
	EXT913	12mA	1	
	EXT513	18mA	1	
	EXTD13	24mA	1	
Low-noise N-ch Open Drain Buffer	EETJ13	6mA	1	1-106
	EET113	9mA	1	
	EET913	12mA	1	
	EET513	18mA	1	
	EETD13	24mA	1	
I/O Buffer	B00U13	3mA	1	1-108
	B00U13PD100	3mA 100KΩ Pull-down	1	
	B00U13PU100	3mA 100KΩ Pull-up	1	
	B0WU13	3mA 5KΩ Pull-up	1	
	B00C13	6mA	1	
	B00C13PD100	6mA 100KΩ Pull-down	1	
	B00C13PU100	6mA 100KΩ Pull-up	1	

Function	Block	Description	Cells	Page
I/O Buffer	B0WC13	6mA 5KΩ Pull-up	1	1-108
	B00313	9mA	1	
	B00313PD100	9mA 100KΩ Pull-down	1	
	B00313PU100	9mA 100KΩ Pull-up	1	
	B0W313	9mA 5KΩ Pull-up	1	
	B00113	12mA	1	
	B00113PD100	12mA 100KΩ Pull-down	1	
	B00113PU100	12mA 100KΩ Pull-up	1	
	B0W113	12mA 5KΩ Pull-up	1	
	B00513	18mA	1	
	B00513PD100	18mA 100KΩ Pull-down	1	
	B00513PU100	18mA 100KΩ Pull-up	1	
	B0W513	18mA 5KΩ Pull-up	1	
	B00F13	24mA	1	
	B00F13PD100	24mA 100KΩ Pull-down	1	
	B00F13PU100	24mA 100KΩ Pull-up	1	
	B0WF13	24mA 5KΩ Pull-up	1	
Low-noise I/O Buffer	BE0C13	6mA	1	1-114
	BE0C13PD100	6mA 100KΩ Pull-down	1	
	BE0C13PU100	6mA 100KΩ Pull-up	1	
	BEWC13	6mA 5KΩ Pull-up	1	
	BE0313	9mA	1	
	BE0313PD100	9mA 100KΩ Pull-down	1	
	BE0313PU100	9mA 100KΩ Pull-up	1	
	BEW313	9mA 5KΩ Pull-up	1	
	BE0113	12mA	1	
	BE0113PD100	12mA 100KΩ Pull-down	1	
	BE0113PU100	12mA 100KΩ Pull-up	1	
	BEW113	12mA 5KΩ Pull-up	1	
	BE0513	18mA	1	
	BE0513PD100	18mA 100KΩ Pull-down	1	
	BE0513PU100	18mA 100KΩ Pull-up	1	
	BEW513	18mA 5KΩ Pull-up	1	
	BE0F13	24mA	1	
	BE0F13PD100	24mA 100KΩ Pull-down	1	
	BE0F13PU100	24mA 100KΩ Pull-up	1	
	BEWF13	24mA 5KΩ Pull-up	1	
Schmitt I/O Buffer	BSIU13	3mA	1	1-118
	BSIU13PD100	3mA 100KΩ Pull-down	1	
	BSIU13PU100	3mA 100KΩ Pull-up	1	
	BSWU13	3mA 5KΩ Pull-up	1	
	BSIC13	6mA	1	
	BSIC13PD100	6mA 100KΩ Pull-down	1	

Function	Block	Description	Cells	Page
Schmitt I/O Buffer	BSIC13PU100	6mA 100KΩ Pull-up	1	1-118
	BSWC13	6mA 5KΩ Pull-up	1	
	BSI313	9mA	1	
	BSI313PD100	9mA 100KΩ Pull-down	1	
	BSI313PU100	9mA 100KΩ Pull-up	1	
	BSW313	9mA 5KΩ Pull-up	1	
	BSI113	12mA	1	
	BSI113PD100	12mA 100KΩ Pull-down	1	
	BSI113PU100	12mA 100KΩ Pull-up	1	
	BSW113	12mA 5KΩ Pull-up	1	
	BSI513	18mA	1	
	BSI513PD100	18mA 100KΩ Pull-down	1	
	BSI513PU100	18mA 100KΩ Pull-up	1	
	BSW513	18mA 5KΩ Pull-up	1	
	BSIF13	24mA	1	
	BSIF13PD100	24mA 100KΩ Pull-down	1	
	BSIF13PU100	24mA 100KΩ Pull-up	1	
	BSWF13	24mA 5KΩ Pull-up	1	
Low-noise Schmitt I/O Buffer	BFIC13	6mA	1	1-124
	BFIC13PD100	6mA 100KΩ Pull-down	1	
	BFIC13PU100	6mA 100KΩ Pull-up	1	
	BFWC13	6mA 5KΩ Pull-up	1	
	BFI313	9mA	1	
	BFI313PD100	9mA 100KΩ Pull-down	1	
	BFI313PU100	9mA 100KΩ Pull-up	1	
	BFW313	9mA 5KΩ Pull-up	1	
	BFI113	12mA	1	
	BFI113PD100	12mA 100KΩ Pull-down	1	
	BFI113PU100	12mA 100KΩ Pull-up	1	
	BFW113	12mA 5KΩ Pull-up	1	
	BFI513	18mA	1	
	BFI513PD100	18mA 100KΩ Pull-down	1	
	BFI513PU100	18mA 100KΩ Pull-up	1	
	BFW513	18mA 5KΩ Pull-up	1	
	BFIF13	24mA	1	
	BFIF13PD100	24mA 100KΩ Pull-down	1	
	BFIF13PU100	24mA 100KΩ Pull-up	1	
	BFWF13	24mA 5KΩ Pull-up	1	

1.4 Test Mode Control

Function	Block	Description	Cells	Page
Input Buffer (2.5V) for TMC Terminal (TMC1)	FM1112	-	1	1-132
Input Buffer (2.5V) for TMC Terminal (TMC2)	FM2112	-	1	1-134
Input Buffer (3.3V) for TMC Terminal (TMC1)	FM1113	-	1	1-136
Input Buffer (3.3V) for TMC Terminal (TMC2)	FM2113	-	1	1-138

1.5 PCI

Function	Block	Description	Cells	Page
3V PCI Input Buffer	BP3I13	-	1	1-144
3V PCI Output Buffer	BP3O13	-	1	1-146
3V PCI 3-state Buffer	BP3T13	-	1	1-148
3V PCI I/O Buffer	BP3B13	mode1	1	1-150

1.6 PCI-X

Function	Block	Description	Cells	Page
PCI-X Input Buffer	BP3IX13	mode1	1	1-156
PCI-X Output Buffer	BP3OX13	mode1	1	1-158
PCI-X 3-state Buffer	BP3TX13	mode1	1	1-160
PCI-X I/O Buffer	BP3BX13	mode1	1	1-162

1.7 2.5 V LVDS

Function	Block	Description	Cells	Page
2.5V LVDS Buffer (Receiver)	FIXM12R	With 50KΩ Pull-down	2	1-168
2.5V LVDS Buffer (Driver)	FO0M12	-	2	1-170
2.5V LVDS Buffer (Bias control input buffer)	FI0M12	-	1	1-172

1.8 LVPECL

Function	Block	Description	Cells	Page
3.3V PECL Input Buffer with EN	FIX11P	-	1	1-178
3.3V PECL Input Buffer for Reference Voltage	FIP31P	-	1	1-180

1.9 2.5 V PECL

Function	Block	Description	Cells	Page
2.5V PECL Input Buffer with EN	FIX112	-	1	1-186
2.5V PECL Input Buffer for Reference Voltage	FIP312	-	1	1-188

1.10 SSTL2

Function	Block	Description	Cells	Page
SSTL2 Input Buffer with EN	FIXH1S2	-	1	1-194
SSTL2 Input Buffer for Reference Voltage	FIPS1S2	-	1	1-196
SSTL2 I/O Buffer	BS1N1S2	Class1	1	1-198
	BS1H1S2	Class2	1	
SSTL2 3-state Buffer	BS0N1S2	Class1	1	1-200
	BS0H1S2	Class2	1	
SSTL2 Output Buffer	FS0N1S2	Class1	1	1-202
	FS0H1S2	Class2	1	
SSTL2 Output Buffer Differential Type	FS0ND1S2	Class 1	2	1-204
	FS0HD1S2	Class 2	2	
SSTL2 3-state Buffer Differential Type	BS0ND1S2	Class 1	2	1-206
	BS0HD1S2	Class 2	2	

1.11 SSTL3

Function	Block	Description	Cells	Page
SSTL3 Input Buffer with EN	FIXH1S3	-	1	1-212
SSTL3 Input Buffer for Reference Voltage	FIPS1S3	-	1	1-214
SSTL3 I/O Buffer	BS1N1S3	Class1	1	1-216
	BS1H1S3	Class2	1	
SSTL3 3-state Buffer	BS0N1S3	Class1	1	1-218
	BS0H1S3	Class2	1	
SSTL3 Output Buffer	FS0N1S3	Class1	1	1-220
	FS0H1S3	Class2	1	

1.12 SSTL18

Function	Block	Description	Cells	Page
SSTL18 Input Buffer with EN	FIXH1S18	-	1	1-226
SSTL18 Input Buffer for Reference Voltage	FIPS1S18	-	1	1-228
SSTL18 Output Buffer	FS0H1S18	-	1	1-230
SSTL18 3-state Buffer	BS0H1S18	-	1	1-232
SSTL18 I/O Buffer	BS1H1S18	-	1	1-234
SSTL18 Input Buffer with EN Differential Type	FIXHD1S18	-	2	1-236
SSTL18 Output Buffer Differential Type	FS0HD1S18	-	2	1-238
SSTL18 3-state Buffer Differential Type	BS0HD1S18	-	2	1-240
SSTL18 I/O Buffer Differential Type	BS1HD1S18	-	2	1-242

1.13 1.5 V HSTL

Function	Block	Description	Cells	Page
1.5V HSTL Input Buffer with EN	FIX31H	-	1	1-248
1.5V HSTL Input Buffer for Reference Voltage	FIP51H	-	1	1-250
1.5V HSTL I/O Buffer	BH0N1H	Class 1	1	1-252
	BH0V1H	Class 3	1	
1.5V HSTL 3-state Buffer	BN0N1H	Class 1	1	1-254
	BN0V1H	Class 3	1	
1.5V HSTL Output Buffer	FH0N1H	Class 1	1	1-256
	FH0V1H	Class 3	1	

1.14 1.8 V HSTL

Function	Block	Description	Cells	Page
1.8V HSTL Input Buffer with EN	FIX31H18	-	1	1-262
1.8V HSTL Input Buffer for Reference Voltage	FIP51H18	-	1	1-264
1.8V HSTL I/O Buffer	BH0N1H18	Class 1	1	1-266
	BH0V1H18	Class 3	1	
1.8V HSTL 3-state Buffer	BN0N1H18	Class 1	1	1-268
	BN0V1H18	Class 3	1	
1.8V HSTL Output Buffer	FH0N1H18	Class 1	1	1-270
	FH0V1H18	Class 3	1	

1.15 2.5 V RSDS

Function	Block	Description	Cells	Page
2.5V RSDS Buffer (Driver)	FO0S12	3-state Output	2	1-276

1.16 Oscillator

Function	Block	Description	Cells	Page
Oscillator Input Buffer	OSI113		1	1-282
Oscillator Output Buffer (External Feedback Resistor)	OSO913		1	1-284

Chapter 2 Function Block

2.1 Level Generator

Function	Block	Description	Cells	Page
H, L Level Generator	F091	-	1	2-4

2.2 Inverter, Buffer, Driver, Delay Gate

Function	Block	Description	Cells	Page
Inverter	L101	Single out	1	2-10
	F101	Single out, x2-drive	1	
	F102	Single out, x4-drive	2	
	F143	Single out, x6-drive	3	
	F144	Single out, x8-drive	4	
	F145	Single out, x10-drive	5	
	F146	Single out, x12-drive	6	
	F148	Single out, x16-drive	8	
Buffer	L111	Single out	1	2-12
	F111	Single out, x2-drive	2	
	F112	Single out, x4-drive	3	
	F153	Single out, x6-drive	4	
	F154	Single out, x8-drive	6	
	F155	Single out, x10-drive	8	
	F156	Single out, x12-drive	9	
	F158	Single out, x16-drive	12	
CTS Driver	FCTS	-	Note	2-14
Driver for Set, Reset ,Scan Clock	FSRTS	-	Note	2-16
Balanced Buffer	F153BR	Single out, x6-drive	4	2-18
	F154BR	Single out, x8-drive	6	
	F155BR	Single out, x10-drive	8	
	F156BR	Single out, x12-drive	9	
	F158BR	Single out, x16-drive	12	
Delay Gate	F131	-	4	2-20
	F132	-	6	
	F137	-	10	

Note Refer to CMOS-12M Series Design Manual.

2.3 OR (NOR), AND (NAND)

Function	Block	Description	Cells	Page
2-input NOR	L202	-	2	2-26
	F202	x2-drive	4	
	F222	x4-drive	6	
	F2C2	x8-drive	10	
	L202N1	with 1 inverter	2	
	F202N1	with 1 inverter, x2-drive	4	
	F222N1	with 1 inverter, x4-drive	6	
3-input NOR	L203	-	3	2-28
	F203	x2-drive	6	
	F223	x4-drive	6	
	F2C3	x8-drive	10	
	L203N1	with 1 inverter	4	
	F203N1	with 1 inverter, x2-drive	6	
	F223N1	with 1 inverter, x4-drive	6	
	L203N2	with 2 inverter	3	
	F203N2	with 2 inverter, x2-drive	4	
	F223N2	with 2 inverter, x4-drive	6	
4-input NOR	L204	-	4	2-32
	F204	x2-drive	4	
	F224	x4-drive	6	
	L204N1	with 1 inverter	4	
	F204N1	with 1 inverter, x2-drive	5	
	F224N1	with 1 inverter, x4-drive	6	
2-input OR	L212	-	2	2-34
	F212	x2-drive	2	
	F232	x4-drive	4	
	F2D2	x8-drive	8	
3-input OR	L213	-	2	2-36
	F213	x2-drive	3	
	F233	x4-drive	5	
	F2D3	x8-drive	10	
4-input OR	L214	-	4	2-38
	F214	x2-drive	5	
	F234	x4-drive	10	
2-input NAND	L302	-	1	2-40
	F302	x2-drive	2	
	F322	x4-drive	4	
	F3C2	x8-drive	8	
	L302N1	with 1 inverter	2	
	F302N1	with 1 inverter, x2-drive	3	
	F322N1	with 1 inverter, x4-drive	5	

Function	Block	Description	Cells	Page
3-input NAND	L303	-	2	2-42
	F303	x2-drive	3	
	F323	x4-drive	6	
	F3C3	x8-drive	12	
	L303N1	with 1 inverter	2	
	F303N1	with 1 inverter, x2-drive	4	
	F323N1	with 1 inverter, x4-drive	7	
	L303N2	with 2 inverter	2	
	F303N2	with 2 inverter, x2-drive	3	
	F323N2	with 2 inverter, x4-drive	6	
4-input NAND	L304	-	4	2-46
	F304	x2-drive	6	
	F324	x4-drive	10	
	L304N1	with 1 inverter	4	
	F304N1	with 1 inverter, x2-drive	6	
	F324N1	with 1 inverter, x4-drive	10	
	L304N2	with 2 inverter	4	
	F304N2	with 2 inverter, x2-drive	6	
	F324N2	with 2 inverter, x4-drive	8	
2-input AND	L312	-	2	2-50
	F312	x2-drive	2	
	F332	x4-drive	4	
	F3D2	x8-drive	8	
3-input AND	L313	-	2	2-52
	F313	x2-drive	3	
	F333	x4-drive	5	
	F3D3	x8-drive	10	
4-input AND	L314	-	4	2-54
	F314	x2-drive	3	
	F334	x4-drive	6	

2.4 AND-NOR

Function	Block	Description	Cells	Page
1-2-input AND-NOR	L421	-	2	2-60
	F421	x2-drive	4	
1-1-2-input AND-NOR	L422	-	4	2-62
	F422	x2-drive	4	
1-3-input AND-NOR	L423	-	3	2-64
	F423	x2-drive	6	
2-2-input AND-NOR	L424	-	4	2-66
	F424	x2-drive	6	
2-2-2-input AND-NOR	L425	-	6	2-68

Function	Block	Description	Cells	Page
2-2-2-input AND-NOR	F425	x2-drive	7	2-68
3-3-input AND-NOR	L426	-	5	2-70
	F426	x2-drive	5	
2-3-input AND-NOR	L427	-	5	2-72
	F427	x2-drive	5	
1-2-2-input AND-NOR	L428	-	5	2-74
	F428	x2-drive	6	
2-2-2-2-input AND-NOR	L429	-	6	2-76
	F429	x2-drive	6	
1-1-1-2-input AND-NOR	L446	-	4	2-78
	F446	x2-drive	5	
1-1-2-2-input AND-NOR	L448	-	5	2-80
	F448	x2-drive	6	
1-2-3-input AND-NOR	L462	-	5	2-82
	F462	x2-drive	6	
1-1-3-input AND-NOR	L463	-	4	2-84
	F463	x2-drive	6	
1-1-1-1-2-input AND-NOR	L465	-	5	2-86
	F465	x2-drive	6	

2.5 OR-NAND

Function	Block	Description	Cells	Page
1-2-input OR-NAND	L431	-	2	2-92
	F431	x2-drive	4	
1-1-2-input OR-NAND	L432	-	3	2-94
	F432	x2-drive	5	
1-3-input OR-NAND	L433	-	4	2-96
	F433	x2-drive	7	
2-2-input OR-NAND	L434	-	3	2-98
	F434	x2-drive	6	
2-3-input OR-NAND	L435	-	5	2-100
	F435	x2-drive	9	
3-3-input OR-NAND	L436	-	6	2-102
	F436	x2-drive	8	
1-2-2-input OR-NAND	L437	-	4	2-104
	F437	x2-drive	7	
2-2-2-input OR-NAND	L438	-	6	2-106
	F438	x2-drive	9	
1-1-1-2-input OR-NAND	L458	-	5	2-108
	F458	x2-drive	8	
1-1-1-1-2-input OR-NAND	L490	-	5	2-110
	F490	x2-drive	6	

Function	Block	Description	Cells	Page
1-2-3-input OR-NAND	L491	-	5	2-112
	F491	x2-drive	6	
1-1-2-2-input OR-NAND	L495	-	5	2-114
	F495	x2-drive	8	

2.6 Exclusive OR, Exclusive NOR

Function	Block	Description	Cells	Page
2-input Exclusive OR	L511	-	4	2-120
	F511	x2-drive	5	
	F511NP	x4-drive	6	
2-input Exclusive NOR	L512	-	4	2-122
	F512	x2-drive	5	
	F512NP	x4-drive	6	
3-input Exclusive OR	L516	-	6	2-124
	F516	x2-drive	8	
	F516NP	x4-drive	12	
3-input Exclusive NOR	L517	-	6	2-126
	F517	x2-drive	8	
	F517NP	x4-drive	12	

2.7 AND-Exclusive OR

Function	Block	Description	Cells	Page
1-2-input AND-Exclusive OR	L411	-	6	2-132
	F411	x2-drive	8	

2.8 Adder, Decoder, Multiplexer, Generator

Function	Block	Description	Cells	Page
1-Bit Full Adder	L521	-	8	2-138
	F521	x2-drive	12	
1-Bit Half Adder	L522	-	4	2-140
	F522	x2-drive	8	
2 to 4 Decoder	L560	Positive out	7	2-142
	F560	Positive out, x2-drive	9	
	L561	Negative out	5	
	F561	Negative out, x2-drive	9	
	L981	Negative out with ENB,	7	
	F981	Negative out with ENB, x2-drive	12	
3 to 8 Decoder	L567	Positive out	19	2-146
	F567	Positive out, x2-drive	23	
	L568	Negative out	15	
	F568	Negative out, x2-drive	23	

Function	Block	Description	Cells	Page
3 to 8 Decoder	L982	Negative out with ENB	17	2-146
	F982	Negative out with ENB, x2-drive	25	
2 to 1 Multiplexer (Positive Out)	L565	-	3	2-154
	F565	x2-drive	4	
	F565NP	x4-drive	6	
	L57D	with Booth Function	7	
	F57D	with Booth Function, x2-drive	10	
	L571	with ENB	4	
	F571	with ENB, x2-drive	6	
	F571NP	with ENB, x4-drive	8	
2 to 1 Multiplexer (Negative Out)	L57B	-	4	2-158
	F57B	x2-drive	6	
	F57BNP	x4-drive	6	
4 to 1 Multiplexer (Positive Out)	L564	-	7	2-160
	F564	x2-drive	9	
	F564NP	x4-drive	14	
	L570	with ENB	8	
	F570	with ENB, x2-drive	9	
	F570NP	with ENB, x4-drive	14	
4 to 1 Multiplexer (Negative Out)	L57A	-	8	2-164
	F57A	x2-drive	10	
	F57ANP	x4-drive	12	
8-Bit Odd Parity Generator	L581	-	17	2-166
	F581	x2-drive	20	
8-Bit Even Parity Generator	L582	-	17	2-170
	F582	x2-drive	20	
3-Bit Majority Gate	L584	-	3	2-174
	F584	x2-drive	4	

2.9 D-latch

Function	Block	Description	Cells	Page
D-latch	L601NQ	Q out	4	2-180
	F601NQ	Q out, x2-drive	5	
	F601NQP	Q out, x4-drive	6	
D-latch with RB	L603NQ	Q out	5	2-182
	F603NQ	Q out, x2-drive	5	
	F603NQP	Q out, x4-drive	6	
D-latch with SB	L60KNQ	Q out	5	2-184
	F60KNQ	Q out, x2-drive	6	
	F60KNQP	Q out, x4-drive	7	
D-latch (GB)	L604NQ	Q out	4	2-186
	F604NQ	Q out, x2-drive	5	

Function	Block	Description	Cells	Page
D-latch (GB)	F604NQP	Q out, x4-drive	6	2-186
D-latch (GB) with RB	L605NQ	Q out	5	2-188
	F605NQ	Q out, x2-drive	5	
	F605NQP	Q out, x4-drive	6	
D-latch (GB) with SB	L60NNQ	Q out,	5	2-190
	F60NNQ	Q out, x2-drive	6	
	F60NNQP	Q out, x4-drive	7	

2.10 D-F/F

Function	Block	Description	Cells	Page
D-F/F	L611NQ	Q out	6	2-196
	F611NQ	Q out, x2-drive	7	
	F611NQP	Q out, x4-drive	8	
D-F/F with EN	L611EQ	Q out	8	2-198
	F611EQ	Q out, x2-drive	9	
	F611EQP	Q out, x4-drive	10	
D-F/F with RB	L615NQ	Q out,	7	2-200
	F615NQ	Q out, x2-drive	8	
	F615NQP	Q out, x4-drive	10	
D-F/F with RB, EN	L615EQ	Q out	9	2-202
	F615EQ	Q out, x2-drive	10	
	F615EQP	Q out, x4-drive	12	
D-F/F with SB	L616NQ	Q out,	7	2-204
	F616NQ	Q out, x2-drive	8	
	F616NQP	Q out, x4-drive	9	
D-F/F with SB, EN	L616EQ	Q out	9	2-206
	F616EQ	Q out, x2-drive	10	
	F616EQP	Q out, x4-drive	11	
D-F/F with RB, SB	L617NQ	Q out	8	2-208
	F617NQ	Q out, x2-drive	9	
	F617NQP	Q out, x4-drive	10	
D-F/F with RB, SB, EN	L617EQ	Q out	10	2-210
	F617EQ	Q out, x2-drive	11	
	F617EQP	Q out, x4-drive	12	
D-F/F with RB (Sync)	L6Z5NQ	Q out	7	2-212
	F6Z5NQ	Q out, x2-drive	7	
	F6Z5NQP	Q out, x4-drive	8	
D-F/F (CB)	L631NQ	Q out	6	2-214
	F631NQ	Q out, x2-drive	7	
	F631NQP	Q out, x4-drive	8	
D-F/F (CB) with EN	L631EQ	Q out	8	2-216
	F631EQ	Q out, x2-drive	9	

Function	Block	Description	Cells	Page
D-F/F (CB) with EN	F631EQP	Q out, x4-drive	10	2-216
D-F/F (CB) with RB	L635NQ	Q out	7	2-218
	F635NQ	Q out, x2-drive	8	
	F635NQP	Q out, x4-drive	10	
D-F/F (CB) with RB, EN	L635EQ	Q out	9	2-220
	F635EQ	Q out, x2-drive	10	
	F635EQP	Q out, x4-drive	12	
D-F/F (CB) with SB	L636NQ	Q out	7	2-222
	F636NQ	Q out, x2-drive	8	
	F636NQP	Q out, x4-drive	9	
D-F/F (CB) with SB, EN	L636EQ	Q out	9	2-224
	F636EQ	Q out, x2-drive	10	
	F636EQP	Q out, x4-drive	11	
D-F/F (CB) with RB, SB	L637NQ	Q out	8	2-226
	F637NQ	Q out, x2-drive	9	
	F637NQP	Q out, x4-drive	10	
D-F/F (CB) with RB, SB, EN	L637EQ	Q out	10	2-228
	F637EQ	Q out, x2-drive	11	
	F637EQP	Q out, x4-drive	12	
D-F/F (CB) with RB (Sync)	L6Y5NQ	Q out	7	2-230
	F6Y5NQ	Q out, x2-drive	7	
	F6Y5NQP	Q out, x4-drive	8	

2.11 Gating Cell

Function	Block	Description	Cells	Page
Gating Cell with Latch Posedge	FCGP1	x2-drive	6	2-236
	FCGP1NP	x4-drive	8	
	FCGP1NT	x8-drive	12	
	FCGP1NU	x12-drive	16	
Gating Cell with Latch Posedge Precontrol	FCGP2	x2-drive	6	2-238
	FCGP2NP	x4-drive	8	
	FCGP2NT	x8-drive	12	
	FCGP2NU	x12-drive	16	
Gating Cell with Latch Posedge Precontrol OBS	FCGP3	x2-drive	7	2-240
	FCGP3NP	x4-drive	9	
	FCGP3NT	x8-drive	13	
	FCGP3NU	x12-drive	17	
Gating Cell with Latch Negedge	FCGN1	x2-drive	6	2-242
	FCGN1NP	x4-drive	8	
	FCGN1NT	x8-drive	12	
	FCGN1NU	x12-drive	16	
Gating Cell with Latch Negedge Precontrol	FCGN2	x2-drive	7	2-244

Function	Block	Description	Cells	Page
Gating Cell with Latch Negedge Precontrol	FCGN2NP	x4-drive	9	2-244
	FCGN2NT	x8-drive	13	
	FCGN2NU	x12-drive	17	
Gating Cell with Latch Negedge Precontrol OBS	FCGN3	x2-drive	8	2-246
	FCGN3NP	x4-drive	10	
	FCGN3NT	x8-drive	14	
	FCGN3NU	x12-drive	18	

Chapter 3 Scan Path Block

3.1 Robust Scan

Function	Block	Description	Cells	Page
Robust Scan D-F/F	SPL611NQ	Q out	10	3-4
	SP611NQ	Q out, x2-drive	10	
	SP611NQP	Q out, x4-drive	11	
Robust Scan D-F/F with RB	SPL615NQ	Q out	11	3-6
	SP615NQ	Q out, x2-drive	11	
	SP615NQP	Q out, x4-drive	12	
Robust Scan D-F/F with SB	SPL616NQ	Q out	11	3-10
	SP616NQ	Q out, x2-drive	11	
	SP616NQP	Q out, x4-drive	12	
Robust Scan D-F/F with RB, SB	SPL617NQ	Q out	12	3-14
	SP617NQ	Q out, x2-drive	12	
	SP617NQP	Q out, x4-drive	13	
Robust Scan D-F/F (CB)	SPL631NQ	Q out	10	3-18
	SP631NQ	Q out, x2-drive	10	
	SP631NQP	Q out, x4-drive	11	
Robust Scan D-F/F (CB) with RB	SPL635NQ	Q out	11	3-20
	SP635NQ	Q out, x2-drive	11	
	SP635NQP	Q out, x4-drive	12	
Robust Scan D-F/F (CB) with SB	SPL636NQ	Q out	11	3-24
	SP636NQ	Q out, x2-drive	11	
	SP636NQP	Q out, x4-drive	12	
Robust Scan D-F/F (CB) with RB, SB	SPL637NQ	Q out	12	3-28
	SP637NQ	Q out, x2-drive	12	
	SP637NQP	Q out, x4-drive	13	

3.2 Robust Scan (Pseudo Type)

Function	Block	Description	Cells	Page
Robust Scan (Pseudo Cell) D-F/F	SPL611NQU	Q out	10	3-36
	SP611NQU	Q out, x2-drive	10	
	SP611NQPU	Q out, x4-drive	11	
Robust Scan (Pseudo Cell) D-F/F with RB	SPL615NQU	Q out	11	3-38
	SP615NQU	Q out, x2-drive	11	
	SP615NQPU	Q out, x4-drive	12	
Robust Scan (Pseudo Cell) D-F/F with SB	SPL616NQU	Q out	11	3-40
	SP616NQU	Q out, x2-drive	11	
	SP616NQPU	Q out, x4-drive	12	
Robust Scan (Pseudo Cell) D-F/F with RB, SB	SPL617NQU	Q out	12	3-42
	SP617NQU	Q out, x2-drive	12	
	SP617NQPU	Q out, x4-drive	13	
Robust Scan (Pseudo Cell) D-F/F (CB)	SPL631NQU	Q out	10	3-44
	SP631NQU	Q out, x2-drive	10	
	SP631NQPU	Q out, x4-drive	11	
Robust Scan (Pseudo Cell) D-F/F (CB) with RB	SPL635NQU	Q out	11	3-46
	SP635NQU	Q out, x2-drive	11	
	SP635NQPU	Q out, x4-drive	12	
Robust Scan (Pseudo Cell) D-F/F (CB) with SB	SPL636NQU	Q out	11	3-48
	SP636NQU	Q out, x2-drive	11	
	SP636NQPU	Q out, x4-drive	12	
Robust Scan (Pseudo Cell) D-F/F (CB) with RB, SB	SPL637NQU	Q out	12	3-50
	SP637NQU	Q out, x2-drive	12	
	SP637NQPU	Q out, x4-drive	13	

3.3 MUX Scan

Function	Block	Description	Cells	Page
MUX Scan D-F/F	SWL611NQ	Q out	8	3-56
	SW611NQ	Q out, x2-drive	9	
	SW611NQP	Q out, x4-drive	10	
MUX Scan D-F/F with EN	SWL611EQ	Q out	11	3-58
	SW611EQ	Q out, x2-drive	11	
	SW611EQP	Q out, x4-drive	12	
MUX Scan D-F/F with RB	SWL615NQ	Q out	9	3-60
	SW615NQ	Q out, x2-drive	10	
	SW615NQP	Q out, x4-drive	12	
MUX Scan D-F/F with RB, EN	SWL615EQ	Q out	12	3-62
	SW615EQ	Q out, x2-drive	12	
	SW615EQP	Q out, x4-drive	14	
MUX Scan D-F/F with SB	SWL616NQ	Q out	9	3-64
	SW616NQ	Q out, x2-drive	10	
	SW616NQP	Q out, x4-drive	11	
MUX Scan D-F/F with SB, EN	SWL616EQ	Q out	12	3-66
	SW616EQ	Q out, x2-drive	12	
	SW616EQP	Q out, x4-drive	13	
MUX Scan D-F/F with RB, SB	SWL617NQ	Q out	10	3-68
	SW617NQ	Q out, x2-drive	11	
	SW617NQP	Q out, x4-drive	12	
MUX Scan D-F/F with RB, SB, EN	SWL617EQ	Q out	13	3-70
	SW617EQ	Q out, x2-drive	13	
	SW617EQP	Q out, x4-drive	14	
MUX Scan D-F/F with RB (Sync)	SWL6Z5NQ	Q out	9	3-74
	SW6Z5NQ	Q out, x2-drive	10	
	SW6Z5NQP	Q out, x4-drive	11	
MUX Scan D-F/F (CB)	SWL631NQ	Q out	8	3-76
	SW631NQ	Q out, x2-drive	9	
	SW631NQP	Q out, x4-drive	10	
MUX Scan D-F/F (CB) with EN	SWL631EQ	Q out	11	3-78
	SW631EQ	Q out, x2-drive	11	
	SW631EQP	Q out, x4-drive	12	
MUX Scan D-F/F (CB) with RB	SWL635NQ	Q out	9	3-80
	SW635NQ	Q out, x2-drive	10	
	SW635NQP	Q out, x4-drive	12	
MUX Scan D-F/F (CB) with RB, EN	SWL635EQ	Q out	12	3-82
	SW635EQ	Q out, x2-drive	12	
	SW635EQP	Q out, x4-drive	14	
MUX Scan D-F/F (CB) with SB	SWL636NQ	Q out	9	3-84
	SW636NQ	Q out, x2-drive	10	

Function	Block	Description	Cells	Page
MUX Scan D-F/F (CB) with SB	SW636NQP	Q out, x4-drive	11	3-84
MUX Scan D-F/F (CB) with SB, EN	SWL636EQ	Q out	12	3-86
	SW636EQ	Q out, x2-drive	12	
	SW636EQP	Q out, x4-drive	13	
MUX Scan D-F/F (CB) with RB, SB	SWL637NQ	Q out	10	3-88
	SW637NQ	Q out, x2-drive	11	
	SW637NQP	Q out, x4-drive	12	
MUX Scan D-F/F (CB) with RB, SB,EN	SWL637EQ	Q out	13	3-90
	SW637EQ	Q out, x2-drive	13	
	SW637EQP	Q out, x4-drive	14	
MUX Scan D-F/F (CB) with RB (Sync)	SWL6Y5NQ	Q out	9	3-94
	SW6Y5NQ	Q out, x2-drive	10	
	SW6Y5NQP	Q out, x4-drive	11	

3.4 MUX Scan (Pseudo Type)

Function	Block	Description	Cells	Page
MUX Scan (Pseudo Type) D-F/F	SWL611NQU	Q out	8	3-100
	SW611NQU	Q out, x2-drive	9	
	SW611NQPU	Q out, x4-drive	10	
MUX Scan (Pseudo Type) D-F/F with EN	SWL611EQU	Q out	11	3-102
	SW611EQU	Q out, x2-drive	11	
	SW611EQPU	Q out, x4-drive	12	
MUX Scan (Pseudo Type) D-F/F with RB	SWL615NQU	Q out	9	3-104
	SW615NQU	Q out, x2-drive	10	
	SW615NQPU	Q out, x4-drive	12	
MUX Scan (Pseudo Type) D-F/F with RB, EN	SWL615EQU	Q out	12	3-106
	SW615EQU	Q out, x2-drive	12	
	SW615EQPU	Q out, x4-drive	14	
MUX Scan (Pseudo Type) D-F/F with SB	SWL616NQU	Q out	9	3-108
	SW616NQU	Q out, x2-drive	10	
	SW616NQPU	Q out, x4-drive	11	
MUX Scan (Pseudo Type) D-F/F with SB, EN	SWL616EQU	Q out	12	3-110
	SW616EQU	Q out, x2-drive	12	
	SW616EQPU	Q out, x4-drive	13	
MUX Scan (Pseudo Type) D-F/F with RB, SB	SWL617NQU	Q out	10	3-112
	SW617NQU	Q out, x2-drive	11	
	SW617NQPU	Q out, x4-drive	12	
MUX Scan (Pseudo Type) D-F/F with RB, SB, EN	SWL617EQU	Q out	13	3-114
	SW617EQU	Q out, x2-drive	13	
	SW617EQPU	Q out, x4-drive	14	
MUX Scan (Pseudo Type) D-F/F with RB (Sync)	SWL6Z5NQU	Q out	9	3-116
	SW6Z5NQU	Q out, x2-drive	10	

Function	Block	Description	Cells	Page
MUX Scan (Pseudo Type) D-F/F with RB (Sync)	SW6Z5NQPU	Q out, x4-drive	11	3-116
MUX Scan (Pseudo Type) D-F/F (CB)	SWL631NQU	Q out	8	3-118
	SW631NQU	Q out, x2-drive	9	
	SW631NQPU	Q out, x4-drive	10	
MUX Scan (Pseudo Type) D-F/F (CB) with EN	SWL631EQU	Q out	11	3-120
	SW631EQU	Q out, x2-drive	11	
	SW631EQPU	Q out, x4-drive	12	
MUX Scan (Pseudo Type) D-F/F (CB) with RB	SWL635NQU	Q out	9	3-122
	SW635NQU	Q out, x2-drive	10	
	SW635NQPU	Q out, x4-drive	12	
MUX Scan (Pseudo Type) D-F/F (CB) with RB, EN	SWL635EQU	Q out	12	3-124
	SW635EQU	Q out, x2-drive	12	
	SW635EQPU	Q out, x4-drive	14	
MUX Scan (Pseudo Type) D-F/F (CB) with SB	SWL636NQU	Q out	9	3-126
	SW636NQU	Q out, x2-drive	10	
	SW636NQPU	Q out, x4-drive	11	
MUX Scan (Pseudo Type) D-F/F (CB) with SB, EN	SWL636EQU	Q out	12	3-128
	SW636EQU	Q out, x2-drive	12	
	SW636EQPU	Q out, x4-drive	13	
MUX Scan (Pseudo Type) D-F/F (CB) with RB, SB	SWL637NQU	Q out	10	3-130
	SW637NQU	Q out, x2-drive	11	
	SW637NQPU	Q out, x4-drive	12	
MUX Scan (Pseudo Type) D-F/F (CB) with RB, SB, EN	SWL637EQU	Q out	13	3-132
	SW637EQU	Q out, x2-drive	13	
	SW637EQPU	Q out, x4-drive	14	
MUX Scan (Pseudo Type) D-F/F (CB) with RB (Sync)	SWL6Y5NQU	Q out	9	3-134
	SW6Y5NQU	Q out, x2-drive	10	
	SW6Y5NQPU	Q out, x4-drive	11	

Chapter 4 Boundary Scan Block

4.1 D-latch, Selector, Shift Register

Function	Block	Description	Cells	Page
BSCAN D-latch with SB Q Out	L606	-	5	4-4
BSCAN Selector	SBD1	-	4	4-6
BSCAN Shift Register	SBR1	-	10	4-8
BSCAN Data Selector for Output	SVSNA2	-	6	4-10
BSCAN Data Selector for Bi-directional	SVSNB2	-	7	4-12
BSCAN Data Enable Selector for 3-state	SVSNC2	-	10	4-14
BSCAN Data Enable Selector for Bi-directional	SVSNE2	-	10	4-16
BSCAN Data Selector with Testbus out for Output	SVSTA2	-	10	4-18
BSCAN Data Selector with Testbus out for Bi-directional	SVSTB2	-	10	4-20
BSCAN Data Enable Selector with Testbus in for 3-state	SVSTC2	-	11	4-22
BSCAN Data Enable Selector with Testbus out for 3-state	SVSTD2	-	12	4-24
BSCAN Data Enable Selector with Testbus in for Bi-directional	SVSTE2	-	12	4-26
BSCAN Data Enable Selector with Testbus out for Bi-directional	SVSTF2	-	12	4-28

Chapter 1

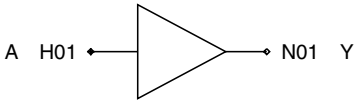
Interface Block

1.1 1.8V Interface

[MEMO]

Function	Input Buffer			External supply voltage	1.8 V
Block type					
Function	no resistor	with 100 KΩ P/D	with 100 KΩ P/U	with 5 KΩ P/U	Cells
Normal	FI0111	FI0111PD100	FI0111PU100	FIW111	1
Schmitt	FIS111	FIS111PD100	FIS111PU100	FWS111	1
Clock					

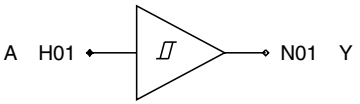
Logic Diagram for "Normal"



Truth Table

A	Y
1	1
0	0

Logic Diagram for "Schmitt"



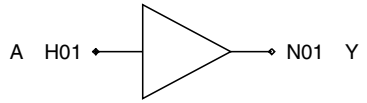
Block type	Input		Output	
	Symbol	Fan-In	Symbol	Fan-Out
FI0111 to FIW111	A	-	Y	0.453
FIS111 to FWS111	A	-	Y	1.739

Logic Diagram for "Clock"

Block type	Switching speed										
	Path		t_{LD0} [ns]			t_1 (ns/pF)			T (ns/pF)		
	IN → OUT		MIN.	TYP.	MAX.	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.
FI0111	A → Y	(HH)	0.196	0.283	0.467	0.156	0.258	0.470			
		(LL)	0.210	0.307	0.488	0.358	0.536	0.898			
FI0111PD100	A → Y	(HH)	0.196	0.283	0.467	0.156	0.258	0.470			
		(LL)	0.210	0.307	0.488	0.358	0.536	0.898			
FI0111PU100	A → Y	(HH)	0.196	0.283	0.467	0.156	0.258	0.470			
		(LL)	0.210	0.307	0.488	0.358	0.536	0.898			
FIW111	A → Y	(HH)	0.196	0.283	0.467	0.156	0.258	0.470			
		(LL)	0.210	0.307	0.488	0.358	0.536	0.898			
FIS111	A → Y	(HH)	1.042	1.682	2.942	0.117	0.155	0.242			
		(LL)	1.232	2.042	3.520	0.065	0.084	0.123			
FIS111PD100	A → Y	(HH)	1.042	1.682	2.942	0.117	0.155	0.242			
		(LL)	1.232	2.042	3.520	0.065	0.084	0.123			
FIS111PU100	A → Y	(HH)	1.042	1.682	2.942	0.117	0.155	0.242			
		(LL)	1.232	2.042	3.520	0.065	0.084	0.123			
FWS111	A → Y	(HH)	1.042	1.682	2.942	0.117	0.155	0.242			
		(LL)	1.232	2.042	3.520	0.065	0.084	0.123			

Function	Input Buffer with failsafe			External supply voltage	1.8 V
Block type					
Function	no resistor	with 100 KΩ P/D	with 100 KΩ P/U	with 5 KΩ P/U	Cells
Normal	FIA111	FIA111PD100			1
Schmitt	FIE111	FIE111PD100			1
Clock					

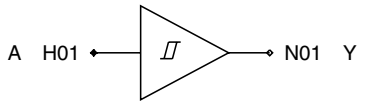
Logic Diagram for "Normal"



Truth Table

A	Y
1	1
0	0

Logic Diagram for "Schmitt"



Logic Diagram for "Clock"

Block type	Input		Output	
	Symbol	Fan-In	Symbol	Fan-Out
FIA111 to FIA111PD100	A	-	Y	0.452
FIE111 to FIE111PD100	A	-	Y	1.739

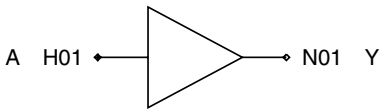
Block type	Switching speed										
	Path		t_{LD0} [ns]			t_1 (ns/pF)			T (ns/pF)		
	IN → OUT		MIN.	TYP.	MAX.	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.
FIA111	A → Y	(HH)	0.192	0.279	0.462	0.156	0.258	0.470			
		(LL)	0.207	0.303	0.483	0.358	0.536	0.898			
FIA111PD100	A → Y	(HH)	0.192	0.279	0.462	0.156	0.258	0.470			
		(LL)	0.207	0.303	0.483	0.358	0.536	0.898			
FIE111	A → Y	(HH)	1.039	1.677	2.935	0.117	0.155	0.241			
		(LL)	1.233	2.041	3.520	0.065	0.084	0.123			
FIE111PD100	A → Y	(HH)	1.039	1.677	2.935	0.117	0.155	0.241			
		(LL)	1.233	2.041	3.520	0.065	0.084	0.123			

Function	Output Buffer	External supply voltage	1.8 V, 3.3 V

Block type

Drivability	no resistor	with 100 KΩ P/D	with 100 KΩ P/U	with 5 KΩ P/U	Cells
1mA					
2mA					
3mA	FO0911				1
6mA	FO0411				1
9mA	FO0111				1
12mA	FO0211				1
18mA					
24mA					

Logic Diagram



Truth Table

A	Y
1	1
0	0

Block type	Input		Output	
	Symbol	Fan-in	Symbol	Fan-out
FO0911	A	0.125	Y	-
FO0411	A	0.125	Y	-
FO0111	A	0.125	Y	-
FO0211	A	0.125	Y	-

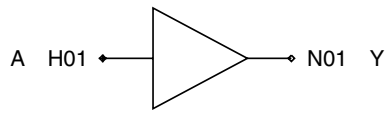
Block type	Switching speed											
	Path		t_{LD0} [ns]			t_1 (ns/pF)			T (ns/pF)		
	IN → OUT		MIN.	TYP.	MAX.	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.
FO0911	A → Y	(HH)	0.517	0.721	1.183				0.050	0.075	0.123
		(LL)	0.609	0.856	1.496				0.039	0.054	0.086
FO0411	A → Y	(HH)	0.521	0.713	1.162				0.025	0.038	0.061
		(LL)	0.439	0.632	1.119				0.020	0.027	0.043
FO0111	A → Y	(HH)	0.521	0.714	1.167				0.021	0.032	0.051
		(LL)	0.452	0.649	1.138				0.017	0.023	0.037
FO0211	A → Y	(HH)	0.529	0.724	1.188				0.017	0.025	0.041
		(LL)	0.453	0.653	1.145				0.014	0.019	0.030

Function	Low-noise Output Buffer	External supply voltage	1.8 V, 3.3 V

Block type

Drivability	no resistor	with 100 KΩ P/D	with 100 KΩ P/U	with 5 KΩ P/U	Cells
1mA					
2mA					
3mA					
6mA	FE0411				1
9mA	FE0111				1
12mA	FE0211				1
18mA					
24mA					

Logic Diagram



Truth Table

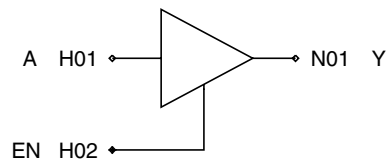
A	Y
1	1
0	0

Block type	Input		Output	
	Symbol	Fan-in	Symbol	Fan-out
FE0411	A	0.125	Y	-
FE0111	A	0.125	Y	-
FE0211	A	0.125	Y	-

Block type	Switching speed											
	Path		t_{LD0} [ns]			t_1 (ns/pF)			T (ns/pF)		
	IN → OUT		MIN.	TYP.	MAX.	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.
FE0411	A → Y	(HH)	0.897	1.267	2.225				0.026	0.039	0.063
		(LL)	0.829	1.197	2.155				0.024	0.033	0.055
FE0111	A → Y	(HH)	0.971	1.373	2.395				0.022	0.033	0.053
		(LL)	0.874	1.252	2.221				0.022	0.031	0.050
FE0211	A → Y	(HH)	1.079	1.525	2.634				0.018	0.027	0.044
		(LL)	0.916	1.303	2.277				0.019	0.027	0.045

Function	3-state Buffer			External supply voltage	1.8 V, 3.3 V
	Block type				
Drivability	no resistor	with 100 KΩ P/D	with 100 KΩ P/U	with 5 KΩ P/U	Cells
1mA					
2mA					
3mA	B00T11	B00T11PD100	B00T11PU100	B0WT11	1
6mA	B00E11	B00E11PD100	B00E11PU100	B0WE11	1
9mA	B00811	B00811PD100	B00811PU100	B0W811	1
12mA	B00711	B00711PD100	B00711PU100	B0W711	1
18mA					
24mA					

Logic Diagram



Block type	Input		Output	
	Symbol	Fan-in	Symbol	Fan-out
B00T11 to B0WT11	A	0.125	Y	-
	EN	0.125		
B00E11 to B0WE11	A	0.125	Y	-
	EN	0.125		
B00811 to B0W811	A	0.125	Y	-
	EN	0.125		
B00711 to B0W711	A	0.125	Y	-
	EN	0.125		

Truth Table

A	EN	Y
0	1	0
1	1	1
X	0	Z

X:Irrelevant

Z:High Impedance

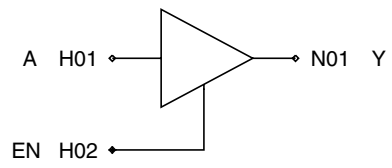
Block type	Switching speed											
	Path		t_{LD0} [ns]			t_1 (ns/pF)			T (ns/pF)		
	IN → OUT		MIN.	TYP.	MAX.	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.
B00T11	A → Y	(HH)	0.520	0.726	1.190				0.050	0.075	0.123
		(LL)	0.618	0.868	1.515				0.039	0.054	0.086
	EN → Y	(HZ)	0.325	0.445	0.743						
		(LZ)	0.279	0.388	0.675						
		(ZH)	0.665	0.920	1.481				0.050	0.075	0.123
		(ZL)	0.567	0.784	1.305				0.039	0.054	0.086
B00T11PD100	A → Y	(HH)	0.520	0.726	1.190				0.050	0.075	0.123
		(LL)	0.618	0.868	1.515				0.039	0.054	0.086
	EN → Y	(HZ)	0.325	0.445	0.743						
		(LZ)	0.279	0.388	0.675						
		(ZH)	0.665	0.920	1.481				0.050	0.075	0.123
		(ZL)	0.567	0.784	1.305				0.039	0.054	0.086
B00T11PU100	A → Y	(HH)	0.520	0.726	1.190				0.050	0.075	0.123
		(LL)	0.618	0.868	1.515				0.039	0.054	0.086
	EN → Y	(HZ)	0.325	0.445	0.743						
		(LZ)	0.279	0.388	0.675						
		(ZH)	0.665	0.920	1.481				0.050	0.075	0.123
		(ZL)	0.567	0.784	1.305				0.039	0.054	0.086
B0WT11	A → Y	(HH)	0.520	0.726	1.190				0.050	0.075	0.123
		(LL)	0.618	0.868	1.515				0.039	0.054	0.086
	EN → Y	(HZ)	0.325	0.445	0.743						
		(LZ)	0.279	0.388	0.675						
		(ZH)	0.665	0.920	1.481				0.050	0.075	0.123
		(ZL)	0.567	0.784	1.305				0.039	0.054	0.086
B00E11	A → Y	(HH)	0.525	0.719	1.172				0.025	0.038	0.061
		(LL)	0.444	0.641	1.131				0.020	0.027	0.043
	EN → Y	(HZ)	0.359	0.482	0.787						
		(LZ)	0.293	0.405	0.704						
		(ZH)	0.623	0.854	1.377				0.025	0.038	0.061
		(ZL)	0.486	0.668	1.097				0.020	0.027	0.043
B00E11PD100	A → Y	(HH)	0.525	0.719	1.172				0.025	0.038	0.061
		(LL)	0.444	0.641	1.131				0.020	0.027	0.043
	EN → Y	(HZ)	0.359	0.482	0.787						
		(LZ)	0.293	0.405	0.704						
		(ZH)	0.623	0.854	1.377				0.025	0.038	0.061
		(ZL)	0.486	0.668	1.097				0.020	0.027	0.043
B00E11PU100	A → Y	(HH)	0.525	0.719	1.172				0.025	0.038	0.061
		(LL)	0.444	0.641	1.131				0.020	0.027	0.043
	EN → Y	(HZ)	0.359	0.482	0.787						
		(LZ)	0.293	0.405	0.704						
		(ZH)	0.623	0.854	1.377				0.025	0.038	0.061
		(ZL)	0.486	0.668	1.097				0.020	0.027	0.043
B0WE11	A → Y	(HH)	0.525	0.719	1.172				0.025	0.038	0.061
		(LL)	0.444	0.641	1.131				0.020	0.027	0.043
	EN → Y	(HZ)	0.359	0.482	0.787						
		(LZ)	0.293	0.405	0.704						
		(ZH)	0.623	0.854	1.377				0.025	0.038	0.061
		(ZL)	0.486	0.668	1.097				0.020	0.027	0.043
B00811	A → Y	(HH)	0.525	0.719	1.177				0.021	0.032	0.051
		(LL)	0.458	0.657	1.150				0.017	0.023	0.037
	EN → Y	(HZ)	0.374	0.498	0.807						
		(LZ)	0.296	0.409	0.712						
		(ZH)	0.624	0.854	1.380				0.021	0.031	0.051
		(ZL)	0.486	0.666	1.088				0.017	0.023	0.037

Block type	Switching speed										
	Path		t_{LD0} [ns]			t_1 (ns/pF)			T (ns/pF)		
	IN → OUT		MIN.	TYP.	MAX.	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.
B00811PD100	A → Y	(HH)	0.525	0.719	1.177				0.021	0.032	0.051
		(LL)	0.458	0.657	1.150				0.017	0.023	0.037
	EN → Y	(HZ)	0.374	0.498	0.807						
		(LZ)	0.296	0.409	0.712						
		(ZH)	0.624	0.854	1.380				0.021	0.031	0.051
		(ZL)	0.486	0.666	1.088				0.017	0.023	0.037
B00811PU100	A → Y	(HH)	0.525	0.719	1.177				0.021	0.032	0.051
		(LL)	0.458	0.657	1.150				0.017	0.023	0.037
	EN → Y	(HZ)	0.374	0.498	0.807						
		(LZ)	0.296	0.409	0.712						
		(ZH)	0.624	0.854	1.380				0.021	0.031	0.051
		(ZL)	0.486	0.666	1.088				0.017	0.023	0.037
B0W811	A → Y	(HH)	0.525	0.719	1.177				0.021	0.032	0.051
		(LL)	0.458	0.657	1.150				0.017	0.023	0.037
	EN → Y	(HZ)	0.374	0.498	0.807						
		(LZ)	0.296	0.409	0.712						
		(ZH)	0.624	0.854	1.380				0.021	0.031	0.051
		(ZL)	0.486	0.666	1.088				0.017	0.023	0.037
B00711	A → Y	(HH)	0.532	0.729	1.197				0.017	0.025	0.041
		(LL)	0.458	0.661	1.157				0.014	0.019	0.030
	EN → Y	(HZ)	0.395	0.521	0.834						
		(LZ)	0.310	0.424	0.733						
		(ZH)	0.629	0.860	1.394				0.017	0.025	0.041
		(ZL)	0.474	0.652	1.068				0.013	0.018	0.029
B00711PD100	A → Y	(HH)	0.532	0.729	1.197				0.017	0.025	0.041
		(LL)	0.458	0.661	1.157				0.014	0.019	0.030
	EN → Y	(HZ)	0.395	0.521	0.834						
		(LZ)	0.310	0.424	0.733						
		(ZH)	0.629	0.860	1.394				0.017	0.025	0.041
		(ZL)	0.474	0.652	1.068				0.013	0.018	0.029
B00711PU100	A → Y	(HH)	0.532	0.729	1.197				0.017	0.025	0.041
		(LL)	0.458	0.661	1.157				0.014	0.019	0.030
	EN → Y	(HZ)	0.395	0.521	0.834						
		(LZ)	0.310	0.424	0.733						
		(ZH)	0.629	0.860	1.394				0.017	0.025	0.041
		(ZL)	0.474	0.652	1.068				0.013	0.018	0.029
B0W711	A → Y	(HH)	0.532	0.729	1.197				0.017	0.025	0.041
		(LL)	0.458	0.661	1.157				0.014	0.019	0.030
	EN → Y	(HZ)	0.395	0.521	0.834						
		(LZ)	0.310	0.424	0.733						
		(ZH)	0.629	0.860	1.394				0.017	0.025	0.041
		(ZL)	0.474	0.652	1.068				0.013	0.018	0.029

[MEMO]

Function	Low-noise 3-state Buffer			External supply voltage	1.8 V, 3.3 V
Block type					
Drivability	no resistor	with 100 KΩ P/D	with 100 KΩ P/U	with 5 KΩ P/U	Cells
1mA					
2mA					
3mA					
6mA	BE0E11	BE0E11PD100	BE0E11PU100	BEWE11	1
9mA	BE0811	BE0811PD100	BE0811PU100	BEW811	1
12mA	BE0711	BE0711PD100	BE0711PU100	BEW711	1
18mA					
24mA					

Logic Diagram



Block type	Input		Output	
	Symbol	Fan-in	Symbol	Fan-out
BE0E11 to BEWE11	A	0.125	Y	-
	EN	0.125		
BE0811 to BEW811	A	0.125	Y	-
	EN	0.125		
BE0711 to BEW711	A	0.125	Y	-
	EN	0.125		

Truth Table

A	EN	Y
0	1	0
1	1	1
X	0	Z

X:Irrelevant

Z:High Impedance

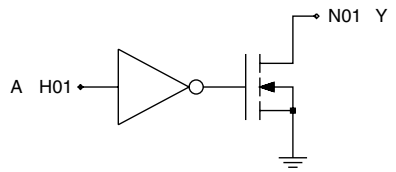
Block type	Switching speed											
	Path		t_{LD0} [ns]			t_1 (ns/pF)			T (ns/pF)		
	IN → OUT		MIN.	TYP.	MAX.	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.
BE0E11	A → Y	(HH)	0.921	1.300	2.277				0.026	0.039	0.063
		(LL)	0.847	1.223	2.197				0.024	0.034	0.055
	EN → Y	(HZ)	0.236	0.333	0.583						
		(LZ)	0.253	0.361	0.651						
		(ZH)	0.988	1.387	2.353				0.026	0.039	0.063
		(ZL)	0.690	1.007	1.797				0.023	0.032	0.054
BE0E11PD100	A → Y	(HH)	0.921	1.300	2.277				0.026	0.039	0.063
		(LL)	0.847	1.223	2.197				0.024	0.034	0.055
	EN → Y	(HZ)	0.236	0.333	0.583						
		(LZ)	0.253	0.361	0.651						
		(ZH)	0.988	1.387	2.353				0.026	0.039	0.063
		(ZL)	0.690	1.007	1.797				0.023	0.032	0.054
BE0E11PU100	A → Y	(HH)	0.921	1.300	2.277				0.026	0.039	0.063
		(LL)	0.847	1.223	2.197				0.024	0.034	0.055
	EN → Y	(HZ)	0.236	0.333	0.583						
		(LZ)	0.253	0.361	0.651						
		(ZH)	0.988	1.387	2.353				0.026	0.039	0.063
		(ZL)	0.690	1.007	1.797				0.023	0.032	0.054
BEWE11	A → Y	(HH)	0.921	1.300	2.277				0.026	0.039	0.063
		(LL)	0.847	1.223	2.197				0.024	0.034	0.055
	EN → Y	(HZ)	0.236	0.333	0.583						
		(LZ)	0.253	0.361	0.651						
		(ZH)	0.988	1.387	2.353				0.026	0.039	0.063
		(ZL)	0.690	1.007	1.797				0.023	0.032	0.054
BE0811	A → Y	(HH)	0.993	1.404	2.446				0.022	0.033	0.054
		(LL)	0.891	1.276	2.260				0.022	0.031	0.051
	EN → Y	(HZ)	0.251	0.349	0.605						
		(LZ)	0.256	0.365	0.659						
		(ZH)	1.051	1.479	2.503				0.022	0.033	0.054
		(ZL)	0.681	0.991	1.757				0.021	0.029	0.049
BE0811PD100	A → Y	(HH)	0.993	1.404	2.446				0.022	0.033	0.054
		(LL)	0.891	1.276	2.260				0.022	0.031	0.051
	EN → Y	(HZ)	0.251	0.349	0.605						
		(LZ)	0.256	0.365	0.659						
		(ZH)	1.051	1.479	2.503				0.022	0.033	0.054
		(ZL)	0.681	0.991	1.757				0.021	0.029	0.049
BE0811PU100	A → Y	(HH)	0.993	1.404	2.446				0.022	0.033	0.054
		(LL)	0.891	1.276	2.260				0.022	0.031	0.051
	EN → Y	(HZ)	0.251	0.349	0.605						
		(LZ)	0.256	0.365	0.659						
		(ZH)	1.051	1.479	2.503				0.022	0.033	0.054
		(ZL)	0.681	0.991	1.757				0.021	0.029	0.049
BEW811	A → Y	(HH)	0.993	1.404	2.446				0.022	0.033	0.054
		(LL)	0.891	1.276	2.260				0.022	0.031	0.051
	EN → Y	(HZ)	0.251	0.349	0.605						
		(LZ)	0.256	0.365	0.659						
		(ZH)	1.051	1.479	2.503				0.022	0.033	0.054
		(ZL)	0.681	0.991	1.757				0.021	0.029	0.049
BE0711	A → Y	(HH)	1.102	1.556	2.683				0.018	0.027	0.045
		(LL)	0.931	1.325	2.313				0.019	0.027	0.045
	EN → Y	(HZ)	0.274	0.375	0.637						
		(LZ)	0.273	0.383	0.682						
		(ZH)	1.139	1.604	2.700				0.018	0.027	0.045
		(ZL)	0.651	0.950	1.683				0.018	0.025	0.042

Block type	Switching speed										
	Path		t_{LD0} [ns]			t_1 (ns/pF)			T (ns/pF)		
	IN → OUT		MIN.	TYP.	MAX.	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.
BE0711PD100	A → Y	(HH)	1.102	1.556	2.683				0.018	0.027	0.045
		(LL)	0.931	1.325	2.313				0.019	0.027	0.045
	EN → Y	(HZ)	0.274	0.375	0.637						
		(LZ)	0.273	0.383	0.682						
		(ZH)	1.139	1.604	2.700				0.018	0.027	0.045
		(ZL)	0.651	0.950	1.683				0.018	0.025	0.042
BE0711PU100	A → Y	(HH)	1.102	1.556	2.683				0.018	0.027	0.045
		(LL)	0.931	1.325	2.313				0.019	0.027	0.045
	EN → Y	(HZ)	0.274	0.375	0.637						
		(LZ)	0.273	0.383	0.682						
		(ZH)	1.139	1.604	2.700				0.018	0.027	0.045
		(ZL)	0.651	0.950	1.683				0.018	0.025	0.042
BEW711	A → Y	(HH)	1.102	1.556	2.683				0.018	0.027	0.045
		(LL)	0.931	1.325	2.313				0.019	0.027	0.045
	EN → Y	(HZ)	0.274	0.375	0.637						
		(LZ)	0.273	0.383	0.682						
		(ZH)	1.139	1.604	2.700				0.018	0.027	0.045
		(ZL)	0.651	0.950	1.683				0.018	0.025	0.042

[MEMO]

Function	N-ch Open Drain Buffer			External supply voltage	1.8 V, 3.3 V
Block type					
Drivability	no resistor	with 100 KΩ P/D	with 100 KΩ P/U	with 5 KΩ P/U	Cells
1mA					
2mA					
3mA	EXTH11				1
6mA	EXTJ11				1
9mA	EXT111				1
12mA	EXT911				1
18mA					
24mA					

Logic Diagram



Truth Table

A	Y
1	Z
0	0

Z:High Impedance

Connect a pull-up resistor to get a high level

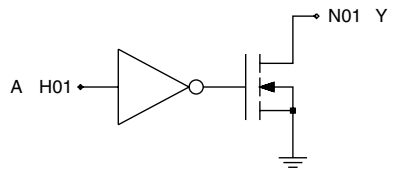
Block type	Input		Output	
	Symbol	Fan-in	Symbol	Fan-out
EXTH11	A	0.125	Y	-
EXTJ11	A	0.125	Y	-
EXT111	A	0.125	Y	-
EXT911	A	0.125	Y	-

Block type	Switching speed										
	Path		t_{LD0} [ns]			t_1 (ns/pF)			T (ns/pF)		
	IN → OUT		MIN.	TYP.	MAX.	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.
EXTH11	A → Y	(LZ)	0.240	0.325	0.535						
		(ZL)	0.429	0.614	1.131				0.039	0.054	0.086
EXTJ11	A → Y	(LZ)	0.293	0.390	0.625						
		(ZL)	0.318	0.469	0.874				0.020	0.027	0.043
EXT111	A → Y	(LZ)	0.295	0.392	0.630						
		(ZL)	0.323	0.472	0.874				0.017	0.023	0.037
EXT911	A → Y	(LZ)	0.301	0.399	0.641						
		(ZL)	0.314	0.463	0.863				0.013	0.018	0.029

Function	Low-noise N-ch Open Drain Buffer	External supply voltage	1.8 V, 3.3 V

Block type					
Drivability	no resistor	with 100 KΩ P/D	with 100 KΩ P/U	with 5 KΩ P/U	Cells
1mA					
2mA					
3mA					
6mA	EETJ11				1
9mA	EET111				1
12mA	EET911				1
18mA					
24mA					

Logic Diagram



Truth Table

A	Y
1	Z
0	0

Z:High Impedance

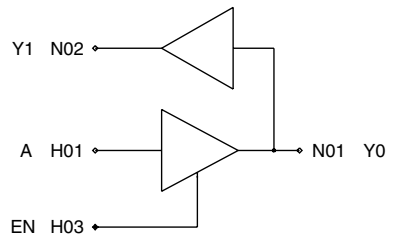
Connect a pull-up resistor to get a high level

Block type	Input		Output	
	Symbol	Fan-in	Symbol	Fan-out
EETJ11	A	0.125	Y	-
EET111	A	0.125	Y	-
EET911	A	0.125	Y	-

Block type	Switching speed										
	Path		t_{LD0} [ns]			t_1 (ns/pF)			T (ns/pF)		
	IN → OUT		MIN.	TYP.	MAX.	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.
EETJ11	A → Y	(LZ)	0.324	0.420	0.702						
		(ZL)	0.467	0.700	1.389				0.023	0.032	0.054
EET111	A → Y	(LZ)	0.334	0.433	0.728						
		(ZL)	0.466	0.696	1.369				0.021	0.029	0.049
EET911	A → Y	(LZ)	0.360	0.464	0.774						
		(ZL)	0.450	0.675	1.326				0.018	0.025	0.042

Function	I/O Buffer			External supply voltage	1.8 V, 3.3 V
Block type					
Drivability	no resistor	with 100 KΩ P/D	with 100 KΩ P/U	with 5 KΩ P/U	Cells
1mA					
2mA					
3mA	B00U11	B00U11PD100	B00U11PU100	B0WU11	1
6mA	B00C11	B00C11PD100	B00C11PU100	B0WC11	1
9mA	B00311	B00311PD100	B00311PU100	B0W311	1
12mA	B00111	B00111PD100	B00111PU100	B0W111	1
18mA					
24mA					

Logic Diagram



Block type	Input		Output	
	Symbol	Fan-in	Symbol	Fan-out
B00U11 to B0WU11	A	0.125	Y1	0.453
	EN	0.125		
B00C11 to B0WC11	A	0.125	Y1	0.453
	EN	0.125		
B00311 to B0W311	A	0.125	Y1	0.453
	EN	0.125		
B00111 to B0W111	A	0.125	Y1	0.453
	EN	0.125		

Truth Table

A	EN	Y0
0	1	0
1	1	1
X	0	Z

X:Irrelevant

Z:High Impedance

Y0	Y1
0	0
1	1

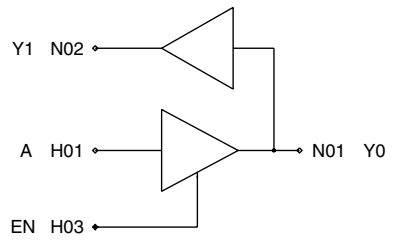
Block type	Switching speed										
	Path		t_{LD0} [ns]			t_1 (ns/pF)			T (ns/pF)		
	IN → OUT		MIN.	TYP.	MAX.	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.
B00U11	A → Y0	(HH)	0.520	0.726	1.190				0.050	0.075	0.123
		(LL)	0.618	0.868	1.515				0.039	0.054	0.086
	EN → Y0	(HZ)	0.325	0.445	0.743						
		(LZ)	0.279	0.388	0.675						
		(ZH)	0.665	0.920	1.481				0.050	0.075	0.123
		(ZL)	0.567	0.784	1.305				0.039	0.054	0.086
	Y0 → Y1	(HH)	0.196	0.283	0.467	0.156	0.258	0.470			
		(LL)	0.210	0.307	0.488	0.358	0.536	0.898			
B00U11PD100	A → Y0	(HH)	0.520	0.726	1.190				0.050	0.075	0.123
		(LL)	0.618	0.868	1.515				0.039	0.054	0.086
	EN → Y0	(HZ)	0.325	0.445	0.743						
		(LZ)	0.279	0.388	0.675						
		(ZH)	0.665	0.920	1.481				0.050	0.075	0.123
		(ZL)	0.567	0.784	1.305				0.039	0.054	0.086
	Y0 → Y1	(HH)	0.196	0.283	0.467	0.156	0.258	0.470			
		(LL)	0.210	0.307	0.488	0.358	0.536	0.898			
B00U11PU100	A → Y0	(HH)	0.520	0.726	1.190				0.050	0.075	0.123
		(LL)	0.618	0.868	1.515				0.039	0.054	0.086
	EN → Y0	(HZ)	0.325	0.445	0.743						
		(LZ)	0.279	0.388	0.675						
		(ZH)	0.665	0.920	1.481				0.050	0.075	0.123
		(ZL)	0.567	0.784	1.305				0.039	0.054	0.086
	Y0 → Y1	(HH)	0.196	0.283	0.467	0.156	0.258	0.470			
		(LL)	0.210	0.307	0.488	0.358	0.536	0.898			
B0WU11	A → Y0	(HH)	0.520	0.726	1.190				0.050	0.075	0.123
		(LL)	0.618	0.868	1.515				0.039	0.054	0.086
	EN → Y0	(HZ)	0.325	0.445	0.743						
		(LZ)	0.279	0.388	0.675						
		(ZH)	0.665	0.920	1.481				0.050	0.075	0.123
		(ZL)	0.567	0.784	1.305				0.039	0.054	0.086
	Y0 → Y1	(HH)	0.196	0.283	0.467	0.156	0.258	0.470			
		(LL)	0.210	0.307	0.488	0.358	0.536	0.898			
B00C11	A → Y0	(HH)	0.525	0.719	1.172				0.025	0.038	0.061
		(LL)	0.444	0.641	1.131				0.020	0.027	0.043
	EN → Y0	(HZ)	0.359	0.482	0.787						
		(LZ)	0.293	0.405	0.704						
		(ZH)	0.623	0.854	1.377				0.025	0.038	0.061
		(ZL)	0.486	0.668	1.097				0.020	0.027	0.043
	Y0 → Y1	(HH)	0.196	0.283	0.467	0.156	0.258	0.470			
		(LL)	0.210	0.307	0.488	0.358	0.536	0.898			
B00C11PD100	A → Y0	(HH)	0.525	0.719	1.172				0.025	0.038	0.061
		(LL)	0.444	0.641	1.131				0.020	0.027	0.043
	EN → Y0	(HZ)	0.359	0.482	0.787						
		(LZ)	0.293	0.405	0.704						
		(ZH)	0.623	0.854	1.377				0.025	0.038	0.061
		(ZL)	0.486	0.668	1.097				0.020	0.027	0.043
	Y0 → Y1	(HH)	0.196	0.283	0.467	0.156	0.258	0.470			
		(LL)	0.210	0.307	0.488	0.358	0.536	0.898			
B00C11PU100	A → Y0	(HH)	0.525	0.719	1.172				0.025	0.038	0.061
		(LL)	0.444	0.641	1.131				0.020	0.027	0.043
	EN → Y0	(HZ)	0.359	0.482	0.787						
		(LZ)	0.293	0.405	0.704						
		(ZH)	0.623	0.854	1.377				0.025	0.038	0.061
		(ZL)	0.486	0.668	1.097				0.020	0.027	0.043
	Y0 → Y1	(HH)	0.196	0.283	0.467	0.156	0.258	0.470			
		(LL)	0.210	0.307	0.488	0.358	0.536	0.898			

Block type	Switching speed										
	Path		t_{LD0} [ns]			t_1 (ns/pF)			T (ns/pF)		
	IN → OUT		MIN.	TYP.	MAX.	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.
B0WC11	A → Y0	(HH)	0.525	0.719	1.172				0.025	0.038	0.061
		(LL)	0.444	0.641	1.131				0.020	0.027	0.043
	EN → Y0	(HZ)	0.359	0.482	0.787						
		(LZ)	0.293	0.405	0.704						
		(ZH)	0.623	0.854	1.377				0.025	0.038	0.061
		(ZL)	0.486	0.668	1.097				0.020	0.027	0.043
	Y0 → Y1	(HH)	0.196	0.283	0.467	0.156	0.258	0.470			
		(LL)	0.210	0.307	0.488	0.358	0.536	0.898			
B00311	A → Y0	(HH)	0.525	0.719	1.177				0.021	0.032	0.051
		(LL)	0.458	0.657	1.150				0.017	0.023	0.037
	EN → Y0	(HZ)	0.374	0.498	0.807						
		(LZ)	0.296	0.409	0.712						
		(ZH)	0.624	0.854	1.380				0.021	0.031	0.051
		(ZL)	0.486	0.666	1.088				0.017	0.023	0.037
	Y0 → Y1	(HH)	0.196	0.283	0.467	0.156	0.258	0.470			
		(LL)	0.210	0.307	0.488	0.358	0.536	0.898			
B00311PD100	A → Y0	(HH)	0.525	0.719	1.177				0.021	0.032	0.051
		(LL)	0.458	0.657	1.150				0.017	0.023	0.037
	EN → Y0	(HZ)	0.374	0.498	0.807						
		(LZ)	0.296	0.409	0.712						
		(ZH)	0.624	0.854	1.380				0.021	0.031	0.051
		(ZL)	0.486	0.666	1.088				0.017	0.023	0.037
	Y0 → Y1	(HH)	0.196	0.283	0.467	0.156	0.258	0.470			
		(LL)	0.210	0.307	0.488	0.358	0.536	0.898			
B00311PU100	A → Y0	(HH)	0.525	0.719	1.177				0.021	0.032	0.051
		(LL)	0.458	0.657	1.150				0.017	0.023	0.037
	EN → Y0	(HZ)	0.374	0.498	0.807						
		(LZ)	0.296	0.409	0.712						
		(ZH)	0.624	0.854	1.380				0.021	0.031	0.051
		(ZL)	0.486	0.666	1.088				0.017	0.023	0.037
	Y0 → Y1	(HH)	0.196	0.283	0.467	0.156	0.258	0.470			
		(LL)	0.210	0.307	0.488	0.358	0.536	0.898			
B0W311	A → Y0	(HH)	0.525	0.719	1.177				0.021	0.032	0.051
		(LL)	0.458	0.657	1.150				0.017	0.023	0.037
	EN → Y0	(HZ)	0.374	0.498	0.807						
		(LZ)	0.296	0.409	0.712						
		(ZH)	0.624	0.854	1.380				0.021	0.031	0.051
		(ZL)	0.486	0.666	1.088				0.017	0.023	0.037
	Y0 → Y1	(HH)	0.196	0.283	0.467	0.156	0.258	0.470			
		(LL)	0.210	0.307	0.488	0.358	0.536	0.898			
B00111	A → Y0	(HH)	0.532	0.729	1.197				0.017	0.025	0.041
		(LL)	0.458	0.661	1.157				0.014	0.019	0.030
	EN → Y0	(HZ)	0.395	0.521	0.834						
		(LZ)	0.310	0.424	0.733						
		(ZH)	0.629	0.860	1.394				0.017	0.025	0.041
		(ZL)	0.474	0.652	1.068				0.013	0.018	0.029
	Y0 → Y1	(HH)	0.196	0.283	0.467	0.156	0.258	0.470			
		(LL)	0.210	0.307	0.488	0.358	0.536	0.898			
B00111PD100	A → Y0	(HH)	0.532	0.729	1.197				0.017	0.025	0.041
		(LL)	0.458	0.661	1.157				0.014	0.019	0.030
	EN → Y0	(HZ)	0.395	0.521	0.834						
		(LZ)	0.310	0.424	0.733						
		(ZH)	0.629	0.860	1.394				0.017	0.025	0.041
		(ZL)	0.474	0.652	1.068				0.013	0.018	0.029
	Y0 → Y1	(HH)	0.196	0.283	0.467	0.156	0.258	0.470			
		(LL)	0.210	0.307	0.488	0.358	0.536	0.898			

Block type	Switching speed										
	Path		t_{LD0} [ns]			t_1 (ns/pF)			T (ns/pF)		
	IN → OUT		MIN.	TYP.	MAX.	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.
B00111PU100	A → Y0	(HH)	0.532	0.729	1.197				0.017	0.025	0.041
		(LL)	0.458	0.661	1.157				0.014	0.019	0.030
	EN → Y0	(HZ)	0.395	0.521	0.834						
		(LZ)	0.310	0.424	0.733						
		(ZH)	0.629	0.860	1.394				0.017	0.025	0.041
		(ZL)	0.474	0.652	1.068				0.013	0.018	0.029
	Y0 → Y1	(HH)	0.196	0.283	0.467	0.156	0.258	0.470			
		(LL)	0.210	0.307	0.488	0.358	0.536	0.898			
B0W111	A → Y0	(HH)	0.532	0.729	1.197				0.017	0.025	0.041
		(LL)	0.458	0.661	1.157				0.014	0.019	0.030
	EN → Y0	(HZ)	0.395	0.521	0.834						
		(LZ)	0.310	0.424	0.733						
		(ZH)	0.629	0.860	1.394				0.017	0.025	0.041
		(ZL)	0.474	0.652	1.068				0.013	0.018	0.029
	Y0 → Y1	(HH)	0.196	0.283	0.467	0.156	0.258	0.470			
		(LL)	0.210	0.307	0.488	0.358	0.536	0.898			

Function	Low-noise I/O Buffer			External supply voltage	1.8 V, 3.3 V
Block type					
Drivability	no resistor	with 100 KΩ P/D	with 100 KΩ P/U	with 5 KΩ P/U	Cells
1mA					
2mA					
3mA					
6mA	BE0C11	BE0C11PD100	BE0C11PU100	BEWC11	1
9mA	BE0311	BE0311PD100	BE0311PU100	BEW311	1
12mA	BE0111	BE0111PD100	BE0111PU100	BEW111	1
18mA					
24mA					

Logic Diagram



Block type	Input		Output	
	Symbol	Fan-in	Symbol	Fan-out
BE0C11 to BEWC11	A	0.125	Y1	0.453
	EN	0.125		
BE0311 to BEW311	A	0.125	Y1	0.453
	EN	0.125		
BE0111 to BEW111	A	0.125	Y1	0.453
	EN	0.125		

Truth Table

A	EN	Y0
0	1	0
1	1	1
X	0	Z

X:Irrelevant

Z:High Impedance

Y0	Y1
0	0
1	1

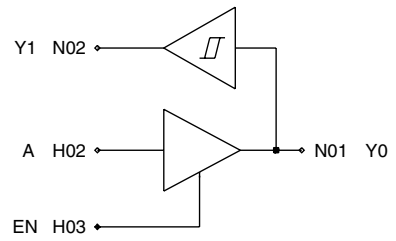
Block type	Switching speed										
	Path		t_{LD0} [ns]			t_1 (ns/pF)			T (ns/pF)		
	IN → OUT		MIN.	TYP.	MAX.	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.
BE0C11	A → Y0	(HH)	0.921	1.300	2.277				0.026	0.039	0.063
		(LL)	0.847	1.223	2.197				0.024	0.034	0.055
	EN → Y0	(HZ)	0.236	0.333	0.583						
		(LZ)	0.253	0.361	0.651						
		(ZH)	0.988	1.387	2.353				0.026	0.039	0.063
		(ZL)	0.690	1.007	1.797				0.023	0.032	0.054
	Y0 → Y1	(HH)	0.196	0.283	0.467	0.156	0.258	0.470			
		(LL)	0.210	0.307	0.488	0.358	0.536	0.898			
BE0C11PD100	A → Y0	(HH)	0.921	1.300	2.277				0.026	0.039	0.063
		(LL)	0.847	1.223	2.197				0.024	0.034	0.055
	EN → Y0	(HZ)	0.236	0.333	0.583						
		(LZ)	0.253	0.361	0.651						
		(ZH)	0.988	1.387	2.353				0.026	0.039	0.063
		(ZL)	0.690	1.007	1.797				0.023	0.032	0.054
	Y0 → Y1	(HH)	0.196	0.283	0.467	0.156	0.258	0.470			
		(LL)	0.210	0.307	0.488	0.358	0.536	0.898			
BE0C11PU100	A → Y0	(HH)	0.921	1.300	2.277				0.026	0.039	0.063
		(LL)	0.847	1.223	2.197				0.024	0.034	0.055
	EN → Y0	(HZ)	0.236	0.333	0.583						
		(LZ)	0.253	0.361	0.651						
		(ZH)	0.988	1.387	2.353				0.026	0.039	0.063
		(ZL)	0.690	1.007	1.797				0.023	0.032	0.054
	Y0 → Y1	(HH)	0.196	0.283	0.467	0.156	0.258	0.470			
		(LL)	0.210	0.307	0.488	0.358	0.536	0.898			
BEWC11	A → Y0	(HH)	0.921	1.300	2.277				0.026	0.039	0.063
		(LL)	0.847	1.223	2.197				0.024	0.034	0.055
	EN → Y0	(HZ)	0.236	0.333	0.583						
		(LZ)	0.253	0.361	0.651						
		(ZH)	0.988	1.387	2.353				0.026	0.039	0.063
		(ZL)	0.690	1.007	1.797				0.023	0.032	0.054
	Y0 → Y1	(HH)	0.196	0.283	0.467	0.156	0.258	0.470			
		(LL)	0.210	0.307	0.488	0.358	0.536	0.898			
BE0311	A → Y0	(HH)	0.993	1.404	2.446				0.022	0.033	0.054
		(LL)	0.891	1.276	2.260				0.022	0.031	0.051
	EN → Y0	(HZ)	0.251	0.349	0.605						
		(LZ)	0.256	0.365	0.659						
		(ZH)	1.051	1.479	2.503				0.022	0.033	0.054
		(ZL)	0.681	0.991	1.757				0.021	0.029	0.049
	Y0 → Y1	(HH)	0.196	0.283	0.467	0.156	0.258	0.470			
		(LL)	0.210	0.307	0.488	0.358	0.536	0.898			
BE0311PD100	A → Y0	(HH)	0.993	1.404	2.446				0.022	0.033	0.054
		(LL)	0.891	1.276	2.260				0.022	0.031	0.051
	EN → Y0	(HZ)	0.251	0.349	0.605						
		(LZ)	0.256	0.365	0.659						
		(ZH)	1.051	1.479	2.503				0.022	0.033	0.054
		(ZL)	0.681	0.991	1.757				0.021	0.029	0.049
	Y0 → Y1	(HH)	0.196	0.283	0.467	0.156	0.258	0.470			
		(LL)	0.210	0.307	0.488	0.358	0.536	0.898			
BE0311PU100	A → Y0	(HH)	0.993	1.404	2.446				0.022	0.033	0.054
		(LL)	0.891	1.276	2.260				0.022	0.031	0.051
	EN → Y0	(HZ)	0.251	0.349	0.605						
		(LZ)	0.256	0.365	0.659						
		(ZH)	1.051	1.479	2.503				0.022	0.033	0.054
		(ZL)	0.681	0.991	1.757				0.021	0.029	0.049
	Y0 → Y1	(HH)	0.196	0.283	0.467	0.156	0.258	0.470			
		(LL)	0.210	0.307	0.488	0.358	0.536	0.898			

Block type	Switching speed										
	Path		t_{LD0} [ns]			t_1 (ns/pF)			T (ns/pF)		
	IN → OUT		MIN.	TYP.	MAX.	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.
BEW311	A → Y0	(HH)	0.993	1.404	2.446				0.022	0.033	0.054
		(LL)	0.891	1.276	2.260				0.022	0.031	0.051
	EN → Y0	(HZ)	0.251	0.349	0.605						
		(LZ)	0.256	0.365	0.659						
		(ZH)	1.051	1.479	2.503				0.022	0.033	0.054
		(ZL)	0.681	0.991	1.757				0.021	0.029	0.049
	Y0 → Y1	(HH)	0.196	0.283	0.467	0.156	0.258	0.470			
		(LL)	0.210	0.307	0.488	0.358	0.536	0.898			
BE0111	A → Y0	(HH)	1.102	1.556	2.683				0.018	0.027	0.045
		(LL)	0.931	1.325	2.313				0.019	0.027	0.045
	EN → Y0	(HZ)	0.274	0.375	0.637						
		(LZ)	0.273	0.383	0.682						
		(ZH)	1.139	1.604	2.700				0.018	0.027	0.045
		(ZL)	0.651	0.950	1.683				0.018	0.025	0.042
	Y0 → Y1	(HH)	0.196	0.283	0.467	0.156	0.258	0.470			
		(LL)	0.210	0.307	0.488	0.358	0.536	0.898			
BE0111PD100	A → Y0	(HH)	1.102	1.556	2.683				0.018	0.027	0.045
		(LL)	0.931	1.325	2.313				0.019	0.027	0.045
	EN → Y0	(HZ)	0.274	0.375	0.637						
		(LZ)	0.273	0.383	0.682						
		(ZH)	1.139	1.604	2.700				0.018	0.027	0.045
		(ZL)	0.651	0.950	1.683				0.018	0.025	0.042
	Y0 → Y1	(HH)	0.196	0.283	0.467	0.156	0.258	0.470			
		(LL)	0.210	0.307	0.488	0.358	0.536	0.898			
BE0111PU100	A → Y0	(HH)	1.102	1.556	2.683				0.018	0.027	0.045
		(LL)	0.931	1.325	2.313				0.019	0.027	0.045
	EN → Y0	(HZ)	0.274	0.375	0.637						
		(LZ)	0.273	0.383	0.682						
		(ZH)	1.139	1.604	2.700				0.018	0.027	0.045
		(ZL)	0.651	0.950	1.683				0.018	0.025	0.042
	Y0 → Y1	(HH)	0.196	0.283	0.467	0.156	0.258	0.470			
		(LL)	0.210	0.307	0.488	0.358	0.536	0.898			
BEW111	A → Y0	(HH)	1.102	1.556	2.683				0.018	0.027	0.045
		(LL)	0.931	1.325	2.313				0.019	0.027	0.045
	EN → Y0	(HZ)	0.274	0.375	0.637						
		(LZ)	0.273	0.383	0.682						
		(ZH)	1.139	1.604	2.700				0.018	0.027	0.045
		(ZL)	0.651	0.950	1.683				0.018	0.025	0.042
	Y0 → Y1	(HH)	0.196	0.283	0.467	0.156	0.258	0.470			
		(LL)	0.210	0.307	0.488	0.358	0.536	0.898			

[MEMO]

Function	Schmitt I/O Buffer			External supply voltage	1.8 V, 3.3 V
	Block type				
Drivability	no resistor	with 100 KΩ P/D	with 100 KΩ P/U	with 5 KΩ P/U	Cells
1mA					
2mA					
3mA	BSIU11	BSIU11PD100	BSIU11PU100	BSWU11	1
6mA	BSIC11	BSIC11PD100	BSIC11PU100	BSWC11	1
9mA	BSI311	BSI311PD100	BSI311PU100	BSW311	1
12mA	BSI111	BSI111PD100	BSI111PU100	BSW111	1
18mA					
24mA					

Logic Diagram



Block type	Input		Output	
	Symbol	Fan-in	Symbol	Fan-out
BSIU11 to BSWU11	A	0.125	Y1	1.739
	EN	0.125		
BSIC11 to BSWC11	A	0.125	Y1	1.739
	EN	0.125		
BSI311 to BSW311	A	0.125	Y1	1.739
	EN	0.125		
BSI111 to BSW111	A	0.125	Y1	1.739
	EN	0.125		

Truth Table

A	EN	Y0
0	1	0
1	1	1
X	0	Z

X:Irrelevant

Z:High Impedance

Y0	Y1
0	0
1	1

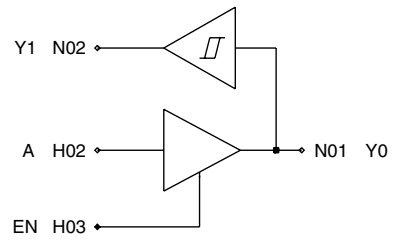
Block type	Switching speed										
	Path		t_{LD0} [ns]			t_1 (ns/pF)			T (ns/pF)		
	IN → OUT		MIN.	TYP.	MAX.	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.
BSIU11	A → Y0	(HH)	0.520	0.726	1.190				0.050	0.075	0.123
		(LL)	0.618	0.868	1.515				0.039	0.054	0.086
	EN → Y0	(HZ)	0.325	0.445	0.743						
		(LZ)	0.279	0.388	0.675						
		(ZH)	0.665	0.920	1.481				0.050	0.075	0.123
		(ZL)	0.567	0.784	1.305				0.039	0.054	0.086
	Y0 → Y1	(HH)	1.042	1.682	2.942	0.117	0.155	0.242			
		(LL)	1.232	2.042	3.520	0.065	0.084	0.123			
BSIU11PD100	A → Y0	(HH)	0.520	0.726	1.190				0.050	0.075	0.123
		(LL)	0.618	0.868	1.515				0.039	0.054	0.086
	EN → Y0	(HZ)	0.325	0.445	0.743						
		(LZ)	0.279	0.388	0.675						
		(ZH)	0.665	0.920	1.481				0.050	0.075	0.123
		(ZL)	0.567	0.784	1.305				0.039	0.054	0.086
	Y0 → Y1	(HH)	1.042	1.682	2.942	0.117	0.155	0.242			
		(LL)	1.232	2.042	3.520	0.065	0.084	0.123			
BSIU11PU100	A → Y0	(HH)	0.520	0.726	1.190				0.050	0.075	0.123
		(LL)	0.618	0.868	1.515				0.039	0.054	0.086
	EN → Y0	(HZ)	0.325	0.445	0.743						
		(LZ)	0.279	0.388	0.675						
		(ZH)	0.665	0.920	1.481				0.050	0.075	0.123
		(ZL)	0.567	0.784	1.305				0.039	0.054	0.086
	Y0 → Y1	(HH)	1.042	1.682	2.942	0.117	0.155	0.242			
		(LL)	1.232	2.042	3.520	0.065	0.084	0.123			
BSWU11	A → Y0	(HH)	0.520	0.726	1.190				0.050	0.075	0.123
		(LL)	0.618	0.868	1.515				0.039	0.054	0.086
	EN → Y0	(HZ)	0.325	0.445	0.743						
		(LZ)	0.279	0.388	0.675						
		(ZH)	0.665	0.920	1.481				0.050	0.075	0.123
		(ZL)	0.567	0.784	1.305				0.039	0.054	0.086
	Y0 → Y1	(HH)	1.042	1.682	2.942	0.117	0.155	0.242			
		(LL)	1.232	2.042	3.520	0.065	0.084	0.123			
BSIC11	A → Y0	(HH)	0.525	0.719	1.172				0.025	0.038	0.061
		(LL)	0.444	0.641	1.131				0.020	0.027	0.043
	EN → Y0	(HZ)	0.359	0.482	0.787						
		(LZ)	0.293	0.405	0.704						
		(ZH)	0.623	0.854	1.377				0.025	0.038	0.061
		(ZL)	0.486	0.668	1.097				0.020	0.027	0.043
	Y0 → Y1	(HH)	1.042	1.682	2.942	0.117	0.155	0.242			
		(LL)	1.232	2.042	3.520	0.065	0.084	0.123			
BSIC11PD100	A → Y0	(HH)	0.525	0.719	1.172				0.025	0.038	0.061
		(LL)	0.444	0.641	1.131				0.020	0.027	0.043
	EN → Y0	(HZ)	0.359	0.482	0.787						
		(LZ)	0.293	0.405	0.704						
		(ZH)	0.623	0.854	1.377				0.025	0.038	0.061
		(ZL)	0.486	0.668	1.097				0.020	0.027	0.043
	Y0 → Y1	(HH)	1.042	1.682	2.942	0.117	0.155	0.242			
		(LL)	1.232	2.042	3.520	0.065	0.084	0.123			
BSIC11PU100	A → Y0	(HH)	0.525	0.719	1.172				0.025	0.038	0.061
		(LL)	0.444	0.641	1.131				0.020	0.027	0.043
	EN → Y0	(HZ)	0.359	0.482	0.787						
		(LZ)	0.293	0.405	0.704						
		(ZH)	0.623	0.854	1.377				0.025	0.038	0.061
		(ZL)	0.486	0.668	1.097				0.020	0.027	0.043
	Y0 → Y1	(HH)	1.042	1.682	2.942	0.117	0.155	0.242			
		(LL)	1.232	2.042	3.520	0.065	0.084	0.123			

Block type	Switching speed										
	Path		t_{LD0} [ns]			t_1 (ns/pF)			T (ns/pF)		
	IN → OUT		MIN.	TYP.	MAX.	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.
BSWC11	A → Y0	(HH)	0.525	0.719	1.172				0.025	0.038	0.061
		(LL)	0.444	0.641	1.131				0.020	0.027	0.043
	EN → Y0	(HZ)	0.359	0.482	0.787						
		(LZ)	0.293	0.405	0.704						
		(ZH)	0.623	0.854	1.377				0.025	0.038	0.061
		(ZL)	0.486	0.668	1.097				0.020	0.027	0.043
	Y0 → Y1	(HH)	1.042	1.682	2.942	0.117	0.155	0.242			
		(LL)	1.232	2.042	3.520	0.065	0.084	0.123			
BSI311	A → Y0	(HH)	0.525	0.719	1.177				0.021	0.032	0.051
		(LL)	0.458	0.657	1.150				0.017	0.023	0.037
	EN → Y0	(HZ)	0.374	0.498	0.807						
		(LZ)	0.296	0.409	0.712						
		(ZH)	0.624	0.854	1.380				0.021	0.031	0.051
		(ZL)	0.486	0.666	1.088				0.017	0.023	0.037
	Y0 → Y1	(HH)	1.042	1.682	2.942	0.117	0.155	0.242			
		(LL)	1.232	2.042	3.520	0.065	0.084	0.123			
BSI311PD100	A → Y0	(HH)	0.525	0.719	1.177				0.021	0.032	0.051
		(LL)	0.458	0.657	1.150				0.017	0.023	0.037
	EN → Y0	(HZ)	0.374	0.498	0.807						
		(LZ)	0.296	0.409	0.712						
		(ZH)	0.624	0.854	1.380				0.021	0.031	0.051
		(ZL)	0.486	0.666	1.088				0.017	0.023	0.037
	Y0 → Y1	(HH)	1.042	1.682	2.942	0.117	0.155	0.242			
		(LL)	1.232	2.042	3.520	0.065	0.084	0.123			
BSI311PU100	A → Y0	(HH)	0.525	0.719	1.177				0.021	0.032	0.051
		(LL)	0.458	0.657	1.150				0.017	0.023	0.037
	EN → Y0	(HZ)	0.374	0.498	0.807						
		(LZ)	0.296	0.409	0.712						
		(ZH)	0.624	0.854	1.380				0.021	0.031	0.051
		(ZL)	0.486	0.666	1.088				0.017	0.023	0.037
	Y0 → Y1	(HH)	1.042	1.682	2.942	0.117	0.155	0.242			
		(LL)	1.232	2.042	3.520	0.065	0.084	0.123			
BSW311	A → Y0	(HH)	0.525	0.719	1.177				0.021	0.032	0.051
		(LL)	0.458	0.657	1.150				0.017	0.023	0.037
	EN → Y0	(HZ)	0.374	0.498	0.807						
		(LZ)	0.296	0.409	0.712						
		(ZH)	0.624	0.854	1.380				0.021	0.031	0.051
		(ZL)	0.486	0.666	1.088				0.017	0.023	0.037
	Y0 → Y1	(HH)	1.042	1.682	2.942	0.117	0.155	0.242			
		(LL)	1.232	2.042	3.520	0.065	0.084	0.123			
BSI111	A → Y0	(HH)	0.532	0.729	1.197				0.017	0.025	0.041
		(LL)	0.458	0.661	1.157				0.014	0.019	0.030
	EN → Y0	(HZ)	0.395	0.521	0.834						
		(LZ)	0.310	0.424	0.733						
		(ZH)	0.629	0.860	1.394				0.017	0.025	0.041
		(ZL)	0.474	0.652	1.068				0.013	0.018	0.029
	Y0 → Y1	(HH)	1.042	1.682	2.942	0.117	0.155	0.242			
		(LL)	1.232	2.042	3.520	0.065	0.084	0.123			
BSI111PD100	A → Y0	(HH)	0.532	0.729	1.197				0.017	0.025	0.041
		(LL)	0.458	0.661	1.157				0.014	0.019	0.030
	EN → Y0	(HZ)	0.395	0.521	0.834						
		(LZ)	0.310	0.424	0.733						
		(ZH)	0.629	0.860	1.394				0.017	0.025	0.041
		(ZL)	0.474	0.652	1.068				0.013	0.018	0.029
	Y0 → Y1	(HH)	1.042	1.682	2.942	0.117	0.155	0.242			
		(LL)	1.232	2.042	3.520	0.065	0.084	0.123			

Block type	Switching speed										
	Path		t_{LD0} [ns]			t_1 (ns/pF)			T (ns/pF)		
	IN → OUT		MIN.	TYP.	MAX.	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.
BSI111PU100	A → Y0	(HH)	0.532	0.729	1.197				0.017	0.025	0.041
		(LL)	0.458	0.661	1.157				0.014	0.019	0.030
	EN → Y0	(HZ)	0.395	0.521	0.834						
		(LZ)	0.310	0.424	0.733						
		(ZH)	0.629	0.860	1.394				0.017	0.025	0.041
		(ZL)	0.474	0.652	1.068				0.013	0.018	0.029
	Y0 → Y1	(HH)	1.042	1.682	2.942	0.117	0.155	0.242			
		(LL)	1.232	2.042	3.520	0.065	0.084	0.123			
BSW111	A → Y0	(HH)	0.532	0.729	1.197				0.017	0.025	0.041
		(LL)	0.458	0.661	1.157				0.014	0.019	0.030
	EN → Y0	(HZ)	0.395	0.521	0.834						
		(LZ)	0.310	0.424	0.733						
		(ZH)	0.629	0.860	1.394				0.017	0.025	0.041
		(ZL)	0.474	0.652	1.068				0.013	0.018	0.029
	Y0 → Y1	(HH)	1.042	1.682	2.942	0.117	0.155	0.242			
		(LL)	1.232	2.042	3.520	0.065	0.084	0.123			

Function	Low-noise Schmitt I/O Buffer			External supply voltage	1.8 V, 3.3 V
	Block type				
Drivability	no resistor	with 100 KΩ P/D	with 100 KΩ P/U	with 5 KΩ P/U	Cells
1mA					
2mA					
3mA					
6mA	BFIC11	BFIC11PD100	BFIC11PU100	BFWC11	1
9mA	BFI311	BFI311PD100	BFI311PU100	BFW311	1
12mA	BFI111	BFI111PD100	BFI111PU100	BFW111	1
18mA					
24mA					

Logic Diagram



Block type	Input		Output	
	Symbol	Fan-in	Symbol	Fan-out
BFIC11 to BFWC11	A	0.125	Y1	1.739
	EN	0.125		
BFI311 to BFW311	A	0.125	Y1	1.739
	EN	0.125		
BFI111 to BFW111	A	0.125	Y1	1.739
	EN	0.125		

Truth Table

A	EN	Y0
0	1	0
1	1	1
X	0	Z

X:Irrelevant

Z:High Impedance

Y0	Y1
0	0
1	1

Block type	Switching speed										
	Path		t_{LD0} [ns]			t_1 (ns/pF)			T (ns/pF)		
	IN → OUT		MIN.	TYP.	MAX.	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.
BFIC11	A → Y0	(HH)	0.921	1.300	2.277				0.026	0.039	0.063
		(LL)	0.847	1.223	2.197				0.024	0.034	0.055
	EN → Y0	(HZ)	0.236	0.333	0.583						
		(LZ)	0.253	0.361	0.651						
		(ZH)	0.988	1.387	2.353				0.026	0.039	0.063
		(ZL)	0.690	1.007	1.797				0.023	0.032	0.054
	Y0 → Y1	(HH)	1.042	1.682	2.942	0.117	0.155	0.242			
		(LL)	1.232	2.042	3.520	0.065	0.084	0.123			
BFIC11PD100	A → Y0	(HH)	0.921	1.300	2.277				0.026	0.039	0.063
		(LL)	0.847	1.223	2.197				0.024	0.034	0.055
	EN → Y0	(HZ)	0.236	0.333	0.583						
		(LZ)	0.253	0.361	0.651						
		(ZH)	0.988	1.387	2.353				0.026	0.039	0.063
		(ZL)	0.690	1.007	1.797				0.023	0.032	0.054
	Y0 → Y1	(HH)	1.042	1.682	2.942	0.117	0.155	0.242			
		(LL)	1.232	2.042	3.520	0.065	0.084	0.123			
BFIC11PU100	A → Y0	(HH)	0.921	1.300	2.277				0.026	0.039	0.063
		(LL)	0.847	1.223	2.197				0.024	0.034	0.055
	EN → Y0	(HZ)	0.236	0.333	0.583						
		(LZ)	0.253	0.361	0.651						
		(ZH)	0.988	1.387	2.353				0.026	0.039	0.063
		(ZL)	0.690	1.007	1.797				0.023	0.032	0.054
	Y0 → Y1	(HH)	1.042	1.682	2.942	0.117	0.155	0.242			
		(LL)	1.232	2.042	3.520	0.065	0.084	0.123			
BFWC11	A → Y0	(HH)	0.921	1.300	2.277				0.026	0.039	0.063
		(LL)	0.847	1.223	2.197				0.024	0.034	0.055
	EN → Y0	(HZ)	0.236	0.333	0.583						
		(LZ)	0.253	0.361	0.651						
		(ZH)	0.988	1.387	2.353				0.026	0.039	0.063
		(ZL)	0.690	1.007	1.797				0.023	0.032	0.054
	Y0 → Y1	(HH)	1.042	1.682	2.942	0.117	0.155	0.242			
		(LL)	1.232	2.042	3.520	0.065	0.084	0.123			
BFI311	A → Y0	(HH)	0.993	1.404	2.446				0.022	0.033	0.054
		(LL)	0.891	1.276	2.260				0.022	0.031	0.051
	EN → Y0	(HZ)	0.251	0.349	0.605						
		(LZ)	0.256	0.365	0.659						
		(ZH)	1.051	1.479	2.503				0.022	0.033	0.054
		(ZL)	0.681	0.991	1.757				0.021	0.029	0.049
	Y0 → Y1	(HH)	1.042	1.682	2.942	0.117	0.155	0.242			
		(LL)	1.232	2.042	3.520	0.065	0.084	0.123			
BFI311PD100	A → Y0	(HH)	0.993	1.404	2.446				0.022	0.033	0.054
		(LL)	0.891	1.276	2.260				0.022	0.031	0.051
	EN → Y0	(HZ)	0.251	0.349	0.605						
		(LZ)	0.256	0.365	0.659						
		(ZH)	1.051	1.479	2.503				0.022	0.033	0.054
		(ZL)	0.681	0.991	1.757				0.021	0.029	0.049
	Y0 → Y1	(HH)	1.042	1.682	2.942	0.117	0.155	0.242			
		(LL)	1.232	2.042	3.520	0.065	0.084	0.123			
BFI311PU100	A → Y0	(HH)	0.993	1.404	2.446				0.022	0.033	0.054
		(LL)	0.891	1.276	2.260				0.022	0.031	0.051
	EN → Y0	(HZ)	0.251	0.349	0.605						
		(LZ)	0.256	0.365	0.659						
		(ZH)	1.051	1.479	2.503				0.022	0.033	0.054
		(ZL)	0.681	0.991	1.757				0.021	0.029	0.049
	Y0 → Y1	(HH)	1.042	1.682	2.942	0.117	0.155	0.242			
		(LL)	1.232	2.042	3.520	0.065	0.084	0.123			

Block type	Switching speed										
	Path		t_{LD0} [ns]			t_1 (ns/pF)			T (ns/pF)		
	IN → OUT		MIN.	TYP.	MAX.	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.
BFW311	A → Y0	(HH)	0.993	1.404	2.446				0.022	0.033	0.054
		(LL)	0.891	1.276	2.260				0.022	0.031	0.051
	EN → Y0	(HZ)	0.251	0.349	0.605						
		(LZ)	0.256	0.365	0.659						
		(ZH)	1.051	1.479	2.503				0.022	0.033	0.054
		(ZL)	0.681	0.991	1.757				0.021	0.029	0.049
	Y0 → Y1	(HH)	1.042	1.682	2.942	0.117	0.155	0.242			
		(LL)	1.232	2.042	3.520	0.065	0.084	0.123			
BFI111	A → Y0	(HH)	1.102	1.556	2.683				0.018	0.027	0.045
		(LL)	0.931	1.325	2.313				0.019	0.027	0.045
	EN → Y0	(HZ)	0.274	0.375	0.637						
		(LZ)	0.273	0.383	0.682						
		(ZH)	1.139	1.604	2.700				0.018	0.027	0.045
		(ZL)	0.651	0.950	1.683				0.018	0.025	0.042
	Y0 → Y1	(HH)	1.042	1.682	2.942	0.117	0.155	0.242			
		(LL)	1.232	2.042	3.520	0.065	0.084	0.123			
BFI111PD100	A → Y0	(HH)	1.102	1.556	2.683				0.018	0.027	0.045
		(LL)	0.931	1.325	2.313				0.019	0.027	0.045
	EN → Y0	(HZ)	0.274	0.375	0.637						
		(LZ)	0.273	0.383	0.682						
		(ZH)	1.139	1.604	2.700				0.018	0.027	0.045
		(ZL)	0.651	0.950	1.683				0.018	0.025	0.042
	Y0 → Y1	(HH)	1.042	1.682	2.942	0.117	0.155	0.242			
		(LL)	1.232	2.042	3.520	0.065	0.084	0.123			
BFI111PU100	A → Y0	(HH)	1.102	1.556	2.683				0.018	0.027	0.045
		(LL)	0.931	1.325	2.313				0.019	0.027	0.045
	EN → Y0	(HZ)	0.274	0.375	0.637						
		(LZ)	0.273	0.383	0.682						
		(ZH)	1.139	1.604	2.700				0.018	0.027	0.045
		(ZL)	0.651	0.950	1.683				0.018	0.025	0.042
	Y0 → Y1	(HH)	1.042	1.682	2.942	0.117	0.155	0.242			
		(LL)	1.232	2.042	3.520	0.065	0.084	0.123			
BFW111	A → Y0	(HH)	1.102	1.556	2.683				0.018	0.027	0.045
		(LL)	0.931	1.325	2.313				0.019	0.027	0.045
	EN → Y0	(HZ)	0.274	0.375	0.637						
		(LZ)	0.273	0.383	0.682						
		(ZH)	1.139	1.604	2.700				0.018	0.027	0.045
		(ZL)	0.651	0.950	1.683				0.018	0.025	0.042
	Y0 → Y1	(HH)	1.042	1.682	2.942	0.117	0.155	0.242			
		(LL)	1.232	2.042	3.520	0.065	0.084	0.123			

[MEMO]

[MEMO]

[MEMO]

1.2 2.5V Interface

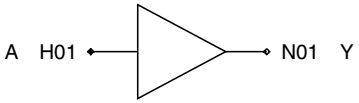
[MEMO]

Function	Input Buffer	External supply voltage	2.5 V

Block type

Function	no resistor	with 100 KΩ P/D	with 100 KΩ P/U	with 5 KΩ P/U	Cells
Normal	FI0112	FI0112PD100	FI0112PU100	FIW112	1
Schmitt	FIS112	FIS112PD100	FIS112PU100	FWS112	1
Clock					

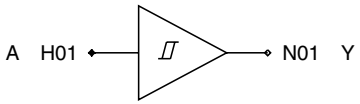
Logic Diagram for "Normal"



Truth Table

A	Y
1	1
0	0

Logic Diagram for "Schmitt"



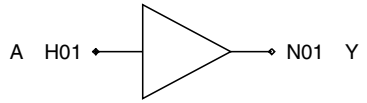
Logic Diagram for "Clock"

Block type	Input		Output	
	Symbol	Fan-In	Symbol	Fan-Out
FI0112 to FIW112	A	-	Y	0.834
FIS112 to FWS112	A	-	Y	1.720

Block type	Switching speed										
	Path		t_{LD0} [ns]			t_1 (ns/pF)			T (ns/pF)		
	IN → OUT		MIN.	TYP.	MAX.	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.
FI0112	A → Y	(HH)	0.120	0.166	0.265	0.155	0.257	0.467			
		(LL)	0.220	0.312	0.481	0.221	0.305	0.476			
FI0112PD100	A → Y	(HH)	0.120	0.166	0.265	0.155	0.257	0.467			
		(LL)	0.220	0.312	0.481	0.221	0.305	0.476			
FI0112PU100	A → Y	(HH)	0.120	0.166	0.265	0.155	0.257	0.467			
		(LL)	0.220	0.312	0.481	0.221	0.305	0.476			
FIW112	A → Y	(HH)	0.120	0.166	0.265	0.155	0.257	0.467			
		(LL)	0.220	0.312	0.481	0.221	0.305	0.476			
FIS112	A → Y	(HH)	1.100	1.608	2.567	0.119	0.158	0.248			
		(LL)	1.040	1.611	2.612	0.062	0.077	0.111			
FIS112PD100	A → Y	(HH)	1.100	1.608	2.567	0.119	0.158	0.248			
		(LL)	1.040	1.611	2.612	0.062	0.077	0.111			
FIS112PU100	A → Y	(HH)	1.100	1.608	2.567	0.119	0.158	0.248			
		(LL)	1.040	1.611	2.612	0.062	0.077	0.111			
FWS112	A → Y	(HH)	1.100	1.608	2.567	0.119	0.158	0.248			
		(LL)	1.040	1.611	2.612	0.062	0.077	0.111			

Function	Input Buffer with failsafe			External supply voltage	2.5 V
Block type					
Function	no resistor	with 100 KΩ P/D	with 100 KΩ P/U	with 5 KΩ P/U	Cells
Normal	FIA112	FIA112PD100			1
Schmitt	FIE112	FIE112PD100			1
Clock					

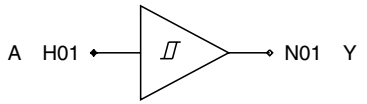
Logic Diagram for "Normal"



Truth Table

A	Y
1	1
0	0

Logic Diagram for "Schmitt"



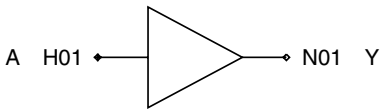
Logic Diagram for "Clock"

Block type	Input		Output	
	Symbol	Fan-In	Symbol	Fan-Out
FIA112 to FIA112PD100	A	-	Y	0.836
FIE112 to FIE112PD100	A	-	Y	1.724

Block type	Switching speed										
	Path		t_{LD0} [ns]			t_1 (ns/pF)			T (ns/pF)		
	IN → OUT		MIN.	TYP.	MAX.	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.
FIA112	A → Y	(HH)	0.117	0.163	0.261	0.155	0.257	0.467			
		(LL)	0.218	0.309	0.478	0.221	0.305	0.475			
FIA112PD100	A → Y	(HH)	0.117	0.163	0.261	0.155	0.257	0.467			
		(LL)	0.218	0.309	0.478	0.221	0.305	0.475			
FIE112	A → Y	(HH)	1.097	1.604	2.567	0.119	0.158	0.246			
		(LL)	1.040	1.613	2.618	0.062	0.077	0.111			
FIE112PD100	A → Y	(HH)	1.097	1.604	2.567	0.119	0.158	0.246			
		(LL)	1.040	1.613	2.618	0.062	0.077	0.111			

Function	Output Buffer			External supply voltage	2.5 V
Block type					
Drivability	no resistor	with 100 KΩ P/D	with 100 KΩ P/U	with 5 KΩ P/U	Cells
1mA					
2mA					
3mA	FO0912				1
6mA	FO0412				1
9mA	FO0112				1
12mA	FO0212				1
18mA	FO0312				1
24mA	FO0612				1

Logic Diagram



Truth Table

A	Y
1	1
0	0

Block type	Input		Output	
	Symbol	Fan-in	Symbol	Fan-out
FO0912	A	0.121	Y	-
FO0412	A	0.116	Y	-
FO0112	A	0.116	Y	-
FO0212	A	0.121	Y	-
FO0312	A	0.120	Y	-
FO0612	A	0.120	Y	-

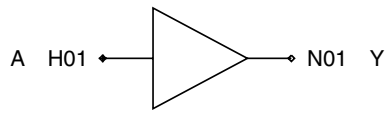
Block type	Switching speed											
	Path		t_{LD0} [ns]			t_1 (ns/pF)			T (ns/pF)		
	IN → OUT		MIN.	TYP.	MAX.	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.
FO0912	A → Y	(HH)	0.637	0.913	1.526				0.079	0.118	0.196
		(LL)	0.553	0.762	1.283				0.084	0.108	0.156
FO0412	A → Y	(HH)	0.542	0.774	1.287				0.039	0.059	0.098
		(LL)	0.466	0.658	1.129				0.042	0.054	0.078
FO0112	A → Y	(HH)	0.525	0.751	1.256				0.026	0.039	0.066
		(LL)	0.462	0.661	1.138				0.028	0.036	0.053
FO0212	A → Y	(HH)	0.526	0.755	1.259				0.020	0.030	0.049
		(LL)	0.478	0.687	1.174				0.021	0.027	0.040
FO0312	A → Y	(HH)	0.546	0.786	1.318				0.015	0.022	0.036
		(LL)	0.515	0.743	1.261				0.015	0.019	0.028
FO0612	A → Y	(HH)	0.563	0.805	1.337				0.012	0.017	0.029
		(LL)	0.558	0.793	1.321				0.012	0.015	0.022

Function	Low-noise Output Buffer	External supply voltage	2.5 V

Block type

Drivability	no resistor	with 100 KΩ P/D	with 100 KΩ P/U	with 5 KΩ P/U	Cells
1mA					
2mA					
3mA					
6mA	FE0412				1
9mA	FE0112				1
12mA	FE0212				1
18mA	FE0312				1
24mA	FE0612				1

Logic Diagram



Truth Table

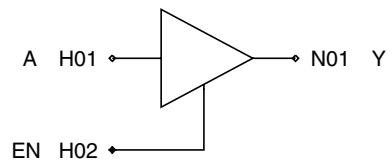
A	Y
1	1
0	0

Block type	Input		Output	
	Symbol	Fan-in	Symbol	Fan-out
FE0412	A	0.121	Y	-
FE0112	A	0.120	Y	-
FE0212	A	0.116	Y	-
FE0312	A	0.120	Y	-
FE0612	A	0.120	Y	-

Block type	Switching speed											
	Path		t_{LD0} [ns]			t_1 (ns/pF)			T (ns/pF)		
	IN → OUT		MIN.	TYP.	MAX.	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.
FE0412	A → Y	(HH)	0.716	1.041	1.846				0.040	0.059	0.099
		(LL)	0.753	1.117	2.038				0.043	0.055	0.081
FE0112	A → Y	(HH)	0.746	1.093	1.930				0.027	0.040	0.067
		(LL)	0.773	1.160	2.091				0.030	0.039	0.058
FE0212	A → Y	(HH)	0.788	1.161	2.042				0.021	0.031	0.052
		(LL)	0.804	1.215	2.168				0.024	0.031	0.047
FE0312	A → Y	(HH)	0.754	1.110	1.921				0.015	0.023	0.039
		(LL)	0.762	1.160	2.041				0.018	0.024	0.036
FE0612	A → Y	(HH)	0.792	1.172	2.017				0.013	0.019	0.032
		(LL)	0.755	1.138	1.966				0.014	0.019	0.028

Function	3-state Buffer			External supply voltage	2.5 V
	Block type				
Drivability	no resistor	with 100 KΩ P/D	with 100 KΩ P/U	with 5 KΩ P/U	Cells
1mA					
2mA					
3mA	B00T12	B00T12PD100	B00T12PU100	B0WT12	1
6mA	B00E12	B00E12PD100	B00E12PU100	B0WE12	1
9mA	B00812	B00812PD100	B00812PU100	B0W812	1
12mA	B00712	B00712PD100	B00712PU100	B0W712	1
18mA	B00912	B00912PD100	B00912PU100	B0W912	1
24mA	B00H12	B00H12PD100	B00H12PU100	B0WH12	1

Logic Diagram



Truth Table

A	EN	Y
0	1	0
1	1	1
X	0	Z

X:Irrelevant

Z:High Impedance

Block type	Input		Output	
	Symbol	Fan-in	Symbol	Fan-out
B00T12 to B0WT12	A	0.116	Y	-
	EN	0.117		
B00E12 to B0WE12	A	0.120	Y	-
	EN	0.117		
B00812 to B0W812	A	0.120	Y	-
	EN	0.121		
B00712 to B0W712	A	0.120	Y	-
	EN	0.121		
B00912 to B0W912	A	0.120	Y	-
	EN	0.121		
B00H12 to B0WH12	A	0.120	Y	-
	EN	0.121		

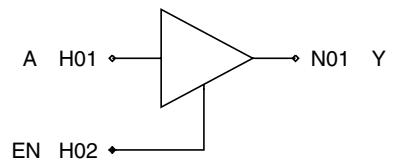
Block type	Switching speed											
	Path		t_{LD0} [ns]			t_1 (ns/pF)			T (ns/pF)		
	IN → OUT		MIN.	TYP.	MAX.	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.
B00T12	A → Y	(HH)	0.644	0.923	1.537				0.079	0.118	0.197
		(LL)	0.562	0.775	1.300				0.084	0.108	0.156
	EN → Y	(HZ)	0.355	0.480	0.774						
		(LZ)	0.267	0.370	0.621						
		(ZH)	0.765	1.107	1.827				0.079	0.118	0.196
		(ZL)	0.760	1.052	1.698				0.084	0.108	0.156
B00T12PD100	A → Y	(HH)	0.644	0.923	1.537				0.079	0.118	0.197
		(LL)	0.562	0.775	1.300				0.084	0.108	0.156
	EN → Y	(HZ)	0.355	0.480	0.774						
		(LZ)	0.267	0.370	0.621						
		(ZH)	0.765	1.107	1.827				0.079	0.118	0.196
		(ZL)	0.760	1.052	1.698				0.084	0.108	0.156
B00T12PU100	A → Y	(HH)	0.644	0.923	1.537				0.079	0.118	0.197
		(LL)	0.562	0.775	1.300				0.084	0.108	0.156
	EN → Y	(HZ)	0.355	0.480	0.774						
		(LZ)	0.267	0.370	0.621						
		(ZH)	0.765	1.107	1.827				0.079	0.118	0.196
		(ZL)	0.760	1.052	1.698				0.084	0.108	0.156
B0WT12	A → Y	(HH)	0.644	0.923	1.537				0.079	0.118	0.197
		(LL)	0.562	0.775	1.300				0.084	0.108	0.156
	EN → Y	(HZ)	0.355	0.480	0.774						
		(LZ)	0.267	0.370	0.621						
		(ZH)	0.765	1.107	1.827				0.079	0.118	0.196
		(ZL)	0.760	1.052	1.698				0.084	0.108	0.156
B00E12	A → Y	(HH)	0.549	0.784	1.310				0.039	0.059	0.098
		(LL)	0.474	0.671	1.152				0.042	0.054	0.078
	EN → Y	(HZ)	0.399	0.530	0.840						
		(LZ)	0.278	0.387	0.654						
		(ZH)	0.663	0.956	1.578				0.039	0.059	0.098
		(ZL)	0.655	0.924	1.514				0.042	0.054	0.078
B00E12PD100	A → Y	(HH)	0.549	0.784	1.310				0.039	0.059	0.098
		(LL)	0.474	0.671	1.152				0.042	0.054	0.078
	EN → Y	(HZ)	0.399	0.530	0.840						
		(LZ)	0.278	0.387	0.654						
		(ZH)	0.663	0.956	1.578				0.039	0.059	0.098
		(ZL)	0.655	0.924	1.514				0.042	0.054	0.078
B00E12PU100	A → Y	(HH)	0.549	0.784	1.310				0.039	0.059	0.098
		(LL)	0.474	0.671	1.152				0.042	0.054	0.078
	EN → Y	(HZ)	0.399	0.530	0.840						
		(LZ)	0.278	0.387	0.654						
		(ZH)	0.663	0.956	1.578				0.039	0.059	0.098
		(ZL)	0.655	0.924	1.514				0.042	0.054	0.078
B0WE12	A → Y	(HH)	0.549	0.784	1.310				0.039	0.059	0.098
		(LL)	0.474	0.671	1.152				0.042	0.054	0.078
	EN → Y	(HZ)	0.399	0.530	0.840						
		(LZ)	0.278	0.387	0.654						
		(ZH)	0.663	0.956	1.578				0.039	0.059	0.098
		(ZL)	0.655	0.924	1.514				0.042	0.054	0.078
B00812	A → Y	(HH)	0.532	0.761	1.272				0.026	0.040	0.066
		(LL)	0.471	0.673	1.156				0.028	0.036	0.053
	EN → Y	(HZ)	0.443	0.582	0.906						
		(LZ)	0.295	0.407	0.685						
		(ZH)	0.639	0.921	1.522				0.026	0.039	0.066
		(ZL)	0.634	0.901	1.481				0.028	0.036	0.053

Block type	Switching speed										
	Path		t_{LD0} [ns]			t_1 (ns/pF)			T (ns/pF)		
	IN → OUT		MIN.	TYP.	MAX.	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.
B00812PD100	A → Y	(HH)	0.532	0.761	1.272				0.026	0.040	0.066
		(LL)	0.471	0.673	1.156				0.028	0.036	0.053
	EN → Y	(HZ)	0.443	0.582	0.906						
		(LZ)	0.295	0.407	0.685						
		(ZH)	0.639	0.921	1.522				0.026	0.039	0.066
		(ZL)	0.634	0.901	1.481				0.028	0.036	0.053
B00812PU100	A → Y	(HH)	0.532	0.761	1.272				0.026	0.040	0.066
		(LL)	0.471	0.673	1.156				0.028	0.036	0.053
	EN → Y	(HZ)	0.443	0.582	0.906						
		(LZ)	0.295	0.407	0.685						
		(ZH)	0.639	0.921	1.522				0.026	0.039	0.066
		(ZL)	0.634	0.901	1.481				0.028	0.036	0.053
B0W812	A → Y	(HH)	0.532	0.761	1.272				0.026	0.040	0.066
		(LL)	0.471	0.673	1.156				0.028	0.036	0.053
	EN → Y	(HZ)	0.443	0.582	0.906						
		(LZ)	0.295	0.407	0.685						
		(ZH)	0.639	0.921	1.522				0.026	0.039	0.066
		(ZL)	0.634	0.901	1.481				0.028	0.036	0.053
B00712	A → Y	(HH)	0.533	0.765	1.280				0.020	0.030	0.049
		(LL)	0.486	0.698	1.195				0.021	0.027	0.040
	EN → Y	(HZ)	0.489	0.634	0.975						
		(LZ)	0.312	0.429	0.715						
		(ZH)	0.633	0.914	1.512				0.020	0.030	0.049
		(ZL)	0.632	0.902	1.482				0.021	0.027	0.040
B00712PD100	A → Y	(HH)	0.533	0.765	1.280				0.020	0.030	0.049
		(LL)	0.486	0.698	1.195				0.021	0.027	0.040
	EN → Y	(HZ)	0.489	0.634	0.975						
		(LZ)	0.312	0.429	0.715						
		(ZH)	0.633	0.914	1.512				0.020	0.030	0.049
		(ZL)	0.632	0.902	1.482				0.021	0.027	0.040
B00712PU100	A → Y	(HH)	0.533	0.765	1.280				0.020	0.030	0.049
		(LL)	0.486	0.698	1.195				0.021	0.027	0.040
	EN → Y	(HZ)	0.489	0.634	0.975						
		(LZ)	0.312	0.429	0.715						
		(ZH)	0.633	0.914	1.512				0.020	0.030	0.049
		(ZL)	0.632	0.902	1.482				0.021	0.027	0.040
B0W712	A → Y	(HH)	0.533	0.765	1.280				0.020	0.030	0.049
		(LL)	0.486	0.698	1.195				0.021	0.027	0.040
	EN → Y	(HZ)	0.489	0.634	0.975						
		(LZ)	0.312	0.429	0.715						
		(ZH)	0.633	0.914	1.512				0.020	0.030	0.049
		(ZL)	0.632	0.902	1.482				0.021	0.027	0.040
B00912	A → Y	(HH)	0.552	0.796	1.333				0.015	0.022	0.036
		(LL)	0.523	0.753	1.278				0.015	0.019	0.028
	EN → Y	(HZ)	0.560	0.719	1.086						
		(LZ)	0.349	0.473	0.781						
		(ZH)	0.637	0.922	1.530				0.015	0.022	0.036
		(ZL)	0.643	0.922	1.512				0.015	0.019	0.028
B00912PD100	A → Y	(HH)	0.552	0.796	1.333				0.015	0.022	0.036
		(LL)	0.523	0.753	1.278				0.015	0.019	0.028
	EN → Y	(HZ)	0.560	0.719	1.086						
		(LZ)	0.349	0.473	0.781						
		(ZH)	0.637	0.922	1.530				0.015	0.022	0.036
		(ZL)	0.643	0.922	1.512				0.015	0.019	0.028

Block type	Switching speed										
	Path		t_{LD0} [ns]			t_1 (ns/pF)			T (ns/pF)		
	IN → OUT		MIN.	TYP.	MAX.	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.
B00912PU100	A → Y	(HH)	0.552	0.796	1.333				0.015	0.022	0.036
		(LL)	0.523	0.753	1.278				0.015	0.019	0.028
	EN → Y	(HZ)	0.560	0.719	1.086						
		(LZ)	0.349	0.473	0.781						
		(ZH)	0.637	0.922	1.530				0.015	0.022	0.036
		(ZL)	0.643	0.922	1.512				0.015	0.019	0.028
B0W912	A → Y	(HH)	0.552	0.796	1.333				0.015	0.022	0.036
		(LL)	0.523	0.753	1.278				0.015	0.019	0.028
	EN → Y	(HZ)	0.560	0.719	1.086						
		(LZ)	0.349	0.473	0.781						
		(ZH)	0.637	0.922	1.530				0.015	0.022	0.036
		(ZL)	0.643	0.922	1.512				0.015	0.019	0.028
B00H12	A → Y	(HH)	0.569	0.814	1.350				0.012	0.017	0.029
		(LL)	0.565	0.803	1.336				0.012	0.015	0.022
	EN → Y	(HZ)	0.734	0.938	1.390						
		(LZ)	0.438	0.577	0.926						
		(ZH)	0.677	0.986	1.632				0.012	0.017	0.029
		(ZL)	0.648	0.931	1.517				0.011	0.015	0.022
B00H12PD100	A → Y	(HH)	0.569	0.814	1.350				0.012	0.017	0.029
		(LL)	0.565	0.803	1.336				0.012	0.015	0.022
	EN → Y	(HZ)	0.734	0.938	1.390						
		(LZ)	0.438	0.577	0.926						
		(ZH)	0.677	0.986	1.632				0.012	0.017	0.029
		(ZL)	0.648	0.931	1.517				0.011	0.015	0.022
B00H12PU100	A → Y	(HH)	0.569	0.814	1.350				0.012	0.017	0.029
		(LL)	0.565	0.803	1.336				0.012	0.015	0.022
	EN → Y	(HZ)	0.734	0.938	1.390						
		(LZ)	0.438	0.577	0.926						
		(ZH)	0.677	0.986	1.632				0.012	0.017	0.029
		(ZL)	0.648	0.931	1.517				0.011	0.015	0.022
B0WH12	A → Y	(HH)	0.569	0.814	1.350				0.012	0.017	0.029
		(LL)	0.565	0.803	1.336				0.012	0.015	0.022
	EN → Y	(HZ)	0.734	0.938	1.390						
		(LZ)	0.438	0.577	0.926						
		(ZH)	0.677	0.986	1.632				0.012	0.017	0.029
		(ZL)	0.648	0.931	1.517				0.011	0.015	0.022

Function	Low-noise 3-state Buffer			External supply voltage	2.5 V
Block type					
Drivability	no resistor	with 100 KΩ P/D	with 100 KΩ P/U	with 5 KΩ P/U	Cells
1mA					
2mA					
3mA					
6mA	BE0E12	BE0E12PD100	BE0E12PU100	BEWE12	1
9mA	BE0812	BE0812PD100	BE0812PU100	BEW812	1
12mA	BE0712	BE0712PD100	BE0712PU100	BEW712	1
18mA	BE0912	BE0912PD100	BE0912PU100	BEW912	1
24mA	BE0H12	BE0H12PD100	BE0H12PU100	BEWH12	1

Logic Diagram



Block type	Input		Output	
	Symbol	Fan-in	Symbol	Fan-out
BE0E12 to BEWE12	A	0.120	Y	-
	EN	0.117		
BE0812 to BEW812	A	0.120	Y	-
	EN	0.121		
BE0712 to BEW712	A	0.121	Y	-
	EN	0.117		
BE0912 to BEW912	A	0.120	Y	-
	EN	0.121		
BE0H12 to BEWH12	A	0.120	Y	-
	EN	0.121		

Truth Table

A	EN	Y
0	1	0
1	1	1
X	0	Z

X:Irrelevant

Z:High Impedance

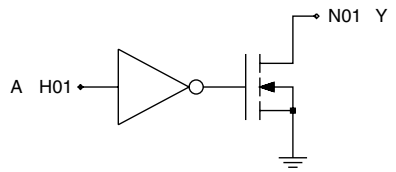
Block type	Switching speed											
	Path		t_{LD0} [ns]			t_1 (ns/pF)			T (ns/pF)		
	IN → OUT		MIN.	TYP.	MAX.	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.
BE0E12	A → Y	(HH)	0.736	1.072	1.898				0.040	0.059	0.099
		(LL)	0.771	1.144	2.083				0.043	0.055	0.082
	EN → Y	(HZ)	0.287	0.386	0.637						
		(LZ)	0.255	0.362	0.624						
		(ZH)	0.819	1.195	2.082				0.040	0.059	0.099
		(ZL)	0.989	1.445	2.509				0.043	0.055	0.082
BE0E12PD100	A → Y	(HH)	0.736	1.072	1.898				0.040	0.059	0.099
		(LL)	0.771	1.144	2.083				0.043	0.055	0.082
	EN → Y	(HZ)	0.287	0.386	0.637						
		(LZ)	0.255	0.362	0.624						
		(ZH)	0.819	1.195	2.082				0.040	0.059	0.099
		(ZL)	0.989	1.445	2.509				0.043	0.055	0.082
BE0E12PU100	A → Y	(HH)	0.736	1.072	1.898				0.040	0.059	0.099
		(LL)	0.771	1.144	2.083				0.043	0.055	0.082
	EN → Y	(HZ)	0.287	0.386	0.637						
		(LZ)	0.255	0.362	0.624						
		(ZH)	0.819	1.195	2.082				0.040	0.059	0.099
		(ZL)	0.989	1.445	2.509				0.043	0.055	0.082
BEWE12	A → Y	(HH)	0.736	1.072	1.898				0.040	0.059	0.099
		(LL)	0.771	1.144	2.083				0.043	0.055	0.082
	EN → Y	(HZ)	0.287	0.386	0.637						
		(LZ)	0.255	0.362	0.624						
		(ZH)	0.819	1.195	2.082				0.040	0.059	0.099
		(ZL)	0.989	1.445	2.509				0.043	0.055	0.082
BE0812	A → Y	(HH)	0.765	1.122	1.979				0.027	0.040	0.067
		(LL)	0.789	1.185	2.131				0.030	0.039	0.058
	EN → Y	(HZ)	0.335	0.442	0.711						
		(LZ)	0.274	0.385	0.657						
		(ZH)	0.841	1.233	2.143				0.027	0.040	0.067
		(ZL)	0.993	1.461	2.521				0.030	0.039	0.058
BE0812PD100	A → Y	(HH)	0.765	1.122	1.979				0.027	0.040	0.067
		(LL)	0.789	1.185	2.131				0.030	0.039	0.058
	EN → Y	(HZ)	0.335	0.442	0.711						
		(LZ)	0.274	0.385	0.657						
		(ZH)	0.841	1.233	2.143				0.027	0.040	0.067
		(ZL)	0.993	1.461	2.521				0.030	0.039	0.058
BE0812PU100	A → Y	(HH)	0.765	1.122	1.979				0.027	0.040	0.067
		(LL)	0.789	1.185	2.131				0.030	0.039	0.058
	EN → Y	(HZ)	0.335	0.442	0.711						
		(LZ)	0.274	0.385	0.657						
		(ZH)	0.841	1.233	2.143				0.027	0.040	0.067
		(ZL)	0.993	1.461	2.521				0.030	0.039	0.058
BEW812	A → Y	(HH)	0.765	1.122	1.979				0.027	0.040	0.067
		(LL)	0.789	1.185	2.131				0.030	0.039	0.058
	EN → Y	(HZ)	0.335	0.442	0.711						
		(LZ)	0.274	0.385	0.657						
		(ZH)	0.841	1.233	2.143				0.027	0.040	0.067
		(ZL)	0.993	1.461	2.521				0.030	0.039	0.058
BE0712	A → Y	(HH)	0.806	1.189	2.087				0.021	0.031	0.052
		(LL)	0.817	1.237	2.205				0.024	0.031	0.047
	EN → Y	(HZ)	0.383	0.499	0.786						
		(LZ)	0.293	0.408	0.690						
		(ZH)	0.875	1.288	2.231				0.021	0.031	0.052
		(ZL)	1.006	1.491	2.561				0.024	0.031	0.047

Block type	Switching speed										
	Path		t_{LD0} [ns]			t_1 (ns/pF)			T (ns/pF)		
	IN → OUT		MIN.	TYP.	MAX.	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.
BE0712PD100	A → Y	(HH)	0.806	1.189	2.087				0.021	0.031	0.052
		(LL)	0.817	1.237	2.205				0.024	0.031	0.047
	EN → Y	(HZ)	0.383	0.499	0.786						
		(LZ)	0.293	0.408	0.690						
		(ZH)	0.875	1.288	2.231				0.021	0.031	0.052
		(ZL)	1.006	1.491	2.561				0.024	0.031	0.047
BE0712PU100	A → Y	(HH)	0.806	1.189	2.087				0.021	0.031	0.052
		(LL)	0.817	1.237	2.205				0.024	0.031	0.047
	EN → Y	(HZ)	0.383	0.499	0.786						
		(LZ)	0.293	0.408	0.690						
		(ZH)	0.875	1.288	2.231				0.021	0.031	0.052
		(ZL)	1.006	1.491	2.561				0.024	0.031	0.047
BEW712	A → Y	(HH)	0.806	1.189	2.087				0.021	0.031	0.052
		(LL)	0.817	1.237	2.205				0.024	0.031	0.047
	EN → Y	(HZ)	0.383	0.499	0.786						
		(LZ)	0.293	0.408	0.690						
		(ZH)	0.875	1.288	2.231				0.021	0.031	0.052
		(ZL)	1.006	1.491	2.561				0.024	0.031	0.047
BE0912	A → Y	(HH)	0.769	1.131	1.955				0.015	0.023	0.039
		(LL)	0.773	1.176	2.068				0.018	0.024	0.036
	EN → Y	(HZ)	0.467	0.600	0.921						
		(LZ)	0.327	0.451	0.753						
		(ZH)	0.818	1.198	2.047				0.015	0.023	0.039
		(ZL)	0.936	1.389	2.355				0.018	0.024	0.036
BE0912PD100	A → Y	(HH)	0.769	1.131	1.955				0.015	0.023	0.039
		(LL)	0.773	1.176	2.068				0.018	0.024	0.036
	EN → Y	(HZ)	0.467	0.600	0.921						
		(LZ)	0.327	0.451	0.753						
		(ZH)	0.818	1.198	2.047				0.015	0.023	0.039
		(ZL)	0.936	1.389	2.355				0.018	0.024	0.036
BE0912PU100	A → Y	(HH)	0.769	1.131	1.955				0.015	0.023	0.039
		(LL)	0.773	1.176	2.068				0.018	0.024	0.036
	EN → Y	(HZ)	0.467	0.600	0.921						
		(LZ)	0.327	0.451	0.753						
		(ZH)	0.818	1.198	2.047				0.015	0.023	0.039
		(ZL)	0.936	1.389	2.355				0.018	0.024	0.036
BEW912	A → Y	(HH)	0.769	1.131	1.955				0.015	0.023	0.039
		(LL)	0.773	1.176	2.068				0.018	0.024	0.036
	EN → Y	(HZ)	0.467	0.600	0.921						
		(LZ)	0.327	0.451	0.753						
		(ZH)	0.818	1.198	2.047				0.015	0.023	0.039
		(ZL)	0.936	1.389	2.355				0.018	0.024	0.036
BE0H12	A → Y	(HH)	0.804	1.190	2.047				0.013	0.019	0.032
		(LL)	0.765	1.152	1.990				0.014	0.019	0.028
	EN → Y	(HZ)	0.541	0.690	1.041						
		(LZ)	0.366	0.498	0.820						
		(ZH)	0.843	1.241	2.117				0.013	0.019	0.032
		(ZL)	0.887	1.309	2.190				0.014	0.019	0.028
BE0H12PD100	A → Y	(HH)	0.804	1.190	2.047				0.013	0.019	0.032
		(LL)	0.765	1.152	1.990				0.014	0.019	0.028
	EN → Y	(HZ)	0.541	0.690	1.041						
		(LZ)	0.366	0.498	0.820						
		(ZH)	0.843	1.241	2.117				0.013	0.019	0.032
		(ZL)	0.887	1.309	2.190				0.014	0.019	0.028

Block type	Switching speed										
	Path		t_{LD0} [ns]			t_1 (ns/pF)			T (ns/pF)		
	IN → OUT		MIN.	TYP.	MAX.	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.
BE0H12PU100	A → Y	(HH)	0.804	1.190	2.047				0.013	0.019	0.032
		(LL)	0.765	1.152	1.990				0.014	0.019	0.028
	EN → Y	(HZ)	0.541	0.690	1.041						
		(LZ)	0.366	0.498	0.820						
		(ZH)	0.843	1.241	2.117				0.013	0.019	0.032
		(ZL)	0.887	1.309	2.190				0.014	0.019	0.028
BEWH12	A → Y	(HH)	0.804	1.190	2.047				0.013	0.019	0.032
		(LL)	0.765	1.152	1.990				0.014	0.019	0.028
	EN → Y	(HZ)	0.541	0.690	1.041						
		(LZ)	0.366	0.498	0.820						
		(ZH)	0.843	1.241	2.117				0.013	0.019	0.032
		(ZL)	0.887	1.309	2.190				0.014	0.019	0.028

Function	N-ch Open Drain Buffer			External supply voltage	2.5 V
Block type					
Drivability	no resistor	with 100 KΩ P/D	with 100 KΩ P/U	with 5 KΩ P/U	Cells
1mA					
2mA					
3mA	EXTH12				1
6mA	EXTJ12				1
9mA	EXT112				1
12mA	EXT912				1
18mA	EXT512				1
24mA	EXTD12				1

Logic Diagram



Block type	Input		Output	
	Symbol	Fan-in	Symbol	Fan-out
EXTH12	A	0.121	Y	-
EXTJ12	A	0.116	Y	-
EXT112	A	0.116	Y	-
EXT912	A	0.116	Y	-
EXT512	A	0.120	Y	-
EXTD12	A	0.120	Y	-

Truth Table

A	Y
1	Z
0	0

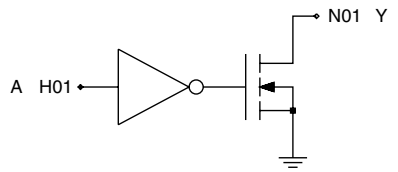
Z:High Impedance

Connect a pull-up resistor to get a high level

Block type	Switching speed										
	Path		t_{LD0} [ns]			t_1 (ns/pF)			T (ns/pF)		
	IN → OUT		MIN.	TYP.	MAX.	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.
EXTH12	A → Y	(LZ)	0.324	0.444	0.708						
		(ZL)	0.381	0.535	0.919				0.084	0.108	0.156
EXTJ12	A → Y	(LZ)	0.336	0.461	0.731						
		(ZL)	0.337	0.483	0.841				0.042	0.054	0.078
EXT112	A → Y	(LZ)	0.347	0.476	0.754						
		(ZL)	0.332	0.480	0.838				0.028	0.036	0.053
EXT912	A → Y	(LZ)	0.357	0.491	0.777						
		(ZL)	0.336	0.488	0.850				0.021	0.027	0.040
EXT512	A → Y	(LZ)	0.377	0.517	0.817						
		(ZL)	0.349	0.510	0.885				0.015	0.019	0.028
EXTD12	A → Y	(LZ)	0.416	0.567	0.889						
		(ZL)	0.362	0.523	0.895				0.011	0.015	0.022

Function	Low-noise N-ch Open Drain Buffer			External supply voltage	2.5 V
Block type					
Drivability	no resistor	with 100 KΩ P/D	with 100 KΩ P/U	with 5 KΩ P/U	Cells
1mA					
2mA					
3mA					
6mA	EETJ12				1
9mA	EET112				1
12mA	EET912				1
18mA	EET512				1
24mA	EETD12				1

Logic Diagram



Block type	Input		Output	
	Symbol	Fan-in	Symbol	Fan-out
EETJ12	A	0.120	Y	-
EET112	A	0.120	Y	-
EET912	A	0.121	Y	-
EET512	A	0.120	Y	-
EETD12	A	0.120	Y	-

Truth Table

A	Y
1	Z
0	0

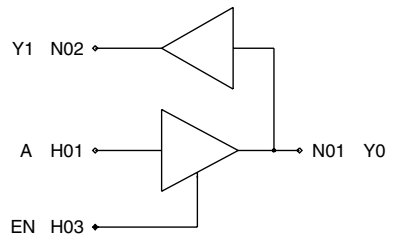
Z:High Impedance

Connect a pull-up resistor to get a high level

Block type	Switching speed										
	Path		t_{LD0} [ns]			t_1 (ns/pF)			T (ns/pF)		
	IN → OUT		MIN.	TYP.	MAX.	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.
EETJ12	A → Y	(LZ)	0.291	0.411	0.668						
		(ZL)	0.618	0.926	1.710				0.043	0.056	0.082
EET112	A → Y	(LZ)	0.305	0.429	0.698						
		(ZL)	0.639	0.965	1.754				0.030	0.039	0.059
EET912	A → Y	(LZ)	0.318	0.445	0.716						
		(ZL)	0.661	1.004	1.803				0.024	0.032	0.048
EET512	A → Y	(LZ)	0.344	0.477	0.766						
		(ZL)	0.611	0.929	1.648				0.018	0.024	0.037
EETD12	A → Y	(LZ)	0.370	0.508	0.811						
		(ZL)	0.580	0.875	1.527				0.014	0.019	0.029

Function	I/O Buffer			External supply voltage	2.5 V
	Block type				
Drivability	no resistor	with 100 KΩ P/D	with 100 KΩ P/U	with 5 KΩ P/U	Cells
1mA					
2mA					
3mA	B00U12	B00U12PD100	B00U12PU100	B0WU12	1
6mA	B00C12	B00C12PD100	B00C12PU100	B0WC12	1
9mA	B00312	B00312PD100	B00312PU100	B0W312	1
12mA	B00112	B00112PD100	B00112PU100	B0W112	1
18mA	B00512	B00512PD100	B00512PU100	B0W512	1
24mA	B00F12	B00F12PD100	B00F12PU100	B0WF12	1

Logic Diagram



Block type	Input		Output	
	Symbol	Fan-in	Symbol	Fan-out
B00U12 to B0WU12	A	0.116	Y1	0.834
	EN	0.117		
B00C12 to B0WC12	A	0.120	Y1	0.834
	EN	0.117		
B00312 to B0W312	A	0.120	Y1	0.834
	EN	0.121		
B00112 to B0W112	A	0.120	Y1	0.834
	EN	0.121		
B00512 to B0W512	A	0.120	Y1	0.834
	EN	0.121		
B00F12 to B0WF12	A	0.120	Y1	0.834
	EN	0.121		

Truth Table

A	EN	Y0
0	1	0
1	1	1
X	0	Z

X:Irrelevant

Z:High Impedance

Y0	Y1
0	0
1	1

Block type	Switching speed										
	Path		t_{LD0} [ns]			t_1 (ns/pF)			T (ns/pF)		
	IN → OUT		MIN.	TYP.	MAX.	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.
B00U12	A → Y0	(HH)	0.644	0.923	1.537				0.079	0.118	0.197
		(LL)	0.562	0.775	1.300				0.084	0.108	0.156
	EN → Y0	(HZ)	0.355	0.480	0.774						
		(LZ)	0.267	0.370	0.621						
		(ZH)	0.765	1.107	1.827				0.079	0.118	0.196
		(ZL)	0.760	1.052	1.698				0.084	0.108	0.156
	Y0 → Y1	(HH)	0.120	0.166	0.265	0.155	0.257	0.467			
		(LL)	0.220	0.312	0.481	0.221	0.305	0.476			
B00U12PD100	A → Y0	(HH)	0.644	0.923	1.537				0.079	0.118	0.197
		(LL)	0.562	0.775	1.300				0.084	0.108	0.156
	EN → Y0	(HZ)	0.355	0.480	0.774						
		(LZ)	0.267	0.370	0.621						
		(ZH)	0.765	1.107	1.827				0.079	0.118	0.196
		(ZL)	0.760	1.052	1.698				0.084	0.108	0.156
	Y0 → Y1	(HH)	0.120	0.166	0.265	0.155	0.257	0.467			
		(LL)	0.220	0.312	0.481	0.221	0.305	0.476			
B00U12PU100	A → Y0	(HH)	0.644	0.923	1.537				0.079	0.118	0.197
		(LL)	0.562	0.775	1.300				0.084	0.108	0.156
	EN → Y0	(HZ)	0.355	0.480	0.774						
		(LZ)	0.267	0.370	0.621						
		(ZH)	0.765	1.107	1.827				0.079	0.118	0.196
		(ZL)	0.760	1.052	1.698				0.084	0.108	0.156
	Y0 → Y1	(HH)	0.120	0.166	0.265	0.155	0.257	0.467			
		(LL)	0.220	0.312	0.481	0.221	0.305	0.476			
B0WU12	A → Y0	(HH)	0.644	0.923	1.537				0.079	0.118	0.197
		(LL)	0.562	0.775	1.300				0.084	0.108	0.156
	EN → Y0	(HZ)	0.355	0.480	0.774						
		(LZ)	0.267	0.370	0.621						
		(ZH)	0.765	1.107	1.827				0.079	0.118	0.196
		(ZL)	0.760	1.052	1.698				0.084	0.108	0.156
	Y0 → Y1	(HH)	0.120	0.166	0.265	0.155	0.257	0.467			
		(LL)	0.220	0.312	0.481	0.221	0.305	0.476			
B00C12	A → Y0	(HH)	0.549	0.784	1.310				0.039	0.059	0.098
		(LL)	0.474	0.671	1.152				0.042	0.054	0.078
	EN → Y0	(HZ)	0.399	0.530	0.840						
		(LZ)	0.278	0.387	0.654						
		(ZH)	0.663	0.956	1.578				0.039	0.059	0.098
		(ZL)	0.655	0.924	1.514				0.042	0.054	0.078
	Y0 → Y1	(HH)	0.120	0.166	0.265	0.155	0.257	0.467			
		(LL)	0.220	0.312	0.481	0.221	0.305	0.476			
B00C12PD100	A → Y0	(HH)	0.549	0.784	1.310				0.039	0.059	0.098
		(LL)	0.474	0.671	1.152				0.042	0.054	0.078
	EN → Y0	(HZ)	0.399	0.530	0.840						
		(LZ)	0.278	0.387	0.654						
		(ZH)	0.663	0.956	1.578				0.039	0.059	0.098
		(ZL)	0.655	0.924	1.514				0.042	0.054	0.078
	Y0 → Y1	(HH)	0.120	0.166	0.265	0.155	0.257	0.467			
		(LL)	0.220	0.312	0.481	0.221	0.305	0.476			
B00C12PU100	A → Y0	(HH)	0.549	0.784	1.310				0.039	0.059	0.098
		(LL)	0.474	0.671	1.152				0.042	0.054	0.078
	EN → Y0	(HZ)	0.399	0.530	0.840						
		(LZ)	0.278	0.387	0.654						
		(ZH)	0.663	0.956	1.578				0.039	0.059	0.098
		(ZL)	0.655	0.924	1.514				0.042	0.054	0.078
	Y0 → Y1	(HH)	0.120	0.166	0.265	0.155	0.257	0.467			
		(LL)	0.220	0.312	0.481	0.221	0.305	0.476			

Block type	Switching speed										
	Path		t_{LD0} [ns]			t_1 (ns/pF)			T (ns/pF)		
	IN → OUT		MIN.	TYP.	MAX.	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.
B0WC12	A → Y0	(HH)	0.549	0.784	1.310				0.039	0.059	0.098
		(LL)	0.474	0.671	1.152				0.042	0.054	0.078
	EN → Y0	(HZ)	0.399	0.530	0.840						
		(LZ)	0.278	0.387	0.654						
		(ZH)	0.663	0.956	1.578				0.039	0.059	0.098
		(ZL)	0.655	0.924	1.514				0.042	0.054	0.078
	Y0 → Y1	(HH)	0.120	0.166	0.265	0.155	0.257	0.467			
		(LL)	0.220	0.312	0.481	0.221	0.305	0.476			
B00312	A → Y0	(HH)	0.532	0.761	1.272				0.026	0.040	0.066
		(LL)	0.471	0.673	1.156				0.028	0.036	0.053
	EN → Y0	(HZ)	0.443	0.582	0.906						
		(LZ)	0.295	0.407	0.685						
		(ZH)	0.639	0.921	1.522				0.026	0.039	0.066
		(ZL)	0.634	0.901	1.481				0.028	0.036	0.053
	Y0 → Y1	(HH)	0.120	0.166	0.265	0.155	0.257	0.467			
		(LL)	0.220	0.312	0.481	0.221	0.305	0.476			
B00312PD100	A → Y0	(HH)	0.532	0.761	1.272				0.026	0.040	0.066
		(LL)	0.471	0.673	1.156				0.028	0.036	0.053
	EN → Y0	(HZ)	0.443	0.582	0.906						
		(LZ)	0.295	0.407	0.685						
		(ZH)	0.639	0.921	1.522				0.026	0.039	0.066
		(ZL)	0.634	0.901	1.481				0.028	0.036	0.053
	Y0 → Y1	(HH)	0.120	0.166	0.265	0.155	0.257	0.467			
		(LL)	0.220	0.312	0.481	0.221	0.305	0.476			
B00312PU100	A → Y0	(HH)	0.532	0.761	1.272				0.026	0.040	0.066
		(LL)	0.471	0.673	1.156				0.028	0.036	0.053
	EN → Y0	(HZ)	0.443	0.582	0.906						
		(LZ)	0.295	0.407	0.685						
		(ZH)	0.639	0.921	1.522				0.026	0.039	0.066
		(ZL)	0.634	0.901	1.481				0.028	0.036	0.053
	Y0 → Y1	(HH)	0.120	0.166	0.265	0.155	0.257	0.467			
		(LL)	0.220	0.312	0.481	0.221	0.305	0.476			
B0W312	A → Y0	(HH)	0.532	0.761	1.272				0.026	0.040	0.066
		(LL)	0.471	0.673	1.156				0.028	0.036	0.053
	EN → Y0	(HZ)	0.443	0.582	0.906						
		(LZ)	0.295	0.407	0.685						
		(ZH)	0.639	0.921	1.522				0.026	0.039	0.066
		(ZL)	0.634	0.901	1.481				0.028	0.036	0.053
	Y0 → Y1	(HH)	0.120	0.166	0.265	0.155	0.257	0.467			
		(LL)	0.220	0.312	0.481	0.221	0.305	0.476			
B00112	A → Y0	(HH)	0.533	0.765	1.280				0.020	0.030	0.049
		(LL)	0.486	0.698	1.195				0.021	0.027	0.040
	EN → Y0	(HZ)	0.489	0.634	0.975						
		(LZ)	0.312	0.429	0.715						
		(ZH)	0.633	0.914	1.512				0.020	0.030	0.049
		(ZL)	0.632	0.902	1.482				0.021	0.027	0.040
	Y0 → Y1	(HH)	0.120	0.166	0.265	0.155	0.257	0.467			
		(LL)	0.220	0.312	0.481	0.221	0.305	0.476			
B00112PD100	A → Y0	(HH)	0.533	0.765	1.280				0.020	0.030	0.049
		(LL)	0.486	0.698	1.195				0.021	0.027	0.040
	EN → Y0	(HZ)	0.489	0.634	0.975						
		(LZ)	0.312	0.429	0.715						
		(ZH)	0.633	0.914	1.512				0.020	0.030	0.049
		(ZL)	0.632	0.902	1.482				0.021	0.027	0.040
	Y0 → Y1	(HH)	0.120	0.166	0.265	0.155	0.257	0.467			
		(LL)	0.220	0.312	0.481	0.221	0.305	0.476			

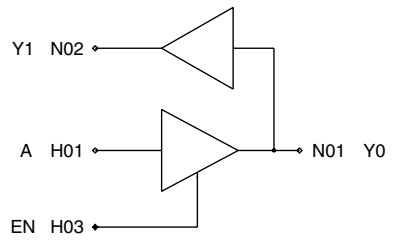
Block type	Switching speed										
	Path		t_{LD0} [ns]			t_1 (ns/pF)			T (ns/pF)		
	IN → OUT		MIN.	TYP.	MAX.	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.
B00112PU100	A → Y0	(HH)	0.533	0.765	1.280				0.020	0.030	0.049
		(LL)	0.486	0.698	1.195				0.021	0.027	0.040
	EN → Y0	(HZ)	0.489	0.634	0.975						
		(LZ)	0.312	0.429	0.715						
		(ZH)	0.633	0.914	1.512				0.020	0.030	0.049
		(ZL)	0.632	0.902	1.482				0.021	0.027	0.040
	Y0 → Y1	(HH)	0.120	0.166	0.265	0.155	0.257	0.467			
		(LL)	0.220	0.312	0.481	0.221	0.305	0.476			
B0W112	A → Y0	(HH)	0.533	0.765	1.280				0.020	0.030	0.049
		(LL)	0.486	0.698	1.195				0.021	0.027	0.040
	EN → Y0	(HZ)	0.489	0.634	0.975						
		(LZ)	0.312	0.429	0.715						
		(ZH)	0.633	0.914	1.512				0.020	0.030	0.049
		(ZL)	0.632	0.902	1.482				0.021	0.027	0.040
	Y0 → Y1	(HH)	0.120	0.166	0.265	0.155	0.257	0.467			
		(LL)	0.220	0.312	0.481	0.221	0.305	0.476			
B00512	A → Y0	(HH)	0.552	0.796	1.333				0.015	0.022	0.036
		(LL)	0.523	0.753	1.278				0.015	0.019	0.028
	EN → Y0	(HZ)	0.560	0.719	1.086						
		(LZ)	0.349	0.473	0.781						
		(ZH)	0.637	0.922	1.530				0.015	0.022	0.036
		(ZL)	0.643	0.922	1.512				0.015	0.019	0.028
	Y0 → Y1	(HH)	0.120	0.166	0.265	0.155	0.257	0.467			
		(LL)	0.220	0.312	0.481	0.221	0.305	0.476			
B00512PD100	A → Y0	(HH)	0.552	0.796	1.333				0.015	0.022	0.036
		(LL)	0.523	0.753	1.278				0.015	0.019	0.028
	EN → Y0	(HZ)	0.560	0.719	1.086						
		(LZ)	0.349	0.473	0.781						
		(ZH)	0.637	0.922	1.530				0.015	0.022	0.036
		(ZL)	0.643	0.922	1.512				0.015	0.019	0.028
	Y0 → Y1	(HH)	0.120	0.166	0.265	0.155	0.257	0.467			
		(LL)	0.220	0.312	0.481	0.221	0.305	0.476			
B00512PU100	A → Y0	(HH)	0.552	0.796	1.333				0.015	0.022	0.036
		(LL)	0.523	0.753	1.278				0.015	0.019	0.028
	EN → Y0	(HZ)	0.560	0.719	1.086						
		(LZ)	0.349	0.473	0.781						
		(ZH)	0.637	0.922	1.530				0.015	0.022	0.036
		(ZL)	0.643	0.922	1.512				0.015	0.019	0.028
	Y0 → Y1	(HH)	0.120	0.166	0.265	0.155	0.257	0.467			
		(LL)	0.220	0.312	0.481	0.221	0.305	0.476			
B0W512	A → Y0	(HH)	0.552	0.796	1.333				0.015	0.022	0.036
		(LL)	0.523	0.753	1.278				0.015	0.019	0.028
	EN → Y0	(HZ)	0.560	0.719	1.086						
		(LZ)	0.349	0.473	0.781						
		(ZH)	0.637	0.922	1.530				0.015	0.022	0.036
		(ZL)	0.643	0.922	1.512				0.015	0.019	0.028
	Y0 → Y1	(HH)	0.120	0.166	0.265	0.155	0.257	0.467			
		(LL)	0.220	0.312	0.481	0.221	0.305	0.476			
B00F12	A → Y0	(HH)	0.569	0.814	1.350				0.012	0.017	0.029
		(LL)	0.565	0.803	1.336				0.012	0.015	0.022
	EN → Y0	(HZ)	0.734	0.938	1.390						
		(LZ)	0.438	0.577	0.926						
		(ZH)	0.677	0.986	1.632				0.012	0.017	0.029
		(ZL)	0.648	0.931	1.517				0.011	0.015	0.022
	Y0 → Y1	(HH)	0.120	0.166	0.265	0.155	0.257	0.467			
		(LL)	0.220	0.312	0.481	0.221	0.305	0.476			

Block type	Switching speed										
	Path		t_{LD0} [ns]			t_1 (ns/pF)			T (ns/pF)		
	IN → OUT		MIN.	TYP.	MAX.	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.
B00F12PD100	A → Y0	(HH)	0.569	0.814	1.350				0.012	0.017	0.029
		(LL)	0.565	0.803	1.336				0.012	0.015	0.022
	EN → Y0	(HZ)	0.734	0.938	1.390						
		(LZ)	0.438	0.577	0.926						
		(ZH)	0.677	0.986	1.632				0.012	0.017	0.029
		(ZL)	0.648	0.931	1.517				0.011	0.015	0.022
	Y0 → Y1	(HH)	0.120	0.166	0.265	0.155	0.257	0.467			
		(LL)	0.220	0.312	0.481	0.221	0.305	0.476			
B00F12PU100	A → Y0	(HH)	0.569	0.814	1.350				0.012	0.017	0.029
		(LL)	0.565	0.803	1.336				0.012	0.015	0.022
	EN → Y0	(HZ)	0.734	0.938	1.390						
		(LZ)	0.438	0.577	0.926						
		(ZH)	0.677	0.986	1.632				0.012	0.017	0.029
		(ZL)	0.648	0.931	1.517				0.011	0.015	0.022
	Y0 → Y1	(HH)	0.120	0.166	0.265	0.155	0.257	0.467			
		(LL)	0.220	0.312	0.481	0.221	0.305	0.476			
B0WF12	A → Y0	(HH)	0.569	0.814	1.350				0.012	0.017	0.029
		(LL)	0.565	0.803	1.336				0.012	0.015	0.022
	EN → Y0	(HZ)	0.734	0.938	1.390						
		(LZ)	0.438	0.577	0.926						
		(ZH)	0.677	0.986	1.632				0.012	0.017	0.029
		(ZL)	0.648	0.931	1.517				0.011	0.015	0.022
	Y0 → Y1	(HH)	0.120	0.166	0.265	0.155	0.257	0.467			
		(LL)	0.220	0.312	0.481	0.221	0.305	0.476			

[MEMO]

Function	Low-noise I/O Buffer			External supply voltage	2.5 V
	Block type				
Drivability	no resistor	with 100 KΩ P/D	with 100 KΩ P/U	with 5 KΩ P/U	Cells
1mA					
2mA					
3mA					
6mA	BE0C12	BE0C12PD100	BE0C12PU100	BEWC12	1
9mA	BE0312	BE0312PD100	BE0312PU100	BEW312	1
12mA	BE0112	BE0112PD100	BE0112PU100	BEW112	1
18mA	BE0512	BE0512PD100	BE0512PU100	BEW512	1
24mA	BE0F12	BE0F12PD100	BE0F12PU100	BEWF12	1

Logic Diagram



Block type	Input		Output	
	Symbol	Fan-in	Symbol	Fan-out
BE0C12 to BEWC12	A	0.120	Y1	0.834
	EN	0.117		
BE0312 to BEW312	A	0.120	Y1	0.834
	EN	0.121		
BE0112 to BEW112	A	0.121	Y1	0.834
	EN	0.117		
BE0512 to BEW512	A	0.120	Y1	0.834
	EN	0.121		
BE0F12 to BEWF12	A	0.120	Y1	0.834
	EN	0.121		

Truth Table

A	EN	Y0
0	1	0
1	1	1
X	0	Z

X:Irrelevant

Z:High Impedance

Y0	Y1
0	0
1	1

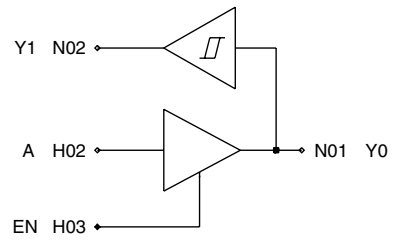
Block type	Switching speed										
	Path		t_{LD0} [ns]			t_1 (ns/pF)			T (ns/pF)		
	IN → OUT		MIN.	TYP.	MAX.	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.
BE0C12	A → Y0	(HH)	0.736	1.072	1.898				0.040	0.059	0.099
		(LL)	0.771	1.144	2.083				0.043	0.055	0.082
	EN → Y0	(HZ)	0.287	0.386	0.637						
		(LZ)	0.255	0.362	0.624						
		(ZH)	0.819	1.195	2.082				0.040	0.059	0.099
		(ZL)	0.989	1.445	2.509				0.043	0.055	0.082
	Y0 → Y1	(HH)	0.120	0.166	0.265	0.155	0.257	0.467			
		(LL)	0.220	0.312	0.481	0.221	0.305	0.476			
BE0C12PD100	A → Y0	(HH)	0.736	1.072	1.898				0.040	0.059	0.099
		(LL)	0.771	1.144	2.083				0.043	0.055	0.082
	EN → Y0	(HZ)	0.287	0.386	0.637						
		(LZ)	0.255	0.362	0.624						
		(ZH)	0.819	1.195	2.082				0.040	0.059	0.099
		(ZL)	0.989	1.445	2.509				0.043	0.055	0.082
	Y0 → Y1	(HH)	0.120	0.166	0.265	0.155	0.257	0.467			
		(LL)	0.220	0.312	0.481	0.221	0.305	0.476			
BE0C12PU100	A → Y0	(HH)	0.736	1.072	1.898				0.040	0.059	0.099
		(LL)	0.771	1.144	2.083				0.043	0.055	0.082
	EN → Y0	(HZ)	0.287	0.386	0.637						
		(LZ)	0.255	0.362	0.624						
		(ZH)	0.819	1.195	2.082				0.040	0.059	0.099
		(ZL)	0.989	1.445	2.509				0.043	0.055	0.082
	Y0 → Y1	(HH)	0.120	0.166	0.265	0.155	0.257	0.467			
		(LL)	0.220	0.312	0.481	0.221	0.305	0.476			
BEWC12	A → Y0	(HH)	0.736	1.072	1.898				0.040	0.059	0.099
		(LL)	0.771	1.144	2.083				0.043	0.055	0.082
	EN → Y0	(HZ)	0.287	0.386	0.637						
		(LZ)	0.255	0.362	0.624						
		(ZH)	0.819	1.195	2.082				0.040	0.059	0.099
		(ZL)	0.989	1.445	2.509				0.043	0.055	0.082
	Y0 → Y1	(HH)	0.120	0.166	0.265	0.155	0.257	0.467			
		(LL)	0.220	0.312	0.481	0.221	0.305	0.476			
BE0312	A → Y0	(HH)	0.765	1.122	1.979				0.027	0.040	0.067
		(LL)	0.789	1.185	2.131				0.030	0.039	0.058
	EN → Y0	(HZ)	0.335	0.442	0.711						
		(LZ)	0.274	0.385	0.657						
		(ZH)	0.841	1.233	2.143				0.027	0.040	0.067
		(ZL)	0.993	1.461	2.521				0.030	0.039	0.058
	Y0 → Y1	(HH)	0.120	0.166	0.265	0.155	0.257	0.467			
		(LL)	0.220	0.312	0.481	0.221	0.305	0.476			
BE0312PD100	A → Y0	(HH)	0.765	1.122	1.979				0.027	0.040	0.067
		(LL)	0.789	1.185	2.131				0.030	0.039	0.058
	EN → Y0	(HZ)	0.335	0.442	0.711						
		(LZ)	0.274	0.385	0.657						
		(ZH)	0.841	1.233	2.143				0.027	0.040	0.067
		(ZL)	0.993	1.461	2.521				0.030	0.039	0.058
	Y0 → Y1	(HH)	0.120	0.166	0.265	0.155	0.257	0.467			
		(LL)	0.220	0.312	0.481	0.221	0.305	0.476			
BE0312PU100	A → Y0	(HH)	0.765	1.122	1.979				0.027	0.040	0.067
		(LL)	0.789	1.185	2.131				0.030	0.039	0.058
	EN → Y0	(HZ)	0.335	0.442	0.711						
		(LZ)	0.274	0.385	0.657						
		(ZH)	0.841	1.233	2.143				0.027	0.040	0.067
		(ZL)	0.993	1.461	2.521				0.030	0.039	0.058
	Y0 → Y1	(HH)	0.120	0.166	0.265	0.155	0.257	0.467			
		(LL)	0.220	0.312	0.481	0.221	0.305	0.476			

Block type	Switching speed										
	Path		t_{LD0} [ns]			t_1 (ns/pF)			T (ns/pF)		
	IN → OUT		MIN.	TYP.	MAX.	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.
BEW312	A → Y0	(HH)	0.765	1.122	1.979				0.027	0.040	0.067
		(LL)	0.789	1.185	2.131				0.030	0.039	0.058
	EN → Y0	(HZ)	0.335	0.442	0.711						
		(LZ)	0.274	0.385	0.657						
		(ZH)	0.841	1.233	2.143				0.027	0.040	0.067
		(ZL)	0.993	1.461	2.521				0.030	0.039	0.058
	Y0 → Y1	(HH)	0.120	0.166	0.265	0.155	0.257	0.467			
		(LL)	0.220	0.312	0.481	0.221	0.305	0.476			
BE0112	A → Y0	(HH)	0.806	1.189	2.087				0.021	0.031	0.052
		(LL)	0.817	1.237	2.205				0.024	0.031	0.047
	EN → Y0	(HZ)	0.383	0.499	0.786						
		(LZ)	0.293	0.408	0.690						
		(ZH)	0.875	1.288	2.231				0.021	0.031	0.052
		(ZL)	1.006	1.491	2.561				0.024	0.031	0.047
	Y0 → Y1	(HH)	0.120	0.166	0.265	0.155	0.257	0.467			
		(LL)	0.220	0.312	0.481	0.221	0.305	0.476			
BE0112PD100	A → Y0	(HH)	0.806	1.189	2.087				0.021	0.031	0.052
		(LL)	0.817	1.237	2.205				0.024	0.031	0.047
	EN → Y0	(HZ)	0.383	0.499	0.786						
		(LZ)	0.293	0.408	0.690						
		(ZH)	0.875	1.288	2.231				0.021	0.031	0.052
		(ZL)	1.006	1.491	2.561				0.024	0.031	0.047
	Y0 → Y1	(HH)	0.120	0.166	0.265	0.155	0.257	0.467			
		(LL)	0.220	0.312	0.481	0.221	0.305	0.476			
BE0112PU100	A → Y0	(HH)	0.806	1.189	2.087				0.021	0.031	0.052
		(LL)	0.817	1.237	2.205				0.024	0.031	0.047
	EN → Y0	(HZ)	0.383	0.499	0.786						
		(LZ)	0.293	0.408	0.690						
		(ZH)	0.875	1.288	2.231				0.021	0.031	0.052
		(ZL)	1.006	1.491	2.561				0.024	0.031	0.047
	Y0 → Y1	(HH)	0.120	0.166	0.265	0.155	0.257	0.467			
		(LL)	0.220	0.312	0.481	0.221	0.305	0.476			
BEW112	A → Y0	(HH)	0.806	1.189	2.087				0.021	0.031	0.052
		(LL)	0.817	1.237	2.205				0.024	0.031	0.047
	EN → Y0	(HZ)	0.383	0.499	0.786						
		(LZ)	0.293	0.408	0.690						
		(ZH)	0.875	1.288	2.231				0.021	0.031	0.052
		(ZL)	1.006	1.491	2.561				0.024	0.031	0.047
	Y0 → Y1	(HH)	0.120	0.166	0.265	0.155	0.257	0.467			
		(LL)	0.220	0.312	0.481	0.221	0.305	0.476			
BE0512	A → Y0	(HH)	0.769	1.131	1.955				0.015	0.023	0.039
		(LL)	0.773	1.176	2.068				0.018	0.024	0.036
	EN → Y0	(HZ)	0.467	0.600	0.921						
		(LZ)	0.327	0.451	0.753						
		(ZH)	0.818	1.198	2.047				0.015	0.023	0.039
		(ZL)	0.936	1.389	2.355				0.018	0.024	0.036
	Y0 → Y1	(HH)	0.120	0.166	0.265	0.155	0.257	0.467			
		(LL)	0.220	0.312	0.481	0.221	0.305	0.476			
BE0512PD100	A → Y0	(HH)	0.769	1.131	1.955				0.015	0.023	0.039
		(LL)	0.773	1.176	2.068				0.018	0.024	0.036
	EN → Y0	(HZ)	0.467	0.600	0.921						
		(LZ)	0.327	0.451	0.753						
		(ZH)	0.818	1.198	2.047				0.015	0.023	0.039
		(ZL)	0.936	1.389	2.355				0.018	0.024	0.036
	Y0 → Y1	(HH)	0.120	0.166	0.265	0.155	0.257	0.467			
		(LL)	0.220	0.312	0.481	0.221	0.305	0.476			

Block type	Switching speed										
	Path		t_{LD0} [ns]			t_1 (ns/pF)			T (ns/pF)		
	IN → OUT		MIN.	TYP.	MAX.	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.
BE0512PU100	A → Y0	(HH)	0.769	1.131	1.955				0.015	0.023	0.039
		(LL)	0.773	1.176	2.068				0.018	0.024	0.036
	EN → Y0	(HZ)	0.467	0.600	0.921						
		(LZ)	0.327	0.451	0.753						
		(ZH)	0.818	1.198	2.047				0.015	0.023	0.039
		(ZL)	0.936	1.389	2.355				0.018	0.024	0.036
	Y0 → Y1	(HH)	0.120	0.166	0.265	0.155	0.257	0.467			
		(LL)	0.220	0.312	0.481	0.221	0.305	0.476			
BEW512	A → Y0	(HH)	0.769	1.131	1.955				0.015	0.023	0.039
		(LL)	0.773	1.176	2.068				0.018	0.024	0.036
	EN → Y0	(HZ)	0.467	0.600	0.921						
		(LZ)	0.327	0.451	0.753						
		(ZH)	0.818	1.198	2.047				0.015	0.023	0.039
		(ZL)	0.936	1.389	2.355				0.018	0.024	0.036
	Y0 → Y1	(HH)	0.120	0.166	0.265	0.155	0.257	0.467			
		(LL)	0.220	0.312	0.481	0.221	0.305	0.476			
BE0F12	A → Y0	(HH)	0.804	1.190	2.047				0.013	0.019	0.032
		(LL)	0.765	1.152	1.990				0.014	0.019	0.028
	EN → Y0	(HZ)	0.541	0.690	1.041						
		(LZ)	0.366	0.498	0.820						
		(ZH)	0.843	1.241	2.117				0.013	0.019	0.032
		(ZL)	0.887	1.309	2.190				0.014	0.019	0.028
	Y0 → Y1	(HH)	0.120	0.166	0.265	0.155	0.257	0.467			
		(LL)	0.220	0.312	0.481	0.221	0.305	0.476			
BE0F12PD100	A → Y0	(HH)	0.804	1.190	2.047				0.013	0.019	0.032
		(LL)	0.765	1.152	1.990				0.014	0.019	0.028
	EN → Y0	(HZ)	0.541	0.690	1.041						
		(LZ)	0.366	0.498	0.820						
		(ZH)	0.843	1.241	2.117				0.013	0.019	0.032
		(ZL)	0.887	1.309	2.190				0.014	0.019	0.028
	Y0 → Y1	(HH)	0.120	0.166	0.265	0.155	0.257	0.467			
		(LL)	0.220	0.312	0.481	0.221	0.305	0.476			
BE0F12PU100	A → Y0	(HH)	0.804	1.190	2.047				0.013	0.019	0.032
		(LL)	0.765	1.152	1.990				0.014	0.019	0.028
	EN → Y0	(HZ)	0.541	0.690	1.041						
		(LZ)	0.366	0.498	0.820						
		(ZH)	0.843	1.241	2.117				0.013	0.019	0.032
		(ZL)	0.887	1.309	2.190				0.014	0.019	0.028
	Y0 → Y1	(HH)	0.120	0.166	0.265	0.155	0.257	0.467			
		(LL)	0.220	0.312	0.481	0.221	0.305	0.476			
BEWF12	A → Y0	(HH)	0.804	1.190	2.047				0.013	0.019	0.032
		(LL)	0.765	1.152	1.990				0.014	0.019	0.028
	EN → Y0	(HZ)	0.541	0.690	1.041						
		(LZ)	0.366	0.498	0.820						
		(ZH)	0.843	1.241	2.117				0.013	0.019	0.032
		(ZL)	0.887	1.309	2.190				0.014	0.019	0.028
	Y0 → Y1	(HH)	0.120	0.166	0.265	0.155	0.257	0.467			
		(LL)	0.220	0.312	0.481	0.221	0.305	0.476			

Function	Schmitt I/O Buffer			External supply voltage	2.5 V
	Block type				
Drivability	no resistor	with 100 KΩ P/D	with 100 KΩ P/U	with 5 KΩ P/U	Cells
1mA					
2mA					
3mA	BSIU12	BSIU12PD100	BSIU12PU100	BSWU12	1
6mA	BSIC12	BSIC12PD100	BSIC12PU100	BSWC12	1
9mA	BSI312	BSI312PD100	BSI312PU100	BSW312	1
12mA	BSI112	BSI112PD100	BSI112PU100	BSW112	1
18mA	BSI512	BSI512PD100	BSI512PU100	BSW512	1
24mA	BSIF12	BSIF12PD100	BSIF12PU100	BSWF12	1

Logic Diagram



Truth Table

A	EN	Y0
0	1	0
1	1	1
X	0	Z

X:Irrelevant

Z:High Impedance

Y0	Y1
0	0
1	1

Block type	Input		Output	
	Symbol	Fan-in	Symbol	Fan-out
BSIU12 to BSWU12	A	0.116	Y1	1.720
	EN	0.117		
BSIC12 to BSWC12	A	0.120	Y1	1.720
	EN	0.117		
BSI312 to BSW312	A	0.120	Y1	1.720
	EN	0.121		
BSI112 to BSW112	A	0.120	Y1	1.720
	EN	0.121		
BSI512 to BSW512	A	0.120	Y1	1.720
	EN	0.121		
BSIF12 to BSWF12	A	0.120	Y1	1.720
	EN	0.121		

Block type	Switching speed										
	Path		t_{LD0} [ns]			t_1 (ns/pF)			T (ns/pF)		
	IN → OUT		MIN.	TYP.	MAX.	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.
BSIU12	A → Y0	(HH)	0.644	0.923	1.537				0.079	0.118	0.197
		(LL)	0.562	0.775	1.300				0.084	0.108	0.156
	EN → Y0	(HZ)	0.355	0.480	0.774						
		(LZ)	0.267	0.370	0.621						
		(ZH)	0.765	1.107	1.827				0.079	0.118	0.196
		(ZL)	0.760	1.052	1.698				0.084	0.108	0.156
	Y0 → Y1	(HH)	1.100	1.608	2.567	0.119	0.158	0.248			
		(LL)	1.040	1.611	2.612	0.062	0.077	0.111			
BSIU12PD100	A → Y0	(HH)	0.644	0.923	1.537				0.079	0.118	0.197
		(LL)	0.562	0.775	1.300				0.084	0.108	0.156
	EN → Y0	(HZ)	0.355	0.480	0.774						
		(LZ)	0.267	0.370	0.621						
		(ZH)	0.765	1.107	1.827				0.079	0.118	0.196
		(ZL)	0.760	1.052	1.698				0.084	0.108	0.156
	Y0 → Y1	(HH)	1.100	1.608	2.567	0.119	0.158	0.248			
		(LL)	1.040	1.611	2.612	0.062	0.077	0.111			
BSIU12PU100	A → Y0	(HH)	0.644	0.923	1.537				0.079	0.118	0.197
		(LL)	0.562	0.775	1.300				0.084	0.108	0.156
	EN → Y0	(HZ)	0.355	0.480	0.774						
		(LZ)	0.267	0.370	0.621						
		(ZH)	0.765	1.107	1.827				0.079	0.118	0.196
		(ZL)	0.760	1.052	1.698				0.084	0.108	0.156
	Y0 → Y1	(HH)	1.100	1.608	2.567	0.119	0.158	0.248			
		(LL)	1.040	1.611	2.612	0.062	0.077	0.111			
BSWU12	A → Y0	(HH)	0.644	0.923	1.537				0.079	0.118	0.197
		(LL)	0.562	0.775	1.300				0.084	0.108	0.156
	EN → Y0	(HZ)	0.355	0.480	0.774						
		(LZ)	0.267	0.370	0.621						
		(ZH)	0.765	1.107	1.827				0.079	0.118	0.196
		(ZL)	0.760	1.052	1.698				0.084	0.108	0.156
	Y0 → Y1	(HH)	1.100	1.608	2.567	0.119	0.158	0.248			
		(LL)	1.040	1.611	2.612	0.062	0.077	0.111			
BSIC12	A → Y0	(HH)	0.549	0.784	1.310				0.039	0.059	0.098
		(LL)	0.474	0.671	1.152				0.042	0.054	0.078
	EN → Y0	(HZ)	0.399	0.530	0.840						
		(LZ)	0.278	0.387	0.654						
		(ZH)	0.663	0.956	1.578				0.039	0.059	0.098
		(ZL)	0.655	0.924	1.514				0.042	0.054	0.078
	Y0 → Y1	(HH)	1.100	1.608	2.567	0.119	0.158	0.248			
		(LL)	1.040	1.611	2.612	0.062	0.077	0.111			
BSIC12PD100	A → Y0	(HH)	0.549	0.784	1.310				0.039	0.059	0.098
		(LL)	0.474	0.671	1.152				0.042	0.054	0.078
	EN → Y0	(HZ)	0.399	0.530	0.840						
		(LZ)	0.278	0.387	0.654						
		(ZH)	0.663	0.956	1.578				0.039	0.059	0.098
		(ZL)	0.655	0.924	1.514				0.042	0.054	0.078
	Y0 → Y1	(HH)	1.100	1.608	2.567	0.119	0.158	0.248			
		(LL)	1.040	1.611	2.612	0.062	0.077	0.111			
BSIC12PU100	A → Y0	(HH)	0.549	0.784	1.310				0.039	0.059	0.098
		(LL)	0.474	0.671	1.152				0.042	0.054	0.078
	EN → Y0	(HZ)	0.399	0.530	0.840						
		(LZ)	0.278	0.387	0.654						
		(ZH)	0.663	0.956	1.578				0.039	0.059	0.098
		(ZL)	0.655	0.924	1.514				0.042	0.054	0.078
	Y0 → Y1	(HH)	1.100	1.608	2.567	0.119	0.158	0.248			
		(LL)	1.040	1.611	2.612	0.062	0.077	0.111			

Block type	Switching speed										
	Path		t_{LD0} [ns]			t_1 (ns/pF)			T (ns/pF)		
	IN → OUT		MIN.	TYP.	MAX.	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.
BSWC12	A → Y0	(HH)	0.549	0.784	1.310				0.039	0.059	0.098
		(LL)	0.474	0.671	1.152				0.042	0.054	0.078
	EN → Y0	(HZ)	0.399	0.530	0.840						
		(LZ)	0.278	0.387	0.654						
		(ZH)	0.663	0.956	1.578				0.039	0.059	0.098
		(ZL)	0.655	0.924	1.514				0.042	0.054	0.078
	Y0 → Y1	(HH)	1.100	1.608	2.567	0.119	0.158	0.248			
		(LL)	1.040	1.611	2.612	0.062	0.077	0.111			
BSI312	A → Y0	(HH)	0.532	0.761	1.272				0.026	0.040	0.066
		(LL)	0.471	0.673	1.156				0.028	0.036	0.053
	EN → Y0	(HZ)	0.443	0.582	0.906						
		(LZ)	0.295	0.407	0.685						
		(ZH)	0.639	0.921	1.522				0.026	0.039	0.066
		(ZL)	0.634	0.901	1.481				0.028	0.036	0.053
	Y0 → Y1	(HH)	1.100	1.608	2.567	0.119	0.158	0.248			
		(LL)	1.040	1.611	2.612	0.062	0.077	0.111			
BSI312PD100	A → Y0	(HH)	0.532	0.761	1.272				0.026	0.040	0.066
		(LL)	0.471	0.673	1.156				0.028	0.036	0.053
	EN → Y0	(HZ)	0.443	0.582	0.906						
		(LZ)	0.295	0.407	0.685						
		(ZH)	0.639	0.921	1.522				0.026	0.039	0.066
		(ZL)	0.634	0.901	1.481				0.028	0.036	0.053
	Y0 → Y1	(HH)	1.100	1.608	2.567	0.119	0.158	0.248			
		(LL)	1.040	1.611	2.612	0.062	0.077	0.111			
BSI312PU100	A → Y0	(HH)	0.532	0.761	1.272				0.026	0.040	0.066
		(LL)	0.471	0.673	1.156				0.028	0.036	0.053
	EN → Y0	(HZ)	0.443	0.582	0.906						
		(LZ)	0.295	0.407	0.685						
		(ZH)	0.639	0.921	1.522				0.026	0.039	0.066
		(ZL)	0.634	0.901	1.481				0.028	0.036	0.053
	Y0 → Y1	(HH)	1.100	1.608	2.567	0.119	0.158	0.248			
		(LL)	1.040	1.611	2.612	0.062	0.077	0.111			
BSW312	A → Y0	(HH)	0.532	0.761	1.272				0.026	0.040	0.066
		(LL)	0.471	0.673	1.156				0.028	0.036	0.053
	EN → Y0	(HZ)	0.443	0.582	0.906						
		(LZ)	0.295	0.407	0.685						
		(ZH)	0.639	0.921	1.522				0.026	0.039	0.066
		(ZL)	0.634	0.901	1.481				0.028	0.036	0.053
	Y0 → Y1	(HH)	1.100	1.608	2.567	0.119	0.158	0.248			
		(LL)	1.040	1.611	2.612	0.062	0.077	0.111			
BSI112	A → Y0	(HH)	0.533	0.765	1.280				0.020	0.030	0.049
		(LL)	0.486	0.698	1.195				0.021	0.027	0.040
	EN → Y0	(HZ)	0.489	0.634	0.975						
		(LZ)	0.312	0.429	0.715						
		(ZH)	0.633	0.914	1.512				0.020	0.030	0.049
		(ZL)	0.632	0.902	1.482				0.021	0.027	0.040
	Y0 → Y1	(HH)	1.100	1.608	2.567	0.119	0.158	0.248			
		(LL)	1.040	1.611	2.612	0.062	0.077	0.111			
BSI112PD100	A → Y0	(HH)	0.533	0.765	1.280				0.020	0.030	0.049
		(LL)	0.486	0.698	1.195				0.021	0.027	0.040
	EN → Y0	(HZ)	0.489	0.634	0.975						
		(LZ)	0.312	0.429	0.715						
		(ZH)	0.633	0.914	1.512				0.020	0.030	0.049
		(ZL)	0.632	0.902	1.482				0.021	0.027	0.040
	Y0 → Y1	(HH)	1.100	1.608	2.567	0.119	0.158	0.248			
		(LL)	1.040	1.611	2.612	0.062	0.077	0.111			

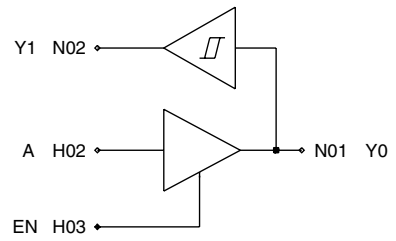
Block type	Switching speed										
	Path		t_{LD0} [ns]			t_1 (ns/pF)			T (ns/pF)		
	IN → OUT		MIN.	TYP.	MAX.	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.
BSI112PU100	A → Y0	(HH)	0.533	0.765	1.280				0.020	0.030	0.049
		(LL)	0.486	0.698	1.195				0.021	0.027	0.040
	EN → Y0	(HZ)	0.489	0.634	0.975						
		(LZ)	0.312	0.429	0.715						
		(ZH)	0.633	0.914	1.512				0.020	0.030	0.049
		(ZL)	0.632	0.902	1.482				0.021	0.027	0.040
	Y0 → Y1	(HH)	1.100	1.608	2.567	0.119	0.158	0.248			
		(LL)	1.040	1.611	2.612	0.062	0.077	0.111			
BSW112	A → Y0	(HH)	0.533	0.765	1.280				0.020	0.030	0.049
		(LL)	0.486	0.698	1.195				0.021	0.027	0.040
	EN → Y0	(HZ)	0.489	0.634	0.975						
		(LZ)	0.312	0.429	0.715						
		(ZH)	0.633	0.914	1.512				0.020	0.030	0.049
		(ZL)	0.632	0.902	1.482				0.021	0.027	0.040
	Y0 → Y1	(HH)	1.100	1.608	2.567	0.119	0.158	0.248			
		(LL)	1.040	1.611	2.612	0.062	0.077	0.111			
BSI512	A → Y0	(HH)	0.552	0.796	1.333				0.015	0.022	0.036
		(LL)	0.523	0.753	1.278				0.015	0.019	0.028
	EN → Y0	(HZ)	0.560	0.719	1.086						
		(LZ)	0.349	0.473	0.781						
		(ZH)	0.637	0.922	1.530				0.015	0.022	0.036
		(ZL)	0.643	0.922	1.512				0.015	0.019	0.028
	Y0 → Y1	(HH)	1.100	1.608	2.567	0.119	0.158	0.248			
		(LL)	1.040	1.611	2.612	0.062	0.077	0.111			
BSI512PD100	A → Y0	(HH)	0.552	0.796	1.333				0.015	0.022	0.036
		(LL)	0.523	0.753	1.278				0.015	0.019	0.028
	EN → Y0	(HZ)	0.560	0.719	1.086						
		(LZ)	0.349	0.473	0.781						
		(ZH)	0.637	0.922	1.530				0.015	0.022	0.036
		(ZL)	0.643	0.922	1.512				0.015	0.019	0.028
	Y0 → Y1	(HH)	1.100	1.608	2.567	0.119	0.158	0.248			
		(LL)	1.040	1.611	2.612	0.062	0.077	0.111			
BSI512PU100	A → Y0	(HH)	0.552	0.796	1.333				0.015	0.022	0.036
		(LL)	0.523	0.753	1.278				0.015	0.019	0.028
	EN → Y0	(HZ)	0.560	0.719	1.086						
		(LZ)	0.349	0.473	0.781						
		(ZH)	0.637	0.922	1.530				0.015	0.022	0.036
		(ZL)	0.643	0.922	1.512				0.015	0.019	0.028
	Y0 → Y1	(HH)	1.100	1.608	2.567	0.119	0.158	0.248			
		(LL)	1.040	1.611	2.612	0.062	0.077	0.111			
BSW512	A → Y0	(HH)	0.552	0.796	1.333				0.015	0.022	0.036
		(LL)	0.523	0.753	1.278				0.015	0.019	0.028
	EN → Y0	(HZ)	0.560	0.719	1.086						
		(LZ)	0.349	0.473	0.781						
		(ZH)	0.637	0.922	1.530				0.015	0.022	0.036
		(ZL)	0.643	0.922	1.512				0.015	0.019	0.028
	Y0 → Y1	(HH)	1.100	1.608	2.567	0.119	0.158	0.248			
		(LL)	1.040	1.611	2.612	0.062	0.077	0.111			
BSIF12	A → Y0	(HH)	0.569	0.814	1.350				0.012	0.017	0.029
		(LL)	0.565	0.803	1.336				0.012	0.015	0.022
	EN → Y0	(HZ)	0.734	0.938	1.390						
		(LZ)	0.438	0.577	0.926						
		(ZH)	0.677	0.986	1.632				0.012	0.017	0.029
		(ZL)	0.648	0.931	1.517				0.011	0.015	0.022
	Y0 → Y1	(HH)	1.100	1.608	2.567	0.119	0.158	0.248			
		(LL)	1.040	1.611	2.612	0.062	0.077	0.111			

Block type	Switching speed										
	Path		t_{LD0} [ns]			t_1 (ns/pF)			T (ns/pF)		
	IN → OUT		MIN.	TYP.	MAX.	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.
BSIF12PD100	A → Y0	(HH)	0.569	0.814	1.350				0.012	0.017	0.029
		(LL)	0.565	0.803	1.336				0.012	0.015	0.022
	EN → Y0	(HZ)	0.734	0.938	1.390						
		(LZ)	0.438	0.577	0.926						
		(ZH)	0.677	0.986	1.632				0.012	0.017	0.029
		(ZL)	0.648	0.931	1.517				0.011	0.015	0.022
	Y0 → Y1	(HH)	1.100	1.608	2.567	0.119	0.158	0.248			
		(LL)	1.040	1.611	2.612	0.062	0.077	0.111			
BSIF12PU100	A → Y0	(HH)	0.569	0.814	1.350				0.012	0.017	0.029
		(LL)	0.565	0.803	1.336				0.012	0.015	0.022
	EN → Y0	(HZ)	0.734	0.938	1.390						
		(LZ)	0.438	0.577	0.926						
		(ZH)	0.677	0.986	1.632				0.012	0.017	0.029
		(ZL)	0.648	0.931	1.517				0.011	0.015	0.022
	Y0 → Y1	(HH)	1.100	1.608	2.567	0.119	0.158	0.248			
		(LL)	1.040	1.611	2.612	0.062	0.077	0.111			
BSWF12	A → Y0	(HH)	0.569	0.814	1.350				0.012	0.017	0.029
		(LL)	0.565	0.803	1.336				0.012	0.015	0.022
	EN → Y0	(HZ)	0.734	0.938	1.390						
		(LZ)	0.438	0.577	0.926						
		(ZH)	0.677	0.986	1.632				0.012	0.017	0.029
		(ZL)	0.648	0.931	1.517				0.011	0.015	0.022
	Y0 → Y1	(HH)	1.100	1.608	2.567	0.119	0.158	0.248			
		(LL)	1.040	1.611	2.612	0.062	0.077	0.111			

[MEMO]

Function	Low-noise Schmitt I/O Buffer			External supply voltage	2.5 V
	Block type				
Drivability	no resistor	with 100 KΩ P/D	with 100 KΩ P/U	with 5 KΩ P/U	Cells
1mA					
2mA					
3mA					
6mA	BFIC12	BFIC12PD100	BFIC12PU100	BFWC12	1
9mA	BFI312	BFI312PD100	BFI312PU100	BFW312	1
12mA	BFI112	BFI112PD100	BFI112PU100	BFW112	1
18mA	BFI512	BFI512PD100	BFI512PU100	BFW512	1
24mA	BFIF12	BFIF12PD100	BFIF12PU100	BFWF12	1

Logic Diagram



Block type	Input		Output	
	Symbol	Fan-in	Symbol	Fan-out
BFIC12 to BFWC12	A	0.120	Y1	1.720
	EN	0.117		
BFI312 to BFW312	A	0.120	Y1	1.720
	EN	0.121		
BFI112 to BFW112	A	0.121	Y1	1.720
	EN	0.117		
BFI512 to BFW512	A	0.120	Y1	1.720
	EN	0.121		
BFIF12 to BFWF12	A	0.120	Y1	1.720
	EN	0.121		

Truth Table

A	EN	Y0
0	1	0
1	1	1
X	0	Z

X:Irrelevant

Z:High Impedance

Y0	Y1
0	0
1	1

Block type	Switching speed										
	Path		t_{LD0} [ns]			t_1 (ns/pF)			T (ns/pF)		
	IN → OUT		MIN.	TYP.	MAX.	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.
BFIC12	A → Y0	(HH)	0.736	1.072	1.898				0.040	0.059	0.099
		(LL)	0.771	1.144	2.083				0.043	0.055	0.082
	EN → Y0	(HZ)	0.287	0.386	0.637						
		(LZ)	0.255	0.362	0.624						
		(ZH)	0.819	1.195	2.082				0.040	0.059	0.099
		(ZL)	0.989	1.445	2.509				0.043	0.055	0.082
	Y0 → Y1	(HH)	1.100	1.608	2.567	0.119	0.158	0.248			
		(LL)	1.040	1.611	2.612	0.062	0.077	0.111			
BFIC12PD100	A → Y0	(HH)	0.736	1.072	1.898				0.040	0.059	0.099
		(LL)	0.771	1.144	2.083				0.043	0.055	0.082
	EN → Y0	(HZ)	0.287	0.386	0.637						
		(LZ)	0.255	0.362	0.624						
		(ZH)	0.819	1.195	2.082				0.040	0.059	0.099
		(ZL)	0.989	1.445	2.509				0.043	0.055	0.082
	Y0 → Y1	(HH)	1.100	1.608	2.567	0.119	0.158	0.248			
		(LL)	1.040	1.611	2.612	0.062	0.077	0.111			
BFIC12PU100	A → Y0	(HH)	0.736	1.072	1.898				0.040	0.059	0.099
		(LL)	0.771	1.144	2.083				0.043	0.055	0.082
	EN → Y0	(HZ)	0.287	0.386	0.637						
		(LZ)	0.255	0.362	0.624						
		(ZH)	0.819	1.195	2.082				0.040	0.059	0.099
		(ZL)	0.989	1.445	2.509				0.043	0.055	0.082
	Y0 → Y1	(HH)	1.100	1.608	2.567	0.119	0.158	0.248			
		(LL)	1.040	1.611	2.612	0.062	0.077	0.111			
BFWC12	A → Y0	(HH)	0.736	1.072	1.898				0.040	0.059	0.099
		(LL)	0.771	1.144	2.083				0.043	0.055	0.082
	EN → Y0	(HZ)	0.287	0.386	0.637						
		(LZ)	0.255	0.362	0.624						
		(ZH)	0.819	1.195	2.082				0.040	0.059	0.099
		(ZL)	0.989	1.445	2.509				0.043	0.055	0.082
	Y0 → Y1	(HH)	1.100	1.608	2.567	0.119	0.158	0.248			
		(LL)	1.040	1.611	2.612	0.062	0.077	0.111			
BFI312	A → Y0	(HH)	0.765	1.122	1.979				0.027	0.040	0.067
		(LL)	0.789	1.185	2.131				0.030	0.039	0.058
	EN → Y0	(HZ)	0.335	0.442	0.711						
		(LZ)	0.274	0.385	0.657						
		(ZH)	0.841	1.233	2.143				0.027	0.040	0.067
		(ZL)	0.993	1.461	2.521				0.030	0.039	0.058
	Y0 → Y1	(HH)	1.100	1.608	2.567	0.119	0.158	0.248			
		(LL)	1.040	1.611	2.612	0.062	0.077	0.111			
BFI312PD100	A → Y0	(HH)	0.765	1.122	1.979				0.027	0.040	0.067
		(LL)	0.789	1.185	2.131				0.030	0.039	0.058
	EN → Y0	(HZ)	0.335	0.442	0.711						
		(LZ)	0.274	0.385	0.657						
		(ZH)	0.841	1.233	2.143				0.027	0.040	0.067
		(ZL)	0.993	1.461	2.521				0.030	0.039	0.058
	Y0 → Y1	(HH)	1.100	1.608	2.567	0.119	0.158	0.248			
		(LL)	1.040	1.611	2.612	0.062	0.077	0.111			
BFI312PU100	A → Y0	(HH)	0.765	1.122	1.979				0.027	0.040	0.067
		(LL)	0.789	1.185	2.131				0.030	0.039	0.058
	EN → Y0	(HZ)	0.335	0.442	0.711						
		(LZ)	0.274	0.385	0.657						
		(ZH)	0.841	1.233	2.143				0.027	0.040	0.067
		(ZL)	0.993	1.461	2.521				0.030	0.039	0.058
	Y0 → Y1	(HH)	1.100	1.608	2.567	0.119	0.158	0.248			
		(LL)	1.040	1.611	2.612	0.062	0.077	0.111			

Block type	Switching speed										
	Path		t_{LD0} [ns]			t_1 (ns/pF)			T (ns/pF)		
	IN → OUT		MIN.	TYP.	MAX.	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.
BFW312	A → Y0	(HH)	0.765	1.122	1.979				0.027	0.040	0.067
		(LL)	0.789	1.185	2.131				0.030	0.039	0.058
	EN → Y0	(HZ)	0.335	0.442	0.711						
		(LZ)	0.274	0.385	0.657						
		(ZH)	0.841	1.233	2.143				0.027	0.040	0.067
		(ZL)	0.993	1.461	2.521				0.030	0.039	0.058
	Y0 → Y1	(HH)	1.100	1.608	2.567	0.119	0.158	0.248			
		(LL)	1.040	1.611	2.612	0.062	0.077	0.111			
BFI112	A → Y0	(HH)	0.806	1.189	2.087				0.021	0.031	0.052
		(LL)	0.817	1.237	2.205				0.024	0.031	0.047
	EN → Y0	(HZ)	0.383	0.499	0.786						
		(LZ)	0.293	0.408	0.690						
		(ZH)	0.875	1.288	2.231				0.021	0.031	0.052
		(ZL)	1.006	1.491	2.561				0.024	0.031	0.047
	Y0 → Y1	(HH)	1.100	1.608	2.567	0.119	0.158	0.248			
		(LL)	1.040	1.611	2.612	0.062	0.077	0.111			
BFI112PD100	A → Y0	(HH)	0.806	1.189	2.087				0.021	0.031	0.052
		(LL)	0.817	1.237	2.205				0.024	0.031	0.047
	EN → Y0	(HZ)	0.383	0.499	0.786						
		(LZ)	0.293	0.408	0.690						
		(ZH)	0.875	1.288	2.231				0.021	0.031	0.052
		(ZL)	1.006	1.491	2.561				0.024	0.031	0.047
	Y0 → Y1	(HH)	1.100	1.608	2.567	0.119	0.158	0.248			
		(LL)	1.040	1.611	2.612	0.062	0.077	0.111			
BFI112PU100	A → Y0	(HH)	0.806	1.189	2.087				0.021	0.031	0.052
		(LL)	0.817	1.237	2.205				0.024	0.031	0.047
	EN → Y0	(HZ)	0.383	0.499	0.786						
		(LZ)	0.293	0.408	0.690						
		(ZH)	0.875	1.288	2.231				0.021	0.031	0.052
		(ZL)	1.006	1.491	2.561				0.024	0.031	0.047
	Y0 → Y1	(HH)	1.100	1.608	2.567	0.119	0.158	0.248			
		(LL)	1.040	1.611	2.612	0.062	0.077	0.111			
BFW112	A → Y0	(HH)	0.806	1.189	2.087				0.021	0.031	0.052
		(LL)	0.817	1.237	2.205				0.024	0.031	0.047
	EN → Y0	(HZ)	0.383	0.499	0.786						
		(LZ)	0.293	0.408	0.690						
		(ZH)	0.875	1.288	2.231				0.021	0.031	0.052
		(ZL)	1.006	1.491	2.561				0.024	0.031	0.047
	Y0 → Y1	(HH)	1.100	1.608	2.567	0.119	0.158	0.248			
		(LL)	1.040	1.611	2.612	0.062	0.077	0.111			
BFI512	A → Y0	(HH)	0.769	1.131	1.955				0.015	0.023	0.039
		(LL)	0.773	1.176	2.068				0.018	0.024	0.036
	EN → Y0	(HZ)	0.467	0.600	0.921						
		(LZ)	0.327	0.451	0.753						
		(ZH)	0.818	1.198	2.047				0.015	0.023	0.039
		(ZL)	0.936	1.389	2.355				0.018	0.024	0.036
	Y0 → Y1	(HH)	1.100	1.608	2.567	0.119	0.158	0.248			
		(LL)	1.040	1.611	2.612	0.062	0.077	0.111			
BFI512PD100	A → Y0	(HH)	0.769	1.131	1.955				0.015	0.023	0.039
		(LL)	0.773	1.176	2.068				0.018	0.024	0.036
	EN → Y0	(HZ)	0.467	0.600	0.921						
		(LZ)	0.327	0.451	0.753						
		(ZH)	0.818	1.198	2.047				0.015	0.023	0.039
		(ZL)	0.936	1.389	2.355				0.018	0.024	0.036
	Y0 → Y1	(HH)	1.100	1.608	2.567	0.119	0.158	0.248			
		(LL)	1.040	1.611	2.612	0.062	0.077	0.111			

Block type	Switching speed										
	Path		t_{LD0} [ns]			t_1 (ns/pF)			T (ns/pF)		
	IN → OUT		MIN.	TYP.	MAX.	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.
BFI512PU100	A → Y0	(HH)	0.769	1.131	1.955				0.015	0.023	0.039
		(LL)	0.773	1.176	2.068				0.018	0.024	0.036
	EN → Y0	(HZ)	0.467	0.600	0.921						
		(LZ)	0.327	0.451	0.753						
		(ZH)	0.818	1.198	2.047				0.015	0.023	0.039
		(ZL)	0.936	1.389	2.355				0.018	0.024	0.036
	Y0 → Y1	(HH)	1.100	1.608	2.567	0.119	0.158	0.248			
		(LL)	1.040	1.611	2.612	0.062	0.077	0.111			
BFW512	A → Y0	(HH)	0.769	1.131	1.955				0.015	0.023	0.039
		(LL)	0.773	1.176	2.068				0.018	0.024	0.036
	EN → Y0	(HZ)	0.467	0.600	0.921						
		(LZ)	0.327	0.451	0.753						
		(ZH)	0.818	1.198	2.047				0.015	0.023	0.039
		(ZL)	0.936	1.389	2.355				0.018	0.024	0.036
	Y0 → Y1	(HH)	1.100	1.608	2.567	0.119	0.158	0.248			
		(LL)	1.040	1.611	2.612	0.062	0.077	0.111			
BFIF12	A → Y0	(HH)	0.804	1.190	2.047				0.013	0.019	0.032
		(LL)	0.765	1.152	1.990				0.014	0.019	0.028
	EN → Y0	(HZ)	0.541	0.690	1.041						
		(LZ)	0.366	0.498	0.820						
		(ZH)	0.843	1.241	2.117				0.013	0.019	0.032
		(ZL)	0.887	1.309	2.190				0.014	0.019	0.028
	Y0 → Y1	(HH)	1.100	1.608	2.567	0.119	0.158	0.248			
		(LL)	1.040	1.611	2.612	0.062	0.077	0.111			
BFIF12PD100	A → Y0	(HH)	0.804	1.190	2.047				0.013	0.019	0.032
		(LL)	0.765	1.152	1.990				0.014	0.019	0.028
	EN → Y0	(HZ)	0.541	0.690	1.041						
		(LZ)	0.366	0.498	0.820						
		(ZH)	0.843	1.241	2.117				0.013	0.019	0.032
		(ZL)	0.887	1.309	2.190				0.014	0.019	0.028
	Y0 → Y1	(HH)	1.100	1.608	2.567	0.119	0.158	0.248			
		(LL)	1.040	1.611	2.612	0.062	0.077	0.111			
BFIF12PU100	A → Y0	(HH)	0.804	1.190	2.047				0.013	0.019	0.032
		(LL)	0.765	1.152	1.990				0.014	0.019	0.028
	EN → Y0	(HZ)	0.541	0.690	1.041						
		(LZ)	0.366	0.498	0.820						
		(ZH)	0.843	1.241	2.117				0.013	0.019	0.032
		(ZL)	0.887	1.309	2.190				0.014	0.019	0.028
	Y0 → Y1	(HH)	1.100	1.608	2.567	0.119	0.158	0.248			
		(LL)	1.040	1.611	2.612	0.062	0.077	0.111			
BFWF12	A → Y0	(HH)	0.804	1.190	2.047				0.013	0.019	0.032
		(LL)	0.765	1.152	1.990				0.014	0.019	0.028
	EN → Y0	(HZ)	0.541	0.690	1.041						
		(LZ)	0.366	0.498	0.820						
		(ZH)	0.843	1.241	2.117				0.013	0.019	0.032
		(ZL)	0.887	1.309	2.190				0.014	0.019	0.028
	Y0 → Y1	(HH)	1.100	1.608	2.567	0.119	0.158	0.248			
		(LL)	1.040	1.611	2.612	0.062	0.077	0.111			

[MEMO]

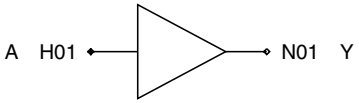
[MEMO]

1.3 3.3V Interface

[MEMO]

Function	Input Buffer			External supply voltage	3.3 V
Block type					
Function	no resistor	with 100 KΩ P/D	with 100 KΩ P/U	with 5 KΩ P/U	Cells
Normal	FI0113	FI0113PD100	FI0113PU100	FIW113	1
Schmitt	FIS113	FIS113PD100	FIS113PU100	FWS113	1
Clock					

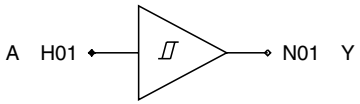
Logic Diagram for "Normal"



Truth Table

A	Y
1	1
0	0

Logic Diagram for "Schmitt"



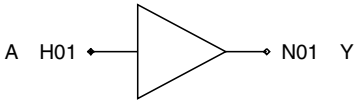
Block type	Input		Output	
	Symbol	Fan-In	Symbol	Fan-Out
FI0113 to FIW113	A	-	Y	0.864
FIS113 to FWS113	A	-	Y	1.739

Logic Diagram for "Clock"

Block type	Switching speed										
	Path		t_{LD0} [ns]			t_1 (ns/pF)			T (ns/pF)		
	IN → OUT		MIN.	TYP.	MAX.	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.
FI0113	A → Y	(HH)	0.178	0.240	0.375	0.158	0.261	0.474			
		(LL)	0.155	0.200	0.294	0.161	0.215	0.327			
FI0113PD100	A → Y	(HH)	0.178	0.240	0.375	0.158	0.261	0.474			
		(LL)	0.155	0.200	0.294	0.161	0.215	0.327			
FI0113PU100	A → Y	(HH)	0.178	0.240	0.375	0.158	0.261	0.474			
		(LL)	0.155	0.200	0.294	0.161	0.215	0.327			
FIW113	A → Y	(HH)	0.178	0.240	0.375	0.158	0.261	0.474			
		(LL)	0.155	0.200	0.294	0.161	0.215	0.327			
FIS113	A → Y	(HH)	0.774	1.063	1.650	0.119	0.156	0.244			
		(LL)	0.726	1.065	1.653	0.062	0.077	0.110			
FIS113PD100	A → Y	(HH)	0.774	1.063	1.650	0.119	0.156	0.244			
		(LL)	0.726	1.065	1.653	0.062	0.077	0.110			
FIS113PU100	A → Y	(HH)	0.774	1.063	1.650	0.119	0.156	0.244			
		(LL)	0.726	1.065	1.653	0.062	0.077	0.110			
FWS113	A → Y	(HH)	0.774	1.063	1.650	0.119	0.156	0.244			
		(LL)	0.726	1.065	1.653	0.062	0.077	0.110			

Function	Input Buffer with failsafe			External supply voltage	3.3 V
Block type					
Function	no resistor	with 100 KΩ P/D	with 100 KΩ P/U	with 5 KΩ P/U	Cells
Normal	FIA113	FIA113PD100			1
Schmitt	FIE113	FIE113PD100			1
Clock					

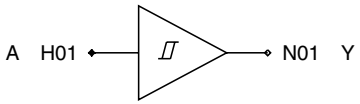
Logic Diagram for "Normal"



Truth Table

A	Y
1	1
0	0

Logic Diagram for "Schmitt"



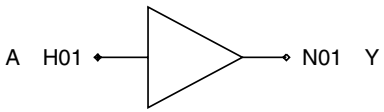
Logic Diagram for "Clock"

Block type	Input		Output	
	Symbol	Fan-In	Symbol	Fan-Out
FIA113 to FIA113PD100	A	-	Y	0.864
FIE113 to FIE113PD100	A	-	Y	1.741

Block type	Switching speed										
	Path		t_{LD0} [ns]			t_1 (ns/pF)			T (ns/pF)		
	IN → OUT		MIN.	TYP.	MAX.	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.
FIA113	A → Y	(HH)	0.175	0.237	0.371	0.158	0.261	0.474			
		(LL)	0.152	0.197	0.289	0.161	0.215	0.327			
FIA113PD100	A → Y	(HH)	0.175	0.237	0.371	0.158	0.261	0.474			
		(LL)	0.152	0.197	0.289	0.161	0.215	0.327			
FIE113	A → Y	(HH)	0.770	1.059	1.645	0.118	0.156	0.244			
		(LL)	0.726	1.061	1.647	0.062	0.077	0.110			
FIE113PD100	A → Y	(HH)	0.770	1.059	1.645	0.118	0.156	0.244			
		(LL)	0.726	1.061	1.647	0.062	0.077	0.110			

Function	Output Buffer			External supply voltage	3.3 V
	Block type				
Drivability	no resistor	with 100 KΩ P/D	with 100 KΩ P/U	with 5 KΩ P/U	Cells
1mA					
2mA					
3mA	FO0913				1
6mA	FO0413				1
9mA	FO0113				1
12mA	FO0213				1
18mA	FO0313				1
24mA	FO0613				1

Logic Diagram



Truth Table

A	Y
1	1
0	0

Block type	Input		Output	
	Symbol	Fan-in	Symbol	Fan-out
FO0913	A	0.124	Y	-
FO0413	A	0.124	Y	-
FO0113	A	0.124	Y	-
FO0213	A	0.124	Y	-
FO0313	A	0.125	Y	-
FO0613	A	0.125	Y	-

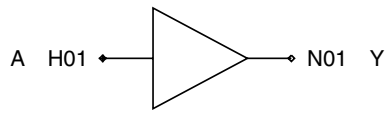
Block type	Switching speed											
	Path		t_{LD0} [ns]			t_1 (ns/pF)			T (ns/pF)		
	IN → OUT		MIN.	TYP.	MAX.	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.
FO0913	A → Y	(HH)	0.510	0.697	1.142				0.061	0.086	0.139
		(LL)	0.517	0.695	1.162				0.078	0.094	0.129
FO0413	A → Y	(HH)	0.464	0.633	1.037				0.040	0.058	0.093
		(LL)	0.420	0.583	1.010				0.039	0.047	0.064
FO0113	A → Y	(HH)	0.447	0.609	0.995				0.030	0.043	0.070
		(LL)	0.401	0.565	0.982				0.026	0.032	0.043
FO0213	A → Y	(HH)	0.434	0.592	0.974				0.020	0.029	0.047
		(LL)	0.411	0.580	1.010				0.020	0.024	0.033
FO0313	A → Y	(HH)	0.436	0.595	0.981				0.015	0.022	0.035
		(LL)	0.428	0.603	1.043				0.016	0.019	0.027
FO0613	A → Y	(HH)	0.451	0.617	1.017				0.011	0.016	0.026
		(LL)	0.458	0.642	1.100				0.012	0.014	0.020

Function	Low-noise Output Buffer	External supply voltage	3.3 V

Block type

Drivability	no resistor	with 100 KΩ P/D	with 100 KΩ P/U	with 5 KΩ P/U	Cells
1mA					
2mA					
3mA					
6mA	FE0413				1
9mA	FE0113				1
12mA	FE0213				1
18mA	FE0313				1
24mA	FE0613				1

Logic Diagram



Truth Table

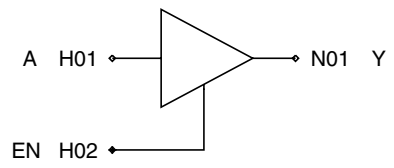
A	Y
1	1
0	0

Block type	Input		Output	
	Symbol	Fan-in	Symbol	Fan-out
FE0413	A	0.124	Y	-
FE0113	A	0.124	Y	-
FE0213	A	0.124	Y	-
FE0313	A	0.125	Y	-
FE0613	A	0.125	Y	-

Block type	Switching speed											
	Path		t_{LD0} [ns]			t_1 (ns/pF)			T (ns/pF)		
	IN → OUT		MIN.	TYP.	MAX.	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.
FE0413	A → Y	(HH)	0.710	0.988	1.759				0.041	0.058	0.094
		(LL)	0.824	1.212	2.237				0.042	0.051	0.073
FE0113	A → Y	(HH)	0.725	1.015	1.804				0.031	0.044	0.071
		(LL)	0.816	1.214	2.215				0.030	0.038	0.055
FE0213	A → Y	(HH)	0.766	1.084	1.914				0.021	0.030	0.050
		(LL)	0.825	1.236	2.243				0.025	0.032	0.048
FE0313	A → Y	(HH)	0.684	0.968	1.688				0.016	0.023	0.038
		(LL)	0.716	1.065	1.904				0.020	0.026	0.038
FE0613	A → Y	(HH)	0.700	0.989	1.687				0.013	0.018	0.029
		(LL)	0.694	1.035	1.838				0.016	0.021	0.032

Function	3-state Buffer			External supply voltage	3.3 V
	Block type				
Drivability	no resistor	with 100 KΩ P/D	with 100 KΩ P/U	with 5 KΩ P/U	Cells
1mA					
2mA					
3mA	B00T13	B00T13PD100	B00T13PU100	B0WT13	1
6mA	B00E13	B00E13PD100	B00E13PU100	B0WE13	1
9mA	B00813	B00813PD100	B00813PU100	B0W813	1
12mA	B00713	B00713PD100	B00713PU100	B0W713	1
18mA	B00913	B00913PD100	B00913PU100	B0W913	1
24mA	B00H13	B00H13PD100	B00H13PU100	B0WH13	1

Logic Diagram



Truth Table

A	EN	Y
0	1	0
1	1	1
X	0	Z

X:Irrelevant

Z:High Impedance

Block type	Input		Output	
	Symbol	Fan-in	Symbol	Fan-out
B00T13 to B0WT13	A	0.124	Y	-
	EN	0.124		
B00E13 to B0WE13	A	0.124	Y	-
	EN	0.124		
B00813 to B0W813	A	0.124	Y	-
	EN	0.124		
B00713 to B0W713	A	0.124	Y	-
	EN	0.120		
B00913 to B0W913	A	0.125	Y	-
	EN	0.125		
B00H13 to B0WH13	A	0.125	Y	-
	EN	0.125		

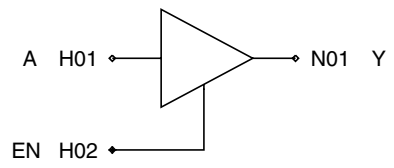
Block type	Switching speed											
	Path		t_{LD0} [ns]			t_1 (ns/pF)			T (ns/pF)		
	IN → OUT		MIN.	TYP.	MAX.	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.
B00T13	A → Y	(HH)	0.516	0.705	1.154				0.061	0.086	0.139
		(LL)	0.523	0.704	1.176				0.078	0.094	0.129
	EN → Y	(HZ)	0.345	0.464	0.776						
		(LZ)	0.271	0.378	0.660						
		(ZH)	0.608	0.836	1.358				0.061	0.086	0.139
		(ZL)	0.641	0.841	1.318				0.078	0.094	0.129
B00T13PD100	A → Y	(HH)	0.516	0.705	1.154				0.061	0.086	0.139
		(LL)	0.523	0.704	1.176				0.078	0.094	0.129
	EN → Y	(HZ)	0.345	0.464	0.776						
		(LZ)	0.271	0.378	0.660						
		(ZH)	0.608	0.836	1.358				0.061	0.086	0.139
		(ZL)	0.641	0.841	1.318				0.078	0.094	0.129
B00T13PU100	A → Y	(HH)	0.516	0.705	1.154				0.061	0.086	0.139
		(LL)	0.523	0.704	1.176				0.078	0.094	0.129
	EN → Y	(HZ)	0.345	0.464	0.776						
		(LZ)	0.271	0.378	0.660						
		(ZH)	0.608	0.836	1.358				0.061	0.086	0.139
		(ZL)	0.641	0.841	1.318				0.078	0.094	0.129
B0WT13	A → Y	(HH)	0.516	0.705	1.154				0.061	0.086	0.139
		(LL)	0.523	0.704	1.176				0.078	0.094	0.129
	EN → Y	(HZ)	0.345	0.464	0.776						
		(LZ)	0.271	0.378	0.660						
		(ZH)	0.608	0.836	1.358				0.061	0.086	0.139
		(ZL)	0.641	0.841	1.318				0.078	0.094	0.129
B00E13	A → Y	(HH)	0.470	0.640	1.050				0.040	0.058	0.093
		(LL)	0.426	0.592	1.023				0.039	0.047	0.064
	EN → Y	(HZ)	0.366	0.487	0.805						
		(LZ)	0.286	0.395	0.688						
		(ZH)	0.555	0.763	1.237				0.040	0.058	0.093
		(ZL)	0.542	0.726	1.162				0.039	0.047	0.064
B00E13PD100	A → Y	(HH)	0.470	0.640	1.050				0.040	0.058	0.093
		(LL)	0.426	0.592	1.023				0.039	0.047	0.064
	EN → Y	(HZ)	0.366	0.487	0.805						
		(LZ)	0.286	0.395	0.688						
		(ZH)	0.555	0.763	1.237				0.040	0.058	0.093
		(ZL)	0.542	0.726	1.162				0.039	0.047	0.064
B00E13PU100	A → Y	(HH)	0.470	0.640	1.050				0.040	0.058	0.093
		(LL)	0.426	0.592	1.023				0.039	0.047	0.064
	EN → Y	(HZ)	0.366	0.487	0.805						
		(LZ)	0.286	0.395	0.688						
		(ZH)	0.555	0.763	1.237				0.040	0.058	0.093
		(ZL)	0.542	0.726	1.162				0.039	0.047	0.064
B0WE13	A → Y	(HH)	0.470	0.640	1.050				0.040	0.058	0.093
		(LL)	0.426	0.592	1.023				0.039	0.047	0.064
	EN → Y	(HZ)	0.366	0.487	0.805						
		(LZ)	0.286	0.395	0.688						
		(ZH)	0.555	0.763	1.237				0.040	0.058	0.093
		(ZL)	0.542	0.726	1.162				0.039	0.047	0.064
B00813	A → Y	(HH)	0.453	0.617	1.011				0.030	0.043	0.070
		(LL)	0.407	0.573	0.999				0.026	0.032	0.043
	EN → Y	(HZ)	0.387	0.511	0.835						
		(LZ)	0.303	0.414	0.717						
		(ZH)	0.532	0.731	1.185				0.030	0.043	0.070
		(ZL)	0.519	0.703	1.131				0.026	0.032	0.043

Block type	Switching speed										
	Path		t_{LD0} [ns]			t_1 (ns/pF)			T (ns/pF)		
	IN → OUT		MIN.	TYP.	MAX.	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.
B00813PD100	A → Y	(HH)	0.453	0.617	1.011				0.030	0.043	0.070
		(LL)	0.407	0.573	0.999				0.026	0.032	0.043
	EN → Y	(HZ)	0.387	0.511	0.835						
		(LZ)	0.303	0.414	0.717						
		(ZH)	0.532	0.731	1.185				0.030	0.043	0.070
		(ZL)	0.519	0.703	1.131				0.026	0.032	0.043
B00813PU100	A → Y	(HH)	0.453	0.617	1.011				0.030	0.043	0.070
		(LL)	0.407	0.573	0.999				0.026	0.032	0.043
	EN → Y	(HZ)	0.387	0.511	0.835						
		(LZ)	0.303	0.414	0.717						
		(ZH)	0.532	0.731	1.185				0.030	0.043	0.070
		(ZL)	0.519	0.703	1.131				0.026	0.032	0.043
B0W813	A → Y	(HH)	0.453	0.617	1.011				0.030	0.043	0.070
		(LL)	0.407	0.573	0.999				0.026	0.032	0.043
	EN → Y	(HZ)	0.387	0.511	0.835						
		(LZ)	0.303	0.414	0.717						
		(ZH)	0.532	0.731	1.185				0.030	0.043	0.070
		(ZL)	0.519	0.703	1.131				0.026	0.032	0.043
B00713	A → Y	(HH)	0.439	0.599	0.985				0.020	0.029	0.047
		(LL)	0.417	0.588	1.022				0.020	0.024	0.033
	EN → Y	(HZ)	0.429	0.558	0.896						
		(LZ)	0.322	0.435	0.747						
		(ZH)	0.514	0.707	1.148				0.020	0.029	0.047
		(ZL)	0.515	0.701	1.129				0.020	0.024	0.033
B00713PD100	A → Y	(HH)	0.439	0.599	0.985				0.020	0.029	0.047
		(LL)	0.417	0.588	1.022				0.020	0.024	0.033
	EN → Y	(HZ)	0.429	0.558	0.896						
		(LZ)	0.322	0.435	0.747						
		(ZH)	0.514	0.707	1.148				0.020	0.029	0.047
		(ZL)	0.515	0.701	1.129				0.020	0.024	0.033
B00713PU100	A → Y	(HH)	0.439	0.599	0.985				0.020	0.029	0.047
		(LL)	0.417	0.588	1.022				0.020	0.024	0.033
	EN → Y	(HZ)	0.429	0.558	0.896						
		(LZ)	0.322	0.435	0.747						
		(ZH)	0.514	0.707	1.148				0.020	0.029	0.047
		(ZL)	0.515	0.701	1.129				0.020	0.024	0.033
B0W713	A → Y	(HH)	0.439	0.599	0.985				0.020	0.029	0.047
		(LL)	0.417	0.588	1.022				0.020	0.024	0.033
	EN → Y	(HZ)	0.429	0.558	0.896						
		(LZ)	0.322	0.435	0.747						
		(ZH)	0.514	0.707	1.148				0.020	0.029	0.047
		(ZL)	0.515	0.701	1.129				0.020	0.024	0.033
B00913	A → Y	(HH)	0.441	0.602	0.992				0.015	0.022	0.035
		(LL)	0.434	0.611	1.056				0.016	0.019	0.027
	EN → Y	(HZ)	0.472	0.606	0.959						
		(LZ)	0.340	0.457	0.778						
		(ZH)	0.510	0.702	1.144				0.015	0.022	0.035
		(ZL)	0.517	0.706	1.137				0.016	0.019	0.027
B00913PD100	A → Y	(HH)	0.441	0.602	0.992				0.015	0.022	0.035
		(LL)	0.434	0.611	1.056				0.016	0.019	0.027
	EN → Y	(HZ)	0.472	0.606	0.959						
		(LZ)	0.340	0.457	0.778						
		(ZH)	0.510	0.702	1.144				0.015	0.022	0.035
		(ZL)	0.517	0.706	1.137				0.016	0.019	0.027

Block type	Switching speed										
	Path		t_{LD0} [ns]			t_1 (ns/pF)			T (ns/pF)		
	IN → OUT		MIN.	TYP.	MAX.	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.
B00913PU100	A → Y	(HH)	0.441	0.602	0.992				0.015	0.022	0.035
		(LL)	0.434	0.611	1.056				0.016	0.019	0.027
	EN → Y	(HZ)	0.472	0.606	0.959						
		(LZ)	0.340	0.457	0.778						
		(ZH)	0.510	0.702	1.144				0.015	0.022	0.035
		(ZL)	0.517	0.706	1.137				0.016	0.019	0.027
B0W913	A → Y	(HH)	0.441	0.602	0.992				0.015	0.022	0.035
		(LL)	0.434	0.611	1.056				0.016	0.019	0.027
	EN → Y	(HZ)	0.472	0.606	0.959						
		(LZ)	0.340	0.457	0.778						
		(ZH)	0.510	0.702	1.144				0.015	0.022	0.035
		(ZL)	0.517	0.706	1.137				0.016	0.019	0.027
B00H13	A → Y	(HH)	0.456	0.623	1.028				0.011	0.016	0.026
		(LL)	0.463	0.649	1.111				0.012	0.014	0.020
	EN → Y	(HZ)	0.539	0.683	1.060						
		(LZ)	0.376	0.499	0.837						
		(ZH)	0.513	0.708	1.156				0.011	0.016	0.026
		(ZL)	0.525	0.720	1.157				0.012	0.014	0.020
B00H13PD100	A → Y	(HH)	0.456	0.623	1.028				0.011	0.016	0.026
		(LL)	0.463	0.649	1.111				0.012	0.014	0.020
	EN → Y	(HZ)	0.539	0.683	1.060						
		(LZ)	0.376	0.499	0.837						
		(ZH)	0.513	0.708	1.156				0.011	0.016	0.026
		(ZL)	0.525	0.720	1.157				0.012	0.014	0.020
B00H13PU100	A → Y	(HH)	0.456	0.623	1.028				0.011	0.016	0.026
		(LL)	0.463	0.649	1.111				0.012	0.014	0.020
	EN → Y	(HZ)	0.539	0.683	1.060						
		(LZ)	0.376	0.499	0.837						
		(ZH)	0.513	0.708	1.156				0.011	0.016	0.026
		(ZL)	0.525	0.720	1.157				0.012	0.014	0.020
B0WH13	A → Y	(HH)	0.456	0.623	1.028				0.011	0.016	0.026
		(LL)	0.463	0.649	1.111				0.012	0.014	0.020
	EN → Y	(HZ)	0.539	0.683	1.060						
		(LZ)	0.376	0.499	0.837						
		(ZH)	0.513	0.708	1.156				0.011	0.016	0.026
		(ZL)	0.525	0.720	1.157				0.012	0.014	0.020

Function	Low-noise 3-state Buffer			External supply voltage	3.3 V
	Block type				
Drivability	no resistor	with 100 KΩ P/D	with 100 KΩ P/U	with 5 KΩ P/U	Cells
1mA					
2mA					
3mA					
6mA	BE0E13	BE0E13PD100	BE0E13PU100	BEWE13	1
9mA	BE0813	BE0813PD100	BE0813PU100	BEW813	1
12mA	BE0713	BE0713PD100	BE0713PU100	BEW713	1
18mA	BE0913	BE0913PD100	BE0913PU100	BEW913	1
24mA	BE0H13	BE0H13PD100	BE0H13PU100	BEWH13	1

Logic Diagram



Block type	Input		Output	
	Symbol	Fan-in	Symbol	Fan-out
BE0E13 to BEWE13	A	0.120	Y	-
	EN	0.120		
BE0813 to BEW813	A	0.124	Y	-
	EN	0.120		
BE0713 to BEW713	A	0.124	Y	-
	EN	0.120		
BE0913 to BEW913	A	0.125	Y	-
	EN	0.125		
BE0H13 to BEWH13	A	0.125	Y	-
	EN	0.125		

Truth Table

A	EN	Y
0	1	0
1	1	1
X	0	Z

X:Irrelevant

Z:High Impedance

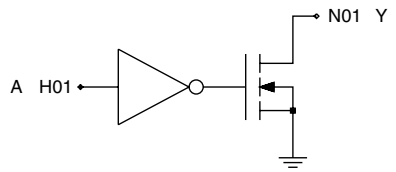
Block type	Switching speed											
	Path		t_{LD0} [ns]			t_1 (ns/pF)			T (ns/pF)		
	IN → OUT		MIN.	TYP.	MAX.	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.
BE0E13	A → Y	(HH)	0.734	1.024	1.820				0.041	0.058	0.094
		(LL)	0.841	1.239	2.281				0.042	0.051	0.073
	EN → Y	(HZ)	0.257	0.355	0.625						
		(LZ)	0.255	0.362	0.649						
		(ZH)	0.780	1.098	1.936				0.041	0.058	0.094
		(ZL)	0.986	1.410	2.474				0.042	0.051	0.073
BE0E13PD100	A → Y	(HH)	0.734	1.024	1.820				0.041	0.058	0.094
		(LL)	0.841	1.239	2.281				0.042	0.051	0.073
	EN → Y	(HZ)	0.257	0.355	0.625						
		(LZ)	0.255	0.362	0.649						
		(ZH)	0.780	1.098	1.936				0.041	0.058	0.094
		(ZL)	0.986	1.410	2.474				0.042	0.051	0.073
BE0E13PU100	A → Y	(HH)	0.734	1.024	1.820				0.041	0.058	0.094
		(LL)	0.841	1.239	2.281				0.042	0.051	0.073
	EN → Y	(HZ)	0.257	0.355	0.625						
		(LZ)	0.255	0.362	0.649						
		(ZH)	0.780	1.098	1.936				0.041	0.058	0.094
		(ZL)	0.986	1.410	2.474				0.042	0.051	0.073
BEWE13	A → Y	(HH)	0.734	1.024	1.820				0.041	0.058	0.094
		(LL)	0.841	1.239	2.281				0.042	0.051	0.073
	EN → Y	(HZ)	0.257	0.355	0.625						
		(LZ)	0.255	0.362	0.649						
		(ZH)	0.780	1.098	1.936				0.041	0.058	0.094
		(ZL)	0.986	1.410	2.474				0.042	0.051	0.073
BE0813	A → Y	(HH)	0.748	1.050	1.856				0.031	0.044	0.071
		(LL)	0.830	1.236	2.250				0.030	0.038	0.056
	EN → Y	(HZ)	0.280	0.381	0.658						
		(LZ)	0.274	0.385	0.680						
		(ZH)	0.791	1.117	1.959				0.031	0.044	0.071
		(ZL)	0.972	1.402	2.433				0.030	0.038	0.056
BE0813PD100	A → Y	(HH)	0.748	1.050	1.856				0.031	0.044	0.071
		(LL)	0.830	1.236	2.250				0.030	0.038	0.056
	EN → Y	(HZ)	0.280	0.381	0.658						
		(LZ)	0.274	0.385	0.680						
		(ZH)	0.791	1.117	1.959				0.031	0.044	0.071
		(ZL)	0.972	1.402	2.433				0.030	0.038	0.056
BE0813PU100	A → Y	(HH)	0.748	1.050	1.856				0.031	0.044	0.071
		(LL)	0.830	1.236	2.250				0.030	0.038	0.056
	EN → Y	(HZ)	0.280	0.381	0.658						
		(LZ)	0.274	0.385	0.680						
		(ZH)	0.791	1.117	1.959				0.031	0.044	0.071
		(ZL)	0.972	1.402	2.433				0.030	0.038	0.056
BEW813	A → Y	(HH)	0.748	1.050	1.856				0.031	0.044	0.071
		(LL)	0.830	1.236	2.250				0.030	0.038	0.056
	EN → Y	(HZ)	0.280	0.381	0.658						
		(LZ)	0.274	0.385	0.680						
		(ZH)	0.791	1.117	1.959				0.031	0.044	0.071
		(ZL)	0.972	1.402	2.433				0.030	0.038	0.056
BE0713	A → Y	(HH)	0.787	1.116	1.966				0.021	0.030	0.050
		(LL)	0.837	1.256	2.277				0.025	0.032	0.048
	EN → Y	(HZ)	0.326	0.434	0.728						
		(LZ)	0.294	0.407	0.713						
		(ZH)	0.829	1.178	2.056				0.021	0.030	0.050
		(ZL)	0.970	1.409	2.439				0.025	0.032	0.048

Block type	Switching speed										
	Path		t_{LD0} [ns]			t_1 (ns/pF)			T (ns/pF)		
	IN → OUT		MIN.	TYP.	MAX.	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.
BE0713PD100	A → Y	(HH)	0.787	1.116	1.966				0.021	0.030	0.050
		(LL)	0.837	1.256	2.277				0.025	0.032	0.048
	EN → Y	(HZ)	0.326	0.434	0.728						
		(LZ)	0.294	0.407	0.713						
		(ZH)	0.829	1.178	2.056				0.021	0.030	0.050
		(ZL)	0.970	1.409	2.439				0.025	0.032	0.048
BE0713PU100	A → Y	(HH)	0.787	1.116	1.966				0.021	0.030	0.050
		(LL)	0.837	1.256	2.277				0.025	0.032	0.048
	EN → Y	(HZ)	0.326	0.434	0.728						
		(LZ)	0.294	0.407	0.713						
		(ZH)	0.829	1.178	2.056				0.021	0.030	0.050
		(ZL)	0.970	1.409	2.439				0.025	0.032	0.048
BEW713	A → Y	(HH)	0.787	1.116	1.966				0.021	0.030	0.050
		(LL)	0.837	1.256	2.277				0.025	0.032	0.048
	EN → Y	(HZ)	0.326	0.434	0.728						
		(LZ)	0.294	0.407	0.713						
		(ZH)	0.829	1.178	2.056				0.021	0.030	0.050
		(ZL)	0.970	1.409	2.439				0.025	0.032	0.048
BE0913	A → Y	(HH)	0.699	0.991	1.724				0.016	0.023	0.038
		(LL)	0.725	1.080	1.928				0.021	0.026	0.038
	EN → Y	(HZ)	0.378	0.493	0.808						
		(LZ)	0.311	0.427	0.742						
		(ZH)	0.742	1.050	1.805				0.016	0.023	0.038
		(ZL)	0.848	1.212	2.055				0.021	0.026	0.038
BE0913PD100	A → Y	(HH)	0.699	0.991	1.724				0.016	0.023	0.038
		(LL)	0.725	1.080	1.928				0.021	0.026	0.038
	EN → Y	(HZ)	0.378	0.493	0.808						
		(LZ)	0.311	0.427	0.742						
		(ZH)	0.742	1.050	1.805				0.016	0.023	0.038
		(ZL)	0.848	1.212	2.055				0.021	0.026	0.038
BE0913PU100	A → Y	(HH)	0.699	0.991	1.724				0.016	0.023	0.038
		(LL)	0.725	1.080	1.928				0.021	0.026	0.038
	EN → Y	(HZ)	0.378	0.493	0.808						
		(LZ)	0.311	0.427	0.742						
		(ZH)	0.742	1.050	1.805				0.016	0.023	0.038
		(ZL)	0.848	1.212	2.055				0.021	0.026	0.038
BEW913	A → Y	(HH)	0.699	0.991	1.724				0.016	0.023	0.038
		(LL)	0.725	1.080	1.928				0.021	0.026	0.038
	EN → Y	(HZ)	0.378	0.493	0.808						
		(LZ)	0.311	0.427	0.742						
		(ZH)	0.742	1.050	1.805				0.016	0.023	0.038
		(ZL)	0.848	1.212	2.055				0.021	0.026	0.038
BE0H13	A → Y	(HH)	0.712	1.007	1.717				0.013	0.018	0.029
		(LL)	0.702	1.046	1.858				0.017	0.021	0.032
	EN → Y	(HZ)	0.452	0.580	0.923						
		(LZ)	0.355	0.477	0.811						
		(ZH)	0.755	1.061	1.785				0.013	0.018	0.029
		(ZL)	0.818	1.172	1.977				0.017	0.021	0.032
BE0H13PD100	A → Y	(HH)	0.712	1.007	1.717				0.013	0.018	0.029
		(LL)	0.702	1.046	1.858				0.017	0.021	0.032
	EN → Y	(HZ)	0.452	0.580	0.923						
		(LZ)	0.355	0.477	0.811						
		(ZH)	0.755	1.061	1.785				0.013	0.018	0.029
		(ZL)	0.818	1.172	1.977				0.017	0.021	0.032

Block type	Switching speed										
	Path		t_{LD0} [ns]			t_1 (ns/pF)			T (ns/pF)		
	IN → OUT		MIN.	TYP.	MAX.	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.
BE0H13PU100	A → Y	(HH)	0.712	1.007	1.717				0.013	0.018	0.029
		(LL)	0.702	1.046	1.858				0.017	0.021	0.032
	EN → Y	(HZ)	0.452	0.580	0.923						
		(LZ)	0.355	0.477	0.811						
		(ZH)	0.755	1.061	1.785				0.013	0.018	0.029
		(ZL)	0.818	1.172	1.977				0.017	0.021	0.032
BEWH13	A → Y	(HH)	0.712	1.007	1.717				0.013	0.018	0.029
		(LL)	0.702	1.046	1.858				0.017	0.021	0.032
	EN → Y	(HZ)	0.452	0.580	0.923						
		(LZ)	0.355	0.477	0.811						
		(ZH)	0.755	1.061	1.785				0.013	0.018	0.029
		(ZL)	0.818	1.172	1.977				0.017	0.021	0.032

Function	N-ch Open Drain Buffer			External supply voltage	3.3 V
Block type					
Drivability	no resistor	with 100 KΩ P/D	with 100 KΩ P/U	with 5 KΩ P/U	Cells
1mA					
2mA					
3mA	EXTH13				1
6mA	EXTJ13				1
9mA	EXT113				1
12mA	EXT913				1
18mA	EXT513				1
24mA	EXTD13				1

Logic Diagram



Block type	Input		Output	
	Symbol	Fan-in	Symbol	Fan-out
EXTH13	A	0.124	Y	-
EXTJ13	A	0.124	Y	-
EXT113	A	0.124	Y	-
EXT913	A	0.124	Y	-
EXT513	A	0.125	Y	-
EXTD13	A	0.125	Y	-

Truth Table

A	Y
1	Z
0	0

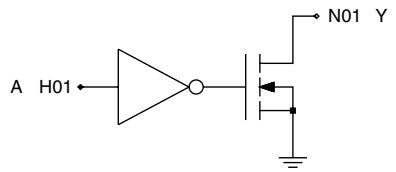
Z:High Impedance

Connect a pull-up resistor to get a high level

Block type	Switching speed										
	Path		t_{LD0} [ns]			t_1 (ns/pF)			T (ns/pF)		
	IN → OUT		MIN.	TYP.	MAX.	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.
EXTH13	A → Y	(LZ)	0.279	0.369	0.588						
		(ZL)	0.366	0.509	0.882				0.078	0.094	0.129
EXTJ13	A → Y	(LZ)	0.289	0.382	0.608						
		(ZL)	0.322	0.459	0.814				0.039	0.047	0.064
EXT113	A → Y	(LZ)	0.299	0.395	0.627						
		(ZL)	0.314	0.452	0.806				0.026	0.032	0.043
EXT913	A → Y	(LZ)	0.308	0.407	0.646						
		(ZL)	0.315	0.455	0.811				0.020	0.024	0.033
EXT513	A → Y	(LZ)	0.318	0.419	0.664						
		(ZL)	0.318	0.461	0.821				0.016	0.019	0.027
EXTD13	A → Y	(LZ)	0.335	0.440	0.698						
		(ZL)	0.327	0.473	0.840				0.012	0.014	0.020

Function	Low-noise N-ch Open Drain Buffer			External supply voltage	3.3 V
Block type					
Drivability	no resistor	with 100 KΩ P/D	with 100 KΩ P/U	with 5 KΩ P/U	Cells
1mA					
2mA					
3mA					
6mA	EETJ13				1
9mA	EET113				1
12mA	EET913				1
18mA	EET513				1
24mA	EETD13				1

Logic Diagram



Block type	Input		Output	
	Symbol	Fan-in	Symbol	Fan-out
EETJ13	A	0.124	Y	-
EET113	A	0.124	Y	-
EET913	A	0.124	Y	-
EET513	A	0.125	Y	-
EETD13	A	0.125	Y	-

Truth Table

A	Y
1	Z
0	0

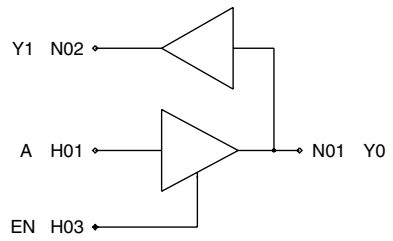
Z:High Impedance

Connect a pull-up resistor to get a high level

Block type	Switching speed										
	Path		t_{LD0} [ns]			t_1 (ns/pF)			T (ns/pF)		
	IN → OUT		MIN.	TYP.	MAX.	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.
EETJ13	A → Y	(LZ)	0.230	0.317	0.531						
		(ZL)	0.707	1.054	1.975				0.042	0.052	0.074
EET113	A → Y	(LZ)	0.244	0.333	0.554						
		(ZL)	0.711	1.067	1.968				0.031	0.038	0.057
EET913	A → Y	(LZ)	0.256	0.349	0.575						
		(ZL)	0.718	1.083	1.983				0.026	0.033	0.049
EET513	A → Y	(LZ)	0.273	0.367	0.601						
		(ZL)	0.615	0.916	1.649				0.021	0.026	0.039
EETD13	A → Y	(LZ)	0.302	0.400	0.646						
		(ZL)	0.583	0.869	1.556				0.017	0.022	0.033

Function	I/O Buffer			External supply voltage	3.3 V
	Block type				
Drivability	no resistor	with 100 KΩ P/D	with 100 KΩ P/U	with 5 KΩ P/U	Cells
1mA					
2mA					
3mA	B00U13	B00U13PD100	B00U13PU100	B0WU13	1
6mA	B00C13	B00C13PD100	B00C13PU100	B0WC13	1
9mA	B00313	B00313PD100	B00313PU100	B0W313	1
12mA	B00113	B00113PD100	B00113PU100	B0W113	1
18mA	B00513	B00513PD100	B00513PU100	B0W513	1
24mA	B00F13	B00F13PD100	B00F13PU100	B0WF13	1

Logic Diagram



Block type	Input		Output	
	Symbol	Fan-in	Symbol	Fan-out
B00U13 to B0WU13	A	0.124	Y1	0.864
	EN	0.124		
B00C13 to B0WC13	A	0.124	Y1	0.864
	EN	0.124		
B00313 to B0W313	A	0.124	Y1	0.864
	EN	0.124		
B00113 to B0W113	A	0.124	Y1	0.864
	EN	0.120		
B00513 to B0W513	A	0.125	Y1	0.864
	EN	0.125		
B00F13 to B0WF13	A	0.125	Y1	0.864
	EN	0.125		

Truth Table

A	EN	Y0
0	1	0
1	1	1
X	0	Z

X:Irrelevant

Z:High Impedance

Y0	Y1
0	0
1	1

Block type	Switching speed										
	Path		t_{LD0} [ns]			t_1 (ns/pF)			T (ns/pF)		
	IN → OUT		MIN.	TYP.	MAX.	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.
B00U13	A → Y0	(HH)	0.516	0.705	1.154				0.061	0.086	0.139
		(LL)	0.523	0.704	1.176				0.078	0.094	0.129
	EN → Y0	(HZ)	0.345	0.464	0.776						
		(LZ)	0.271	0.378	0.660						
		(ZH)	0.608	0.836	1.358				0.061	0.086	0.139
		(ZL)	0.641	0.841	1.318				0.078	0.094	0.129
	Y0 → Y1	(HH)	0.178	0.240	0.375	0.158	0.261	0.474			
		(LL)	0.155	0.200	0.294	0.161	0.215	0.327			
B00U13PD100	A → Y0	(HH)	0.516	0.705	1.154				0.061	0.086	0.139
		(LL)	0.523	0.704	1.176				0.078	0.094	0.129
	EN → Y0	(HZ)	0.345	0.464	0.776						
		(LZ)	0.271	0.378	0.660						
		(ZH)	0.608	0.836	1.358				0.061	0.086	0.139
		(ZL)	0.641	0.841	1.318				0.078	0.094	0.129
	Y0 → Y1	(HH)	0.178	0.240	0.375	0.158	0.261	0.474			
		(LL)	0.155	0.200	0.294	0.161	0.215	0.327			
B00U13PU100	A → Y0	(HH)	0.516	0.705	1.154				0.061	0.086	0.139
		(LL)	0.523	0.704	1.176				0.078	0.094	0.129
	EN → Y0	(HZ)	0.345	0.464	0.776						
		(LZ)	0.271	0.378	0.660						
		(ZH)	0.608	0.836	1.358				0.061	0.086	0.139
		(ZL)	0.641	0.841	1.318				0.078	0.094	0.129
	Y0 → Y1	(HH)	0.178	0.240	0.375	0.158	0.261	0.474			
		(LL)	0.155	0.200	0.294	0.161	0.215	0.327			
B0WU13	A → Y0	(HH)	0.516	0.705	1.154				0.061	0.086	0.139
		(LL)	0.523	0.704	1.176				0.078	0.094	0.129
	EN → Y0	(HZ)	0.345	0.464	0.776						
		(LZ)	0.271	0.378	0.660						
		(ZH)	0.608	0.836	1.358				0.061	0.086	0.139
		(ZL)	0.641	0.841	1.318				0.078	0.094	0.129
	Y0 → Y1	(HH)	0.178	0.240	0.375	0.158	0.261	0.474			
		(LL)	0.155	0.200	0.294	0.161	0.215	0.327			
B00C13	A → Y0	(HH)	0.470	0.640	1.050				0.040	0.058	0.093
		(LL)	0.426	0.592	1.023				0.039	0.047	0.064
	EN → Y0	(HZ)	0.366	0.487	0.805						
		(LZ)	0.286	0.395	0.688						
		(ZH)	0.555	0.763	1.237				0.040	0.058	0.093
		(ZL)	0.542	0.726	1.162				0.039	0.047	0.064
	Y0 → Y1	(HH)	0.178	0.240	0.375	0.158	0.261	0.474			
		(LL)	0.155	0.200	0.294	0.161	0.215	0.327			
B00C13PD100	A → Y0	(HH)	0.470	0.640	1.050				0.040	0.058	0.093
		(LL)	0.426	0.592	1.023				0.039	0.047	0.064
	EN → Y0	(HZ)	0.366	0.487	0.805						
		(LZ)	0.286	0.395	0.688						
		(ZH)	0.555	0.763	1.237				0.040	0.058	0.093
		(ZL)	0.542	0.726	1.162				0.039	0.047	0.064
	Y0 → Y1	(HH)	0.178	0.240	0.375	0.158	0.261	0.474			
		(LL)	0.155	0.200	0.294	0.161	0.215	0.327			
B00C13PU100	A → Y0	(HH)	0.470	0.640	1.050				0.040	0.058	0.093
		(LL)	0.426	0.592	1.023				0.039	0.047	0.064
	EN → Y0	(HZ)	0.366	0.487	0.805						
		(LZ)	0.286	0.395	0.688						
		(ZH)	0.555	0.763	1.237				0.040	0.058	0.093
		(ZL)	0.542	0.726	1.162				0.039	0.047	0.064
	Y0 → Y1	(HH)	0.178	0.240	0.375	0.158	0.261	0.474			
		(LL)	0.155	0.200	0.294	0.161	0.215	0.327			

Block type	Switching speed										
	Path		t_{LD0} [ns]			t_1 (ns/pF)			T (ns/pF)		
	IN → OUT		MIN.	TYP.	MAX.	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.
B0WC13	A → Y0	(HH)	0.470	0.640	1.050				0.040	0.058	0.093
		(LL)	0.426	0.592	1.023				0.039	0.047	0.064
	EN → Y0	(HZ)	0.366	0.487	0.805						
		(LZ)	0.286	0.395	0.688						
		(ZH)	0.555	0.763	1.237				0.040	0.058	0.093
		(ZL)	0.542	0.726	1.162				0.039	0.047	0.064
	Y0 → Y1	(HH)	0.178	0.240	0.375	0.158	0.261	0.474			
		(LL)	0.155	0.200	0.294	0.161	0.215	0.327			
B00313	A → Y0	(HH)	0.453	0.617	1.011				0.030	0.043	0.070
		(LL)	0.407	0.573	0.999				0.026	0.032	0.043
	EN → Y0	(HZ)	0.387	0.511	0.835						
		(LZ)	0.303	0.414	0.717						
		(ZH)	0.532	0.731	1.185				0.030	0.043	0.070
		(ZL)	0.519	0.703	1.131				0.026	0.032	0.043
	Y0 → Y1	(HH)	0.178	0.240	0.375	0.158	0.261	0.474			
		(LL)	0.155	0.200	0.294	0.161	0.215	0.327			
B00313PD100	A → Y0	(HH)	0.453	0.617	1.011				0.030	0.043	0.070
		(LL)	0.407	0.573	0.999				0.026	0.032	0.043
	EN → Y0	(HZ)	0.387	0.511	0.835						
		(LZ)	0.303	0.414	0.717						
		(ZH)	0.532	0.731	1.185				0.030	0.043	0.070
		(ZL)	0.519	0.703	1.131				0.026	0.032	0.043
	Y0 → Y1	(HH)	0.178	0.240	0.375	0.158	0.261	0.474			
		(LL)	0.155	0.200	0.294	0.161	0.215	0.327			
B00313PU100	A → Y0	(HH)	0.453	0.617	1.011				0.030	0.043	0.070
		(LL)	0.407	0.573	0.999				0.026	0.032	0.043
	EN → Y0	(HZ)	0.387	0.511	0.835						
		(LZ)	0.303	0.414	0.717						
		(ZH)	0.532	0.731	1.185				0.030	0.043	0.070
		(ZL)	0.519	0.703	1.131				0.026	0.032	0.043
	Y0 → Y1	(HH)	0.178	0.240	0.375	0.158	0.261	0.474			
		(LL)	0.155	0.200	0.294	0.161	0.215	0.327			
B0W313	A → Y0	(HH)	0.453	0.617	1.011				0.030	0.043	0.070
		(LL)	0.407	0.573	0.999				0.026	0.032	0.043
	EN → Y0	(HZ)	0.387	0.511	0.835						
		(LZ)	0.303	0.414	0.717						
		(ZH)	0.532	0.731	1.185				0.030	0.043	0.070
		(ZL)	0.519	0.703	1.131				0.026	0.032	0.043
	Y0 → Y1	(HH)	0.178	0.240	0.375	0.158	0.261	0.474			
		(LL)	0.155	0.200	0.294	0.161	0.215	0.327			
B00113	A → Y0	(HH)	0.439	0.599	0.985				0.020	0.029	0.047
		(LL)	0.417	0.588	1.022				0.020	0.024	0.033
	EN → Y0	(HZ)	0.429	0.558	0.896						
		(LZ)	0.322	0.435	0.747						
		(ZH)	0.514	0.707	1.148				0.020	0.029	0.047
		(ZL)	0.515	0.701	1.129				0.020	0.024	0.033
	Y0 → Y1	(HH)	0.178	0.240	0.375	0.158	0.261	0.474			
		(LL)	0.155	0.200	0.294	0.161	0.215	0.327			
B00113PD100	A → Y0	(HH)	0.439	0.599	0.985				0.020	0.029	0.047
		(LL)	0.417	0.588	1.022				0.020	0.024	0.033
	EN → Y0	(HZ)	0.429	0.558	0.896						
		(LZ)	0.322	0.435	0.747						
		(ZH)	0.514	0.707	1.148				0.020	0.029	0.047
		(ZL)	0.515	0.701	1.129				0.020	0.024	0.033
	Y0 → Y1	(HH)	0.178	0.240	0.375	0.158	0.261	0.474			
		(LL)	0.155	0.200	0.294	0.161	0.215	0.327			

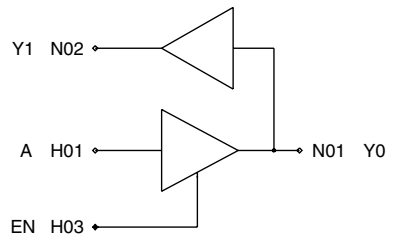
Block type	Switching speed										
	Path		t_{LD0} [ns]			t_1 (ns/pF)			T (ns/pF)		
	IN → OUT		MIN.	TYP.	MAX.	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.
B00113PU100	A → Y0	(HH)	0.439	0.599	0.985				0.020	0.029	0.047
		(LL)	0.417	0.588	1.022				0.020	0.024	0.033
	EN → Y0	(HZ)	0.429	0.558	0.896						
		(LZ)	0.322	0.435	0.747						
		(ZH)	0.514	0.707	1.148				0.020	0.029	0.047
		(ZL)	0.515	0.701	1.129				0.020	0.024	0.033
	Y0 → Y1	(HH)	0.178	0.240	0.375	0.158	0.261	0.474			
		(LL)	0.155	0.200	0.294	0.161	0.215	0.327			
B0W113	A → Y0	(HH)	0.439	0.599	0.985				0.020	0.029	0.047
		(LL)	0.417	0.588	1.022				0.020	0.024	0.033
	EN → Y0	(HZ)	0.429	0.558	0.896						
		(LZ)	0.322	0.435	0.747						
		(ZH)	0.514	0.707	1.148				0.020	0.029	0.047
		(ZL)	0.515	0.701	1.129				0.020	0.024	0.033
	Y0 → Y1	(HH)	0.178	0.240	0.375	0.158	0.261	0.474			
		(LL)	0.155	0.200	0.294	0.161	0.215	0.327			
B00513	A → Y0	(HH)	0.441	0.602	0.992				0.015	0.022	0.035
		(LL)	0.434	0.611	1.056				0.016	0.019	0.027
	EN → Y0	(HZ)	0.472	0.606	0.959						
		(LZ)	0.340	0.457	0.778						
		(ZH)	0.510	0.702	1.144				0.015	0.022	0.035
		(ZL)	0.517	0.706	1.137				0.016	0.019	0.027
	Y0 → Y1	(HH)	0.178	0.240	0.375	0.158	0.261	0.474			
		(LL)	0.155	0.200	0.294	0.161	0.215	0.327			
B00513PD100	A → Y0	(HH)	0.441	0.602	0.992				0.015	0.022	0.035
		(LL)	0.434	0.611	1.056				0.016	0.019	0.027
	EN → Y0	(HZ)	0.472	0.606	0.959						
		(LZ)	0.340	0.457	0.778						
		(ZH)	0.510	0.702	1.144				0.015	0.022	0.035
		(ZL)	0.517	0.706	1.137				0.016	0.019	0.027
	Y0 → Y1	(HH)	0.178	0.240	0.375	0.158	0.261	0.474			
		(LL)	0.155	0.200	0.294	0.161	0.215	0.327			
B00513PU100	A → Y0	(HH)	0.441	0.602	0.992				0.015	0.022	0.035
		(LL)	0.434	0.611	1.056				0.016	0.019	0.027
	EN → Y0	(HZ)	0.472	0.606	0.959						
		(LZ)	0.340	0.457	0.778						
		(ZH)	0.510	0.702	1.144				0.015	0.022	0.035
		(ZL)	0.517	0.706	1.137				0.016	0.019	0.027
	Y0 → Y1	(HH)	0.178	0.240	0.375	0.158	0.261	0.474			
		(LL)	0.155	0.200	0.294	0.161	0.215	0.327			
B0W513	A → Y0	(HH)	0.441	0.602	0.992				0.015	0.022	0.035
		(LL)	0.434	0.611	1.056				0.016	0.019	0.027
	EN → Y0	(HZ)	0.472	0.606	0.959						
		(LZ)	0.340	0.457	0.778						
		(ZH)	0.510	0.702	1.144				0.015	0.022	0.035
		(ZL)	0.517	0.706	1.137				0.016	0.019	0.027
	Y0 → Y1	(HH)	0.178	0.240	0.375	0.158	0.261	0.474			
		(LL)	0.155	0.200	0.294	0.161	0.215	0.327			
B00F13	A → Y0	(HH)	0.456	0.623	1.028				0.011	0.016	0.026
		(LL)	0.463	0.649	1.111				0.012	0.014	0.020
	EN → Y0	(HZ)	0.539	0.683	1.060						
		(LZ)	0.376	0.499	0.837						
		(ZH)	0.513	0.708	1.156				0.011	0.016	0.026
		(ZL)	0.525	0.720	1.157				0.012	0.014	0.020
	Y0 → Y1	(HH)	0.178	0.240	0.375	0.158	0.261	0.474			
		(LL)	0.155	0.200	0.294	0.161	0.215	0.327			

Block type	Switching speed										
	Path		t_{LD0} [ns]			t_1 (ns/pF)			T (ns/pF)		
	IN → OUT		MIN.	TYP.	MAX.	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.
B00F13PD100	A → Y0	(HH)	0.456	0.623	1.028				0.011	0.016	0.026
		(LL)	0.463	0.649	1.111				0.012	0.014	0.020
	EN → Y0	(HZ)	0.539	0.683	1.060						
		(LZ)	0.376	0.499	0.837						
		(ZH)	0.513	0.708	1.156				0.011	0.016	0.026
		(ZL)	0.525	0.720	1.157				0.012	0.014	0.020
	Y0 → Y1	(HH)	0.178	0.240	0.375	0.158	0.261	0.474			
		(LL)	0.155	0.200	0.294	0.161	0.215	0.327			
B00F13PU100	A → Y0	(HH)	0.456	0.623	1.028				0.011	0.016	0.026
		(LL)	0.463	0.649	1.111				0.012	0.014	0.020
	EN → Y0	(HZ)	0.539	0.683	1.060						
		(LZ)	0.376	0.499	0.837						
		(ZH)	0.513	0.708	1.156				0.011	0.016	0.026
		(ZL)	0.525	0.720	1.157				0.012	0.014	0.020
	Y0 → Y1	(HH)	0.178	0.240	0.375	0.158	0.261	0.474			
		(LL)	0.155	0.200	0.294	0.161	0.215	0.327			
B0WF13	A → Y0	(HH)	0.456	0.623	1.028				0.011	0.016	0.026
		(LL)	0.463	0.649	1.111				0.012	0.014	0.020
	EN → Y0	(HZ)	0.539	0.683	1.060						
		(LZ)	0.376	0.499	0.837						
		(ZH)	0.513	0.708	1.156				0.011	0.016	0.026
		(ZL)	0.525	0.720	1.157				0.012	0.014	0.020
	Y0 → Y1	(HH)	0.178	0.240	0.375	0.158	0.261	0.474			
		(LL)	0.155	0.200	0.294	0.161	0.215	0.327			

[MEMO]

Function	Low-noise I/O Buffer			External supply voltage	3.3 V
	Block type				
Drivability	no resistor	with 100 KΩ P/D	with 100 KΩ P/U	with 5 KΩ P/U	Cells
1mA					
2mA					
3mA					
6mA	BE0C13	BE0C13PD100	BE0C13PU100	BEWC13	1
9mA	BE0313	BE0313PD100	BE0313PU100	BEW313	1
12mA	BE0113	BE0113PD100	BE0113PU100	BEW113	1
18mA	BE0513	BE0513PD100	BE0513PU100	BEW513	1
24mA	BE0F13	BE0F13PD100	BE0F13PU100	BEWF13	1

Logic Diagram



Block type	Input		Output	
	Symbol	Fan-in	Symbol	Fan-out
BE0C13 to BEWC13	A	0.120	Y1	0.864
	EN	0.120		
BE0313 to BEW313	A	0.124	Y1	0.864
	EN	0.120		
BE0113 to BEW113	A	0.124	Y1	0.864
	EN	0.120		
BE0513 to BEW513	A	0.125	Y1	0.864
	EN	0.125		
BE0F13 to BEWF13	A	0.125	Y1	0.864
	EN	0.125		

Truth Table

A	EN	Y0
0	1	0
1	1	1
X	0	Z

X:Irrelevant

Z:High Impedance

Y0	Y1
0	0
1	1

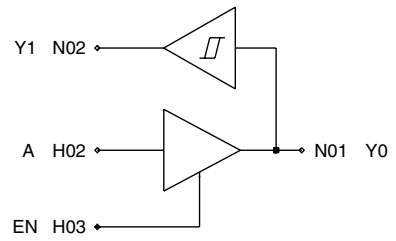
Block type	Switching speed										
	Path		t_{LD0} [ns]			t_1 (ns/pF)			T (ns/pF)		
	IN → OUT		MIN.	TYP.	MAX.	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.
BE0C13	A → Y0	(HH)	0.734	1.024	1.820				0.041	0.058	0.094
		(LL)	0.841	1.239	2.281				0.042	0.051	0.073
	EN → Y0	(HZ)	0.257	0.355	0.625						
		(LZ)	0.255	0.362	0.649						
		(ZH)	0.780	1.098	1.936				0.041	0.058	0.094
		(ZL)	0.986	1.410	2.474				0.042	0.051	0.073
	Y0 → Y1	(HH)	0.178	0.240	0.375	0.158	0.261	0.474			
		(LL)	0.155	0.200	0.294	0.161	0.215	0.327			
BE0C13PD100	A → Y0	(HH)	0.734	1.024	1.820				0.041	0.058	0.094
		(LL)	0.841	1.239	2.281				0.042	0.051	0.073
	EN → Y0	(HZ)	0.257	0.355	0.625						
		(LZ)	0.255	0.362	0.649						
		(ZH)	0.780	1.098	1.936				0.041	0.058	0.094
		(ZL)	0.986	1.410	2.474				0.042	0.051	0.073
	Y0 → Y1	(HH)	0.178	0.240	0.375	0.158	0.261	0.474			
		(LL)	0.155	0.200	0.294	0.161	0.215	0.327			
BE0C13PU100	A → Y0	(HH)	0.734	1.024	1.820				0.041	0.058	0.094
		(LL)	0.841	1.239	2.281				0.042	0.051	0.073
	EN → Y0	(HZ)	0.257	0.355	0.625						
		(LZ)	0.255	0.362	0.649						
		(ZH)	0.780	1.098	1.936				0.041	0.058	0.094
		(ZL)	0.986	1.410	2.474				0.042	0.051	0.073
	Y0 → Y1	(HH)	0.178	0.240	0.375	0.158	0.261	0.474			
		(LL)	0.155	0.200	0.294	0.161	0.215	0.327			
BEWC13	A → Y0	(HH)	0.734	1.024	1.820				0.041	0.058	0.094
		(LL)	0.841	1.239	2.281				0.042	0.051	0.073
	EN → Y0	(HZ)	0.257	0.355	0.625						
		(LZ)	0.255	0.362	0.649						
		(ZH)	0.780	1.098	1.936				0.041	0.058	0.094
		(ZL)	0.986	1.410	2.474				0.042	0.051	0.073
	Y0 → Y1	(HH)	0.178	0.240	0.375	0.158	0.261	0.474			
		(LL)	0.155	0.200	0.294	0.161	0.215	0.327			
BE0313	A → Y0	(HH)	0.748	1.050	1.856				0.031	0.044	0.071
		(LL)	0.830	1.236	2.250				0.030	0.038	0.056
	EN → Y0	(HZ)	0.280	0.381	0.658						
		(LZ)	0.274	0.385	0.680						
		(ZH)	0.791	1.117	1.959				0.031	0.044	0.071
		(ZL)	0.972	1.402	2.433				0.030	0.038	0.056
	Y0 → Y1	(HH)	0.178	0.240	0.375	0.158	0.261	0.474			
		(LL)	0.155	0.200	0.294	0.161	0.215	0.327			
BE0313PD100	A → Y0	(HH)	0.748	1.050	1.856				0.031	0.044	0.071
		(LL)	0.830	1.236	2.250				0.030	0.038	0.056
	EN → Y0	(HZ)	0.280	0.381	0.658						
		(LZ)	0.274	0.385	0.680						
		(ZH)	0.791	1.117	1.959				0.031	0.044	0.071
		(ZL)	0.972	1.402	2.433				0.030	0.038	0.056
	Y0 → Y1	(HH)	0.178	0.240	0.375	0.158	0.261	0.474			
		(LL)	0.155	0.200	0.294	0.161	0.215	0.327			
BE0313PU100	A → Y0	(HH)	0.748	1.050	1.856				0.031	0.044	0.071
		(LL)	0.830	1.236	2.250				0.030	0.038	0.056
	EN → Y0	(HZ)	0.280	0.381	0.658						
		(LZ)	0.274	0.385	0.680						
		(ZH)	0.791	1.117	1.959				0.031	0.044	0.071
		(ZL)	0.972	1.402	2.433				0.030	0.038	0.056
	Y0 → Y1	(HH)	0.178	0.240	0.375	0.158	0.261	0.474			
		(LL)	0.155	0.200	0.294	0.161	0.215	0.327			

Block type	Switching speed										
	Path		t_{LD0} [ns]			t_1 (ns/pF)			T (ns/pF)		
	IN → OUT		MIN.	TYP.	MAX.	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.
BEW313	A → Y0	(HH)	0.748	1.050	1.856				0.031	0.044	0.071
		(LL)	0.830	1.236	2.250				0.030	0.038	0.056
	EN → Y0	(HZ)	0.280	0.381	0.658						
		(LZ)	0.274	0.385	0.680						
		(ZH)	0.791	1.117	1.959				0.031	0.044	0.071
		(ZL)	0.972	1.402	2.433				0.030	0.038	0.056
	Y0 → Y1	(HH)	0.178	0.240	0.375	0.158	0.261	0.474			
		(LL)	0.155	0.200	0.294	0.161	0.215	0.327			
BE0113	A → Y0	(HH)	0.787	1.116	1.966				0.021	0.030	0.050
		(LL)	0.837	1.256	2.277				0.025	0.032	0.048
	EN → Y0	(HZ)	0.326	0.434	0.728						
		(LZ)	0.294	0.407	0.713						
		(ZH)	0.829	1.178	2.056				0.021	0.030	0.050
		(ZL)	0.970	1.409	2.439				0.025	0.032	0.048
	Y0 → Y1	(HH)	0.178	0.240	0.375	0.158	0.261	0.474			
		(LL)	0.155	0.200	0.294	0.161	0.215	0.327			
BE0113PD100	A → Y0	(HH)	0.787	1.116	1.966				0.021	0.030	0.050
		(LL)	0.837	1.256	2.277				0.025	0.032	0.048
	EN → Y0	(HZ)	0.326	0.434	0.728						
		(LZ)	0.294	0.407	0.713						
		(ZH)	0.829	1.178	2.056				0.021	0.030	0.050
		(ZL)	0.970	1.409	2.439				0.025	0.032	0.048
	Y0 → Y1	(HH)	0.178	0.240	0.375	0.158	0.261	0.474			
		(LL)	0.155	0.200	0.294	0.161	0.215	0.327			
BE0113PU100	A → Y0	(HH)	0.787	1.116	1.966				0.021	0.030	0.050
		(LL)	0.837	1.256	2.277				0.025	0.032	0.048
	EN → Y0	(HZ)	0.326	0.434	0.728						
		(LZ)	0.294	0.407	0.713						
		(ZH)	0.829	1.178	2.056				0.021	0.030	0.050
		(ZL)	0.970	1.409	2.439				0.025	0.032	0.048
	Y0 → Y1	(HH)	0.178	0.240	0.375	0.158	0.261	0.474			
		(LL)	0.155	0.200	0.294	0.161	0.215	0.327			
BEW113	A → Y0	(HH)	0.787	1.116	1.966				0.021	0.030	0.050
		(LL)	0.837	1.256	2.277				0.025	0.032	0.048
	EN → Y0	(HZ)	0.326	0.434	0.728						
		(LZ)	0.294	0.407	0.713						
		(ZH)	0.829	1.178	2.056				0.021	0.030	0.050
		(ZL)	0.970	1.409	2.439				0.025	0.032	0.048
	Y0 → Y1	(HH)	0.178	0.240	0.375	0.158	0.261	0.474			
		(LL)	0.155	0.200	0.294	0.161	0.215	0.327			
BE0513	A → Y0	(HH)	0.699	0.991	1.724				0.016	0.023	0.038
		(LL)	0.725	1.080	1.928				0.021	0.026	0.038
	EN → Y0	(HZ)	0.378	0.493	0.808						
		(LZ)	0.311	0.427	0.742						
		(ZH)	0.742	1.050	1.805				0.016	0.023	0.038
		(ZL)	0.848	1.212	2.055				0.021	0.026	0.038
	Y0 → Y1	(HH)	0.178	0.240	0.375	0.158	0.261	0.474			
		(LL)	0.155	0.200	0.294	0.161	0.215	0.327			
BE0513PD100	A → Y0	(HH)	0.699	0.991	1.724				0.016	0.023	0.038
		(LL)	0.725	1.080	1.928				0.021	0.026	0.038
	EN → Y0	(HZ)	0.378	0.493	0.808						
		(LZ)	0.311	0.427	0.742						
		(ZH)	0.742	1.050	1.805				0.016	0.023	0.038
		(ZL)	0.848	1.212	2.055				0.021	0.026	0.038
	Y0 → Y1	(HH)	0.178	0.240	0.375	0.158	0.261	0.474			
		(LL)	0.155	0.200	0.294	0.161	0.215	0.327			

Block type	Switching speed										
	Path		t_{LD0} [ns]			t_1 (ns/pF)			T (ns/pF)		
	IN → OUT		MIN.	TYP.	MAX.	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.
BE0513PU100	A → Y0	(HH)	0.699	0.991	1.724				0.016	0.023	0.038
		(LL)	0.725	1.080	1.928				0.021	0.026	0.038
	EN → Y0	(HZ)	0.378	0.493	0.808						
		(LZ)	0.311	0.427	0.742						
		(ZH)	0.742	1.050	1.805				0.016	0.023	0.038
		(ZL)	0.848	1.212	2.055				0.021	0.026	0.038
	Y0 → Y1	(HH)	0.178	0.240	0.375	0.158	0.261	0.474			
		(LL)	0.155	0.200	0.294	0.161	0.215	0.327			
BEW513	A → Y0	(HH)	0.699	0.991	1.724				0.016	0.023	0.038
		(LL)	0.725	1.080	1.928				0.021	0.026	0.038
	EN → Y0	(HZ)	0.378	0.493	0.808						
		(LZ)	0.311	0.427	0.742						
		(ZH)	0.742	1.050	1.805				0.016	0.023	0.038
		(ZL)	0.848	1.212	2.055				0.021	0.026	0.038
	Y0 → Y1	(HH)	0.178	0.240	0.375	0.158	0.261	0.474			
		(LL)	0.155	0.200	0.294	0.161	0.215	0.327			
BE0F13	A → Y0	(HH)	0.712	1.007	1.717				0.013	0.018	0.029
		(LL)	0.702	1.046	1.858				0.017	0.021	0.032
	EN → Y0	(HZ)	0.452	0.580	0.923						
		(LZ)	0.355	0.477	0.811						
		(ZH)	0.755	1.061	1.785				0.013	0.018	0.029
		(ZL)	0.818	1.172	1.977				0.017	0.021	0.032
	Y0 → Y1	(HH)	0.178	0.240	0.375	0.158	0.261	0.474			
		(LL)	0.155	0.200	0.294	0.161	0.215	0.327			
BE0F13PD100	A → Y0	(HH)	0.712	1.007	1.717				0.013	0.018	0.029
		(LL)	0.702	1.046	1.858				0.017	0.021	0.032
	EN → Y0	(HZ)	0.452	0.580	0.923						
		(LZ)	0.355	0.477	0.811						
		(ZH)	0.755	1.061	1.785				0.013	0.018	0.029
		(ZL)	0.818	1.172	1.977				0.017	0.021	0.032
	Y0 → Y1	(HH)	0.178	0.240	0.375	0.158	0.261	0.474			
		(LL)	0.155	0.200	0.294	0.161	0.215	0.327			
BE0F13PU100	A → Y0	(HH)	0.712	1.007	1.717				0.013	0.018	0.029
		(LL)	0.702	1.046	1.858				0.017	0.021	0.032
	EN → Y0	(HZ)	0.452	0.580	0.923						
		(LZ)	0.355	0.477	0.811						
		(ZH)	0.755	1.061	1.785				0.013	0.018	0.029
		(ZL)	0.818	1.172	1.977				0.017	0.021	0.032
	Y0 → Y1	(HH)	0.178	0.240	0.375	0.158	0.261	0.474			
		(LL)	0.155	0.200	0.294	0.161	0.215	0.327			
BEWF13	A → Y0	(HH)	0.712	1.007	1.717				0.013	0.018	0.029
		(LL)	0.702	1.046	1.858				0.017	0.021	0.032
	EN → Y0	(HZ)	0.452	0.580	0.923						
		(LZ)	0.355	0.477	0.811						
		(ZH)	0.755	1.061	1.785				0.013	0.018	0.029
		(ZL)	0.818	1.172	1.977				0.017	0.021	0.032
	Y0 → Y1	(HH)	0.178	0.240	0.375	0.158	0.261	0.474			
		(LL)	0.155	0.200	0.294	0.161	0.215	0.327			

Function	Schmitt I/O Buffer			External supply voltage	3.3 V
	Block type				
Drivability	no resistor	with 100 KΩ P/D	with 100 KΩ P/U	with 5 KΩ P/U	Cells
1mA					
2mA					
3mA	BSIU13	BSIU13PD100	BSIU13PU100	BSWU13	1
6mA	BSIC13	BSIC13PD100	BSIC13PU100	BSWC13	1
9mA	BSI313	BSI313PD100	BSI313PU100	BSW313	1
12mA	BSI113	BSI113PD100	BSI113PU100	BSW113	1
18mA	BSI513	BSI513PD100	BSI513PU100	BSW513	1
24mA	BSIF13	BSIF13PD100	BSIF13PU100	BSWF13	1

Logic Diagram



Truth Table

A	EN	Y0
0	1	0
1	1	1
X	0	Z

X:Irrelevant

Z:High Impedance

Y0	Y1
0	0
1	1

Block type	Input		Output	
	Symbol	Fan-in	Symbol	Fan-out
BSIU13 to BSWU13	A	0.124	Y1	1.739
	EN	0.124		
BSIC13 to BSWC13	A	0.124	Y1	1.739
	EN	0.124		
BSI313 to BSW313	A	0.124	Y1	1.739
	EN	0.124		
BSI113 to BSW113	A	0.124	Y1	1.739
	EN	0.120		
BSI513 to BSW513	A	0.125	Y1	1.739
	EN	0.125		
BSIF13 to BSWF13	A	0.125	Y1	1.739
	EN	0.125		

Block type	Switching speed										
	Path		t_{LD0} [ns]			t_1 (ns/pF)			T (ns/pF)		
	IN → OUT		MIN.	TYP.	MAX.	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.
BSIU13	A → Y0	(HH)	0.516	0.705	1.154				0.061	0.086	0.139
		(LL)	0.523	0.704	1.176				0.078	0.094	0.129
	EN → Y0	(HZ)	0.345	0.464	0.776						
		(LZ)	0.271	0.378	0.660						
		(ZH)	0.608	0.836	1.358				0.061	0.086	0.139
		(ZL)	0.641	0.841	1.318				0.078	0.094	0.129
	Y0 → Y1	(HH)	0.774	1.063	1.650	0.119	0.156	0.244			
		(LL)	0.726	1.065	1.653	0.062	0.077	0.110			
BSIU13PD100	A → Y0	(HH)	0.516	0.705	1.154				0.061	0.086	0.139
		(LL)	0.523	0.704	1.176				0.078	0.094	0.129
	EN → Y0	(HZ)	0.345	0.464	0.776						
		(LZ)	0.271	0.378	0.660						
		(ZH)	0.608	0.836	1.358				0.061	0.086	0.139
		(ZL)	0.641	0.841	1.318				0.078	0.094	0.129
	Y0 → Y1	(HH)	0.774	1.063	1.650	0.119	0.156	0.244			
		(LL)	0.726	1.065	1.653	0.062	0.077	0.110			
BSIU13PU100	A → Y0	(HH)	0.516	0.705	1.154				0.061	0.086	0.139
		(LL)	0.523	0.704	1.176				0.078	0.094	0.129
	EN → Y0	(HZ)	0.345	0.464	0.776						
		(LZ)	0.271	0.378	0.660						
		(ZH)	0.608	0.836	1.358				0.061	0.086	0.139
		(ZL)	0.641	0.841	1.318				0.078	0.094	0.129
	Y0 → Y1	(HH)	0.774	1.063	1.650	0.119	0.156	0.244			
		(LL)	0.726	1.065	1.653	0.062	0.077	0.110			
BSWU13	A → Y0	(HH)	0.516	0.705	1.154				0.061	0.086	0.139
		(LL)	0.523	0.704	1.176				0.078	0.094	0.129
	EN → Y0	(HZ)	0.345	0.464	0.776						
		(LZ)	0.271	0.378	0.660						
		(ZH)	0.608	0.836	1.358				0.061	0.086	0.139
		(ZL)	0.641	0.841	1.318				0.078	0.094	0.129
	Y0 → Y1	(HH)	0.774	1.063	1.650	0.119	0.156	0.244			
		(LL)	0.726	1.065	1.653	0.062	0.077	0.110			
BSIC13	A → Y0	(HH)	0.470	0.640	1.050				0.040	0.058	0.093
		(LL)	0.426	0.592	1.023				0.039	0.047	0.064
	EN → Y0	(HZ)	0.366	0.487	0.805						
		(LZ)	0.286	0.395	0.688						
		(ZH)	0.555	0.763	1.237				0.040	0.058	0.093
		(ZL)	0.542	0.726	1.162				0.039	0.047	0.064
	Y0 → Y1	(HH)	0.774	1.063	1.650	0.119	0.156	0.244			
		(LL)	0.726	1.065	1.653	0.062	0.077	0.110			
BSIC13PD100	A → Y0	(HH)	0.470	0.640	1.050				0.040	0.058	0.093
		(LL)	0.426	0.592	1.023				0.039	0.047	0.064
	EN → Y0	(HZ)	0.366	0.487	0.805						
		(LZ)	0.286	0.395	0.688						
		(ZH)	0.555	0.763	1.237				0.040	0.058	0.093
		(ZL)	0.542	0.726	1.162				0.039	0.047	0.064
	Y0 → Y1	(HH)	0.774	1.063	1.650	0.119	0.156	0.244			
		(LL)	0.726	1.065	1.653	0.062	0.077	0.110			
BSIC13PU100	A → Y0	(HH)	0.470	0.640	1.050				0.040	0.058	0.093
		(LL)	0.426	0.592	1.023				0.039	0.047	0.064
	EN → Y0	(HZ)	0.366	0.487	0.805						
		(LZ)	0.286	0.395	0.688						
		(ZH)	0.555	0.763	1.237				0.040	0.058	0.093
		(ZL)	0.542	0.726	1.162				0.039	0.047	0.064
	Y0 → Y1	(HH)	0.774	1.063	1.650	0.119	0.156	0.244			
		(LL)	0.726	1.065	1.653	0.062	0.077	0.110			

Block type	Switching speed										
	Path		t_{LD0} [ns]			t_1 (ns/pF)			T (ns/pF)		
	IN → OUT		MIN.	TYP.	MAX.	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.
BSWC13	A → Y0	(HH)	0.470	0.640	1.050				0.040	0.058	0.093
		(LL)	0.426	0.592	1.023				0.039	0.047	0.064
	EN → Y0	(HZ)	0.366	0.487	0.805						
		(LZ)	0.286	0.395	0.688						
		(ZH)	0.555	0.763	1.237				0.040	0.058	0.093
		(ZL)	0.542	0.726	1.162				0.039	0.047	0.064
	Y0 → Y1	(HH)	0.774	1.063	1.650	0.119	0.156	0.244			
		(LL)	0.726	1.065	1.653	0.062	0.077	0.110			
BSI313	A → Y0	(HH)	0.453	0.617	1.011				0.030	0.043	0.070
		(LL)	0.407	0.573	0.999				0.026	0.032	0.043
	EN → Y0	(HZ)	0.387	0.511	0.835						
		(LZ)	0.303	0.414	0.717						
		(ZH)	0.532	0.731	1.185				0.030	0.043	0.070
		(ZL)	0.519	0.703	1.131				0.026	0.032	0.043
	Y0 → Y1	(HH)	0.774	1.063	1.650	0.119	0.156	0.244			
		(LL)	0.726	1.065	1.653	0.062	0.077	0.110			
BSI313PD100	A → Y0	(HH)	0.453	0.617	1.011				0.030	0.043	0.070
		(LL)	0.407	0.573	0.999				0.026	0.032	0.043
	EN → Y0	(HZ)	0.387	0.511	0.835						
		(LZ)	0.303	0.414	0.717						
		(ZH)	0.532	0.731	1.185				0.030	0.043	0.070
		(ZL)	0.519	0.703	1.131				0.026	0.032	0.043
	Y0 → Y1	(HH)	0.774	1.063	1.650	0.119	0.156	0.244			
		(LL)	0.726	1.065	1.653	0.062	0.077	0.110			
BSI313PU100	A → Y0	(HH)	0.453	0.617	1.011				0.030	0.043	0.070
		(LL)	0.407	0.573	0.999				0.026	0.032	0.043
	EN → Y0	(HZ)	0.387	0.511	0.835						
		(LZ)	0.303	0.414	0.717						
		(ZH)	0.532	0.731	1.185				0.030	0.043	0.070
		(ZL)	0.519	0.703	1.131				0.026	0.032	0.043
	Y0 → Y1	(HH)	0.774	1.063	1.650	0.119	0.156	0.244			
		(LL)	0.726	1.065	1.653	0.062	0.077	0.110			
BSW313	A → Y0	(HH)	0.453	0.617	1.011				0.030	0.043	0.070
		(LL)	0.407	0.573	0.999				0.026	0.032	0.043
	EN → Y0	(HZ)	0.387	0.511	0.835						
		(LZ)	0.303	0.414	0.717						
		(ZH)	0.532	0.731	1.185				0.030	0.043	0.070
		(ZL)	0.519	0.703	1.131				0.026	0.032	0.043
	Y0 → Y1	(HH)	0.774	1.063	1.650	0.119	0.156	0.244			
		(LL)	0.726	1.065	1.653	0.062	0.077	0.110			
BSI113	A → Y0	(HH)	0.439	0.599	0.985				0.020	0.029	0.047
		(LL)	0.417	0.588	1.022				0.020	0.024	0.033
	EN → Y0	(HZ)	0.429	0.558	0.896						
		(LZ)	0.322	0.435	0.747						
		(ZH)	0.514	0.707	1.148				0.020	0.029	0.047
		(ZL)	0.515	0.701	1.129				0.020	0.024	0.033
	Y0 → Y1	(HH)	0.774	1.063	1.650	0.119	0.156	0.244			
		(LL)	0.726	1.065	1.653	0.062	0.077	0.110			
BSI113PD100	A → Y0	(HH)	0.439	0.599	0.985				0.020	0.029	0.047
		(LL)	0.417	0.588	1.022				0.020	0.024	0.033
	EN → Y0	(HZ)	0.429	0.558	0.896						
		(LZ)	0.322	0.435	0.747						
		(ZH)	0.514	0.707	1.148				0.020	0.029	0.047
		(ZL)	0.515	0.701	1.129				0.020	0.024	0.033
	Y0 → Y1	(HH)	0.774	1.063	1.650	0.119	0.156	0.244			
		(LL)	0.726	1.065	1.653	0.062	0.077	0.110			

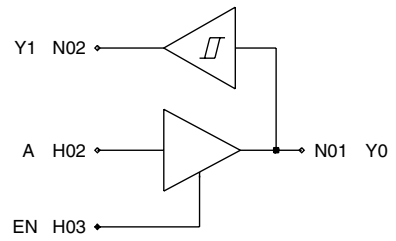
Block type	Switching speed										
	Path		t_{LD0} [ns]			t_1 (ns/pF)			T (ns/pF)		
	IN → OUT		MIN.	TYP.	MAX.	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.
BSI113PU100	A → Y0	(HH)	0.439	0.599	0.985				0.020	0.029	0.047
		(LL)	0.417	0.588	1.022				0.020	0.024	0.033
	EN → Y0	(HZ)	0.429	0.558	0.896						
		(LZ)	0.322	0.435	0.747						
		(ZH)	0.514	0.707	1.148				0.020	0.029	0.047
		(ZL)	0.515	0.701	1.129				0.020	0.024	0.033
	Y0 → Y1	(HH)	0.774	1.063	1.650	0.119	0.156	0.244			
		(LL)	0.726	1.065	1.653	0.062	0.077	0.110			
BSW113	A → Y0	(HH)	0.439	0.599	0.985				0.020	0.029	0.047
		(LL)	0.417	0.588	1.022				0.020	0.024	0.033
	EN → Y0	(HZ)	0.429	0.558	0.896						
		(LZ)	0.322	0.435	0.747						
		(ZH)	0.514	0.707	1.148				0.020	0.029	0.047
		(ZL)	0.515	0.701	1.129				0.020	0.024	0.033
	Y0 → Y1	(HH)	0.774	1.063	1.650	0.119	0.156	0.244			
		(LL)	0.726	1.065	1.653	0.062	0.077	0.110			
BSI513	A → Y0	(HH)	0.441	0.602	0.992				0.015	0.022	0.035
		(LL)	0.434	0.611	1.056				0.016	0.019	0.027
	EN → Y0	(HZ)	0.472	0.606	0.959						
		(LZ)	0.340	0.457	0.778						
		(ZH)	0.510	0.702	1.144				0.015	0.022	0.035
		(ZL)	0.517	0.706	1.137				0.016	0.019	0.027
	Y0 → Y1	(HH)	0.774	1.063	1.650	0.119	0.156	0.244			
		(LL)	0.726	1.065	1.653	0.062	0.077	0.110			
BSI513PD100	A → Y0	(HH)	0.441	0.602	0.992				0.015	0.022	0.035
		(LL)	0.434	0.611	1.056				0.016	0.019	0.027
	EN → Y0	(HZ)	0.472	0.606	0.959						
		(LZ)	0.340	0.457	0.778						
		(ZH)	0.510	0.702	1.144				0.015	0.022	0.035
		(ZL)	0.517	0.706	1.137				0.016	0.019	0.027
	Y0 → Y1	(HH)	0.774	1.063	1.650	0.119	0.156	0.244			
		(LL)	0.726	1.065	1.653	0.062	0.077	0.110			
BSI513PU100	A → Y0	(HH)	0.441	0.602	0.992				0.015	0.022	0.035
		(LL)	0.434	0.611	1.056				0.016	0.019	0.027
	EN → Y0	(HZ)	0.472	0.606	0.959						
		(LZ)	0.340	0.457	0.778						
		(ZH)	0.510	0.702	1.144				0.015	0.022	0.035
		(ZL)	0.517	0.706	1.137				0.016	0.019	0.027
	Y0 → Y1	(HH)	0.774	1.063	1.650	0.119	0.156	0.244			
		(LL)	0.726	1.065	1.653	0.062	0.077	0.110			
BSW513	A → Y0	(HH)	0.441	0.602	0.992				0.015	0.022	0.035
		(LL)	0.434	0.611	1.056				0.016	0.019	0.027
	EN → Y0	(HZ)	0.472	0.606	0.959						
		(LZ)	0.340	0.457	0.778						
		(ZH)	0.510	0.702	1.144				0.015	0.022	0.035
		(ZL)	0.517	0.706	1.137				0.016	0.019	0.027
	Y0 → Y1	(HH)	0.774	1.063	1.650	0.119	0.156	0.244			
		(LL)	0.726	1.065	1.653	0.062	0.077	0.110			
BSIF13	A → Y0	(HH)	0.456	0.623	1.028				0.011	0.016	0.026
		(LL)	0.463	0.649	1.111				0.012	0.014	0.020
	EN → Y0	(HZ)	0.539	0.683	1.060						
		(LZ)	0.376	0.499	0.837						
		(ZH)	0.513	0.708	1.156				0.011	0.016	0.026
		(ZL)	0.525	0.720	1.157				0.012	0.014	0.020
	Y0 → Y1	(HH)	0.774	1.063	1.650	0.119	0.156	0.244			
		(LL)	0.726	1.065	1.653	0.062	0.077	0.110			

Block type	Switching speed										
	Path		t_{LD0} [ns]			t_1 (ns/pF)			T (ns/pF)		
	IN → OUT		MIN.	TYP.	MAX.	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.
BSIF13PD100	A → Y0	(HH)	0.456	0.623	1.028				0.011	0.016	0.026
		(LL)	0.463	0.649	1.111				0.012	0.014	0.020
	EN → Y0	(HZ)	0.539	0.683	1.060						
		(LZ)	0.376	0.499	0.837						
		(ZH)	0.513	0.708	1.156				0.011	0.016	0.026
		(ZL)	0.525	0.720	1.157				0.012	0.014	0.020
	Y0 → Y1	(HH)	0.774	1.063	1.650	0.119	0.156	0.244			
		(LL)	0.726	1.065	1.653	0.062	0.077	0.110			
BSIF13PU100	A → Y0	(HH)	0.456	0.623	1.028				0.011	0.016	0.026
		(LL)	0.463	0.649	1.111				0.012	0.014	0.020
	EN → Y0	(HZ)	0.539	0.683	1.060						
		(LZ)	0.376	0.499	0.837						
		(ZH)	0.513	0.708	1.156				0.011	0.016	0.026
		(ZL)	0.525	0.720	1.157				0.012	0.014	0.020
	Y0 → Y1	(HH)	0.774	1.063	1.650	0.119	0.156	0.244			
		(LL)	0.726	1.065	1.653	0.062	0.077	0.110			
BSWF13	A → Y0	(HH)	0.456	0.623	1.028				0.011	0.016	0.026
		(LL)	0.463	0.649	1.111				0.012	0.014	0.020
	EN → Y0	(HZ)	0.539	0.683	1.060						
		(LZ)	0.376	0.499	0.837						
		(ZH)	0.513	0.708	1.156				0.011	0.016	0.026
		(ZL)	0.525	0.720	1.157				0.012	0.014	0.020
	Y0 → Y1	(HH)	0.774	1.063	1.650	0.119	0.156	0.244			
		(LL)	0.726	1.065	1.653	0.062	0.077	0.110			

[MEMO]

Function	Low-noise Schmitt I/O Buffer			External supply voltage	3.3 V
Block type					
Drivability	no resistor	with 100 KΩ P/D	with 100 KΩ P/U	with 5 KΩ P/U	Cells
1mA					
2mA					
3mA					
6mA	BFIC13	BFIC13PD100	BFIC13PU100	BFWC13	1
9mA	BFI313	BFI313PD100	BFI313PU100	BFW313	1
12mA	BFI113	BFI113PD100	BFI113PU100	BFW113	1
18mA	BFI513	BFI513PD100	BFI513PU100	BFW513	1
24mA	BFIF13	BFIF13PD100	BFIF13PU100	BFWF13	1

Logic Diagram



Block type	Input		Output	
	Symbol	Fan-in	Symbol	Fan-out
BFIC13 to BFWC13	A	0.120	Y1	1.739
	EN	0.120		
BFI313 to BFW313	A	0.124	Y1	1.739
	EN	0.120		
BFI113 to BFW113	A	0.124	Y1	1.739
	EN	0.120		
BFI513 to BFW513	A	0.125	Y1	1.739
	EN	0.125		
BFIF13 to BFWF13	A	0.125	Y1	1.739
	EN	0.125		

Truth Table

A	EN	Y0
0	1	0
1	1	1
X	0	Z

X:Irrelevant

Z:High Impedance

Y0	Y1
0	0
1	1

Block type	Switching speed										
	Path		t_{LD0} [ns]			t_1 (ns/pF)			T (ns/pF)		
	IN → OUT		MIN.	TYP.	MAX.	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.
BFIC13	A → Y0	(HH)	0.734	1.024	1.820				0.041	0.058	0.094
		(LL)	0.841	1.239	2.281				0.042	0.051	0.073
	EN → Y0	(HZ)	0.257	0.355	0.625						
		(LZ)	0.255	0.362	0.649						
		(ZH)	0.780	1.098	1.936				0.041	0.058	0.094
		(ZL)	0.986	1.410	2.474				0.042	0.051	0.073
	Y0 → Y1	(HH)	0.774	1.063	1.650	0.119	0.156	0.244			
		(LL)	0.726	1.065	1.653	0.062	0.077	0.110			
BFIC13PD100	A → Y0	(HH)	0.734	1.024	1.820				0.041	0.058	0.094
		(LL)	0.841	1.239	2.281				0.042	0.051	0.073
	EN → Y0	(HZ)	0.257	0.355	0.625						
		(LZ)	0.255	0.362	0.649						
		(ZH)	0.780	1.098	1.936				0.041	0.058	0.094
		(ZL)	0.986	1.410	2.474				0.042	0.051	0.073
	Y0 → Y1	(HH)	0.774	1.063	1.650	0.119	0.156	0.244			
		(LL)	0.726	1.065	1.653	0.062	0.077	0.110			
BFIC13PU100	A → Y0	(HH)	0.734	1.024	1.820				0.041	0.058	0.094
		(LL)	0.841	1.239	2.281				0.042	0.051	0.073
	EN → Y0	(HZ)	0.257	0.355	0.625						
		(LZ)	0.255	0.362	0.649						
		(ZH)	0.780	1.098	1.936				0.041	0.058	0.094
		(ZL)	0.986	1.410	2.474				0.042	0.051	0.073
	Y0 → Y1	(HH)	0.774	1.063	1.650	0.119	0.156	0.244			
		(LL)	0.726	1.065	1.653	0.062	0.077	0.110			
BFWC13	A → Y0	(HH)	0.734	1.024	1.820				0.041	0.058	0.094
		(LL)	0.841	1.239	2.281				0.042	0.051	0.073
	EN → Y0	(HZ)	0.257	0.355	0.625						
		(LZ)	0.255	0.362	0.649						
		(ZH)	0.780	1.098	1.936				0.041	0.058	0.094
		(ZL)	0.986	1.410	2.474				0.042	0.051	0.073
	Y0 → Y1	(HH)	0.774	1.063	1.650	0.119	0.156	0.244			
		(LL)	0.726	1.065	1.653	0.062	0.077	0.110			
BFI313	A → Y0	(HH)	0.748	1.050	1.856				0.031	0.044	0.071
		(LL)	0.830	1.236	2.250				0.030	0.038	0.056
	EN → Y0	(HZ)	0.280	0.381	0.658						
		(LZ)	0.274	0.385	0.680						
		(ZH)	0.791	1.117	1.959				0.031	0.044	0.071
		(ZL)	0.972	1.402	2.433				0.030	0.038	0.056
	Y0 → Y1	(HH)	0.774	1.063	1.650	0.119	0.156	0.244			
		(LL)	0.726	1.065	1.653	0.062	0.077	0.110			
BFI313PD100	A → Y0	(HH)	0.748	1.050	1.856				0.031	0.044	0.071
		(LL)	0.830	1.236	2.250				0.030	0.038	0.056
	EN → Y0	(HZ)	0.280	0.381	0.658						
		(LZ)	0.274	0.385	0.680						
		(ZH)	0.791	1.117	1.959				0.031	0.044	0.071
		(ZL)	0.972	1.402	2.433				0.030	0.038	0.056
	Y0 → Y1	(HH)	0.774	1.063	1.650	0.119	0.156	0.244			
		(LL)	0.726	1.065	1.653	0.062	0.077	0.110			
BFI313PU100	A → Y0	(HH)	0.748	1.050	1.856				0.031	0.044	0.071
		(LL)	0.830	1.236	2.250				0.030	0.038	0.056
	EN → Y0	(HZ)	0.280	0.381	0.658						
		(LZ)	0.274	0.385	0.680						
		(ZH)	0.791	1.117	1.959				0.031	0.044	0.071
		(ZL)	0.972	1.402	2.433				0.030	0.038	0.056
	Y0 → Y1	(HH)	0.774	1.063	1.650	0.119	0.156	0.244			
		(LL)	0.726	1.065	1.653	0.062	0.077	0.110			

Block type	Switching speed										
	Path		t_{LD0} [ns]			t_1 (ns/pF)			T (ns/pF)		
	IN → OUT		MIN.	TYP.	MAX.	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.
BFW313	A → Y0	(HH)	0.748	1.050	1.856				0.031	0.044	0.071
		(LL)	0.830	1.236	2.250				0.030	0.038	0.056
	EN → Y0	(HZ)	0.280	0.381	0.658						
		(LZ)	0.274	0.385	0.680						
		(ZH)	0.791	1.117	1.959				0.031	0.044	0.071
		(ZL)	0.972	1.402	2.433				0.030	0.038	0.056
	Y0 → Y1	(HH)	0.774	1.063	1.650	0.119	0.156	0.244			
		(LL)	0.726	1.065	1.653	0.062	0.077	0.110			
BFI113	A → Y0	(HH)	0.787	1.116	1.966				0.021	0.030	0.050
		(LL)	0.837	1.256	2.277				0.025	0.032	0.048
	EN → Y0	(HZ)	0.326	0.434	0.728						
		(LZ)	0.294	0.407	0.713						
		(ZH)	0.829	1.178	2.056				0.021	0.030	0.050
		(ZL)	0.970	1.409	2.439				0.025	0.032	0.048
	Y0 → Y1	(HH)	0.774	1.063	1.650	0.119	0.156	0.244			
		(LL)	0.726	1.065	1.653	0.062	0.077	0.110			
BFI113PD100	A → Y0	(HH)	0.787	1.116	1.966				0.021	0.030	0.050
		(LL)	0.837	1.256	2.277				0.025	0.032	0.048
	EN → Y0	(HZ)	0.326	0.434	0.728						
		(LZ)	0.294	0.407	0.713						
		(ZH)	0.829	1.178	2.056				0.021	0.030	0.050
		(ZL)	0.970	1.409	2.439				0.025	0.032	0.048
	Y0 → Y1	(HH)	0.774	1.063	1.650	0.119	0.156	0.244			
		(LL)	0.726	1.065	1.653	0.062	0.077	0.110			
BFI113PU100	A → Y0	(HH)	0.787	1.116	1.966				0.021	0.030	0.050
		(LL)	0.837	1.256	2.277				0.025	0.032	0.048
	EN → Y0	(HZ)	0.326	0.434	0.728						
		(LZ)	0.294	0.407	0.713						
		(ZH)	0.829	1.178	2.056				0.021	0.030	0.050
		(ZL)	0.970	1.409	2.439				0.025	0.032	0.048
	Y0 → Y1	(HH)	0.774	1.063	1.650	0.119	0.156	0.244			
		(LL)	0.726	1.065	1.653	0.062	0.077	0.110			
BFW113	A → Y0	(HH)	0.787	1.116	1.966				0.021	0.030	0.050
		(LL)	0.837	1.256	2.277				0.025	0.032	0.048
	EN → Y0	(HZ)	0.326	0.434	0.728						
		(LZ)	0.294	0.407	0.713						
		(ZH)	0.829	1.178	2.056				0.021	0.030	0.050
		(ZL)	0.970	1.409	2.439				0.025	0.032	0.048
	Y0 → Y1	(HH)	0.774	1.063	1.650	0.119	0.156	0.244			
		(LL)	0.726	1.065	1.653	0.062	0.077	0.110			
BFI513	A → Y0	(HH)	0.699	0.991	1.724				0.016	0.023	0.038
		(LL)	0.725	1.080	1.928				0.021	0.026	0.038
	EN → Y0	(HZ)	0.378	0.493	0.808						
		(LZ)	0.311	0.427	0.742						
		(ZH)	0.742	1.050	1.805				0.016	0.023	0.038
		(ZL)	0.848	1.212	2.055				0.021	0.026	0.038
	Y0 → Y1	(HH)	0.774	1.063	1.650	0.119	0.156	0.244			
		(LL)	0.726	1.065	1.653	0.062	0.077	0.110			
BFI513PD100	A → Y0	(HH)	0.699	0.991	1.724				0.016	0.023	0.038
		(LL)	0.725	1.080	1.928				0.021	0.026	0.038
	EN → Y0	(HZ)	0.378	0.493	0.808						
		(LZ)	0.311	0.427	0.742						
		(ZH)	0.742	1.050	1.805				0.016	0.023	0.038
		(ZL)	0.848	1.212	2.055				0.021	0.026	0.038
	Y0 → Y1	(HH)	0.774	1.063	1.650	0.119	0.156	0.244			
		(LL)	0.726	1.065	1.653	0.062	0.077	0.110			

Block type	Switching speed										
	Path		t_{LD0} [ns]			t_1 (ns/pF)			T (ns/pF)		
	IN → OUT		MIN.	TYP.	MAX.	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.
BFI513PU100	A → Y0	(HH)	0.699	0.991	1.724				0.016	0.023	0.038
		(LL)	0.725	1.080	1.928				0.021	0.026	0.038
	EN → Y0	(HZ)	0.378	0.493	0.808						
		(LZ)	0.311	0.427	0.742						
		(ZH)	0.742	1.050	1.805				0.016	0.023	0.038
		(ZL)	0.848	1.212	2.055				0.021	0.026	0.038
	Y0 → Y1	(HH)	0.774	1.063	1.650	0.119	0.156	0.244			
		(LL)	0.726	1.065	1.653	0.062	0.077	0.110			
BFW513	A → Y0	(HH)	0.699	0.991	1.724				0.016	0.023	0.038
		(LL)	0.725	1.080	1.928				0.021	0.026	0.038
	EN → Y0	(HZ)	0.378	0.493	0.808						
		(LZ)	0.311	0.427	0.742						
		(ZH)	0.742	1.050	1.805				0.016	0.023	0.038
		(ZL)	0.848	1.212	2.055				0.021	0.026	0.038
	Y0 → Y1	(HH)	0.774	1.063	1.650	0.119	0.156	0.244			
		(LL)	0.726	1.065	1.653	0.062	0.077	0.110			
BFIF13	A → Y0	(HH)	0.712	1.007	1.717				0.013	0.018	0.029
		(LL)	0.702	1.046	1.858				0.017	0.021	0.032
	EN → Y0	(HZ)	0.452	0.580	0.923						
		(LZ)	0.355	0.477	0.811						
		(ZH)	0.755	1.061	1.785				0.013	0.018	0.029
		(ZL)	0.818	1.172	1.977				0.017	0.021	0.032
	Y0 → Y1	(HH)	0.774	1.063	1.650	0.119	0.156	0.244			
		(LL)	0.726	1.065	1.653	0.062	0.077	0.110			
BFIF13PD100	A → Y0	(HH)	0.712	1.007	1.717				0.013	0.018	0.029
		(LL)	0.702	1.046	1.858				0.017	0.021	0.032
	EN → Y0	(HZ)	0.452	0.580	0.923						
		(LZ)	0.355	0.477	0.811						
		(ZH)	0.755	1.061	1.785				0.013	0.018	0.029
		(ZL)	0.818	1.172	1.977				0.017	0.021	0.032
	Y0 → Y1	(HH)	0.774	1.063	1.650	0.119	0.156	0.244			
		(LL)	0.726	1.065	1.653	0.062	0.077	0.110			
BFIF13PU100	A → Y0	(HH)	0.712	1.007	1.717				0.013	0.018	0.029
		(LL)	0.702	1.046	1.858				0.017	0.021	0.032
	EN → Y0	(HZ)	0.452	0.580	0.923						
		(LZ)	0.355	0.477	0.811						
		(ZH)	0.755	1.061	1.785				0.013	0.018	0.029
		(ZL)	0.818	1.172	1.977				0.017	0.021	0.032
	Y0 → Y1	(HH)	0.774	1.063	1.650	0.119	0.156	0.244			
		(LL)	0.726	1.065	1.653	0.062	0.077	0.110			
BFWF13	A → Y0	(HH)	0.712	1.007	1.717				0.013	0.018	0.029
		(LL)	0.702	1.046	1.858				0.017	0.021	0.032
	EN → Y0	(HZ)	0.452	0.580	0.923						
		(LZ)	0.355	0.477	0.811						
		(ZH)	0.755	1.061	1.785				0.013	0.018	0.029
		(ZL)	0.818	1.172	1.977				0.017	0.021	0.032
	Y0 → Y1	(HH)	0.774	1.063	1.650	0.119	0.156	0.244			
		(LL)	0.726	1.065	1.653	0.062	0.077	0.110			

[MEMO]

[MEMO]

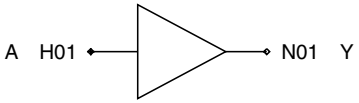
1.4 Test Mode Control

[MEMO]

Function	Input Buffer (2.5V) for TMC Terminal (TMC1)	External supply voltage	2.5 V

Block type					
Function	no resistor	with 100 KΩ P/D	with 100 KΩ P/U	with 5 KΩ P/U	Cells
Normal	FM1112				1
Schmitt					
Clock					

Logic Diagram for "Normal"



Truth Table

A	Y
1	1
0	0

Logic Diagram for "Schmitt"

Logic Diagram for "Clock"

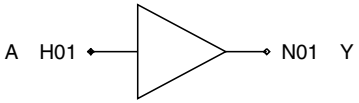
Block type	Input		Output	
	Symbol	Fan-In	Symbol	Fan-Out
FM1112	A	-	Y	0.834

Block type	Switching speed										
	Path		t_{LD0} [ns]			t_1 (ns/pF)			T (ns/pF)		
	IN → OUT		MIN.	TYP.	MAX.	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.
FM1112	A → Y	(HH)	0.120	0.166	0.265	0.155	0.257	0.467			
		(LL)	0.220	0.312	0.481	0.221	0.305	0.476			

Function	Input Buffer (2.5V) for TMC Terminal (TMC2)	External supply voltage	2.5 V

Block type					
Function	no resistor	with 100 KΩ P/D	with 100 KΩ P/U	with 5 KΩ P/U	Cells
Normal	FM2112				1
Schmitt					
Clock					

Logic Diagram for "Normal"



Truth Table

A	Y
1	1
0	0

Logic Diagram for "Schmitt"

Logic Diagram for "Clock"

Block type	Input		Output	
	Symbol	Fan-In	Symbol	Fan-Out
FM2112	A	-	Y	0.834

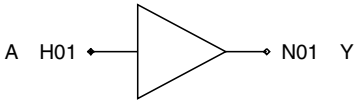
Block type	Switching speed										
	Path		t_{LD0} [ns]			t_1 (ns/pF)			T (ns/pF)		
	IN → OUT		MIN.	TYP.	MAX.	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.
FM2112	A → Y	(HH)	0.120	0.166	0.265	0.155	0.257	0.467			
		(LL)	0.220	0.312	0.481	0.221	0.305	0.476			

Function	Input Buffer (3.3V) for TMC Terminal (TMC1)	External supply voltage	3.3 V

Block type

Function	no resistor	with 100 KΩ P/D	with 100 KΩ P/U	with 5 KΩ P/U	Cells
Normal	FM1113				1
Schmitt					
Clock					

Logic Diagram for "Normal"



Truth Table

A	Y
1	1
0	0

Logic Diagram for "Schmitt"

Logic Diagram for "Clock"

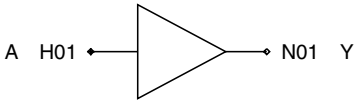
Block type	Input		Output	
	Symbol	Fan-In	Symbol	Fan-Out
FM1113	A	-	Y	0.864

Block type	Switching speed										
	Path		t_{LD0} [ns]			t_1 (ns/pF)			T (ns/pF)		
	IN → OUT		MIN.	TYP.	MAX.	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.
FM1113	A → Y	(HH)	0.178	0.240	0.375	0.158	0.261	0.474			
		(LL)	0.155	0.200	0.294	0.161	0.215	0.327			

Function	Input Buffer (3.3V) for TMC Terminal (TMC2)	External supply voltage	3.3 V

Block type					
Function	no resistor	with 100 KΩ P/D	with 100 KΩ P/U	with 5 KΩ P/U	Cells
Normal	FM2113				1
Schmitt					
Clock					

Logic Diagram for "Normal"



Truth Table

A	Y
1	1
0	0

Logic Diagram for "Schmitt"

Logic Diagram for "Clock"

Block type	Input		Output	
	Symbol	Fan-In	Symbol	Fan-Out
FM2113	A	-	Y	0.864

Block type	Switching speed										
	Path		t_{LD0} [ns]			t_1 (ns/pF)			T (ns/pF)		
	IN → OUT		MIN.	TYP.	MAX.	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.
FM2113	A → Y	(HH)	0.178	0.240	0.375	0.158	0.261	0.474			
		(LL)	0.155	0.200	0.294	0.161	0.215	0.327			

[MEMO]

[MEMO]

1.5 PCI

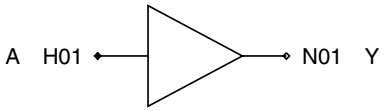
[MEMO]

Function	3V PCI Input Buffer	External supply voltage	3.3 V

Block type

Function	no resistor	with 100 KΩ P/D	with 100 KΩ P/U	with 5 KΩ P/U	Cells
Normal	BP3I13				1
Schmitt					
Clock					

Logic Diagram



Block type	Input		Output	
	Symbol	Fan-in	Symbol	Fan-out
BP3I13	A	-	Y	0.863

Truth Table

A	Y
1	1
0	0

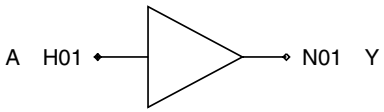
Block type	Switching speed										
	Path		t_{LD0} [ns]			t_1 (ns/pF)			T (ns/pF)		
	IN → OUT		MIN.	TYP.	MAX.	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.
BP3I13	A → Y	(HH)	0.178	0.241	0.377	0.158	0.261	0.474			
		(LL)	0.154	0.200	0.293	0.162	0.216	0.327			

Function	3V PCI Output Buffer	External supply voltage	3.3 V

Block type

Function	no resistor	with 100 KΩ P/D	with 100 KΩ P/U	with 5 KΩ P/U	Cells
Normal	BP3O13				1
Schmitt					
Clock					

Logic Diagram



Block type	Input		Output	
	Symbol	Fan-in	Symbol	Fan-out
BP3O13	A	0.125	Y	-

Truth Table

A	Y
1	1
0	0

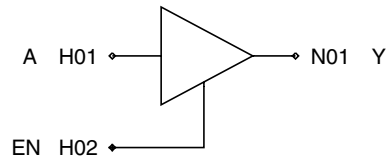
Block type	Switching speed										
	Path		t_{LD0} [ns]			t_1 (ns/pF)			T (ns/pF)		
	IN → OUT		MIN.	TYP.	MAX.	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.
BP3O13	A → Y	(HH)	0.446	0.602	0.979				0.013	0.017	0.025
		(LL)	0.438	0.625	1.092				0.012	0.016	0.024

Function	3V PCI 3-state Buffer	External supply voltage	3.3 V

Block type

Function	no resistor	with 100 KΩ P/D	with 100 KΩ P/U	with 5 KΩ P/U	Cells
Normal	BP3T13				1
Schmitt					
Clock					

Logic Diagram



Block type	Input		Output	
	Symbol	Fan-in	Symbol	Fan-out
BP3T13	A	0.125	Y	-
	EN	0.125		

Truth Table

A	EN	Y
0	1	0
1	1	1
X	0	Z

X:Irrelevant

Z:High Impedance

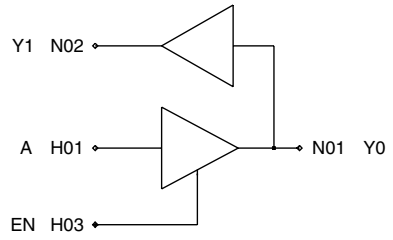
Block type	Switching speed											
	Path		t_{LD0} [ns]			t_1 (ns/pF)			T (ns/pF)			
	IN → OUT		MIN.	TYP.	MAX.	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.
BP3T13	A → Y	(HH)	0.451	0.609	0.989				0.013	0.017	0.025
		(LL)	0.444	0.633	1.103				0.012	0.016	0.024
	EN → Y	(HZ)	0.493	0.630	0.990						
		(LZ)	0.377	0.499	0.837						
		(ZH)	0.507	0.692	1.116				0.013	0.017	0.025
		(ZL)	0.528	0.729	1.185				0.012	0.016	0.024

Function	3V PCI I/O Buffer	External supply voltage	3.3 V

Block type

Function	no resistor	with 100 KΩ P/D	with 100 KΩ P/U	with 5 KΩ P/U	Cells
Normal	BP3B13				1
Schmitt					
Clock					

Logic Diagram



Block type	Input		Output	
	Symbol	Fan-in	Symbol	Fan-out
BP3B13	A	0.125	Y1	0.863
	EN	0.125		

Truth Table

A	EN	Y0
0	1	0
1	1	1
X	0	Z

Y0	Y1
0	0
1	1

X:Irrelevant

Z:High Impedance

Block type	Switching speed										
	Path		t_{LD0} [ns]			t_1 (ns/pF)			T (ns/pF)		
	IN → OUT		MIN.	TYP.	MAX.	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.
BP3B13	A → Y0	(HH)	0.451	0.609	0.989				0.013	0.017	0.025
		(LL)	0.444	0.633	1.103				0.012	0.016	0.024
	EN → Y0	(HZ)	0.493	0.630	0.990						
		(LZ)	0.377	0.499	0.837						
		(ZH)	0.507	0.692	1.116				0.013	0.017	0.025
		(ZL)	0.528	0.729	1.185				0.012	0.016	0.024
	Y0 → Y1	(HH)	0.178	0.241	0.377	0.158	0.261	0.474			
		(LL)	0.154	0.200	0.293	0.162	0.216	0.327			

[MEMO]

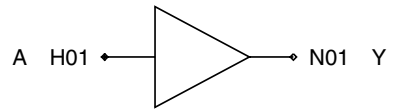
[MEMO]

1.6 PCI-X

[MEMO]

Function	PCI-X Input Buffer		External supply voltage	3.3 V
Block type				
-	mode1			Cells
-	BP3IX13			1
-				
-				

Logic Diagram



Block type	Input		Output	
	Symbol	Fan-in	Symbol	Fan-out
BP3IX13	A	-	Y	0.863

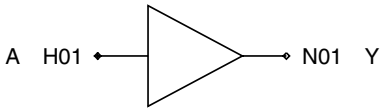
Truth Table

A	Y
1	1
0	0

Block type	Switching speed										
	Path		t_{LD0} [ns]			t_1 (ns/pF)			T (ns/pF)		
	IN → OUT		MIN.	TYP.	MAX.	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.
BP3IX13	A → Y	(HH)	0.178	0.240	0.377	0.158	0.261	0.474			
		(LL)	0.155	0.200	0.293	0.162	0.216	0.327			

Function	PCI-X Output Buffer			External supply voltage	3.3 V
Block type					
-	mode1				Cells
-	BP3OX13				1
-					
-					

Logic Diagram



Block type	Input		Output	
	Symbol	Fan-in	Symbol	Fan-out
BP3OX13	A	0.125	Y	-

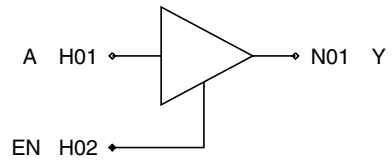
Truth Table

A	Y
1	1
0	0

Block type	Switching speed										
	Path		t_{LD0} [ns]			t_1 (ns/pF)			T (ns/pF)		
	IN → OUT		MIN.	TYP.	MAX.	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.
BP3OX13	A → Y	(HH)	0.563	0.763	1.244				0.011	0.013	0.018
		(LL)	0.591	0.835	1.423				0.012	0.014	0.020

Function	PCI-X 3-state Buffer			External supply voltage	3.3 V
Block type					
-	mode1				Cells
-	BP3TX13				1
-					
-					

Logic Diagram



Block type	Input		Output	
	Symbol	Fan-in	Symbol	Fan-out
BP3TX13	A	0.125	Y	-
	EN	0.125		

Truth Table

A	EN	Y
0	1	0
1	1	1
X	0	Z

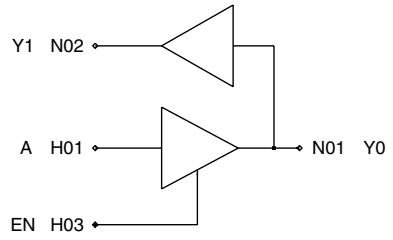
X:Irrelevant

Z:High Impedance

Block type	Switching speed											
	Path		t_{LD0} [ns]			t_1 (ns/pF)			T (ns/pF)			
	IN → OUT		MIN.	TYP.	MAX.	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.
BP3TX13	A → Y	(HH)	0.569	0.771	1.256				0.011	0.013	0.018
		(LL)	0.597	0.843	1.435				0.012	0.014	0.020
	EN → Y	(HZ)	0.618	0.774	1.178						
		(LZ)	0.510	0.654	1.056						
		(ZH)	0.561	0.768	1.246				0.011	0.013	0.018
		(ZL)	0.585	0.824	1.356				0.012	0.014	0.020

Function	PCI-X I/O Buffer			External supply voltage	3.3 V
Block type					
-	mode1				Cells
-	BP3BX13				1
-					
-					

Logic Diagram



Block type	Input		Output	
	Symbol	Fan-in	Symbol	Fan-out
BP3BX13	A	0.125	Y1	0.863
	EN	0.125		

Truth Table

A	EN	Y0
0	1	0
1	1	1
X	0	Z

X:Irrelevant

Z:High Impedance

Y0	Y1
0	0
1	1

Block type	Switching speed										
	Path		t_{LD0} [ns]			t_1 (ns/pF)			T (ns/pF)		
	IN → OUT		MIN.	TYP.	MAX.	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.
BP3BX13	A → Y0	(HH)	0.569	0.771	1.256				0.011	0.013	0.018
		(LL)	0.597	0.843	1.435				0.012	0.014	0.020
	EN → Y0	(HZ)	0.618	0.774	1.178						
		(LZ)	0.510	0.654	1.056						
		(ZH)	0.561	0.768	1.246				0.011	0.013	0.018
		(ZL)	0.585	0.824	1.356				0.012	0.014	0.020
	Y0 → Y1	(HH)	0.178	0.240	0.377	0.158	0.261	0.474			
		(LL)	0.155	0.200	0.293	0.162	0.216	0.327			

[MEMO]

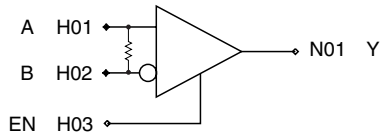
[MEMO]

1.7 2.5V LVDS

[MEMO]

Function	2.5V LVDS Buffer (Receiver)			External supply voltage	2.5 V
Block type					
Function	with 50 KΩ P/D	with 100 KΩ P/D	with 100 KΩ P/U	with 5 KΩ P/U	Cells
Normal	FIXM12R				2
Schmitt					
Clock					

Logic Diagram



Block type	Input		Output	
	Symbol	Fan-in	Symbol	Fan-out
FIXM12R	A	-	Y	0.422
	B	-		
	EN	0.095		

Truth Table

A	B	EN	Y
1	0	1	1
0	1	1	0
X	X	0	1
open		X	1

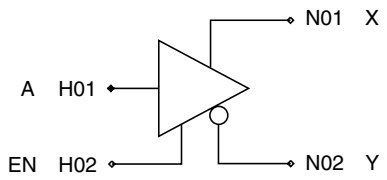
Block type	Switching speed										
	Path		t_{LD0} [ns]			t_1 (ns/pF)			T (ns/pF)		
	IN → OUT		MIN.	TYP.	MAX.	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.
FIXM12R	A → Y	(HH)	0.438	0.613	1.259	0.450	0.588	0.913			
		(LL)	0.485	0.677	1.746	0.443	0.547	0.787			
	B → Y	(HL)	0.485	0.677	1.746	0.443	0.547	0.787			
		(LH)	0.438	0.613	1.259	0.450	0.588	0.913			
	EN → Y	(HL)	7.034	9.203	12.569	0.443	0.548	0.782			
		(LH)	0.033	0.040	0.065	0.442	0.588	0.912			

Function	2.5V LVDS Buffer (Driver)	External supply voltage	2.5 V

Block type

Function	no resistor	with 100 KΩ P/D	with 100 KΩ P/U	with 5 KΩ P/U	Cells
Normal	FO0M12				2
Schmitt					
Clock					

Logic Diagram



Block type	Input		Output	
	Symbol	Fan-in	Symbol	Fan-out
FO0M12	A	0.054	X	-
	EN	0.057	Y	-

Truth Table

A	EN	X	Y	
1	1	1	0	
0	1	0	1	
X	0	Z	Z	
1	X	-	-	← Prohibition
0	X	-	-	← Prohibition
X	1	-	-	← Prohibition
X	X	-	-	← Prohibition

X:Irrelevant

Z:High Impedance

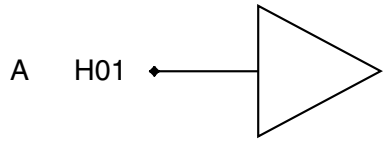
Block type	Switching speed											
	Path		t_{LD0} [ns]			t_1 (ns/pF)			T (ns/pF)		
	IN → OUT		MIN.	TYP.	MAX.	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.
FO0M12	A → X	(HH)	0.505	0.650	0.948				0.021	0.023	0.025
		(LL)	0.501	0.648	0.949				0.021	0.023	0.025
	A → Y	(HL)	0.505	0.650	0.948				0.021	0.023	0.025
		(LH)	0.501	0.648	0.949				0.021	0.023	0.025
	EN → X	(HZ)	2.667	4.005	6.253						
		(LZ)	2.662	3.982	6.213						
		(ZH)	2.255	3.477	6.108				0.221	0.293	0.403
		(ZL)	1.378	2.048	3.393				0.199	0.255	0.337
	EN → Y	(HZ)	2.662	3.982	6.213						
		(LZ)	2.667	4.005	6.253						
		(ZH)	1.378	2.048	3.393				0.199	0.255	0.337
		(ZL)	2.255	3.477	6.108				0.221	0.293	0.403

Function	2.5V LVDS Buffer (Bias control input buffer)	External supply voltage	2.5 V

Block type

Function	no resistor	with 100 KΩ P/D	with 100 KΩ P/U	with 5 KΩ P/U	Cells
Normal	FI0M12				1
Schmitt					
Clock					

Logic Diagram



Block type	Input		Output	
	Symbol	Fan-in	Symbol	Fan-out
FI0M12	A	-		

Truth Table

A	BiasMode
0	Off
1	On

Block type	Switching speed										
	Path		t_{LD0} [ns]			t_1 (ns/pF)			T (ns/pF)		
	IN → OUT		MIN.	TYP.	MAX.	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.
FI0M12											

[MEMO]

[MEMO]

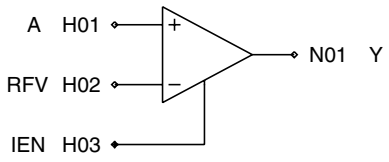
1.8 LVPECL

[MEMO]

Function	3.3V PECL Input Buffer with EN	External supply voltage	3.3 V

Block type					
Function	no resistor	with 100 KΩ P/D	with 100 KΩ P/U	with 5 KΩ P/U	Cells
Normal	FIX11P				1
Schmitt					
Clock					

Logic Diagram



Block type	Input		Output	
	Symbol	Fan-in	Symbol	Fan-out
FIX11P	A	-	Y	1.773
	RFV	0.327		
	IEN	0.096		

Truth Table

A	IEN	Y
1	1	1
0	1	0
X	0	1

X:Irrelevant

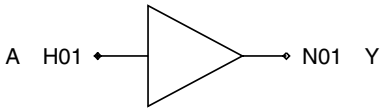
Block type	Switching speed										
	Path		t_{LD0} [ns]			t_1 (ns/pF)			T (ns/pF)		
	IN → OUT		MIN.	TYP.	MAX.	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.
FIX11P	A → Y	(HH)	0.942	1.533	2.611	0.117	0.152	0.233			
		(LL)	0.974	1.287	1.833	0.123	0.153	0.218			
	IEN → Y	(HL)	0.501	0.738	1.333	0.122	0.152	0.216			
		(LH)	1.511	2.205	5.261	0.116	0.151	0.231			

Function	3.3V PECL Input Buffer for Reference Voltage	External supply voltage	–

Block type

Function	no resistor	with 100 KΩ P/D	with 100 KΩ P/U	with 5 KΩ P/U	Cells
Normal	FIP31P				1
Schmitt					
Clock					

Logic Diagram



Block type	Input		Output	
	Symbol	Fan-in	Symbol	Fan-out
FIP31P	A	-	Y	50.000

Truth Table

A	Y
1	1
0	0

Block type	Switching speed										
	Path		t_{LD0} [ns]			t_1 (ns/pF)			T (ns/pF)		
	IN → OUT		MIN.	TYP.	MAX.	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.
FIP31P	A → Y	(HH)	0.020	0.020	0.020	0.000	0.000	0.000			
		(LL)	0.020	0.020	0.020	0.000	0.000	0.000			

[MEMO]

[MEMO]

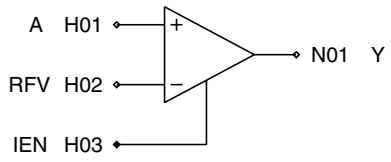
1.9 2.5V PECL

[MEMO]

Function	2.5V PECL Input Buffer with EN	External supply voltage	2.5 V

Block type					
Function	no resistor	with 100 KΩ P/D	with 100 KΩ P/U	with 5 KΩ P/U	Cells
Normal	FIX112				1
Schmitt					
Clock					

Logic Diagram



Block type	Input		Output	
	Symbol	Fan-in	Symbol	Fan-out
FIX112	A	-	Y	1.322
	RFV	0.327		
	IEN	0.094		

Truth Table

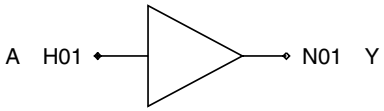
A	IEN	Y
1	1	1
0	1	0
X	0	1

X:Irrelevant

Block type	Switching speed										
	Path		t_{LD0} [ns]			t_1 (ns/pF)			T (ns/pF)		
	IN → OUT		MIN.	TYP.	MAX.	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.
FIX112	A → Y	(HH)	0.905	1.452	2.296	0.153	0.200	0.308			
		(LL)	0.878	1.173	1.671	0.173	0.214	0.303			
	IEN → Y	(HL)	0.518	0.769	1.318	0.173	0.213	0.302			
		(LH)	1.324	1.886	3.284	0.153	0.199	0.307			

Function	2.5V PECL Input Buffer for Reference Voltage			External supply voltage	–
Block type					
Function	no resistor	with 100 KΩ P/D	with 100 KΩ P/U	with 5 KΩ P/U	Cells
Normal	FIP312				1
Schmitt					
Clock					

Logic Diagram



Block type	Input		Output	
	Symbol	Fan-in	Symbol	Fan-out
FIP312	A	-	Y	50.000

Truth Table

A	Y
1	1
0	0

Block type	Switching speed										
	Path		t_{LD0} [ns]			t_1 (ns/pF)			T (ns/pF)		
	IN → OUT		MIN.	TYP.	MAX.	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.
FIP312	A → Y	(HH)	0.020	0.020	0.020	0.000	0.000	0.000			
		(LL)	0.020	0.020	0.020	0.000	0.000	0.000			

[MEMO]

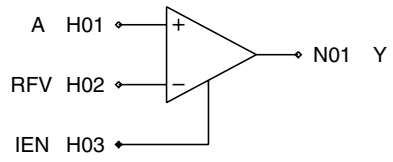
[MEMO]

1.10 SSTL2

[MEMO]

Function	SSTL2 Input Buffer with EN			External supply voltage	2.5 V
Block type					
Function	no resistor	with 100 KΩ P/D	with 100 KΩ P/U	with 5 KΩ P/U	Cells
Normal	FIXH1S2				1
Schmitt					
Clock					

Logic Diagram



Block type	Input		Output	
	Symbol	Fan-in	Symbol	Fan-out
FIXH1S2	A	-	Y	1.335
	RFV	0.327		
	IEN	0.094		

Truth Table

A	IEN	Y
1	1	1
0	1	0
X	0	1

X:Irrelevant

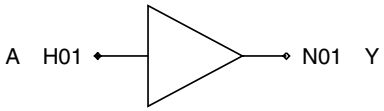
Block type	Switching speed										
	Path		t_{LD0} [ns]			t_1 (ns/pF)			T (ns/pF)		
	IN → OUT		MIN.	TYP.	MAX.	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.
FIXH1S2	A → Y	(HH)	0.467	0.719	1.186	0.153	0.199	0.306			
		(LL)	0.499	0.707	1.110	0.173	0.213	0.302			
	IEN → Y	(HL)	0.627	0.797	1.312	0.173	0.213	0.302			
		(LH)	0.744	1.494	3.555	0.153	0.199	0.307			

Function	SSTL2 Input Buffer for Reference Voltage	External supply voltage	–

Block type

Function	no resistor	with 100 KΩ P/D	with 100 KΩ P/U	with 5 KΩ P/U	Cells
Normal	FIPS1S2				1
Schmitt					
Clock					

Logic Diagram



Block type	Input		Output	
	Symbol	Fan-in	Symbol	Fan-out
FIPS1S2	A	-	Y	50.000

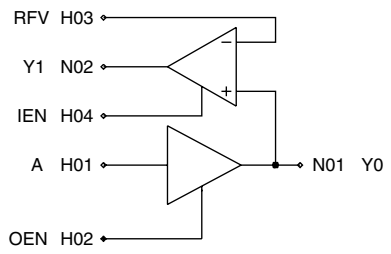
Truth Table

A	Y
1	1
0	0

Block type	Switching speed										
	Path		t_{LD0} [ns]			t_1 (ns/pF)			T (ns/pF)		
	IN → OUT		MIN.	TYP.	MAX.	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.
FIPS1S2	A → Y	(HH)	0.020	0.020	0.020	0.000	0.000	0.000			
		(LL)	0.020	0.020	0.020	0.000	0.000	0.000			

Function	SSTL2 I/O Buffer		External supply voltage	2.5 V
Block type				
-	Class1	Class2	Class3	Cells
-	BS1N1S2	BS1H1S2		1
-				
-				

Logic Diagram



Block type	Input		Output	
	Symbol	Fan-in	Symbol	Fan-out
BS1N1S2 to BS1H1S2	A	0.053	Y1	1.335
	OEN	0.120		
	RFV	0.327		
	IEN	0.094		

Truth Table

A	OEN	Y0
0	1	0
1	1	1
X	0	Z*

Y0	IEN	Y1
0	1	0
1	1	1
X	0	1

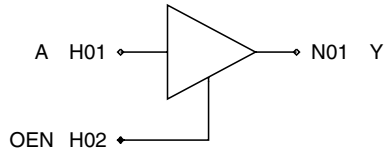
X:Irrelevant

Z:High Impedance

Block type	Switching speed										
	Path		t_{LD0} [ns]			t_1 (ns/pF)			T (ns/pF)		
	IN → OUT		MIN.	TYP.	MAX.	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.
BS1N1S2	A → Y0	(HH)	0.438	0.589	0.936				0.020	0.022	0.025
		(LL)	0.518	0.698	1.083				0.018	0.021	0.026
	OEN → Y0	(HZ)	0.491	0.646	1.002						
		(LZ)	0.322	0.440	0.724						
		(ZH)	0.603	0.865	1.405				0.022	0.024	0.028
		(ZL)	0.541	0.778	1.276				0.021	0.024	0.029
	IEN → Y1	(HL)	0.627	0.797	1.312	0.173	0.213	0.302			
		(LH)	0.744	1.494	3.555	0.153	0.199	0.307			
	Y0 → Y1	(HH)	0.467	0.719	1.186	0.153	0.199	0.306			
		(LL)	0.499	0.707	1.110	0.173	0.213	0.302			
BS1H1S2	A → Y0	(HH)	0.440	0.614	1.002				0.010	0.011	0.012
		(LL)	0.539	0.748	1.177				0.010	0.011	0.012
	OEN → Y0	(HZ)	0.742	0.941	1.383						
		(LZ)	0.389	0.521	0.847						
		(ZH)	0.634	0.915	1.492				0.010	0.011	0.012
		(ZL)	0.561	0.814	1.341				0.010	0.011	0.012
	IEN → Y1	(HL)	0.627	0.797	1.312	0.173	0.213	0.302			
		(LH)	0.744	1.494	3.555	0.153	0.199	0.307			
	Y0 → Y1	(HH)	0.467	0.719	1.186	0.153	0.199	0.306			
		(LL)	0.499	0.707	1.110	0.173	0.213	0.302			

Function	SSTL2 3-state Buffer		External supply voltage	2.5 V
Block type				
-	Class1	Class2	Class3	Cells
-	BS0N1S2	BS0H1S2		1
-				
-				

Logic Diagram



Block type	Input		Output	
	Symbol	Fan-in	Symbol	Fan-out
BS0N1S2 to BS0H1S2	A	0.053	Y	-
	OEN	0.120		

Truth Table

A	OEN	Y
0	1	0
1	1	1
X	0	Z

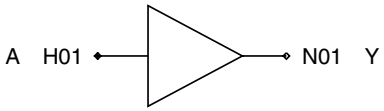
X:Irrelevant

Z:High Impedance

Block type	Switching speed											
	Path		t_{LD0} [ns]			t_1 (ns/pF)			T (ns/pF)			
	IN → OUT		MIN.	TYP.	MAX.	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.
BS0N1S2	A → Y	(HH)	0.438	0.589	0.936				0.020	0.022	0.025
		(LL)	0.518	0.698	1.083				0.018	0.021	0.026
	OEN → Y	(HZ)	0.491	0.646	1.002						
		(LZ)	0.322	0.440	0.724						
		(ZH)	0.603	0.865	1.405				0.022	0.024	0.028
		(ZL)	0.541	0.778	1.276				0.021	0.024	0.029
BS0H1S2	A → Y	(HH)	0.440	0.614	1.002				0.010	0.011	0.012
		(LL)	0.539	0.748	1.177				0.010	0.011	0.012
	OEN → Y	(HZ)	0.742	0.941	1.383						
		(LZ)	0.389	0.521	0.847						
		(ZH)	0.634	0.915	1.492				0.010	0.011	0.012
		(ZL)	0.561	0.814	1.341				0.010	0.011	0.012

Function	SSTL2 Output Buffer			External supply voltage	2.5 V
Block type					
-	Class1	Class2	Class3		Cells
-	FS0N1S2	FS0H1S2			1
-					
-					

Logic Diagram



Block type	Input		Output	
	Symbol	Fan-in	Symbol	Fan-out
FS0N1S2 to FS0H1S2	A	0.053	Y	-

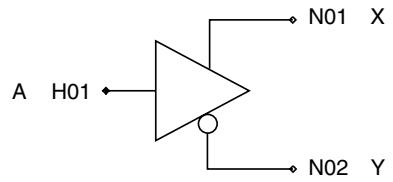
Truth Table

A	Y
1	1
0	0

Block type	Switching speed										
	Path		t_{LD0} [ns]			t_1 (ns/pF)			T (ns/pF)		
	IN → OUT		MIN.	TYP.	MAX.	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.
FS0N1S2	A → Y	(HH)	0.438	0.589	0.936				0.020	0.022	0.025
		(LL)	0.518	0.698	1.083				0.018	0.021	0.026
FS0H1S2	A → Y	(HH)	0.440	0.614	1.002				0.010	0.011	0.012
		(LL)	0.539	0.748	1.177				0.010	0.011	0.012

Function	SSTL2 Output Buffer Differential Type		External supply voltage	2.5 V
Block type				
-	Class1	Class2	Class3	Cells
-	FS0ND1S2	FS0HD1S2		2
-				
-				

Logic Diagram



Block type	Input		Output	
	Symbol	Fan-in	Symbol	Fan-out
FS0ND1S2 to FS0HD1S2	A	0.054	X	-
			Y	-

Truth Table

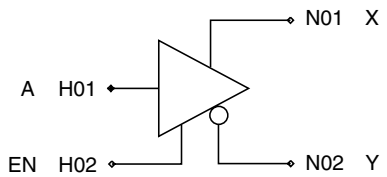
A	X	Y	
1	1	0	
0	0	1	
X	-	-	← Prohibition

X:Irrelevant

Block type	Switching speed											
	Path		t_{LD0} [ns]			t_1 (ns/pF)			T (ns/pF)			
	IN → OUT		MIN.	TYP.	MAX.	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.
FS0ND1S2	A → X	(HH)	0.586	0.800	1.261				0.017	0.019	0.023
		(LL)	0.592	0.812	1.280				0.017	0.019	0.023
	A → Y	(HL)	0.586	0.800	1.261				0.017	0.019	0.023
		(LH)	0.592	0.812	1.280				0.017	0.019	0.023
FS0HD1S2	A → X	(HH)	0.589	0.817	1.297				0.010	0.011	0.012
		(LL)	0.595	0.828	1.317				0.010	0.011	0.012
	A → Y	(HL)	0.589	0.817	1.297				0.010	0.011	0.012
		(LH)	0.595	0.828	1.317				0.010	0.011	0.012

Function	SSTL2 3-state Buffer Differential Type		External supply voltage	2.5 V
Block type				
-	Class1	Class2	Class3	Cells
-	BS0ND1S2	BS0HD1S2		2
-				
-				

Logic Diagram



Block type	Input		Output	
	Symbol	Fan-in	Symbol	Fan-out
BS0ND1S2 to BS0HD1S2	A	0.054	X	-
	EN	0.244	Y	-

Truth Table

A	EN	X	Y	
1	1	1	0	
0	1	0	1	
X	0	Z	Z	
1	X	-	-	← Prohibition
0	X	-	-	← Prohibition
X	1	-	-	← Prohibition
X	X	-	-	← Prohibition

X:Irrelevant

Z:High Impedance

Block type	Switching speed											
	Path		t_{LD0} [ns]			t_1 (ns/pF)			T (ns/pF)			
	IN → OUT		MIN.	TYP.	MAX.	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.
BS0ND1S2	A → X	(HH)	0.586	0.801	1.261				0.017	0.019	0.023
		(LL)	0.592	0.812	1.280				0.017	0.019	0.023
	A → Y	(HL)	0.586	0.801	1.261				0.017	0.019	0.023
		(LH)	0.592	0.812	1.280				0.017	0.019	0.023
	EN → X	(HZ)	0.605	0.778	1.168						
		(LZ)	0.341	0.461	0.756						
		(ZH)	0.619	0.891	1.448				0.018	0.019	0.020
		(ZL)	0.519	0.747	1.220				0.016	0.018	0.020
	EN → Y	(HZ)	0.603	0.776	1.166						
		(LZ)	0.339	0.459	0.754						
		(ZH)	0.619	0.891	1.448				0.018	0.019	0.020
		(ZL)	0.519	0.747	1.220				0.016	0.018	0.020
BS0HD1S2	A → X	(HH)	0.589	0.817	1.297				0.010	0.011	0.012
		(LL)	0.595	0.828	1.317				0.010	0.011	0.012
	A → Y	(HL)	0.589	0.817	1.297				0.010	0.011	0.012
		(LH)	0.595	0.828	1.317				0.010	0.011	0.012
	EN → X	(HZ)	0.915	1.146	1.646						
		(LZ)	0.392	0.523	0.848						
		(ZH)	0.652	0.941	1.536				0.010	0.010	0.011
		(ZL)	0.544	0.785	1.285				0.010	0.011	0.012
	EN → Y	(HZ)	0.913	1.144	1.645						
		(LZ)	0.391	0.522	0.846						
		(ZH)	0.651	0.941	1.536				0.010	0.010	0.011
		(ZL)	0.544	0.784	1.284				0.010	0.011	0.012

[MEMO]

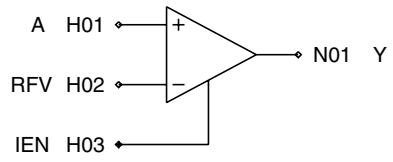
[MEMO]

1.11 SSTL3

[MEMO]

Function	SSTL3 Input Buffer with EN			External supply voltage	3.3 V
Block type					
Function	no resistor	with 100 KΩ P/D	with 100 KΩ P/U	with 5 KΩ P/U	Cells
Normal	FIXH1S3				1
Schmitt					
Clock					

Logic Diagram



Block type	Input		Output	
	Symbol	Fan-in	Symbol	Fan-out
FIXH1S3	A	-	Y	1.787
	RFV	0.339		
	IEN	0.096		

Truth Table

A	IEN	Y
1	1	1
0	1	0
X	0	1

X:Irrelevant

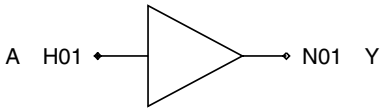
Block type	Switching speed											
	Path		t_{LD0} [ns]			t_1 (ns/pF)			T (ns/pF)			
	IN → OUT		MIN.	TYP.	MAX.	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.
FIXH1S3	A → Y	(HH)	0.417	0.598	0.923	0.116	0.151	0.231			
		(LL)	0.386	0.523	0.791	0.119	0.146	0.206			
	IEN → Y	(HL)	0.423	0.628	1.152	0.119	0.146	0.206			
		(LH)	1.191	1.888	4.962	0.116	0.151	0.232			

Function	SSTL3 Input Buffer for Reference Voltage	External supply voltage	–

Block type

Function	no resistor	with 100 KΩ P/D	with 100 KΩ P/U	with 5 KΩ P/U	Cells
Normal	FIPS1S3				1
Schmitt					
Clock					

Logic Diagram



Block type	Input		Output	
	Symbol	Fan-in	Symbol	Fan-out
FIPS1S3	A	-	Y	50.000

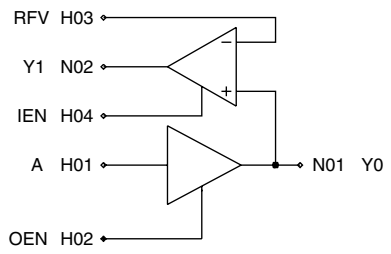
Truth Table

A	Y
1	1
0	0

Block type	Switching speed										
	Path		t_{LD0} [ns]			t_1 (ns/pF)			T (ns/pF)		
	IN → OUT		MIN.	TYP.	MAX.	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.
FIPS1S3	A → Y	(HH)	0.020	0.020	0.020	0.000	0.000	0.000			
		(LL)	0.020	0.020	0.020	0.000	0.000	0.000			

Function	SSTL3 I/O Buffer		External supply voltage	3.3 V
Block type				
-	Class1	Class2	Class3	Cells
-	BS1N1S3	BS1H1S3		1
-				
-				

Logic Diagram



Block type	Input		Output	
	Symbol	Fan-in	Symbol	Fan-out
BS1N1S3 to BS1H1S3	A	0.130	Y1	1.787
	OEN	0.124		
	RFV	0.339		
	IEN	0.096		

Truth Table

A	OEN	Y0
0	1	0
1	1	1
X	0	Z*

Y0	IEN	Y1
0	1	0
1	1	1
X	0	1

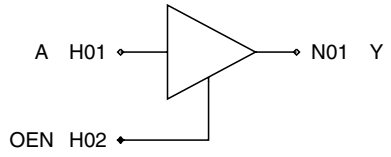
X:Irrelevant

Z:High Impedance

Block type	Switching speed										
	Path		t_{LD0} [ns]			t_1 (ns/pF)			T (ns/pF)		
	IN → OUT		MIN.	TYP.	MAX.	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.
BS1N1S3	A → Y0	(HH)	0.403	0.514	0.778				0.022	0.025	0.028
		(LL)	0.432	0.579	0.961				0.018	0.020	0.023
	OEN → Y0	(HZ)	0.372	0.496	0.821						
		(LZ)	0.299	0.413	0.720						
		(ZH)	0.524	0.694	1.071				0.021	0.024	0.026
		(ZL)	0.489	0.670	1.096				0.017	0.019	0.023
	IEN → Y1	(HL)	0.423	0.628	1.152	0.119	0.146	0.206			
		(LH)	1.191	1.888	4.962	0.116	0.151	0.232			
	Y0 → Y1	(HH)	0.417	0.598	0.923	0.116	0.151	0.231			
		(LL)	0.386	0.523	0.791	0.119	0.146	0.206			
BS1H1S3	A → Y0	(HH)	0.421	0.547	0.843				0.011	0.012	0.014
		(LL)	0.363	0.499	0.838				0.011	0.011	0.013
	OEN → Y0	(HZ)	0.439	0.569	0.911						
		(LZ)	0.334	0.453	0.775						
		(ZH)	0.506	0.682	1.079				0.011	0.012	0.013
		(ZL)	0.460	0.639	1.041				0.010	0.011	0.012
	IEN → Y1	(HL)	0.423	0.628	1.152	0.119	0.146	0.206			
		(LH)	1.191	1.888	4.962	0.116	0.151	0.232			
	Y0 → Y1	(HH)	0.417	0.598	0.923	0.116	0.151	0.231			
		(LL)	0.386	0.523	0.791	0.119	0.146	0.206			

Function	SSTL3 3-state Buffer		External supply voltage	3.3 V
Block type				
-	Class1	Class2	Class3	Cells
-	BS0N1S3	BS0H1S3		1
-				
-				

Logic Diagram



Block type	Input		Output	
	Symbol	Fan-in	Symbol	Fan-out
BS0N1S3 to BS0H1S3	A	0.130	Y	-
	OEN	0.124		

Truth Table

A	OEN	Y
0	1	0
1	1	1
X	0	Z

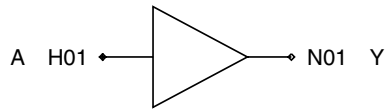
X:Irrelevant

Z:High Impedance

Block type	Switching speed											
	Path		t_{LD0} [ns]			t_1 (ns/pF)			T (ns/pF)			
	IN → OUT		MIN.	TYP.	MAX.	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.
BS0N1S3	A → Y	(HH)	0.403	0.514	0.778				0.022	0.025	0.028
		(LL)	0.432	0.579	0.961				0.018	0.020	0.023
	OEN → Y	(HZ)	0.372	0.496	0.821						
		(LZ)	0.299	0.413	0.720						
		(ZH)	0.524	0.694	1.071				0.021	0.024	0.026
		(ZL)	0.489	0.670	1.096				0.017	0.019	0.023
BS0H1S3	A → Y	(HH)	0.421	0.547	0.843				0.011	0.012	0.014
		(LL)	0.363	0.499	0.838				0.011	0.011	0.013
	OEN → Y	(HZ)	0.439	0.569	0.911						
		(LZ)	0.334	0.453	0.775						
		(ZH)	0.506	0.682	1.079				0.011	0.012	0.013
		(ZL)	0.460	0.639	1.041				0.010	0.011	0.012

Function	SSTL3 Output Buffer			External supply voltage	3.3 V
Block type					
-	Class1	Class2	Class3		Cells
-	FS0N1S3	FS0H1S3			1
-					
-					

Logic Diagram



Block type	Input		Output	
	Symbol	Fan-in	Symbol	Fan-out
FS0N1S3 to FS0H1S3	A	0.130	Y	-

Truth Table

A	Y
1	1
0	0

Block type	Switching speed										
	Path		t_{LD0} [ns]			t_1 (ns/pF)			T (ns/pF)		
	IN → OUT		MIN.	TYP.	MAX.	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.
FS0N1S3	A → Y	(HH)	0.403	0.514	0.778				0.022	0.025	0.028
		(LL)	0.432	0.579	0.961				0.018	0.020	0.023
FS0H1S3	A → Y	(HH)	0.421	0.547	0.843				0.011	0.012	0.014
		(LL)	0.363	0.499	0.838				0.011	0.011	0.013

[MEMO]

[MEMO]

1.12 SSTL18

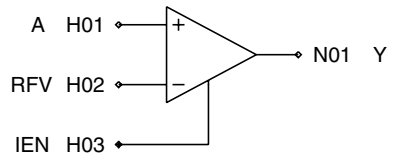
[MEMO]

Function	SSTL18 Input Buffer with EN	External supply voltage	3.3 V

Block type

Function	no resistor	with 100 KΩ P/D	with 100 KΩ P/U	with 5 KΩ P/U	Cells
Normal	FIXH1S18				1
Schmitt					
Clock					

Logic Diagram



Block type	Input		Output	
	Symbol	Fan-in	Symbol	Fan-out
FIXH1S18	A	-	Y	1.788
	RFV	0.339		
	IEN	0.096		

Truth Table

A	IEN	Y
1	1	1
0	1	0
X	0	1

X:Irrelevant

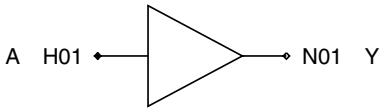
Block type	Switching speed										
	Path		t_{LD0} [ns]			t_1 (ns/pF)			T (ns/pF)		
	IN → OUT		MIN.	TYP.	MAX.	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.
FIXH1S18	A → Y	(HH)	0.314	0.445	0.690	0.116	0.151	0.231			
		(LL)	0.337	0.453	0.693	0.121	0.150	0.213			
	IEN → Y	(HL)	0.468	0.640	1.177	0.121	0.150	0.213			
		(LH)	0.596	1.487	4.431	0.116	0.151	0.232			

Function	SSTL18 Input Buffer for Reference Voltage	External supply voltage	–

Block type

Function	no resistor	with 100 KΩ P/D	with 100 KΩ P/U	with 5 KΩ P/U	Cells
Normal	FIPS1S18				1
Schmitt					
Clock					

Logic Diagram



Block type	Input		Output	
	Symbol	Fan-in	Symbol	Fan-out
FIPS1S18	A	-	Y	50.000

Truth Table

A	Y
1	1
0	0

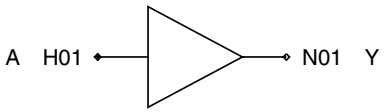
Block type	Switching speed										
	Path		t_{LD0} [ns]			t_1 (ns/pF)			T (ns/pF)		
	IN → OUT		MIN.	TYP.	MAX.	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.
FIPS1S18	A → Y	(HH)	0.020	0.020	0.020	0.000	0.000	0.000			
		(LL)	0.020	0.020	0.020	0.000	0.000	0.000			

Function	SSTL18 Output Buffer	External supply voltage	1.8 V, 3.3 V

Block type

Function	no resistor	with 100 KΩ P/D	with 100 KΩ P/U	with 5 KΩ P/U	Cells
Normal	FS0H1S18				1
Schmitt					
Clock					

Logic Diagram



Block type	Input		Output	
	Symbol	Fan-in	Symbol	Fan-out
FS0H1S18	A	0.053	Y	-

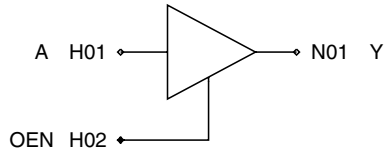
Truth Table

A	Y
1	1
0	0

Block type	Switching speed										
	Path		t_{LD0} [ns]			t_1 (ns/pF)			T (ns/pF)		
	IN → OUT		MIN.	TYP.	MAX.	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.
FS0H1S18	A → Y	(HH)	0.578	0.865	1.556				0.010	0.011	0.013
		(LL)	0.653	0.952	1.515				0.010	0.010	0.012

Function	SSTL18 3-state Buffer			External supply voltage	1.8 V, 3.3 V
Block type					
Function	no resistor	with 100 KΩ P/D	with 100 KΩ P/U	with 5 KΩ P/U	Cells
Normal	BS0H1S18				1
Schmitt					
Clock					

Logic Diagram



Block type	Input		Output	
	Symbol	Fan-in	Symbol	Fan-out
BS0H1S18	A	0.053	Y	-
	OEN	0.124		

Truth Table

A	OEN	Y
0	1	0
1	1	1
X	0	Z

X:Irrelevant

Z:High Impedance

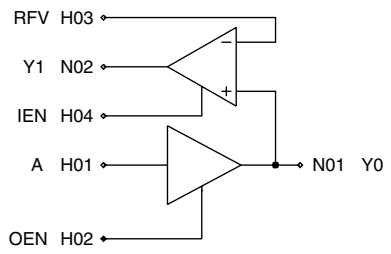
Block type	Switching speed											
	Path		t_{LD0} [ns]			t_1 (ns/pF)			T (ns/pF)			
	IN → OUT		MIN.	TYP.	MAX.	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.
BS0H1S18	A → Y	(HH)	0.579	0.865	1.556				0.010	0.011	0.013
		(LL)	0.653	0.952	1.515				0.010	0.010	0.012
	OEN → Y	(HZ)	0.919	1.251	1.901						
		(LZ)	0.367	0.462	0.779						
		(ZH)	0.721	1.058	1.727				0.010	0.011	0.012
		(ZL)	0.551	0.789	1.285				0.009	0.010	0.012

Function	SSTL18 I/O Buffer	External supply voltage	1.8 V, 3.3 V

Block type

Function	no resistor	with 100 KΩ P/D	with 100 KΩ P/U	with 5 KΩ P/U	Cells
Normal	BS1H1S18				1
Schmitt					
Clock					

Logic Diagram



Block type	Input		Output	
	Symbol	Fan-in	Symbol	Fan-out
BS1H1S18	A	0.053	Y1	1.788
	OEN	0.124		
	RFV	0.339		
	IEN	0.096		

Truth Table

A	OEN	Y0
0	1	0
1	1	1
X	0	Z

Y0	IEN	Y1
0	1	0
1	1	1
X	0	1

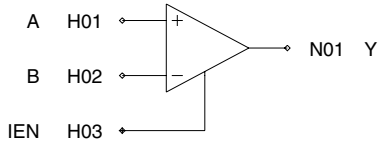
X:Irrelevant

Z:High Impedance

Block type	Switching speed											
	Path		t_{LD0} [ns]			t_1 (ns/pF)			T (ns/pF)		
	IN → OUT		MIN.	TYP.	MAX.	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.
BS1H1S18	A → Y0	(HH)	0.579	0.865	1.556				0.010	0.011	0.013
		(LL)	0.653	0.952	1.515				0.010	0.010	0.012
	OEN → Y0	(HZ)	0.919	1.251	1.901						
		(LZ)	0.367	0.462	0.779						
		(ZH)	0.721	1.058	1.727				0.010	0.011	0.012
		(ZL)	0.551	0.789	1.285				0.009	0.010	0.012
	IEN → Y1	(HL)	0.468	0.640	1.177	0.121	0.150	0.213			
		(LH)	0.596	1.487	4.431	0.116	0.151	0.232			
	Y0 → Y1	(HH)	0.314	0.445	0.690	0.116	0.151	0.231			
		(LL)	0.337	0.453	0.693	0.121	0.150	0.213			

Function	SSTL18 Input Buffer with EN Differential Type			External supply voltage	3.3 V
Block type					
Function	no resistor	with 100 KΩ P/D	with 100 KΩ P/U	with 5 KΩ P/U	Cells
Normal	FIXHD1S18				2
Schmitt					
Clock					

Logic Diagram



Block type	Input		Output	
	Symbol	Fan-in	Symbol	Fan-out
FIXHD1S18	A	-	Y	0.891
	B	-		
	IEN	0.096		

Truth Table

A	B	IEN	Y
1	0	1	1
0	1	1	0
X	X	0	1

X:Irrelevant

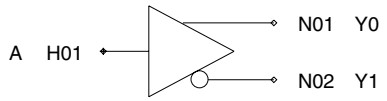
Block type	Switching speed										
	Path		t_{LD0} [ns]			t_1 (ns/pF)			T (ns/pF)		
	IN → OUT		MIN.	TYP.	MAX.	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.
FIXHD1S18	A → Y	(HH)	0.199	0.342	0.552	0.229	0.297	0.457			
		(LL)	0.244	0.380	0.593	0.233	0.287	0.404			
	B → Y	(HL)	0.244	0.380	0.593	0.233	0.287	0.404			
		(LH)	0.199	0.342	0.552	0.229	0.297	0.457			
	IEN → Y	(HL)	0.421	0.604	1.118	0.233	0.287	0.404			
		(LH)	0.599	2.000	5.192	0.229	0.297	0.457			

Function	SSTL18 Output Buffer Differential Type	External supply voltage	1.8 V, 3.3 V

Block type

Function	no resistor	with 100 KΩ P/D	with 100 KΩ P/U	with 5 KΩ P/U	Cells
Normal	FS0HD1S18				2
Schmitt					
Clock					

Logic Diagram



Block type	Input		Output	
	Symbol	Fan-in	Symbol	Fan-out
FS0HD1S18	A	0.053	Y0	-
			Y1	-

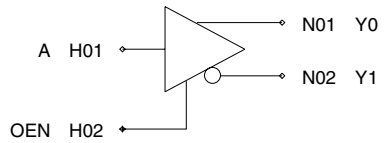
Truth Table

A	Y0	Y1
1	1	0
0	0	1

Block type	Switching speed										
	Path		t_{LD0} [ns]			t_1 (ns/pF)			T (ns/pF)		
	IN → OUT		MIN.	TYP.	MAX.	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.
FS0HD1S18	A → Y0	(HH)	0.678	0.980	1.613				0.010	0.011	0.012
		(LL)	0.665	0.986	1.649				0.010	0.011	0.012
	A → Y1	(HL)	0.678	0.980	1.613				0.010	0.011	0.012
		(LH)	0.665	0.986	1.649				0.010	0.011	0.012

Function	SSTL18 3-state Buffer Differential Type			External supply voltage	1.8 V, 3.3 V
Block type					
Function	no resistor	with 100 KΩ P/D	with 100 KΩ P/U	with 5 KΩ P/U	Cells
Normal	BS0HD1S18				2
Schmitt					
Clock					

Logic Diagram



Block type	Input		Output	
	Symbol	Fan-in	Symbol	Fan-out
BS0HD1S18	A	0.053	Y0	-
	OEN	0.250	Y1	-

Truth Table

A	OEN	Y0	Y1
1	1	1	0
0	1	0	1
X	0	Z	Z

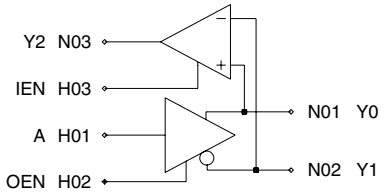
X:Irrelevant

Z:High Impedance

Block type	Switching speed											
	Path		t_{LD0} [ns]			t_1 (ns/pF)			T (ns/pF)			
	IN → OUT		MIN.	TYP.	MAX.	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.
BS0HD1S18	A → Y0	(HH)	0.678	0.980	1.612				0.010	0.011	0.012
		(LL)	0.665	0.986	1.649				0.010	0.011	0.012
	A → Y1	(HL)	0.678	0.980	1.612				0.010	0.011	0.012
		(LH)	0.665	0.986	1.649				0.010	0.011	0.012
	OEN → Y0	(HZ)	0.920	1.252	1.902						
		(LZ)	0.367	0.463	0.780						
		(ZH)	0.727	1.061	1.723				0.010	0.010	0.012
		(ZL)	0.550	0.792	1.297				0.009	0.010	0.012
	OEN → Y1	(HZ)	0.922	1.254	1.904						
		(LZ)	0.369	0.465	0.782						
		(ZH)	0.730	1.065	1.728				0.010	0.011	0.012
		(ZL)	0.553	0.795	1.301				0.009	0.010	0.012

Function	SSTL18 I/O Buffer Differential Type			External supply voltage	1.8 V, 3.3 V
Block type					
Function	no resistor	with 100 KΩ P/D	with 100 KΩ P/U	with 5 KΩ P/U	Cells
Normal	BS1HD1S18				2
Schmitt					
Clock					

Logic Diagram



Block type	Input		Output	
	Symbol	Fan-in	Symbol	Fan-out
BS1HD1S18	A	0.053	Y2	0.891
	OEN	0.250		
	IEN	0.096		

Truth Table

A	OEN	Y0	Y1
0	1	0	1
1	1	1	0
X	0	Z	Z

Y0	Y1	IEN	Y2
0	1	1	0
1	0	1	1
X	X	0	1

X:Irrelevant

Z:High Impedance

Block type	Switching speed											
	Path		t_{LD0} [ns]			t_1 (ns/pF)			T (ns/pF)			
	IN → OUT		MIN.	TYP.	MAX.	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.
BS1HD1S18	A → Y0	(HH)	0.678	0.980	1.612				0.010	0.011	0.012
		(LL)	0.665	0.986	1.649				0.010	0.011	0.012
	A → Y1	(HL)	0.678	0.980	1.612				0.010	0.011	0.012
		(LH)	0.665	0.986	1.649				0.010	0.011	0.012
	OEN → Y0	(HZ)	0.920	1.252	1.902						
		(LZ)	0.367	0.463	0.780						
		(ZH)	0.727	1.061	1.723				0.010	0.010	0.012
		(ZL)	0.550	0.792	1.297				0.009	0.010	0.012
	OEN → Y1	(HZ)	0.922	1.254	1.904						
		(LZ)	0.369	0.465	0.782						
		(ZH)	0.730	1.065	1.728				0.010	0.011	0.012
		(ZL)	0.553	0.795	1.301				0.009	0.010	0.012
	IEN → Y2	(HL)	0.421	0.604	1.118	0.233	0.287	0.404			
		(LH)	0.599	2.000	5.192	0.229	0.297	0.457			
	Y0 → Y2	(HH)	0.199	0.342	0.552	0.229	0.297	0.457			
		(LL)	0.244	0.380	0.593	0.233	0.287	0.404			
	Y1 → Y2	(HL)	0.244	0.380	0.593	0.233	0.287	0.404			
		(LH)	0.199	0.342	0.552	0.229	0.297	0.457			

[MEMO]

[MEMO]

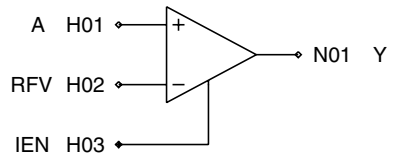
1.13 1.5V HSTL

[MEMO]

Function	1.5V HSTL Input Buffer with EN	External supply voltage	3.3 V

Block type					
Function	no resistor	with 100 KΩ P/D	with 100 KΩ P/U	with 5 KΩ P/U	Cells
Normal	FIX31H				1
Schmitt					
Clock					

Logic Diagram



Block type	Input		Output	
	Symbol	Fan-in	Symbol	Fan-out
FIX31H	A	-	Y	1.778
	RFV	0.339		
	IEN	0.096		

Truth Table

A	IEN	Y
1	1	1
0	1	0
X	0	1

X:Irrelevant

RFV must be supplied reference voltage for HSTL.

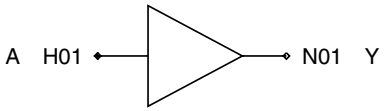
Block type	Switching speed											
	Path		t_{LD0} [ns]			t_1 (ns/pF)			T (ns/pF)		
	IN → OUT		MIN.	TYP.	MAX.	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.
FIX31H	A → Y	(HH)	0.259	0.837	1.347	0.116	0.151	0.232			
		(LL)	0.947	0.682	1.050	0.123	0.152	0.217			
	IEN → Y	(HL)	0.498	0.740	1.339	0.122	0.152	0.216			
		(LH)	0.865	1.421	4.327	0.116	0.151	0.231			

Function	1.5V HSTL Input Buffer for Reference Voltage	External supply voltage	–

Block type

Function	no resistor	with 100 KΩ P/D	with 100 KΩ P/U	with 5 KΩ P/U	Cells
Normal	FIP51H				1
Schmitt					
Clock					

Logic Diagram



Block type	Input		Output	
	Symbol	Fan-in	Symbol	Fan-out
FIP51H	A	-	Y	50.000

Truth Table

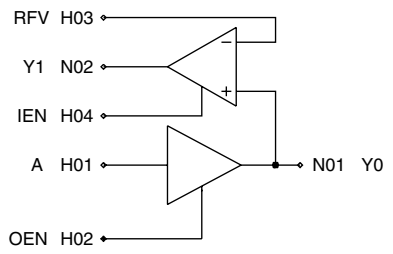
A	Y
1	1
0	0

Block type	Switching speed										
	Path		t_{LD0} [ns]			t_1 (ns/pF)			T (ns/pF)		
	IN → OUT		MIN.	TYP.	MAX.	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.
FIP51H	A → Y	(HH)	0.020	0.020	0.020	0.000	0.000	0.000			
		(LL)	0.020	0.020	0.020	0.000	0.000	0.000			

Function	1.5V HSTL I/O Buffer		External supply voltage	1.5 V, 3.3 V

Block type				
-	Class1	Class2	Class3	Cells
-	BH0N1H		BH0V1H	1
-				
-				

Logic Diagram



Block type	Input		Output	
	Symbol	Fan-in	Symbol	Fan-out
BH0N1H to BH0V1H	A	0.053	Y1	1.778
	OEN	0.124		
	RFV	0.339		
	IEN	0.096		

Truth Table

A	OEN	Y0
0	1	0
1	1	1
X	0	Z

Y0	IEN	Y1
0	1	0
1	1	1
X	0	1

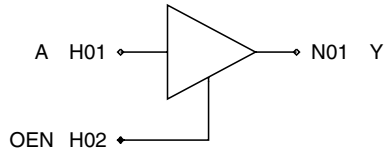
X:Irrelevant

Z:High Impedance

Block type	Switching speed											
	Path		t_{LD0} [ns]			t_1 (ns/pF)			T (ns/pF)			
	IN → OUT		MIN.	TYP.	MAX.	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.
BH0N1H	A → Y0	(HH)	0.690	1.048	1.780				0.015	0.019	0.024
		(LL)	0.745	1.137	1.862				0.013	0.017	0.024
	OEN → Y0	(HZ)	1.030	1.475	2.293						
		(LZ)	0.305	0.410	0.700						
		(ZH)	0.853	1.306	2.189				0.010	0.015	0.021
		(ZL)	0.609	0.905	1.514				0.009	0.014	0.021
	IEN → Y1	(HL)	0.498	0.740	1.339	0.122	0.152	0.216			
		(LH)	0.865	1.421	4.327	0.116	0.151	0.231			
	Y0 → Y1	(HH)	0.259	0.837	1.347	0.116	0.151	0.232			
		(LL)	0.947	0.682	1.050	0.123	0.152	0.217			
BH0V1H	A → Y0	(HH)	0.984	1.437	2.238				0.013	0.019	0.025
		(LL)	0.813	1.295	2.255				0.007	0.010	0.016
	OEN → Y0	(HZ)	1.028	1.477	2.306						
		(LZ)	0.378	0.481	0.803						
		(ZH)	0.766	1.169	2.006				0.007	0.011	0.019
		(ZL)	0.766	1.169	2.006				0.007	0.011	0.019
	IEN → Y1	(HL)	0.498	0.740	1.339	0.122	0.152	0.216			
		(LH)	0.865	1.421	4.327	0.116	0.151	0.231			
	Y0 → Y1	(HH)	0.259	0.837	1.347	0.116	0.151	0.232			
		(LL)	0.947	0.682	1.050	0.123	0.152	0.217			

Function	1.5V HSTL 3-state Buffer			External supply voltage	1.5 V, 3.3 V
Block type					
-	Class1	Class2	Class3		Cells
-	BN0N1H		BN0V1H		1
-					
-					

Logic Diagram



Block type	Input		Output	
	Symbol	Fan-in	Symbol	Fan-out
BN0N1H to BN0V1H	A	0.053	Y	-
	OEN	0.124		

Truth Table

A	OEN	Y
0	1	0
1	1	1
X	0	Z

X:Irrelevant

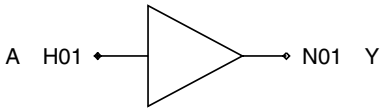
Z:High Impedance

Block type	Switching speed											
	Path		t_{LD0} [ns]			t_1 (ns/pF)			T (ns/pF)			
	IN → OUT		MIN.	TYP.	MAX.	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.
BN0N1H	A → Y	(HH)	0.690	1.048	1.780				0.015	0.019	0.024
		(LL)	0.745	1.137	1.862				0.013	0.017	0.024
	OEN → Y	(HZ)	1.030	1.475	2.293						
		(LZ)	0.305	0.410	0.700						
		(ZH)	0.853	1.306	2.189				0.010	0.015	0.021
		(ZL)	0.609	0.905	1.514				0.009	0.014	0.021
BN0V1H	A → Y	(HH)	0.984	1.437	2.238				0.013	0.019	0.025
		(LL)	0.813	1.295	2.255				0.007	0.010	0.016
	OEN → Y	(HZ)	1.028	1.477	2.306						
		(LZ)	0.378	0.481	0.803						
		(ZH)	0.766	1.169	2.006				0.007	0.011	0.019
		(ZL)	0.766	1.169	2.006				0.007	0.011	0.019

Function	1.5V HSTL Output Buffer	External supply voltage	1.5 V, 3.3 V

Block type					
-	Class1	Class2	Class3		Cells
-	FH0N1H		FH0V1H		1
-					
-					

Logic Diagram



Block type	Input		Output	
	Symbol	Fan-in	Symbol	Fan-out
FH0N1H to FH0V1H	A	0.053	Y	-

Truth Table

A	Y
1	1
0	0

Block type	Switching speed											
	Path		t_{LD0} [ns]			t_1 (ns/pF)			T (ns/pF)			
	IN → OUT		MIN.	TYP.	MAX.	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.
FH0N1H	A → Y	(HH)	0.690	1.048	1.780				0.015	0.019	0.024
		(LL)	0.745	1.137	1.862				0.013	0.017	0.024
FH0V1H	A → Y	(HH)	0.984	1.437	2.237				0.013	0.019	0.025
		(LL)	0.813	1.295	2.255				0.007	0.010	0.016

[MEMO]

[MEMO]

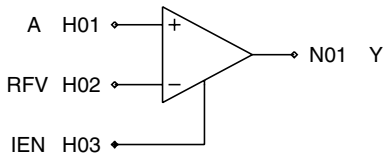
1.14 1.8V HSTL

[MEMO]

Function	1.8V HSTL Input Buffer with EN	External supply voltage	3.3 V

Block type					
Function	no resistor	with 100 KΩ P/D	with 100 KΩ P/U	with 5 KΩ P/U	Cells
Normal	FIX31H18				1
Schmitt					
Clock					

Logic Diagram



Block type	Input		Output	
	Symbol	Fan-in	Symbol	Fan-out
FIX31H18	A	-	Y	1.778
	RFV	0.339		
	IEN	0.096		

Truth Table

A	IEN	Y
1	1	1
0	1	0
X	0	1

X:Irrelevant

RFV must be supplied reference voltage for HSTL.

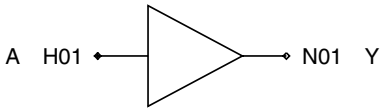
Block type	Switching speed											
	Path		t_{LD0} [ns]			t_1 (ns/pF)			T (ns/pF)		
	IN → OUT		MIN.	TYP.	MAX.	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.
FIX31H18	A → Y	(HH)	0.529	0.801	1.289	0.116	0.151	0.232			
		(LL)	0.414	0.551	0.841	0.121	0.150	0.213			
	IEN → Y	(HL)	0.429	0.640	1.178	0.121	0.150	0.213			
		(LH)	0.936	1.487	4.401	0.116	0.151	0.231			

Function	1.8V HSTL Input Buffer for Reference Voltage	External supply voltage	–

Block type

Function	no resistor	with 100 KΩ P/D	with 100 KΩ P/U	with 5 KΩ P/U	Cells
Normal	FIP51H18				1
Schmitt					
Clock					

Logic Diagram



Block type	Input		Output	
	Symbol	Fan-in	Symbol	Fan-out
FIP51H18	A	-	Y	50.000

Truth Table

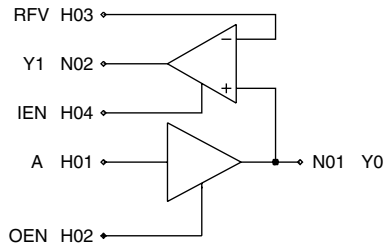
A	Y
1	1
0	0

Block type	Switching speed										
	Path		t_{LD0} [ns]			t_1 (ns/pF)			T (ns/pF)		
	IN → OUT		MIN.	TYP.	MAX.	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.
FIP51H18	A → Y	(HH)	0.020	0.020	0.020	0.000	0.000	0.000			
		(LL)	0.020	0.020	0.020	0.000	0.000	0.000			

Function	1.8V HSTL I/O Buffer		External supply voltage	1.8 V, 3.3 V

Block type				
-	Class1	Class2	Class3	Cells
-	BH0N1H18		BH0V1H18	1
-				
-				

Logic Diagram



Block type	Input		Output	
	Symbol	Fan-in	Symbol	Fan-out
BH0N1H18 to BH0V1H18	A	0.053	Y1	1.778
	OEN	0.124		
	RFV	0.339		
	IEN	0.096		

Truth Table

A	OEN	Y0
0	1	0
1	1	1
X	0	Z

Y0	IEN	Y1
0	1	0
1	1	1
X	0	1

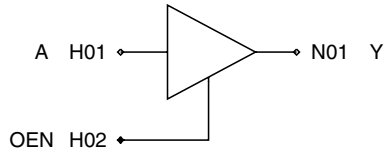
X:Irrelevant

Z:High Impedance

Block type	Switching speed										
	Path		t_{LD0} [ns]			t_1 (ns/pF)			T (ns/pF)		
	IN → OUT		MIN.	TYP.	MAX.	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.
BH0N1H18	A → Y0	(HH)	0.578	0.863	1.535				0.016	0.020	0.025
		(LL)	0.584	0.867	1.442				0.014	0.018	0.024
	OEN → Y0	(HZ)	0.769	1.090	1.750						
		(LZ)	0.351	0.435	0.729						
		(ZH)	0.699	1.034	1.716				0.012	0.016	0.021
		(ZL)	0.542	0.777	1.284				0.010	0.015	0.022
	IEN → Y1	(HL)	0.429	0.640	1.178	0.121	0.150	0.213			
		(LH)	0.936	1.487	4.401	0.116	0.151	0.231			
	Y0 → Y1	(HH)	0.529	0.801	1.289	0.116	0.151	0.232			
		(LL)	0.414	0.551	0.841	0.121	0.150	0.213			
BH0V1H18	A → Y0	(HH)	0.643	0.940	1.573				0.014	0.018	0.023
		(LL)	0.644	0.998	1.755				0.009	0.012	0.019
	OEN → Y0	(HZ)	0.742	1.061	1.720						
		(LZ)	0.395	0.479	0.792						
		(ZH)	0.637	0.939	1.594				0.009	0.013	0.021
		(ZL)	0.637	0.939	1.594				0.009	0.013	0.021
	IEN → Y1	(HL)	0.429	0.640	1.178	0.121	0.150	0.213			
		(LH)	0.936	1.487	4.401	0.116	0.151	0.231			
	Y0 → Y1	(HH)	0.529	0.801	1.289	0.116	0.151	0.232			
		(LL)	0.414	0.551	0.841	0.121	0.150	0.213			

Function	1.8V HSTL 3-state Buffer			External supply voltage	1.8 V, 3.3 V
Block type					
-	Class1	Class2	Class3		Cells
-	BN0N1H18		BN0V1H18		1
-					
-					

Logic Diagram



Block type	Input		Output	
	Symbol	Fan-in	Symbol	Fan-out
BN0N1H18 to BN0V1H18	A	0.053	Y	-
	OEN	0.124		

Truth Table

A	OEN	Y
0	1	0
1	1	1
X	0	Z

X:Irrelevant

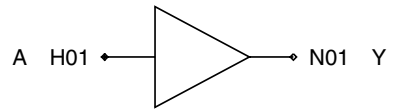
Z:High Impedance

Block type	Switching speed											
	Path		t_{LD0} [ns]			t_1 (ns/pF)			T (ns/pF)			
	IN → OUT		MIN.	TYP.	MAX.	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.
BN0N1H18	A → Y	(HH)	0.578	0.863	1.535				0.016	0.020	0.025
		(LL)	0.584	0.867	1.442				0.014	0.018	0.024
	OEN → Y	(HZ)	0.769	1.090	1.750						
		(LZ)	0.351	0.435	0.729						
		(ZH)	0.699	1.034	1.716				0.012	0.016	0.021
		(ZL)	0.542	0.777	1.284				0.010	0.015	0.022
BN0V1H18	A → Y	(HH)	0.643	0.940	1.573				0.014	0.018	0.023
		(LL)	0.644	0.998	1.755				0.009	0.012	0.019
	OEN → Y	(HZ)	0.742	1.061	1.720						
		(LZ)	0.395	0.479	0.792						
		(ZH)	0.637	0.939	1.594				0.009	0.013	0.021
		(ZL)	0.637	0.939	1.594				0.009	0.013	0.021

Function	1.8V HSTL Output Buffer	External supply voltage	1.8 V, 3.3 V

Block type					
-	Class1	Class2	Class3		Cells
-	FH0N1H18		FH0V1H18		1
-					
-					

Logic Diagram



Block type	Input		Output	
	Symbol	Fan-in	Symbol	Fan-out
FH0N1H18 to FH0V1H18	A	0.053	Y	-

Truth Table

A	Y
1	1
0	0

Block type	Switching speed										
	Path		t_{LD0} [ns]			t_1 (ns/pF)			T (ns/pF)		
	IN → OUT		MIN.	TYP.	MAX.	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.
FH0N1H18	A → Y	(HH)	0.578	0.863	1.535				0.016	0.020	0.025
		(LL)	0.584	0.867	1.442				0.014	0.018	0.024
FH0V1H18	A → Y	(HH)	0.643	0.940	1.573				0.014	0.018	0.023
		(LL)	0.644	0.998	1.756				0.009	0.012	0.019

[MEMO]

[MEMO]

1.15 2.5V RSDS

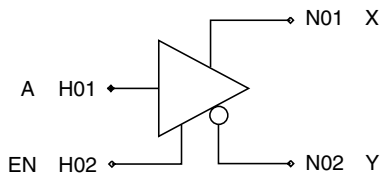
[MEMO]

Function	2.5V RSDS Buffer (Driver)	External supply voltage	2.5 V

Block type

Function	no resistor	with 100 KΩ P/D	with 100 KΩ P/U	with 5 KΩ P/U	Cells
Normal	FO0S12				2
Schmitt					
Clock					

Logic Diagram



Block type	Input		Output	
	Symbol	Fan-in	Symbol	Fan-out
FO0S12	A	0.054	X	-
	EN	0.057	Y	-

Truth Table

A	EN	X	Y	
1	1	1	0	
0	1	0	1	
X	0	Z	Z	
1	X	-	-	← Prohibition
0	X	-	-	← Prohibition
X	1	-	-	← Prohibition
X	X	-	-	← Prohibition

X:Irrelevant

Z:High Impedance

Block type	Switching speed											
	Path		t_{LD0} [ns]			t_1 (ns/pF)			T (ns/pF)			
	IN → OUT		MIN.	TYP.	MAX.	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.
FO0S12	A → X	(HH)	0.498	0.652	0.961				0.017	0.020	0.022
		(LL)	0.495	0.650	0.962				0.017	0.020	0.022
	A → Y	(HL)	0.498	0.652	0.961				0.017	0.020	0.022
		(LH)	0.495	0.650	0.962				0.017	0.020	0.022
	EN → X	(HZ)	2.569	3.509	5.580						
		(LZ)	2.557	3.484	5.546						
		(ZH)	2.777	4.195	7.525				0.323	0.470	0.806
		(ZL)	1.969	2.906	4.435				0.335	0.476	0.728
	EN → Y	(HZ)	2.557	3.484	5.546						
		(LZ)	2.569	3.509	5.580						
		(ZH)	1.969	2.906	4.435				0.335	0.476	0.728
		(ZL)	2.777	4.195	7.525				0.323	0.470	0.806

[MEMO]

[MEMO]

1.16 Oscillator

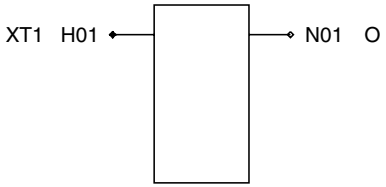
[MEMO]

Function	Oscillator Input Buffer	External supply voltage	3.3 V

Block type

Function				Cells
Normal	OSI113			1
Oscillation stop function				

Logic Diagram



Block type	Input		Output	
	Symbol	Fan-in	Symbol	Fan-out
OSI113	XT1	-	O	1.999

Truth Table

XT1	O
0	0
1	1

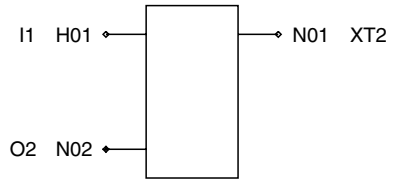
Block type	Switching speed										
	Path		t_{LD0} [ns]			t_1 (ns/pF)			T (ns/pF)		
	IN → OUT		MIN.	TYP.	MAX.	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.
OSI113	XT1 → O	(HH)	0.020	0.020	0.020	0.000	0.000	0.000			
		(LL)	0.020	0.020	0.020	0.000	0.000	0.000			

Function	Oscillator Output Buffer (External Feedback Resistor)	External supply voltage	3.3 V

Block type

Function	MHz range	kHz range		Cells
External feedback Resistor	OSO913			1
Internal feedback Resistor				
Internal feedback Resistor Oscillation stop function				

Logic Diagram



Block type	Input		Output	
	Symbol	Fan-in	Symbol	Fan-out
OSO913	I1	0.421	XT2	-
			O2	1.744

Truth Table

I1	XT2	O2
0	1	1
1	0	0

Block type	Switching speed										
	Path		t_{LD0} [ns]			t_1 (ns/pF)			T (ns/pF)		
	IN → OUT		MIN.	TYP.	MAX.	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.
OSO913	I1 → XT2	(HL)	0.294	0.346	0.472				0.079	0.095	0.129
		(LH)	0.245	0.328	0.513				0.061	0.087	0.140
	I1 → O2	(HL)	1.052	1.473	2.336	0.167	0.215	0.320			
		(LH)	1.149	1.566	2.437	0.219	0.292	0.446			

[MEMO]

[MEMO]

Chapter 2

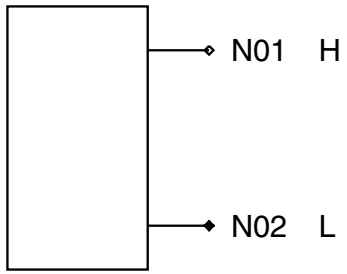
Function Block

2.1 Level Generator

[MEMO]

Function	H, L Level Generator											
Block type	Standard type											
	Normal		High speed									
Drivability	Name	cells	Name	cells								
-	F091	1										
-												
-												
-												

Logic Diagram



Truth Table

H	L
1	0

Block type	Switching speed								Input		Output	
	Path		t_{LD0} [ns]			t_1 (ns/pF)						
	IN → OUT		MIN.	TYP.	MAX.	MIN.	TYP.	MAX.	Symbol	Cin(pF)	Symbol	Cmax(pF)
F091											H	0.846
											L	0.846

[MEMO]

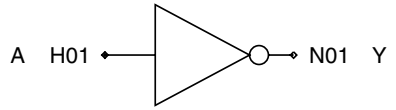
[MEMO]

2.2 Inverter, Buffer, Driver, Delay Gate

[MEMO]

Function	Inverter											
Block type	Single output type						Multi output type					
Drivability	Name	cells	Name	cells	Name	cells	Name	cells	Name	cells	Name	cells
	L101	1										
x2	F101	1										
x4	F102	2										
x6	F143	3										
x8	F144	4										
x10	F145	5										
x12	F146	6										
x14												
x16	F148	8										

Logic Diagram for "Single output type"



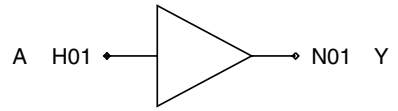
Logic Diagram for "Multi output type 1"

Logic Diagram for "Multi output type 2"

Block type	Switching speed									Input		Output	
	Path		t_{LD0} [ns]			t_1 (ns/pF)							
	IN → OUT		MIN.	TYP.	MAX.	MIN.	TYP.	MAX.		Symbol	Cin(pF)	Symbol	Cmax(pF)
L101	A → Y	(HL)	0.009	0.012	0.016	0.836	1.029	1.451		A	0.006	Y	0.210
		(LH)	0.009	0.013	0.020	0.963	1.265	1.970					
F101	A → Y	(HL)	0.008	0.010	0.014	0.418	0.515	0.725		A	0.013	Y	0.423
		(LH)	0.008	0.011	0.017	0.481	0.632	0.985					
F102	A → Y	(HL)	0.008	0.010	0.014	0.209	0.257	0.363		A	0.026	Y	0.846
		(LH)	0.008	0.011	0.017	0.241	0.316	0.492					
F143	A → Y	(HL)	0.008	0.010	0.014	0.139	0.171	0.242		A	0.040	Y	1.268
		(LH)	0.009	0.012	0.018	0.161	0.211	0.328					
F144	A → Y	(HL)	0.008	0.010	0.014	0.104	0.129	0.181		A	0.053	Y	1.690
		(LH)	0.009	0.012	0.018	0.120	0.158	0.246					
F145	A → Y	(HL)	0.008	0.010	0.014	0.084	0.103	0.145		A	0.067	Y	2.113
		(LH)	0.009	0.012	0.018	0.096	0.127	0.197					
F146	A → Y	(HL)	0.008	0.010	0.014	0.070	0.086	0.121		A	0.080	Y	2.536
		(LH)	0.009	0.012	0.018	0.080	0.105	0.164					
F148	A → Y	(HL)	0.008	0.010	0.014	0.052	0.064	0.091		A	0.107	Y	3.380
		(LH)	0.009	0.012	0.018	0.060	0.079	0.123					

Function	Buffer											
Block type	Single output type						Multi output type					
Drivability	Name	cells	Name	cells	Name	cells	Name	cells	Name	cells	Name	cells
	L111	1										
x2	F111	2										
x4	F112	3										
x6	F153	4										
x8	F154	6										
x10	F155	8										
x12	F156	9										
x14												
x16	F158	12										

Logic Diagram for "Single output type"



Logic Diagram for "Multi output type 1"

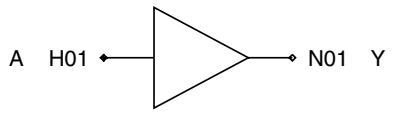
Logic Diagram for "Multi output type 2"

Block type	Switching speed									Input		Output	
	Path		t_{LD0} [ns]			t_1 (ns/pF)							
	IN → OUT		MIN.	TYP.	MAX.	MIN.	TYP.	MAX.		Symbol	Cin(pF)	Symbol	Cmax(pF)
L111	A → Y	(HH)	0.025	0.033	0.051	0.963	1.266	1.972		A	0.007	Y	0.210
		(LL)	0.028	0.039	0.062	0.839	1.033	1.458					
F111	A → Y	(HH)	0.029	0.039	0.061	0.482	0.634	0.987		A	0.007	Y	0.420
		(LL)	0.035	0.049	0.079	0.421	0.519	0.733					
F112	A → Y	(HH)	0.028	0.037	0.058	0.241	0.317	0.494		A	0.012	Y	0.844
		(LL)	0.034	0.048	0.077	0.211	0.260	0.367					
F153	A → Y	(HH)	0.034	0.045	0.070	0.161	0.212	0.330		A	0.012	Y	1.263
		(LL)	0.042	0.060	0.096	0.141	0.174	0.247					
F154	A → Y	(HH)	0.027	0.037	0.056	0.121	0.159	0.247		A	0.025	Y	1.686
		(LL)	0.033	0.047	0.075	0.105	0.130	0.184					
F155	A → Y	(HH)	0.028	0.037	0.057	0.096	0.127	0.198		A	0.031	Y	2.108
		(LL)	0.033	0.047	0.076	0.084	0.104	0.147					
F156	A → Y1	(HH)	0.027	0.037	0.056	0.080	0.106	0.165		A	0.037	Y1	2.530
		(LL)	0.033	0.046	0.075	0.070	0.087	0.122					
F158	A → Y	(HH)	0.027	0.037	0.056	0.060	0.079	0.124		A	0.049	Y	3.372
		(LL)	0.033	0.046	0.075	0.053	0.065	0.092					

Function	CTS Driver											
Block type	Single type (Small scale circuit)				Standard type (Middle scale circuit)				Double type (Large scale circuit)			
Drivability	Name	cells			Name	cells			Name	cells		
x1	FCTS	Note										
x2												
x3												
x4												
x5												
-												

Note Refer to CMOS-12M Series Design Manual.

Logic Diagram

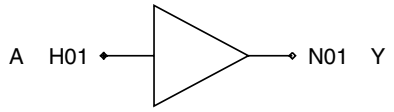


Block type	Switching speed								Input		Output	
	Path		t LD0 [ns]			t 1 (ns/pF)						
	IN → OUT		MIN.	TYP.	MAX.	MIN.	TYP.	MAX.	Symbol	Cin(pF)	Symbol	Cmax(pF)
FCTS	A → Y	(HH)	0.524	0.718	1.145	0.000	0.000	0.000	A	0.049	Y	9999.000
		(LL)	0.527	0.697	1.065	0.000	0.000	0.000				

Function	Driver for Set, Reset, Scan Clock											
Block type	Single type (Small scale circuit)				Standard type (Middle scale circuit)				Double type (Large scale circuit)			
Drivability	Name	cells			Name	cells			Name	cells		
x1	FSRTS	Note										
x2												
x3												
x4												
x5												
-												

Note Refer to CMOS-12M Series Design Manual.

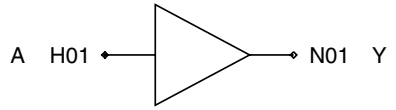
Logic Diagram



Block type	Switching speed								Input		Output	
	Path		t LD0 [ns]			t 1 (ns/pF)						
	IN → OUT		MIN.	TYP.	MAX.	MIN.	TYP.	MAX.	Symbol	Cin(pF)	Symbol	Cmax(pF)
FSRTS	A → Y	(HH)	0.524	0.718	1.145	0.000	0.000	0.000	A	0.049	Y	9999.000
		(LL)	0.527	0.697	1.065	0.000	0.000	0.000				

Function	Balanced Buffer											
Block type	Single output type						Multi output type					
Drivability	Name	cells	Name	cells	Name	cells	Name	cells	Name	cells	Name	cells
x2												
x4												
x6					F153BR	4						
x8					F154BR	6						
x10					F155BR	8						
x12					F156BR	9						
x14												
x16					F158BR	12						

Logic Diagram for "Single output type"



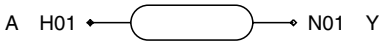
Logic Diagram for "Multi output type 1"

Logic Diagram for "Multi output type 2"

Block type	Switching speed									Input		Output	
	Path		t_{LD0} [ns]			t_1 (ns/pF)							
	IN → OUT		MIN.	TYP.	MAX.	MIN.	TYP.	MAX.		Symbol	Cin(pF)	Symbol	Cmax(pF)
F153BR	A → Y	(HH)	0.033	0.045	0.069	0.161	0.211	0.330		A	0.012	Y	1.264
		(LL)	0.043	0.061	0.099	0.169	0.208	0.295					
F154BR	A → Y	(HH)	0.027	0.036	0.055	0.121	0.158	0.247		A	0.025	Y	1.689
		(LL)	0.035	0.049	0.078	0.140	0.173	0.244					
F155BR	A → Y	(HH)	0.027	0.036	0.056	0.096	0.127	0.198		A	0.031	Y	2.111
		(LL)	0.035	0.049	0.078	0.105	0.130	0.183					
F156BR	A → Y	(HH)	0.027	0.036	0.056	0.080	0.106	0.165		A	0.037	Y	2.533
		(LL)	0.034	0.048	0.077	0.084	0.104	0.146					
F158BR	A → Y	(HH)	0.027	0.036	0.056	0.060	0.079	0.124		A	0.049	Y	3.374
		(LL)	0.034	0.047	0.076	0.060	0.074	0.105					

Function	Delay Gate											
Block type	Standard type											
	Normal		High speed									
Drivability	Name	cells	Name	cells								
-	F131	4										
-	F132	6										
-	F137	10										
-												

Logic Diagram



Truth Table

A	Y
0	0
1	1

Block type	Switching speed									Input		Output	
	Path		t_{LD0} [ns]			t_1 (ns/pF)							
	IN → OUT		MIN.	TYP.	MAX.	MIN.	TYP.	MAX.		Symbol	Cin(pF)	Symbol	Cmax(pF)
F131	A → Y	(HH)	0.115	0.167	0.275	0.484	0.637	0.993		A	0.006	Y	0.420
		(LL)	0.119	0.174	0.288	0.428	0.532	0.758					
F132	A → Y	(HH)	0.248	0.366	0.615	0.488	0.643	1.006		A	0.007	Y	0.416
		(LL)	0.258	0.383	0.643	0.440	0.552	0.796					
F137	A → Y	(HH)	0.468	0.702	1.196	0.493	0.653	1.025		A	0.006	Y	0.412
		(LL)	0.491	0.741	1.261	0.455	0.579	0.845					

[MEMO]

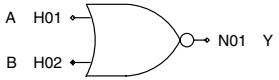
[MEMO]

2.3 OR(NOR), AND(NAND)

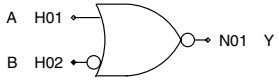
[MEMO]

Function	2-input NOR											
Block type	Normal		with 1 inverter		with 2 inverter		with 3 inverter		with 4 inverter		-	
Drivability	Name	cells	Name	cells	Name	cells	Name	cells	Name	cells		
	L202	2	L202N1	2								
x2	F202	4	F202N1	4								
x4	F222	6	F222N1	6								
x8	F2C2	10										
x16												

Logic Diagram for "Normal"



Logic Diagram for "with 1 inverter"



Logic Diagram for "with 2 inverter"

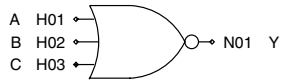
Logic Diagram for "with 3 inverter"

Logic Diagram for "with 4 inverter"

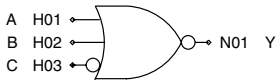
Block type	Switching speed									Input		Output	
	Path		t_{LD0} [ns]			t_1 (ns/pF)							
	IN → OUT		MIN.	TYP.	MAX.	MIN.	TYP.	MAX.		Symbol	Cin(pF)	Symbol	Cmax(pF)
L202	A → Y	(HL)	0.017	0.022	0.033	0.839	1.033	1.457		A	0.013	Y	0.202
		(LH)	0.016	0.024	0.038	0.898	1.281	2.054		B	0.012		
	B → Y	(HL)	0.017	0.022	0.033	0.840	1.034	1.457					
		(LH)	0.016	0.024	0.038	0.898	1.281	2.054					
F202	A → Y	(HL)	0.017	0.022	0.032	0.420	0.517	0.729		A	0.026	Y	0.406
		(LH)	0.016	0.023	0.037	0.449	0.641	1.027		B	0.024		
	B → Y	(HL)	0.017	0.022	0.032	0.420	0.517	0.729					
		(LH)	0.016	0.023	0.037	0.449	0.641	1.027					
F222	A → Y	(HL)	0.015	0.019	0.028	0.210	0.258	0.364		A	0.037	Y	0.600
		(LH)	0.018	0.027	0.045	0.299	0.427	0.685		B	0.039		
	B → Y	(HL)	0.015	0.019	0.028	0.210	0.258	0.364					
		(LH)	0.019	0.028	0.046	0.299	0.427	0.685					
F2C2	A → Y	(HL)	0.014	0.017	0.025	0.105	0.129	0.182		A	0.062	Y	0.994
		(LH)	0.020	0.030	0.049	0.180	0.256	0.411		B	0.066		
	B → Y	(HL)	0.014	0.018	0.026	0.105	0.129	0.182					
		(LH)	0.021	0.030	0.050	0.180	0.256	0.411					
L202N1	A → Y	(HL)	0.011	0.014	0.020	0.837	1.029	1.451		A	0.006	Y	0.134
		(LH)	0.015	0.021	0.035	1.358	1.903	3.041		B	0.007		
	B → Y	(HH)	0.040	0.056	0.089	1.357	1.904	3.042					
		(LL)	0.042	0.059	0.094	0.843	1.041	1.470					
F202N1	A → Y	(HL)	0.014	0.018	0.026	0.419	0.516	0.727		A	0.018	Y	0.335
		(LH)	0.016	0.024	0.039	0.541	0.766	1.227		B	0.007		
	B → Y	(HH)	0.049	0.068	0.107	0.542	0.767	1.229					
		(LL)	0.061	0.086	0.138	0.424	0.524	0.742					
F222N1	A → Y	(HL)	0.013	0.016	0.024	0.210	0.258	0.364		A	0.031	Y	0.531
		(LH)	0.018	0.027	0.045	0.338	0.480	0.768		B	0.007		
	B → Y	(HH)	0.061	0.084	0.131	0.338	0.480	0.770					
		(LL)	0.075	0.105	0.169	0.214	0.266	0.377					

Function	3-input NOR											
Block type	Normal		with 1 inverter		with 2 inverter		with 3 inverter		with 4 inverter		-	
Drivability	Name	cells	Name	cells	Name	cells	Name	cells	Name	cells		
	L203	3	L203N1	4	L203N2	3						
x2	F203	6	F203N1	6	F203N2	4						
x4	F223	6	F223N1	6	F223N2	6						
x8	F2C3	10										
x16												

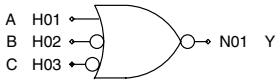
Logic Diagram for "Normal"



Logic Diagram for "with 1 inverter"



Logic Diagram for "with 2 inverter"



Logic Diagram for "with 3 inverter"

Logic Diagram for "with 4 inverter"

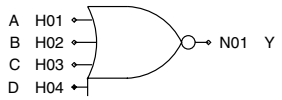
Block type	Switching speed									Input		Output	
	Path		t_{LD0} [ns]			t_1 (ns/pF)							
	IN → OUT		MIN.	TYP.	MAX.	MIN.	TYP.	MAX.		Symbol	Cin(pF)	Symbol	Cmax(pF)
L203	A → Y	(HL)	0.023	0.029	0.042	0.846	1.044	1.474		A	0.012	Y	0.126
		(LH)	0.029	0.044	0.074	1.333	1.947	3.153		B	0.013		
	B → Y	(HL)	0.024	0.030	0.045	0.840	1.035	1.461		C	0.012		
		(LH)	0.033	0.050	0.083	1.333	1.946	3.153					
	C → Y	(HL)	0.022	0.028	0.041	0.845	1.043	1.474					
		(LH)	0.029	0.044	0.074	1.333	1.947	3.153					
F203	A → Y	(HL)	0.023	0.029	0.042	0.423	0.522	0.737		A	0.027	Y	0.252
		(LH)	0.029	0.044	0.074	0.666	0.973	1.576		B	0.026		
	B → Y	(HL)	0.024	0.031	0.045	0.421	0.518	0.732		C	0.026		
		(LH)	0.033	0.051	0.086	0.666	0.973	1.576					
	C → Y	(HL)	0.022	0.028	0.041	0.423	0.522	0.737					
		(LH)	0.029	0.044	0.074	0.666	0.973	1.576					
F223	A → Y	(HL)	0.067	0.094	0.150	0.213	0.264	0.375		A	0.007	Y	0.832
		(LH)	0.078	0.108	0.177	0.244	0.321	0.502		B	0.013		
	B → Y	(HL)	0.090	0.125	0.200	0.213	0.264	0.376		C	0.018		
		(LH)	0.093	0.134	0.223	0.244	0.321	0.502					
	C → Y	(HL)	0.087	0.121	0.194	0.213	0.264	0.375					
		(LH)	0.091	0.130	0.216	0.244	0.321	0.502					
F2C3	A → Y	(HL)	0.070	0.098	0.157	0.107	0.132	0.188		A	0.012	Y	1.661
		(LH)	0.080	0.111	0.181	0.122	0.161	0.251		B	0.020		
	B → Y	(HL)	0.079	0.110	0.176	0.107	0.132	0.188		C	0.018		
		(LH)	0.096	0.139	0.230	0.122	0.161	0.251					
	C → Y	(HL)	0.080	0.112	0.179	0.107	0.132	0.188					
		(LH)	0.098	0.141	0.234	0.122	0.161	0.251					
L203N1	A → Y	(HL)	0.023	0.029	0.043	0.846	1.043	1.473		A	0.013	Y	0.125
		(LH)	0.030	0.045	0.076	1.334	1.947	3.154		B	0.012		
	B → Y	(HL)	0.024	0.031	0.045	0.840	1.035	1.461		C	0.007		
		(LH)	0.033	0.051	0.085	1.333	1.946	3.153					
	C → Y	(HH)	0.049	0.070	0.114	1.335	1.949	3.157					
		(LL)	0.050	0.069	0.110	0.847	1.046	1.479					
F203N1	A → Y	(HL)	0.018	0.023	0.032	0.421	0.519	0.732		A	0.020	Y	0.220
		(LH)	0.026	0.039	0.066	0.760	1.105	1.788		B	0.025		
	B → Y	(HL)	0.021	0.027	0.040	0.421	0.518	0.731		C	0.007		
		(LH)	0.033	0.051	0.085	0.760	1.104	1.787					
	C → Y	(HH)	0.066	0.094	0.150	0.761	1.106	1.790					
		(LL)	0.068	0.094	0.150	0.428	0.530	0.751					
F223N1	A → Y	(HL)	0.067	0.094	0.151	0.213	0.264	0.375		A	0.007	Y	0.832
		(LH)	0.078	0.109	0.177	0.244	0.321	0.502		B	0.012		
	B → Y	(HL)	0.084	0.117	0.187	0.213	0.264	0.375		C	0.006		
		(LH)	0.092	0.132	0.219	0.244	0.321	0.502					
	C → Y	(HH)	0.112	0.158	0.258	0.244	0.321	0.502					
		(LL)	0.111	0.156	0.253	0.213	0.264	0.375					
L203N2	A → Y	(HL)	0.017	0.022	0.033	0.840	1.034	1.458		A	0.013	Y	0.201
		(LH)	0.017	0.024	0.040	0.899	1.283	2.056		B	0.006		
	B → Y	(HH)	0.049	0.069	0.112	0.901	1.286	2.062		C	0.006		
		(LL)	0.049	0.068	0.109	0.843	1.040	1.469					
	C → Y	(HH)	0.053	0.074	0.120	0.901	1.286	2.062					
		(LL)	0.053	0.074	0.119	0.843	1.041	1.472					
F203N2	A → Y	(HL)	0.015	0.019	0.027	0.419	0.516	0.727		A	0.019	Y	0.298
		(LH)	0.018	0.026	0.043	0.599	0.855	1.370		B	0.007		
	B → Y	(HH)	0.060	0.085	0.138	0.601	0.857	1.374		C	0.006		
		(LL)	0.055	0.077	0.124	0.423	0.522	0.738					
	C → Y	(HH)	0.064	0.089	0.145	0.601	0.857	1.374					
		(LL)	0.058	0.082	0.132	0.423	0.523	0.740					

Block type	Switching speed									Input		Output	
	Path		t_{LD0} [ns]			t_1 (ns/pF)							
	IN → OUT		MIN.	TYP.	MAX.	MIN.	TYP.	MAX.		Symbol	Cin(pF)	Symbol	Cmax(pF)
F223N2	A → Y	(HL)	0.067	0.094	0.151	0.213	0.264	0.375		A	0.007	Y	0.831
		(LH)	0.078	0.109	0.177	0.244	0.321	0.502		B	0.006		
	B → Y	(HH)	0.111	0.158	0.259	0.244	0.321	0.502		C	0.007		
		(LL)	0.097	0.136	0.221	0.213	0.264	0.375					
	C → Y	(HH)	0.121	0.172	0.281	0.244	0.321	0.502					
		(LL)	0.109	0.153	0.248	0.213	0.264	0.375					

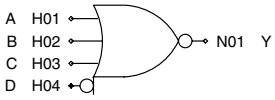
[MEMO]

Function	4-input NOR											
Block type	Normal		with 1 inverter		with 2 inverter		with 3 inverter		with 4 inverter		-	
Drivability	Name	cells	Name	cells	Name	cells	Name	cells	Name	cells		
	L204	4	L204N1	4								
x2	F204	4	F204N1	5								
x4	F224	6	F224N1	6								
x8												
x16												

Logic Diagram for "Normal"



Logic Diagram for "with 1 inverter"



Logic Diagram for "with 2 inverter"

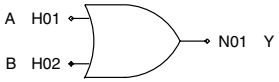
Logic Diagram for "with 3 inverter"

Logic Diagram for "with 4 inverter"

Block type	Switching speed									Input		Output	
	Path		t_{LD0} [ns]			t_1 (ns/pF)							
	IN → OUT		MIN.	TYP.	MAX.	MIN.	TYP.	MAX.		Symbol	Cin(pF)	Symbol	Cmax(pF)
L204	A → Y	(HL)	0.048	0.067	0.106	0.840	1.035	1.461		A	0.006	Y	0.209
		(LH)	0.073	0.108	0.181	0.966	1.270	1.980		B	0.007		
	B → Y	(HL)	0.051	0.071	0.113	0.840	1.035	1.461		C	0.006		
		(LH)	0.080	0.118	0.197	0.966	1.270	1.980		D	0.006		
	C → Y	(HL)	0.052	0.073	0.116	0.840	1.036	1.464					
		(LH)	0.074	0.109	0.185	0.966	1.270	1.980					
	D → Y	(HL)	0.055	0.076	0.122	0.840	1.036	1.464					
		(LH)	0.080	0.119	0.199	0.966	1.270	1.980					
F204	A → Y	(HL)	0.055	0.077	0.122	0.422	0.521	0.737		A	0.006	Y	0.420
		(LH)	0.081	0.119	0.199	0.484	0.637	0.994		B	0.007		
	B → Y	(HL)	0.058	0.081	0.129	0.422	0.521	0.737		C	0.006		
		(LH)	0.088	0.130	0.216	0.484	0.637	0.994		D	0.006		
	C → Y	(HL)	0.059	0.082	0.132	0.422	0.522	0.739					
		(LH)	0.082	0.121	0.204	0.484	0.637	0.994					
	D → Y	(HL)	0.062	0.086	0.138	0.422	0.522	0.739					
		(LH)	0.089	0.130	0.218	0.484	0.637	0.994					
F224	A → Y	(HL)	0.063	0.087	0.139	0.211	0.261	0.369		A	0.006	Y	0.839
		(LH)	0.096	0.142	0.239	0.242	0.319	0.498		B	0.006		
	B → Y	(HL)	0.066	0.092	0.146	0.211	0.261	0.369		C	0.007		
		(LH)	0.103	0.152	0.253	0.242	0.319	0.498		D	0.006		
	C → Y	(HL)	0.063	0.087	0.139	0.211	0.261	0.369					
		(LH)	0.096	0.142	0.238	0.242	0.319	0.498					
	D → Y	(HL)	0.066	0.091	0.146	0.211	0.261	0.369					
		(LH)	0.102	0.151	0.251	0.242	0.319	0.498					
L204N1	A → Y	(HL)	0.050	0.069	0.109	0.840	1.036	1.462		A	0.006	Y	0.209
		(LH)	0.075	0.110	0.185	0.966	1.270	1.981		B	0.007		
	B → Y	(HL)	0.053	0.073	0.116	0.840	1.036	1.462		C	0.006		
		(LH)	0.082	0.121	0.201	0.966	1.270	1.981		D	0.007		
	C → Y	(HL)	0.054	0.075	0.120	0.841	1.037	1.465					
		(LH)	0.076	0.113	0.191	0.966	1.270	1.981					
	D → Y	(HH)	0.097	0.141	0.234	0.967	1.271	1.981					
		(LL)	0.075	0.106	0.173	0.841	1.037	1.466					
F204N1	A → Y	(HL)	0.055	0.077	0.123	0.422	0.521	0.737		A	0.006	Y	0.420
		(LH)	0.081	0.120	0.200	0.484	0.637	0.994		B	0.007		
	B → Y	(HL)	0.058	0.081	0.130	0.422	0.521	0.737		C	0.007		
		(LH)	0.089	0.130	0.217	0.484	0.637	0.994		D	0.007		
	C → Y	(HL)	0.060	0.083	0.133	0.422	0.522	0.739					
		(LH)	0.083	0.122	0.205	0.485	0.638	0.995					
	D → Y	(HH)	0.103	0.150	0.247	0.485	0.638	0.995					
		(LL)	0.080	0.114	0.185	0.422	0.522	0.739					
F224N1	A → Y	(HL)	0.059	0.082	0.130	0.211	0.260	0.368		A	0.006	Y	0.836
		(LH)	0.101	0.147	0.246	0.243	0.320	0.499		B	0.006		
	B → Y	(HL)	0.075	0.105	0.168	0.213	0.265	0.377		C	0.006		
		(LH)	0.097	0.142	0.235	0.243	0.320	0.499		D	0.006		
	C → Y	(HL)	0.078	0.109	0.175	0.214	0.265	0.377					
		(LH)	0.104	0.151	0.249	0.243	0.320	0.499					
	D → Y	(HH)	0.122	0.176	0.289	0.243	0.320	0.499					
		(LL)	0.081	0.114	0.184	0.211	0.260	0.368					

Function	2-input OR											
Block type	Normal		with 1 inverter		with 2 inverter		with 3 inverter		with 4 inverter		-	
Drivability	Name	cells	Name	cells	Name	cells	Name	cells	Name	cells		
	L212	2										
x2	F212	2										
x4	F232	4										
x8	F2D2	8										
x16												

Logic Diagram for "Normal"



Logic Diagram for "with 1 inverter"

Logic Diagram for "with 2 inverter"

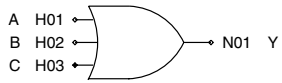
Logic Diagram for "with 3 inverter"

Logic Diagram for "with 4 inverter"

Block type	Switching speed									Input		Output	
	Path		t_{LD0} [ns]			t_1 (ns/pF)							
	IN → OUT		MIN.	TYP.	MAX.	MIN.	TYP.	MAX.		Symbol	Cin(pF)	Symbol	Cmax(pF)
L212	A → Y	(HH)	0.027	0.036	0.055	0.964	1.266	1.973		A	0.006	Y	0.209
		(LL)	0.048	0.072	0.122	0.848	1.051	1.492		B	0.007		
	B → Y	(HH)	0.029	0.040	0.062	0.964	1.267	1.975					
		(LL)	0.055	0.083	0.138	0.848	1.051	1.492					
F212	A → Y	(HH)	0.031	0.041	0.064	0.482	0.634	0.988		A	0.006	Y	0.421
		(LL)	0.061	0.091	0.153	0.430	0.535	0.763		B	0.007		
	B → Y	(HH)	0.034	0.046	0.071	0.482	0.634	0.989					
		(LL)	0.068	0.102	0.169	0.430	0.535	0.763					
F232	A → Y	(HH)	0.032	0.043	0.067	0.241	0.317	0.494		A	0.012	Y	0.844
		(LL)	0.063	0.095	0.159	0.215	0.268	0.382		B	0.013		
	B → Y	(HH)	0.032	0.043	0.067	0.241	0.317	0.494					
		(LL)	0.064	0.096	0.160	0.215	0.268	0.382					
F2D2	A → Y	(HH)	0.031	0.042	0.065	0.121	0.159	0.247		A	0.025	Y	1.687
		(LL)	0.061	0.092	0.153	0.107	0.134	0.190		B	0.025		
	B → Y	(HH)	0.031	0.042	0.065	0.121	0.159	0.247					
		(LL)	0.062	0.092	0.154	0.107	0.134	0.190					

Function	3-input OR											
Block type	Normal		with 1 inverter		with 2 inverter		with 3 inverter		with 4 inverter		-	
Drivability	Name	cells	Name	cells	Name	cells	Name	cells	Name	cells		
	L213	2										
x2	F213	3										
x4	F233	5										
x8	F2D3	10										
x16												

Logic Diagram for "Normal"



Logic Diagram for "with 1 inverter"

Logic Diagram for "with 2 inverter"

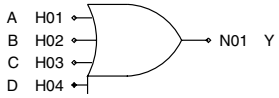
Logic Diagram for "with 3 inverter"

Logic Diagram for "with 4 inverter"

Block type	Switching speed									Input		Output	
	Path		t_{LD0} [ns]			t_1 (ns/pF)							
	IN → OUT		MIN.	TYP.	MAX.	MIN.	TYP.	MAX.		Symbol	Cin(pF)	Symbol	Cmax(pF)
L213	A → Y	(HH)	0.029	0.039	0.060	0.964	1.266	1.973		A	0.007	Y	0.209
		(LL)	0.072	0.111	0.190	0.872	1.093	1.570		B	0.006		
	B → Y	(HH)	0.033	0.044	0.069	0.964	1.267	1.975		C	0.006		
		(LL)	0.086	0.133	0.224	0.872	1.093	1.570					
	C → Y	(HH)	0.035	0.046	0.073	0.966	1.271	1.983					
		(LL)	0.094	0.145	0.243	0.872	1.093	1.570					
F213	A → Y	(HH)	0.033	0.044	0.069	0.482	0.634	0.988		A	0.007	Y	0.420
		(LL)	0.090	0.138	0.234	0.446	0.564	0.816		B	0.006		
	B → Y	(HH)	0.038	0.050	0.078	0.483	0.635	0.990		C	0.006		
		(LL)	0.104	0.159	0.269	0.446	0.563	0.816					
	C → Y	(HH)	0.039	0.052	0.081	0.484	0.637	0.994					
		(LL)	0.110	0.169	0.284	0.446	0.563	0.816					
F233	A → Y	(HH)	0.036	0.049	0.075	0.242	0.318	0.496		A	0.013	Y	0.843
		(LL)	0.100	0.153	0.258	0.223	0.282	0.408		B	0.014		
	B → Y	(HH)	0.037	0.050	0.077	0.241	0.317	0.495		C	0.013		
		(LL)	0.104	0.160	0.270	0.223	0.282	0.408					
	C → Y	(HH)	0.035	0.048	0.074	0.242	0.318	0.496					
		(LL)	0.099	0.153	0.258	0.223	0.282	0.408					
F2D3	A → Y	(HH)	0.036	0.048	0.075	0.121	0.159	0.248		A	0.026	Y	1.684
		(LL)	0.100	0.154	0.261	0.112	0.141	0.205		B	0.027		
	B → Y	(HH)	0.038	0.051	0.078	0.121	0.159	0.248		C	0.027		
		(LL)	0.104	0.160	0.271	0.112	0.141	0.205					
	C → Y	(HH)	0.036	0.049	0.076	0.121	0.159	0.248					
		(LL)	0.101	0.155	0.262	0.112	0.141	0.205					

Function	4-input OR											
Block type	Normal		with 1 inverter		with 2 inverter		with 3 inverter		with 4 inverter		-	
Drivability	Name	cells	Name	cells	Name	cells	Name	cells	Name	cells		
	L214	4										
x2	F214	5										
x4	F234	10										
x8												
x16												

Logic Diagram for "Normal"



Logic Diagram for "with 1 inverter"

Logic Diagram for "with 2 inverter"

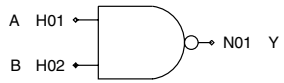
Logic Diagram for "with 3 inverter"

Logic Diagram for "with 4 inverter"

Block type	Switching speed									Input		Output	
	Path		t_{LD0} [ns]			t_1 (ns/pF)							
	IN → OUT		MIN.	TYP.	MAX.	MIN.	TYP.	MAX.		Symbol	Cin(pF)	Symbol	Cmax(pF)
L214	A → Y	(HH)	0.041	0.056	0.088	0.965	1.269	1.977		A	0.006	Y	0.200
		(LL)	0.060	0.091	0.153	0.659	0.846	1.269		B	0.006		
	B → Y	(HH)	0.044	0.060	0.094	0.966	1.270	1.979		C	0.006		
		(LL)	0.067	0.100	0.167	0.659	0.846	1.269		D	0.007		
	C → Y	(HH)	0.043	0.058	0.090	0.966	1.269	1.978					
		(LL)	0.063	0.095	0.159	0.661	0.848	1.273					
	D → Y	(HH)	0.046	0.062	0.098	0.966	1.270	1.980					
		(LL)	0.070	0.105	0.174	0.661	0.848	1.273					
F214	A → Y	(HH)	0.044	0.059	0.093	0.483	0.634	0.989		A	0.006	Y	0.402
		(LL)	0.077	0.115	0.192	0.440	0.564	0.847		B	0.006		
	B → Y	(HH)	0.047	0.063	0.100	0.483	0.635	0.990		C	0.007		
		(LL)	0.083	0.124	0.207	0.440	0.564	0.847		D	0.006		
	C → Y	(HH)	0.047	0.063	0.099	0.483	0.635	0.989					
		(LL)	0.080	0.120	0.201	0.440	0.565	0.848					
	D → Y	(HH)	0.050	0.067	0.106	0.483	0.635	0.990					
		(LL)	0.086	0.129	0.214	0.440	0.565	0.848					
F234	A → Y	(HH)	0.047	0.063	0.099	0.241	0.317	0.495		A	0.013	Y	0.811
		(LL)	0.080	0.121	0.201	0.220	0.283	0.424		B	0.012		
	B → Y	(HH)	0.046	0.062	0.097	0.241	0.317	0.495		C	0.013		
		(LL)	0.080	0.120	0.200	0.220	0.283	0.424		D	0.012		
	C → Y	(HH)	0.048	0.064	0.100	0.242	0.318	0.495					
		(LL)	0.082	0.123	0.205	0.220	0.283	0.425					
	D → Y	(HH)	0.047	0.063	0.099	0.242	0.318	0.495					
		(LL)	0.081	0.122	0.204	0.220	0.283	0.425					

Function	2-input NAND											
Block type	Normal		with 1 inverter		with 2 inverter		with 3 inverter		with 4 inverter		-	
Drivability	Name	cells	Name	cells	Name	cells	Name	cells	Name	cells		
	L302	1	L302N1	2								
x2	F302	2	F302N1	3								
x4	F322	4	F322N1	5								
x8	F3C2	8										
x16												

Logic Diagram for "Normal"



Logic Diagram for "with 1 inverter"

Logic Diagram for "with 2 inverter"

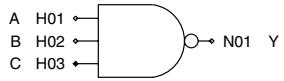
Logic Diagram for "with 3 inverter"

Logic Diagram for "with 4 inverter"

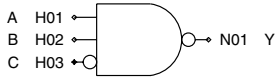
Block type	Switching speed									Input		Output	
	Path		t_{LD0} [ns]			t_1 (ns/pF)							
	IN → OUT		MIN.	TYP.	MAX.	MIN.	TYP.	MAX.		Symbol	Cin(pF)	Symbol	Cmax(pF)
L302	A → Y	(HL)	0.015	0.020	0.030	1.288	1.639	2.444		A	0.006	Y	0.195
		(LH)	0.012	0.016	0.025	0.963	1.264	1.969		B	0.006		
	B → Y	(HL)	0.018	0.024	0.037	1.288	1.639	2.443					
		(LH)	0.015	0.020	0.032	0.962	1.264	1.971					
F302	A → Y	(HL)	0.016	0.021	0.033	0.644	0.819	1.222		A	0.013	Y	0.390
		(LH)	0.013	0.018	0.028	0.481	0.632	0.985		B	0.013		
	B → Y	(HL)	0.016	0.021	0.033	0.644	0.819	1.222					
		(LH)	0.013	0.018	0.028	0.481	0.632	0.985					
F322	A → Y	(HL)	0.017	0.023	0.035	0.322	0.410	0.611		A	0.026	Y	0.778
		(LH)	0.013	0.018	0.029	0.241	0.316	0.493		B	0.025		
	B → Y	(HL)	0.016	0.022	0.034	0.322	0.410	0.611					
		(LH)	0.013	0.018	0.029	0.241	0.316	0.493					
F3C2	A → Y	(HL)	0.017	0.023	0.035	0.161	0.205	0.306		A	0.052	Y	1.556
		(LH)	0.014	0.019	0.029	0.120	0.158	0.246		B	0.052		
	B → Y	(HL)	0.017	0.022	0.035	0.161	0.205	0.306					
		(LH)	0.013	0.018	0.029	0.120	0.158	0.246					
L302N1	A → Y	(HL)	0.014	0.018	0.026	1.034	1.297	1.897		A	0.006	Y	0.201
		(LH)	0.012	0.016	0.026	0.962	1.264	1.969		B	0.007		
	B → Y	(HH)	0.038	0.051	0.081	0.964	1.267	1.976					
		(LL)	0.038	0.053	0.086	1.035	1.299	1.901					
F302N1	A → Y	(HL)	0.017	0.023	0.036	0.645	0.820	1.223		A	0.013	Y	0.387
		(LH)	0.013	0.018	0.029	0.481	0.632	0.985		B	0.006		
	B → Y	(HH)	0.033	0.045	0.070	0.482	0.633	0.987					
		(LL)	0.041	0.058	0.094	0.645	0.821	1.225					
F322N1	A → Y	(HL)	0.018	0.024	0.037	0.323	0.411	0.612		A	0.026	Y	0.767
		(LH)	0.013	0.018	0.029	0.241	0.316	0.493		B	0.006		
	B → Y	(HH)	0.045	0.061	0.095	0.241	0.317	0.494					
		(LL)	0.056	0.079	0.129	0.323	0.412	0.615					

Function	3-input NAND											
Block type	Normal		with 1 inverter		with 2 inverter		with 3 inverter		with 4 inverter		-	
Drivability	Name	cells	Name	cells	Name	cells	Name	cells	Name	cells		
	L303	2	L303N1	2	L303N2	2						
x2	F303	3	F303N1	4	F303N2	3						
x4	F323	6	F323N1	7	F323N2	6						
x8	F3C3	12										
x16												

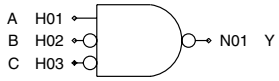
Logic Diagram for "Normal"



Logic Diagram for "with 1 inverter"



Logic Diagram for "with 2 inverter"



Logic Diagram for "with 3 inverter"

Logic Diagram for "with 4 inverter"

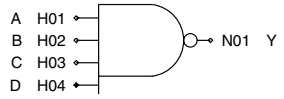
Block type	Switching speed									Input		Output	
	Path		t_{LD0} [ns]			t_1 (ns/pF)							
	IN → OUT		MIN.	TYP.	MAX.	MIN.	TYP.	MAX.		Symbol	Cin(pF)	Symbol	Cmax(pF)
L303	A → Y	(HL)	0.023	0.031	0.050	1.740	2.260	3.457		A	0.007	Y	0.132
		(LH)	0.014	0.019	0.030	0.963	1.264	1.970		B	0.006		
	B → Y	(HL)	0.028	0.039	0.063	1.739	2.260	3.457		C	0.006		
		(LH)	0.017	0.024	0.038	0.962	1.264	1.970					
	C → Y	(HL)	0.031	0.044	0.070	1.739	2.260	3.457					
		(LH)	0.021	0.028	0.046	0.965	1.269	1.979					
F303	A → Y	(HL)	0.028	0.038	0.061	0.870	1.130	1.729		A	0.013	Y	0.264
		(LH)	0.018	0.024	0.038	0.482	0.634	0.988		B	0.013		
	B → Y	(HL)	0.029	0.039	0.063	0.870	1.130	1.729		C	0.013		
		(LH)	0.018	0.024	0.038	0.481	0.632	0.985					
	C → Y	(HL)	0.027	0.038	0.061	0.870	1.130	1.729					
		(LH)	0.017	0.024	0.038	0.482	0.633	0.987					
F323	A → Y	(HL)	0.027	0.038	0.061	0.435	0.565	0.864		A	0.027	Y	0.529
		(LH)	0.017	0.024	0.038	0.241	0.317	0.494		B	0.027		
	B → Y	(HL)	0.028	0.039	0.063	0.435	0.565	0.864		C	0.027		
		(LH)	0.018	0.024	0.038	0.241	0.316	0.493					
	C → Y	(HL)	0.027	0.038	0.061	0.435	0.565	0.864					
		(LH)	0.017	0.024	0.038	0.241	0.317	0.494					
F3C3	A → Y	(HL)	0.027	0.038	0.060	0.218	0.283	0.432		A	0.054	Y	1.058
		(LH)	0.018	0.024	0.038	0.121	0.159	0.247		B	0.054		
	B → Y	(HL)	0.029	0.039	0.063	0.218	0.283	0.432		C	0.055		
		(LH)	0.018	0.024	0.038	0.120	0.158	0.246					
	C → Y	(HL)	0.028	0.038	0.062	0.218	0.283	0.432					
		(LH)	0.018	0.024	0.039	0.121	0.159	0.247					
L303N1	A → Y	(HL)	0.023	0.031	0.050	1.740	2.260	3.457		A	0.007	Y	0.132
		(LH)	0.014	0.019	0.030	0.962	1.264	1.970		B	0.006		
	B → Y	(HL)	0.028	0.039	0.063	1.740	2.260	3.457		C	0.007		
		(LH)	0.017	0.024	0.038	0.962	1.264	1.970					
	C → Y	(HH)	0.036	0.048	0.076	0.965	1.269	1.980					
		(LL)	0.048	0.069	0.113	1.740	2.261	3.459					
F303N1	A → Y	(HL)	0.028	0.039	0.062	0.870	1.131	1.729		A	0.013	Y	0.263
		(LH)	0.017	0.024	0.038	0.482	0.633	0.987		B	0.013		
	B → Y	(HL)	0.029	0.040	0.064	0.870	1.131	1.729		C	0.006		
		(LH)	0.017	0.024	0.038	0.481	0.632	0.985					
	C → Y	(HH)	0.039	0.052	0.082	0.482	0.634	0.989					
		(LL)	0.053	0.075	0.122	0.871	1.132	1.731					
F323N1	A → Y	(HL)	0.028	0.039	0.062	0.435	0.566	0.865		A	0.027	Y	0.524
		(LH)	0.017	0.024	0.038	0.241	0.317	0.494		B	0.027		
	B → Y	(HL)	0.029	0.040	0.065	0.435	0.566	0.865		C	0.006		
		(LH)	0.017	0.024	0.038	0.241	0.316	0.493					
	C → Y	(HH)	0.051	0.069	0.108	0.241	0.317	0.495					
		(LL)	0.068	0.097	0.158	0.436	0.567	0.867					
L303N2	A → Y	(HL)	0.016	0.021	0.032	1.289	1.639	2.445		A	0.006	Y	0.192
		(LH)	0.012	0.017	0.026	0.962	1.264	1.969		B	0.006		
	B → Y	(HH)	0.032	0.044	0.068	0.963	1.265	1.972		C	0.007		
		(LL)	0.054	0.080	0.136	1.292	1.646	2.458					
	C → Y	(HH)	0.035	0.048	0.076	0.963	1.266	1.974					
		(LL)	0.061	0.091	0.151	1.292	1.646	2.457					
F303N2	A → Y	(HL)	0.016	0.022	0.034	0.645	0.821	1.225		A	0.013	Y	0.381
		(LH)	0.013	0.018	0.028	0.481	0.632	0.985		B	0.006		
	B → Y	(HH)	0.035	0.048	0.075	0.482	0.633	0.987		C	0.006		
		(LL)	0.067	0.101	0.169	0.649	0.828	1.237					
	C → Y	(HH)	0.039	0.053	0.083	0.482	0.634	0.988					
		(LL)	0.074	0.110	0.183	0.649	0.828	1.237					

Block type	Switching speed								Input		Output	
	Path		t_{LD0} [ns]			t_1 (ns/pF)						
	IN → OUT		MIN.	TYP.	MAX.	MIN.	TYP.	MAX.	Symbol	Cin(pF)	Symbol	Cmax(pF)
F323N2	A → Y	(HL)	0.018	0.023	0.036	0.323	0.411	0.613	A	0.026	Y	0.760
		(LH)	0.013	0.018	0.029	0.241	0.316	0.493	B	0.013		
	B → Y	(HH)	0.038	0.051	0.080	0.241	0.317	0.494	C	0.013		
		(LL)	0.071	0.106	0.178	0.324	0.414	0.619				
	C → Y	(HH)	0.038	0.051	0.080	0.241	0.317	0.494				
		(LL)	0.071	0.106	0.178	0.324	0.414	0.619				

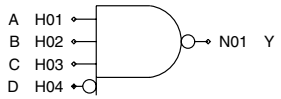
[MEMO]

Function	4-input NAND											
Block type	Normal		with 1 inverter		with 2 inverter		with 3 inverter		with 4 inverter		-	
Drivability	Name	cells	Name	cells	Name	cells	Name	cells	Name	cells		
	L304	4	L304N1	4	L304N2	4						
x2	F304	6	F304N1	6	F304N2	6						
x4	F324	10	F324N1	10	F324N2	8						
x8												
x16												

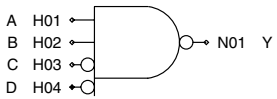
Logic Diagram for "Normal"



Logic Diagram for "with 1 inverter"



Logic Diagram for "with 2 inverter"



Logic Diagram for "with 3 inverter"

Logic Diagram for "with 4 inverter"

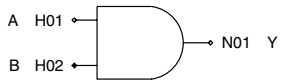
Block type	Switching speed									Input		Output	
	Path		t_{LD0} [ns]			t_1 (ns/pF)							
	IN → OUT		MIN.	TYP.	MAX.	MIN.	TYP.	MAX.		Symbol	Cin(pF)	Symbol	Cmax(pF)
L304	A → Y	(HL)	0.028	0.039	0.063	1.085	1.431	2.227		A	0.011	Y	0.186
		(LH)	0.031	0.042	0.068	0.967	1.272	1.985		B	0.013		
	B → Y	(HL)	0.031	0.043	0.071	1.085	1.431	2.227		C	0.013		
		(LH)	0.033	0.046	0.074	0.964	1.268	1.977		D	0.013		
	C → Y	(HL)	0.030	0.043	0.071	1.085	1.431	2.227					
		(LH)	0.032	0.045	0.073	0.964	1.268	1.977					
	D → Y	(HL)	0.029	0.040	0.065	1.085	1.431	2.227					
		(LH)	0.031	0.043	0.069	0.967	1.272	1.985					
F304	A → Y	(HL)	0.030	0.041	0.068	0.724	0.954	1.484		A	0.019	Y	0.299
		(LH)	0.024	0.032	0.052	0.482	0.634	0.989		B	0.020		
	B → Y	(HL)	0.034	0.048	0.080	0.724	0.954	1.484		C	0.020		
		(LH)	0.027	0.037	0.060	0.482	0.633	0.987		D	0.019		
	C → Y	(HL)	0.036	0.051	0.084	0.724	0.954	1.484					
		(LH)	0.028	0.039	0.063	0.482	0.634	0.989					
	D → Y	(HL)	0.036	0.050	0.082	0.724	0.954	1.484					
		(LH)	0.029	0.039	0.063	0.484	0.636	0.993					
F324	A → Y	(HL)	0.034	0.048	0.079	0.434	0.572	0.891		A	0.033	Y	0.491
		(LH)	0.022	0.031	0.049	0.241	0.317	0.495		B	0.035		
	B → Y	(HL)	0.038	0.054	0.089	0.434	0.572	0.891		C	0.035		
		(LH)	0.025	0.034	0.055	0.241	0.317	0.494		D	0.033		
	C → Y	(HL)	0.039	0.055	0.092	0.434	0.572	0.891					
		(LH)	0.025	0.035	0.056	0.241	0.317	0.494					
	D → Y	(HL)	0.038	0.053	0.088	0.434	0.572	0.891					
		(LH)	0.025	0.034	0.055	0.242	0.318	0.496					
L304N1	A → Y	(HL)	0.023	0.031	0.049	1.436	1.858	2.839		A	0.006	Y	0.158
		(LH)	0.017	0.023	0.036	0.962	1.264	1.969		B	0.013		
	B → Y	(HL)	0.033	0.046	0.075	1.436	1.858	2.839		C	0.013		
		(LH)	0.027	0.037	0.060	0.965	1.269	1.980		D	0.006		
	C → Y	(HL)	0.038	0.053	0.086	1.436	1.858	2.839					
		(LH)	0.033	0.045	0.073	0.973	1.280	2.000					
	D → Y	(HH)	0.051	0.070	0.110	0.969	1.276	1.991					
		(LL)	0.060	0.085	0.139	1.437	1.860	2.843					
F304N1	A → Y	(HL)	0.034	0.048	0.079	0.864	1.127	1.734		A	0.019	Y	0.254
		(LH)	0.023	0.031	0.050	0.483	0.635	0.991		B	0.020		
	B → Y	(HL)	0.040	0.056	0.092	0.864	1.127	1.734		C	0.020		
		(LH)	0.027	0.037	0.059	0.484	0.637	0.993		D	0.006		
	C → Y	(HL)	0.039	0.055	0.090	0.864	1.127	1.734					
		(LH)	0.025	0.035	0.057	0.482	0.634	0.989					
	D → Y	(HH)	0.044	0.060	0.094	0.483	0.635	0.990					
		(LL)	0.062	0.088	0.143	0.865	1.127	1.735					
F324N1	A → Y	(HL)	0.039	0.055	0.090	0.499	0.655	1.014		A	0.034	Y	0.427
		(LH)	0.021	0.030	0.048	0.242	0.318	0.496		B	0.028		
	B → Y	(HL)	0.041	0.058	0.095	0.499	0.655	1.014		C	0.029		
		(LH)	0.022	0.030	0.049	0.241	0.317	0.494		D	0.007		
	C → Y	(HL)	0.040	0.056	0.093	0.499	0.655	1.014					
		(LH)	0.022	0.030	0.048	0.241	0.317	0.494					
	D → Y	(HH)	0.070	0.094	0.147	0.243	0.319	0.498					
		(LL)	0.093	0.132	0.216	0.500	0.656	1.016					
L304N2	A → Y	(HL)	0.019	0.026	0.041	0.871	1.133	1.732		A	0.012	Y	0.193
		(LH)	0.025	0.034	0.055	0.966	1.270	1.979		B	0.012		
	B → Y	(HL)	0.021	0.028	0.044	0.871	1.133	1.733		C	0.006		
		(LH)	0.025	0.034	0.055	0.963	1.266	1.973		D	0.006		
	C → Y	(HH)	0.049	0.067	0.106	0.967	1.272	1.984					
		(LL)	0.070	0.105	0.176	0.878	1.144	1.753					
	D → Y	(HH)	0.052	0.071	0.113	0.968	1.273	1.986					
		(LL)	0.076	0.114	0.190	0.878	1.144	1.753					

Block type	Switching speed								Input		Output	
	Path		t_{LD0} [ns]			t_1 (ns/pF)						
	IN → OUT		MIN.	TYP.	MAX.	MIN.	TYP.	MAX.	Symbol	Cin(pF)	Symbol	Cmax(pF)
F304N2	A → Y	(HL)	0.020	0.028	0.044	0.581	0.755	1.154	A	0.019	Y	0.389
		(LH)	0.019	0.027	0.043	0.482	0.634	0.988	B	0.019		
	B → Y	(HL)	0.023	0.031	0.050	0.581	0.755	1.155	C	0.006		
		(LH)	0.021	0.029	0.046	0.481	0.633	0.986	D	0.006		
	C → Y	(HH)	0.053	0.072	0.113	0.483	0.636	0.992				
		(LL)	0.087	0.130	0.219	0.585	0.762	1.168				
	D → Y	(HH)	0.056	0.076	0.120	0.484	0.636	0.993				
		(LL)	0.093	0.139	0.233	0.585	0.762	1.168				
F324N2	A → Y	(HL)	0.028	0.038	0.062	0.435	0.566	0.865	A	0.027	Y	0.521
		(LH)	0.017	0.024	0.038	0.241	0.317	0.494	B	0.027		
	B → Y	(HL)	0.029	0.040	0.064	0.435	0.566	0.865	C	0.013		
		(LH)	0.017	0.024	0.038	0.241	0.316	0.493	D	0.013		
	C → Y	(HH)	0.043	0.058	0.091	0.241	0.317	0.495				
		(LL)	0.082	0.123	0.206	0.436	0.568	0.869				
	D → Y	(HH)	0.043	0.058	0.091	0.241	0.317	0.495				
		(LL)	0.083	0.123	0.207	0.436	0.568	0.869				

[MEMO]

Function	2-input AND											
Block type	Normal		with 1 inverter		with 2 inverter		with 3 inverter		with 4 inverter		-	
Drivability	Name	cells	Name	cells	Name	cells	Name	cells	Name	cells		
	L312	2										
x2	F312	2										
x4	F332	4										
x8	F3D2	8										
x16												

Logic Diagram for "Normal"



Logic Diagram for "with 1 inverter"

Logic Diagram for "with 2 inverter"

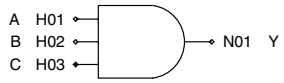
Logic Diagram for "with 3 inverter"

Logic Diagram for "with 4 inverter"

Block type	Switching speed									Input		Output	
	Path		t_{LD0} [ns]			t_1 (ns/pF)							
	IN → OUT		MIN.	TYP.	MAX.	MIN.	TYP.	MAX.		Symbol	Cin(pF)	Symbol	Cmax(pF)
L312	A → Y	(HH)	0.035	0.049	0.079	0.965	1.269	1.977		A	0.007	Y	0.209
		(LL)	0.031	0.044	0.070	0.839	1.034	1.460		B	0.006		
	B → Y	(HH)	0.038	0.053	0.085	0.965	1.269	1.978					
		(LL)	0.034	0.049	0.079	0.840	1.036	1.464					
F312	A → Y	(HH)	0.042	0.059	0.095	0.484	0.637	0.993		A	0.007	Y	0.420
		(LL)	0.038	0.053	0.086	0.422	0.521	0.736		B	0.006		
	B → Y	(HH)	0.046	0.063	0.102	0.484	0.637	0.993					
		(LL)	0.041	0.058	0.095	0.422	0.521	0.738					
F332	A → Y	(HH)	0.043	0.060	0.098	0.242	0.319	0.497		A	0.013	Y	0.839
		(LL)	0.039	0.056	0.090	0.211	0.261	0.369		B	0.013		
	B → Y	(HH)	0.043	0.060	0.097	0.242	0.319	0.497					
		(LL)	0.039	0.055	0.089	0.211	0.261	0.369					
F3D2	A → Y	(HH)	0.044	0.062	0.100	0.121	0.159	0.249		A	0.025	Y	1.679
		(LL)	0.040	0.056	0.091	0.106	0.130	0.185		B	0.026		
	B → Y	(HH)	0.045	0.062	0.101	0.121	0.159	0.249					
		(LL)	0.040	0.057	0.092	0.106	0.130	0.185					

Function	3-input AND											
Block type	Normal		with 1 inverter		with 2 inverter		with 3 inverter		with 4 inverter		-	
Drivability	Name	cells	Name	cells	Name	cells	Name	cells	Name	cells		
	L313	2										
x2	F313	3										
x4	F333	5										
x8	F3D3	10										
x16												

Logic Diagram for "Normal"



Logic Diagram for "with 1 inverter"

Logic Diagram for "with 2 inverter"

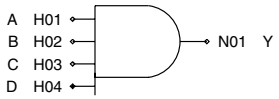
Logic Diagram for "with 3 inverter"

Logic Diagram for "with 4 inverter"

Block type	Switching speed									Input		Output	
	Path		t_{LD0} [ns]			t_1 (ns/pF)							
	IN → OUT		MIN.	TYP.	MAX.	MIN.	TYP.	MAX.		Symbol	Cin(pF)	Symbol	Cmax(pF)
L313	A → Y	(HH)	0.050	0.070	0.117	0.971	1.277	1.993		A	0.006	Y	0.208
		(LL)	0.035	0.049	0.080	0.841	1.037	1.465		B	0.006		
	B → Y	(HH)	0.056	0.079	0.131	0.971	1.277	1.992		C	0.006		
		(LL)	0.040	0.056	0.091	0.841	1.038	1.468					
	C → Y	(HH)	0.059	0.084	0.140	0.970	1.277	1.992					
		(LL)	0.044	0.062	0.101	0.843	1.042	1.475					
F313	A → Y	(HH)	0.059	0.084	0.139	0.489	0.644	1.006		A	0.006	Y	0.417
		(LL)	0.041	0.058	0.094	0.423	0.523	0.740		B	0.006		
	B → Y	(HH)	0.065	0.092	0.152	0.489	0.644	1.006		C	0.006		
		(LL)	0.045	0.064	0.104	0.423	0.523	0.741					
	C → Y	(HH)	0.069	0.097	0.161	0.489	0.644	1.006					
		(LL)	0.050	0.071	0.116	0.424	0.525	0.745					
F333	A → Y	(HH)	0.064	0.090	0.149	0.244	0.322	0.503		A	0.013	Y	0.834
		(LL)	0.045	0.064	0.104	0.212	0.262	0.372		B	0.013		
	B → Y	(HH)	0.065	0.091	0.151	0.244	0.322	0.503		C	0.013		
		(LL)	0.045	0.064	0.104	0.212	0.262	0.371					
	C → Y	(HH)	0.064	0.090	0.149	0.244	0.322	0.503					
		(LL)	0.046	0.064	0.104	0.212	0.262	0.372					
F3D3	A → Y	(HH)	0.064	0.091	0.151	0.122	0.161	0.252		A	0.027	Y	1.666
		(LL)	0.046	0.065	0.105	0.106	0.131	0.186		B	0.028		
	B → Y	(HH)	0.066	0.093	0.154	0.122	0.161	0.252		C	0.026		
		(LL)	0.046	0.065	0.106	0.106	0.131	0.186					
	C → Y	(HH)	0.064	0.091	0.151	0.122	0.161	0.252					
		(LL)	0.046	0.065	0.105	0.106	0.131	0.186					

Function	4-input AND											
Block type	Normal		with 1 inverter		with 2 inverter		with 3 inverter		with 4 inverter		-	
Drivability	Name	cells	Name	cells	Name	cells	Name	cells	Name	cells		
	L314	4										
x2	F314	3										
x4	F334	6										
x8												
x16												

Logic Diagram for "Normal"



Logic Diagram for "with 1 inverter"

Logic Diagram for "with 2 inverter"

Logic Diagram for "with 3 inverter"

Logic Diagram for "with 4 inverter"

Block type	Switching speed									Input		Output	
	Path		t LD0 [ns]			t 1 (ns/pF)							
	IN → OUT		MIN.	TYP.	MAX.	MIN.	TYP.	MAX.		Symbol	Cin(pF)	Symbol	Cmax(pF)
L314	A → Y	(HH)	0.048	0.068	0.110	0.902	1.286	2.063		A	0.007	Y	0.202
		(LL)	0.048	0.066	0.106	0.843	1.040	1.469		B	0.006		
	B → Y	(HH)	0.051	0.072	0.117	0.902	1.286	2.063		C	0.006		
		(LL)	0.051	0.072	0.115	0.844	1.041	1.472		D	0.006		
	C → Y	(HH)	0.049	0.069	0.112	0.902	1.287	2.064					
		(LL)	0.048	0.068	0.108	0.843	1.040	1.470					
	D → Y	(HH)	0.053	0.074	0.119	0.902	1.287	2.064					
		(LL)	0.052	0.073	0.118	0.844	1.041	1.472					
F314	A → Y	(HH)	0.078	0.111	0.187	0.495	0.655	1.026		A	0.007	Y	0.413
		(LL)	0.045	0.063	0.103	0.424	0.524	0.743		B	0.006		
	B → Y	(HH)	0.084	0.121	0.204	0.495	0.655	1.026		C	0.006		
		(LL)	0.049	0.069	0.113	0.424	0.525	0.745		D	0.006		
	C → Y	(HH)	0.090	0.129	0.219	0.495	0.655	1.026					
		(LL)	0.053	0.075	0.122	0.425	0.527	0.748					
	D → Y	(HH)	0.093	0.134	0.226	0.495	0.655	1.026					
		(LL)	0.056	0.079	0.129	0.426	0.528	0.752					
F334	A → Y	(HH)	0.085	0.122	0.207	0.248	0.328	0.514		A	0.012	Y	0.825
		(LL)	0.050	0.071	0.116	0.213	0.264	0.374		B	0.013		
	B → Y	(HH)	0.088	0.126	0.214	0.248	0.328	0.514		C	0.013		
		(LL)	0.052	0.073	0.119	0.212	0.263	0.374		D	0.014		
	C → Y	(HH)	0.088	0.126	0.214	0.248	0.328	0.514					
		(LL)	0.051	0.073	0.118	0.212	0.263	0.374					
	D → Y	(HH)	0.087	0.125	0.210	0.248	0.328	0.514					
		(LL)	0.051	0.072	0.117	0.213	0.264	0.374					

[MEMO]

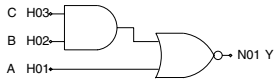
[MEMO]

2.4 AND-NOR

[MEMO]

Function	1-2-input AND-NOR											
Block type	Normal		with inv. A		with inv. B		with inv. C		with inv. D		with inv. E	
Drivability	Name	cells	Name	cells	Name	cells	Name	cells	Name	cells	Name	cells
	L421	2										
x2	F421	4										
x4												
x8												
x16												

Logic Diagram for "Normal"



Logic Diagram for "with inv. A type"

Logic Diagram for "with inv. B type"

Logic Diagram for "with inv. C type"

Logic Diagram for "with inv. D type"

Logic Diagram for "with inv. E type"

Logic Diagram for "with inv. F type"

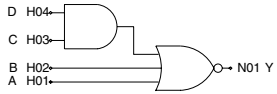
Logic Diagram for "with inv. G type"

Logic Diagram for "with inv. H type"

Block type	Switching speed									Input		Output	
	Path		t_{LD0} [ns]			t_1 (ns/pF)							
	IN → OUT		MIN.	TYP.	MAX.	MIN.	TYP.	MAX.		Symbol	Cin(pF)	Symbol	Cmax(pF)
L421	A → Y	(HL)	0.013	0.018	0.025	0.838	1.035	1.459		A	0.012	Y	0.127
		(LH)	0.012	0.031	0.051	0.907	1.972	3.143		B	0.006		
	B → Y	(HL)	0.030	0.040	0.062	1.295	1.650	2.463		C	0.006		
		(LH)	0.030	0.043	0.070	1.385	1.970	3.140					
	C → Y	(HL)	0.032	0.044	0.069	1.295	1.650	2.463					
		(LH)	0.034	0.050	0.082	1.383	1.969	3.140					
F421	A → Y	(HL)	0.009	0.012	0.017	0.418	0.515	0.726		A	0.013	Y	0.237
		(LH)	0.012	0.024	0.040	0.612	1.065	1.704		B	0.018		
	B → Y	(HL)	0.026	0.034	0.054	0.650	0.828	1.236		C	0.019		
		(LH)	0.028	0.041	0.066	0.753	1.064	1.703					
	C → Y	(HL)	0.026	0.034	0.053	0.650	0.828	1.236					
		(LH)	0.028	0.040	0.066	0.752	1.063	1.701					

Function	1-1-2-input AND-NOR											
Block type	Normal		with inv. A		with inv. B		with inv. C		with inv. D		with inv. E	
Drivability	Name	cells	Name	cells	Name	cells	Name	cells	Name	cells	Name	cells
	L422	4										
x2	F422	4										
x4												
x8												
x16												

Logic Diagram for "Normal"



Logic Diagram for "with inv. A type"

Logic Diagram for "with inv. B type"

Logic Diagram for "with inv. C type"

Logic Diagram for "with inv. D type"

Logic Diagram for "with inv. E type"

Logic Diagram for "with inv. F type"

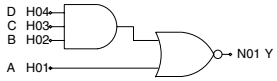
Logic Diagram for "with inv. G type"

Logic Diagram for "with inv. H type"

Block type	Switching speed									Input		Output	
	Path		t LD0 [ns]			t 1 (ns/pF)							
	IN → OUT		MIN.	TYP.	MAX.	MIN.	TYP.	MAX.		Symbol	Cin(pF)	Symbol	Cmax(pF)
L422	A → Y	(HL)	0.022	0.029	0.042	0.839	1.036	1.463		A	0.013	Y	0.119
		(LH)	0.025	0.051	0.086	1.113	1.949	3.156		B	0.013		
	B → Y	(HL)	0.022	0.029	0.042	0.838	1.035	1.462		C	0.013		
		(LH)	0.025	0.052	0.088	1.113	1.949	3.156		D	0.012		
	C → Y	(HL)	0.026	0.034	0.052	0.664	0.849	1.270					
		(LH)	0.053	0.081	0.134	1.332	1.946	3.153					
	D → Y	(HL)	0.026	0.033	0.052	0.664	0.849	1.270					
		(LH)	0.053	0.080	0.134	1.335	1.949	3.156					
F422	A → Y	(HL)	0.055	0.077	0.122	0.422	0.521	0.737		A	0.006	Y	0.419
		(LH)	0.081	0.119	0.199	0.484	0.637	0.994		B	0.007		
	B → Y	(HL)	0.058	0.081	0.129	0.422	0.521	0.737		C	0.006		
		(LH)	0.088	0.129	0.215	0.484	0.637	0.994		D	0.006		
	C → Y	(HL)	0.072	0.101	0.164	0.422	0.522	0.739					
		(LH)	0.071	0.100	0.165	0.484	0.637	0.994					
	D → Y	(HL)	0.068	0.096	0.156	0.422	0.522	0.739					
		(LH)	0.067	0.095	0.156	0.484	0.637	0.994					

Function	1-3-input AND-NOR											
Block type	Normal		with inv. A		with inv. B		with inv. C		with inv. D		with inv. E	
Drivability	Name	cells	Name	cells	Name	cells	Name	cells	Name	cells	Name	cells
	L423	3										
x2	F423	6										
x4												
x8												
x16												

Logic Diagram for "Normal"



Logic Diagram for "with inv. A type"

Logic Diagram for "with inv. B type"

Logic Diagram for "with inv. C type"

Logic Diagram for "with inv. D type"

Logic Diagram for "with inv. E type"

Logic Diagram for "with inv. F type"

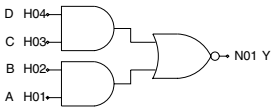
Logic Diagram for "with inv. G type"

Logic Diagram for "with inv. H type"

Block type	Switching speed									Input		Output	
	Path		t LD0 [ns]			t 1 (ns/pF)							
	IN → OUT		MIN.	TYP.	MAX.	MIN.	TYP.	MAX.		Symbol	Cin(pF)	Symbol	Cmax(pF)
L423	A → Y	(HL)	0.014	0.019	0.027	0.837	1.039	1.460		A	0.012	Y	0.120
		(LH)	0.012	0.040	0.067	0.756	1.976	3.152		B	0.006		
	B → Y	(HL)	0.046	0.062	0.102	1.750	2.277	3.486		C	0.006		
		(LH)	0.035	0.051	0.082	1.384	1.969	3.139		D	0.006		
	C → Y	(HL)	0.051	0.070	0.115	1.750	2.277	3.486					
		(LH)	0.040	0.059	0.096	1.377	1.962	3.133					
	D → Y	(HL)	0.054	0.075	0.122	1.750	2.277	3.486					
		(LH)	0.045	0.066	0.109	1.386	1.974	3.150					
F423	A → Y	(HL)	0.013	0.018	0.025	0.418	0.519	0.731		A	0.018	Y	0.279
		(LH)	0.012	0.036	0.061	0.410	0.863	1.382		B	0.020		
	B → Y	(HL)	0.033	0.046	0.073	0.586	0.763	1.169		C	0.019		
		(LH)	0.036	0.052	0.085	0.604	0.861	1.378		D	0.019		
	C → Y	(HL)	0.036	0.049	0.078	0.586	0.763	1.169					
		(LH)	0.038	0.055	0.090	0.604	0.860	1.377					
	D → Y	(HL)	0.036	0.049	0.080	0.586	0.763	1.169					
		(LH)	0.040	0.059	0.097	0.605	0.862	1.382					

Function	2-2-input AND-NOR											
Block type	Normal		with inv. A		with inv. B		with inv. C		with inv. D		with inv. E	
Drivability	Name	cells	Name	cells	Name	cells	Name	cells	Name	cells	Name	cells
	L424	4										
x2	F424	6										
x4												
x8												
x16												

Logic Diagram for "Normal"



Logic Diagram for "with inv. A type"

Logic Diagram for "with inv. B type"

Logic Diagram for "with inv. C type"

Logic Diagram for "with inv. D type"

Logic Diagram for "with inv. E type"

Logic Diagram for "with inv. F type"

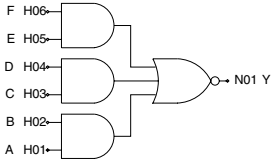
Logic Diagram for "with inv. G type"

Logic Diagram for "with inv. H type"

Block type	Switching speed									Input		Output	
	Path		t LD0 [ns]			t 1 (ns/pF)							
	IN → OUT		MIN.	TYP.	MAX.	MIN.	TYP.	MAX.		Symbol	Cin(pF)	Symbol	Cmax(pF)
L424	A → Y	(HL)	0.018	0.024	0.037	0.645	0.823	1.228		A	0.013	Y	0.185
		(LH)	0.019	0.039	0.065	0.682	1.289	2.065		B	0.013		
	B → Y	(HL)	0.017	0.024	0.037	0.645	0.823	1.228		C	0.013		
		(LH)	0.019	0.039	0.065	0.684	1.291	2.067		D	0.012		
	C → Y	(HL)	0.028	0.042	0.066	0.652	0.838	1.254					
		(LH)	0.032	0.061	0.100	0.691	1.288	2.063					
	D → Y	(HL)	0.027	0.042	0.066	0.652	0.838	1.254					
		(LH)	0.032	0.061	0.100	0.693	1.290	2.066					
F424	A → Y	(HL)	0.022	0.031	0.047	0.645	0.821	1.225		A	0.020	Y	0.285
		(LH)	0.016	0.031	0.052	0.454	0.858	1.375		B	0.019		
	B → Y	(HL)	0.022	0.031	0.047	0.645	0.821	1.224		C	0.019		
		(LH)	0.016	0.031	0.051	0.455	0.859	1.376		D	0.018		
	C → Y	(HL)	0.039	0.060	0.095	0.648	0.830	1.240					
		(LH)	0.029	0.053	0.087	0.461	0.859	1.376					
	D → Y	(HL)	0.039	0.060	0.095	0.648	0.830	1.240					
		(LH)	0.029	0.053	0.086	0.461	0.859	1.375					

Function	2-2-2-input AND-NOR											
Block type	Normal		with inv. A		with inv. B		with inv. C		with inv. D		with inv. E	
Drivability	Name	cells	Name	cells	Name	cells	Name	cells	Name	cells	Name	cells
	L425	6										
x2	F425	7										
x4												
x8												
x16												

Logic Diagram for "Normal"



Logic Diagram for "with inv. A type"

Logic Diagram for "with inv. B type"

Logic Diagram for "with inv. C type"

Logic Diagram for "with inv. D type"

Logic Diagram for "with inv. E type"

Logic Diagram for "with inv. F type"

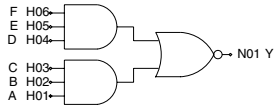
Logic Diagram for "with inv. G type"

Logic Diagram for "with inv. H type"

Block type	Switching speed									Input		Output	
	Path		t LD0 [ns]			t 1 (ns/pF)							
	IN → OUT		MIN.	TYP.	MAX.	MIN.	TYP.	MAX.		Symbol	Cin(pF)	Symbol	Cmax(pF)
L425	A → Y	(HL)	0.062	0.088	0.143	0.841	1.038	1.467		A	0.007	Y	0.209
		(LH)	0.062	0.087	0.144	0.967	1.271	1.982		B	0.006		
	B → Y	(HL)	0.066	0.092	0.150	0.841	1.038	1.467		C	0.007		
		(LH)	0.065	0.093	0.153	0.967	1.271	1.982		D	0.006		
	C → Y	(HL)	0.084	0.118	0.192	0.844	1.043	1.479		E	0.007		
		(LH)	0.073	0.104	0.173	0.967	1.272	1.983		F	0.006		
	D → Y	(HL)	0.087	0.123	0.199	0.844	1.043	1.479					
		(LH)	0.076	0.109	0.181	0.967	1.272	1.983					
	E → Y	(HL)	0.087	0.123	0.199	0.844	1.044	1.480					
		(LH)	0.075	0.108	0.178	0.967	1.272	1.983					
	F → Y	(HL)	0.091	0.127	0.206	0.844	1.044	1.480					
		(LH)	0.078	0.112	0.187	0.967	1.272	1.983					
F425	A → Y	(HL)	0.091	0.128	0.209	0.425	0.527	0.749		A	0.007	Y	0.420
		(LH)	0.072	0.103	0.170	0.485	0.638	0.996		B	0.006		
	B → Y	(HL)	0.094	0.132	0.216	0.425	0.527	0.749		C	0.007		
		(LH)	0.075	0.107	0.178	0.485	0.638	0.996		D	0.006		
	C → Y	(HL)	0.094	0.133	0.217	0.425	0.526	0.747		E	0.007		
		(LH)	0.074	0.106	0.175	0.485	0.639	0.996		F	0.006		
	D → Y	(HL)	0.098	0.137	0.224	0.425	0.526	0.747					
		(LH)	0.077	0.111	0.184	0.485	0.639	0.996					
	E → Y	(HL)	0.092	0.129	0.211	0.425	0.527	0.748					
		(LH)	0.072	0.103	0.171	0.485	0.638	0.996					
	F → Y	(HL)	0.095	0.134	0.219	0.425	0.527	0.748					
		(LH)	0.075	0.108	0.180	0.485	0.638	0.996					

Function	3-3-input AND-NOR											
Block type	Normal		with inv. A		with inv. B		with inv. C		with inv. D		with inv. E	
Drivability	Name	cells	Name	cells	Name	cells	Name	cells	Name	cells	Name	cells
	L426	5										
x2	F426	5										
x4												
x8												
x16												

Logic Diagram for "Normal"



Logic Diagram for "with inv. A type"

Logic Diagram for "with inv. B type"

Logic Diagram for "with inv. C type"

Logic Diagram for "with inv. D type"

Logic Diagram for "with inv. E type"

Logic Diagram for "with inv. F type"

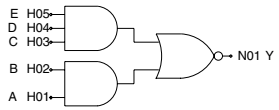
Logic Diagram for "with inv. G type"

Logic Diagram for "with inv. H type"

Block type	Switching speed									Input		Output	
	Path		t LD0 [ns]			t 1 (ns/pF)							
	IN → OUT		MIN.	TYP.	MAX.	MIN.	TYP.	MAX.		Symbol	Cin(pF)	Symbol	Cmax(pF)
L426	A → Y	(HL)	0.072	0.102	0.169	0.840	1.036	1.464		A	0.006	Y	0.209
		(LH)	0.061	0.087	0.142	0.965	1.269	1.978		B	0.006		
	B → Y	(HL)	0.078	0.111	0.183	0.840	1.036	1.464		C	0.006		
		(LH)	0.065	0.092	0.152	0.965	1.269	1.978		D	0.006		
	C → Y	(HL)	0.082	0.117	0.193	0.840	1.036	1.464		E	0.006		
		(LH)	0.070	0.099	0.162	0.966	1.269	1.979		F	0.006		
	D → Y	(HL)	0.074	0.106	0.177	0.841	1.037	1.466					
		(LH)	0.061	0.088	0.145	0.966	1.269	1.979					
	E → Y	(HL)	0.080	0.114	0.190	0.841	1.037	1.466					
		(LH)	0.065	0.093	0.154	0.966	1.269	1.979					
	F → Y	(HL)	0.084	0.120	0.199	0.841	1.037	1.466					
		(LH)	0.070	0.100	0.164	0.966	1.269	1.979					
F426	A → Y	(HL)	0.079	0.112	0.186	0.422	0.522	0.738		A	0.006	Y	0.419
		(LH)	0.068	0.096	0.157	0.484	0.637	0.994		B	0.006		
	B → Y	(HL)	0.084	0.120	0.199	0.422	0.522	0.738		C	0.006		
		(LH)	0.072	0.102	0.168	0.484	0.637	0.994		D	0.006		
	C → Y	(HL)	0.088	0.126	0.208	0.422	0.522	0.738		E	0.006		
		(LH)	0.077	0.109	0.179	0.484	0.637	0.994		F	0.006		
	D → Y	(HL)	0.083	0.118	0.196	0.422	0.522	0.740					
		(LH)	0.070	0.099	0.163	0.484	0.637	0.994					
	E → Y	(HL)	0.088	0.126	0.209	0.422	0.522	0.740					
		(LH)	0.074	0.105	0.172	0.484	0.637	0.994					
	F → Y	(HL)	0.093	0.133	0.219	0.422	0.522	0.740					
		(LH)	0.078	0.111	0.183	0.484	0.637	0.994					

Function	2-3-input AND-NOR											
Block type	Normal		with inv. A		with inv. B		with inv. C		with inv. D		with inv. E	
Drivability	Name	cells	Name	cells	Name	cells	Name	cells	Name	cells	Name	cells
	L427	5										
x2	F427	5										
x4												
x8												
x16												

Logic Diagram for "Normal"



Logic Diagram for "with inv. A type"

Logic Diagram for "with inv. B type"

Logic Diagram for "with inv. C type"

Logic Diagram for "with inv. D type"

Logic Diagram for "with inv. E type"

Logic Diagram for "with inv. F type"

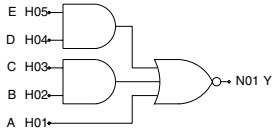
Logic Diagram for "with inv. G type"

Logic Diagram for "with inv. H type"

Block type	Switching speed									Input		Output	
	Path		t LD0 [ns]			t 1 (ns/pF)							
	IN → OUT		MIN.	TYP.	MAX.	MIN.	TYP.	MAX.		Symbol	Cin(pF)	Symbol	Cmax(pF)
L427	A → Y	(HL)	0.026	0.040	0.060	1.289	1.655	2.465		A	0.013	Y	0.165
		(LH)	0.013	0.034	0.056	0.612	1.292	2.071		B	0.012		
	B → Y	(HL)	0.030	0.045	0.067	1.289	1.655	2.464		C	0.013		
		(LH)	0.015	0.038	0.064	0.614	1.293	2.073		D	0.013		
	C → Y	(HL)	0.039	0.063	0.103	0.881	1.157	1.777		E	0.013		
		(LH)	0.036	0.069	0.113	0.695	1.293	2.073					
	D → Y	(HL)	0.040	0.064	0.104	0.881	1.157	1.777					
		(LH)	0.036	0.068	0.111	0.692	1.290	2.066					
	E → Y	(HL)	0.039	0.063	0.102	0.881	1.157	1.777					
		(LH)	0.037	0.069	0.113	0.695	1.293	2.073					
F427	A → Y	(HL)	0.064	0.090	0.147	0.422	0.521	0.737		A	0.007	Y	0.419
		(LH)	0.065	0.091	0.149	0.484	0.637	0.994		B	0.006		
	B → Y	(HL)	0.067	0.095	0.154	0.422	0.521	0.737		C	0.006		
		(LH)	0.068	0.096	0.157	0.484	0.637	0.994		D	0.006		
	C → Y	(HL)	0.082	0.118	0.195	0.422	0.522	0.739		E	0.006		
		(LH)	0.069	0.099	0.163	0.484	0.637	0.994					
	D → Y	(HL)	0.088	0.126	0.209	0.422	0.522	0.739					
		(LH)	0.074	0.105	0.172	0.484	0.637	0.994					
	E → Y	(HL)	0.092	0.131	0.218	0.422	0.522	0.739					
		(LH)	0.078	0.111	0.183	0.484	0.637	0.994					

Function	1-2-2-input AND-NOR											
Block type	Normal		with inv. A		with inv. B		with inv. C		with inv. D		with inv. E	
Drivability	Name	cells	Name	cells	Name	cells	Name	cells	Name	cells	Name	cells
	L428	5										
x2	F428	6										
x4												
x8												
x16												

Logic Diagram for "Normal"



Logic Diagram for "with inv. A type"

Logic Diagram for "with inv. B type"

Logic Diagram for "with inv. C type"

Logic Diagram for "with inv. D type"

Logic Diagram for "with inv. E type"

Logic Diagram for "with inv. F type"

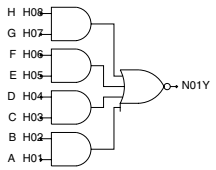
Logic Diagram for "with inv. G type"

Logic Diagram for "with inv. H type"

Block type	Switching speed									Input		Output	
	Path		t LD0 [ns]			t 1 (ns/pF)							
	IN → OUT		MIN.	TYP.	MAX.	MIN.	TYP.	MAX.		Symbol	Cin(pF)	Symbol	Cmax(pF)
L428	A → Y	(HL)	0.051	0.070	0.113	0.841	1.038	1.467		A	0.006	Y	0.209
		(LH)	0.064	0.090	0.149	0.969	1.275	1.988		B	0.007		
	B → Y	(HL)	0.066	0.093	0.153	0.842	1.040	1.471		C	0.006		
		(LH)	0.071	0.101	0.168	0.969	1.275	1.988		D	0.007		
	C → Y	(HL)	0.070	0.098	0.160	0.842	1.040	1.471		E	0.006		
		(LH)	0.074	0.106	0.176	0.969	1.275	1.988					
	D → Y	(HL)	0.082	0.115	0.188	0.844	1.044	1.481					
		(LH)	0.078	0.112	0.187	0.969	1.275	1.988					
	E → Y	(HL)	0.085	0.120	0.195	0.845	1.044	1.481					
		(LH)	0.081	0.117	0.195	0.969	1.275	1.988					
F428	A → Y	(HL)	0.057	0.079	0.127	0.423	0.523	0.741		A	0.006	Y	0.419
		(LH)	0.064	0.091	0.149	0.485	0.639	0.997		B	0.007		
	B → Y	(HL)	0.089	0.125	0.204	0.425	0.526	0.747		C	0.006		
		(LH)	0.079	0.113	0.186	0.485	0.639	0.997		D	0.007		
	C → Y	(HL)	0.092	0.130	0.212	0.425	0.526	0.747		E	0.006		
		(LH)	0.082	0.118	0.195	0.485	0.639	0.997					
	D → Y	(HL)	0.093	0.131	0.213	0.425	0.526	0.748					
		(LH)	0.082	0.117	0.193	0.485	0.639	0.997					
	E → Y	(HL)	0.096	0.135	0.220	0.425	0.526	0.748					
		(LH)	0.085	0.121	0.201	0.485	0.639	0.997					

Function	2-2-2-2-input AND-NOR											
Block type	Normal		with inv. A		with inv. B		with inv. C		with inv. D		with inv. E	
Drivability	Name	cells	Name	cells	Name	cells	Name	cells	Name	cells	Name	cells
	L429	6										
x2	F429	6										
x4												
x8												
x16												

Logic Diagram for "Normal"



Logic Diagram for "with inv. A type"

Logic Diagram for "with inv. B type"

Logic Diagram for "with inv. C type"

Logic Diagram for "with inv. D type"

Logic Diagram for "with inv. E type"

Logic Diagram for "with inv. F type"

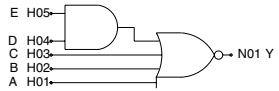
Logic Diagram for "with inv. G type"

Logic Diagram for "with inv. H type"

Block type	Switching speed									Input		Output	
	Path		t_{LD0} [ns]			t_1 (ns/pF)							
	IN → OUT		MIN.	TYP.	MAX.	MIN.	TYP.	MAX.		Symbol	Cin(pF)	Symbol	Cmax(pF)
L429	A → Y	(HL)	0.060	0.090	0.147	0.839	1.035	1.462		A	0.007	Y	0.208
		(LH)	0.069	0.128	0.215	0.965	1.269	1.979		B	0.006		
	B → Y	(HL)	0.064	0.095	0.155	0.839	1.035	1.462		C	0.006		
		(LH)	0.074	0.139	0.235	0.965	1.269	1.979		D	0.006		
	C → Y	(HL)	0.070	0.105	0.171	0.839	1.035	1.462		E	0.006		
		(LH)	0.083	0.148	0.247	0.965	1.269	1.979		F	0.006		
	D → Y	(HL)	0.074	0.109	0.179	0.839	1.035	1.462		G	0.006		
		(LH)	0.089	0.160	0.267	0.965	1.269	1.979		H	0.006		
	E → Y	(HL)	0.062	0.093	0.152	0.840	1.036	1.464					
		(LH)	0.068	0.123	0.207	0.965	1.270	1.979					
	F → Y	(HL)	0.066	0.098	0.160	0.840	1.036	1.464					
		(LH)	0.073	0.135	0.228	0.965	1.270	1.979					
	G → Y	(HL)	0.073	0.108	0.178	0.840	1.036	1.465					
		(LH)	0.082	0.146	0.243	0.965	1.270	1.979					
	H → Y	(HL)	0.076	0.113	0.185	0.840	1.036	1.465					
		(LH)	0.087	0.157	0.263	0.965	1.270	1.979					
F429	A → Y	(HL)	0.068	0.102	0.166	0.422	0.522	0.738		A	0.006	Y	0.419
		(LH)	0.078	0.141	0.236	0.484	0.637	0.995		B	0.006		
	B → Y	(HL)	0.071	0.106	0.173	0.422	0.522	0.738		C	0.006		
		(LH)	0.084	0.154	0.258	0.484	0.637	0.995		D	0.006		
	C → Y	(HL)	0.080	0.119	0.194	0.422	0.522	0.739		E	0.006		
		(LH)	0.094	0.164	0.273	0.484	0.637	0.995		F	0.006		
	D → Y	(HL)	0.082	0.122	0.199	0.422	0.522	0.739		G	0.006		
		(LH)	0.099	0.176	0.292	0.484	0.637	0.995		H	0.006		
	E → Y	(HL)	0.070	0.105	0.171	0.422	0.522	0.740					
		(LH)	0.077	0.137	0.229	0.484	0.638	0.995					
	F → Y	(HL)	0.074	0.110	0.179	0.422	0.522	0.740					
		(LH)	0.082	0.149	0.250	0.484	0.638	0.995					
	G → Y	(HL)	0.081	0.121	0.198	0.423	0.522	0.740					
		(LH)	0.091	0.159	0.265	0.484	0.638	0.995					
	H → Y	(HL)	0.085	0.126	0.205	0.423	0.522	0.740					
		(LH)	0.097	0.171	0.285	0.484	0.638	0.995					

Function	1-1-1-2-input AND-NOR											
Block type	Normal		with inv. A		with inv. B		with inv. C		with inv. D		with inv. E	
Drivability	Name	cells	Name	cells	Name	cells	Name	cells	Name	cells	Name	cells
	L446	4										
x2	F446	5										
x4												
x8												
x16												

Logic Diagram for "Normal"



Logic Diagram for "with inv. A type"

Logic Diagram for "with inv. B type"

Logic Diagram for "with inv. C type"

Logic Diagram for "with inv. D type"

Logic Diagram for "with inv. E type"

Logic Diagram for "with inv. F type"

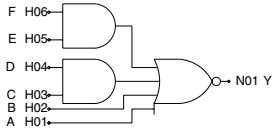
Logic Diagram for "with inv. G type"

Logic Diagram for "with inv. H type"

Block type	Switching speed									Input		Output	
	Path		t LD0 [ns]			t 1 (ns/pF)							
	IN → OUT		MIN.	TYP.	MAX.	MIN.	TYP.	MAX.		Symbol	Cin(pF)	Symbol	Cmax(pF)
L446	A → Y	(HL)	0.048	0.067	0.106	0.839	1.035	1.461		A	0.006	Y	0.208
		(LH)	0.073	0.108	0.181	0.966	1.270	1.979		B	0.006		
	B → Y	(HL)	0.051	0.071	0.113	0.839	1.034	1.461		C	0.006		
		(LH)	0.080	0.118	0.197	0.966	1.270	1.979		D	0.006		
	C → Y	(HL)	0.052	0.076	0.122	0.839	1.035	1.463		E	0.006		
		(LH)	0.065	0.121	0.204	0.965	1.269	1.979					
	D → Y	(HL)	0.069	0.096	0.157	0.840	1.036	1.464					
		(LH)	0.083	0.122	0.204	0.965	1.269	1.979					
	E → Y	(HL)	0.072	0.101	0.165	0.840	1.036	1.464					
		(LH)	0.092	0.136	0.227	0.965	1.269	1.979					
F446	A → Y	(HL)	0.056	0.078	0.124	0.422	0.521	0.738		A	0.006	Y	0.419
		(LH)	0.082	0.120	0.202	0.484	0.637	0.995		B	0.007		
	B → Y	(HL)	0.059	0.082	0.131	0.422	0.521	0.738		C	0.012		
		(LH)	0.089	0.131	0.218	0.484	0.637	0.995		D	0.006		
	C → Y	(HL)	0.062	0.090	0.145	0.422	0.522	0.739		E	0.006		
		(LH)	0.069	0.124	0.209	0.484	0.638	0.995					
	D → Y	(HL)	0.086	0.121	0.198	0.423	0.522	0.740					
		(LH)	0.093	0.136	0.225	0.485	0.638	0.995					
	E → Y	(HL)	0.089	0.125	0.205	0.423	0.522	0.740					
		(LH)	0.098	0.144	0.239	0.485	0.638	0.995					

Function	1-1-2-2-input AND-NOR											
Block type	Normal		with inv. A		with inv. B		with inv. C		with inv. D		with inv. E	
Drivability	Name	cells	Name	cells	Name	cells	Name	cells	Name	cells	Name	cells
	L448	5										
x2	F448	6										
x4												
x8												
x16												

Logic Diagram for "Normal"



Logic Diagram for "with inv. A type"

Logic Diagram for "with inv. B type"

Logic Diagram for "with inv. C type"

Logic Diagram for "with inv. D type"

Logic Diagram for "with inv. E type"

Logic Diagram for "with inv. F type"

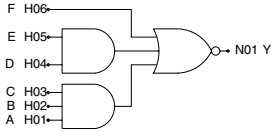
Logic Diagram for "with inv. G type"

Logic Diagram for "with inv. H type"

Block type	Switching speed									Input		Output	
	Path		t LD0 [ns]			t 1 (ns/pF)							
	IN → OUT		MIN.	TYP.	MAX.	MIN.	TYP.	MAX.		Symbol	Cin(pF)	Symbol	Cmax(pF)
L448	A → Y	(HL)	0.052	0.072	0.115	0.840	1.037	1.465		A	0.006	Y	0.208
		(LH)	0.087	0.129	0.218	0.971	1.278	1.994		B	0.006		
	B → Y	(HL)	0.055	0.076	0.122	0.840	1.037	1.465		C	0.007		
		(LH)	0.094	0.139	0.233	0.971	1.278	1.994		D	0.006		
	C → Y	(HL)	0.065	0.091	0.149	0.841	1.038	1.468		E	0.006		
		(LH)	0.075	0.108	0.180	0.971	1.277	1.993		F	0.006		
	D → Y	(HL)	0.068	0.096	0.157	0.841	1.038	1.468					
		(LH)	0.078	0.113	0.188	0.971	1.277	1.993					
	E → Y	(HL)	0.070	0.100	0.163	0.842	1.041	1.475					
		(LH)	0.080	0.116	0.194	0.970	1.277	1.993					
	F → Y	(HL)	0.074	0.104	0.170	0.843	1.041	1.475					
		(LH)	0.084	0.121	0.202	0.971	1.277	1.993					
F448	A → Y	(HL)	0.056	0.078	0.124	0.422	0.521	0.738		A	0.007	Y	0.419
		(LH)	0.082	0.120	0.202	0.484	0.637	0.995		B	0.006		
	B → Y	(HL)	0.058	0.081	0.130	0.422	0.521	0.738		C	0.007		
		(LH)	0.088	0.129	0.215	0.484	0.637	0.995		D	0.006		
	C → Y	(HL)	0.071	0.106	0.173	0.422	0.522	0.740		E	0.012		
		(LH)	0.074	0.122	0.203	0.484	0.637	0.995		F	0.012		
	D → Y	(HL)	0.074	0.110	0.180	0.422	0.522	0.740					
		(LH)	0.078	0.129	0.216	0.484	0.638	0.995					
	E → Y	(HL)	0.088	0.130	0.214	0.423	0.523	0.740					
		(LH)	0.080	0.139	0.230	0.484	0.637	0.995					
	F → Y	(HL)	0.091	0.135	0.221	0.423	0.523	0.740					
		(LH)	0.084	0.148	0.245	0.484	0.638	0.995					

Function	1-2-3-input AND-NOR											
Block type	Normal		with inv. A		with inv. B		with inv. C		with inv. D		with inv. E	
Drivability	Name	cells	Name	cells	Name	cells	Name	cells	Name	cells	Name	cells
	L462	5										
x2	F462	6										
x4												
x8												
x16												

Logic Diagram for "Normal"



Logic Diagram for "with inv. A type"

Logic Diagram for "with inv. B type"

Logic Diagram for "with inv. C type"

Logic Diagram for "with inv. D type"

Logic Diagram for "with inv. E type"

Logic Diagram for "with inv. F type"

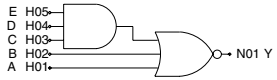
Logic Diagram for "with inv. G type"

Logic Diagram for "with inv. H type"

Block type	Switching speed									Input		Output	
	Path		t_{LD0} [ns]			t_1 (ns/pF)							
	IN → OUT		MIN.	TYP.	MAX.	MIN.	TYP.	MAX.		Symbol	Cin(pF)	Symbol	Cmax(pF)
L462	A → Y	(HL)	0.072	0.103	0.171	0.840	1.036	1.463		A	0.006	Y	0.209
		(LH)	0.061	0.087	0.142	0.965	1.269	1.978		B	0.006		
	B → Y	(HL)	0.078	0.111	0.184	0.840	1.036	1.463		C	0.006		
		(LH)	0.066	0.093	0.152	0.965	1.269	1.978		D	0.006		
	C → Y	(HL)	0.082	0.117	0.193	0.840	1.036	1.463		E	0.006		
		(LH)	0.070	0.099	0.162	0.965	1.269	1.978		F	0.012		
	D → Y	(HL)	0.077	0.109	0.178	0.840	1.037	1.465					
		(LH)	0.083	0.121	0.202	0.966	1.270	1.980					
	E → Y	(HL)	0.081	0.113	0.185	0.840	1.037	1.465					
		(LH)	0.088	0.130	0.216	0.966	1.270	1.980					
	F → Y	(HL)	0.054	0.079	0.127	0.840	1.036	1.464					
		(LH)	0.059	0.110	0.186	0.966	1.270	1.980					
F462	A → Y	(HL)	0.080	0.114	0.188	0.422	0.522	0.739		A	0.006	Y	0.419
		(LH)	0.070	0.098	0.161	0.484	0.637	0.994		B	0.006		
	B → Y	(HL)	0.086	0.122	0.202	0.422	0.522	0.739		C	0.006		
		(LH)	0.074	0.104	0.171	0.484	0.637	0.994		D	0.006		
	C → Y	(HL)	0.090	0.129	0.212	0.422	0.522	0.739		E	0.006		
		(LH)	0.079	0.111	0.182	0.484	0.637	0.994		F	0.012		
	D → Y	(HL)	0.085	0.120	0.196	0.422	0.522	0.740					
		(LH)	0.092	0.134	0.223	0.484	0.637	0.995					
	E → Y	(HL)	0.089	0.125	0.204	0.422	0.522	0.740					
		(LH)	0.097	0.142	0.237	0.484	0.637	0.995					
	F → Y	(HL)	0.062	0.090	0.144	0.422	0.522	0.739					
		(LH)	0.068	0.123	0.207	0.484	0.637	0.995					

Function	1-1-3-input AND-NOR											
Block type	Normal		with inv. A		with inv. B		with inv. C		with inv. D		with inv. E	
Drivability	Name	cells	Name	cells	Name	cells	Name	cells	Name	cells	Name	cells
	L463	4										
x2	F463	6										
x4												
x8												
x16												

Logic Diagram for "Normal"



Logic Diagram for "with inv. A type"

Logic Diagram for "with inv. B type"

Logic Diagram for "with inv. C type"

Logic Diagram for "with inv. D type"

Logic Diagram for "with inv. E type"

Logic Diagram for "with inv. F type"

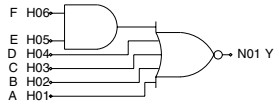
Logic Diagram for "with inv. G type"

Logic Diagram for "with inv. H type"

Block type	Switching speed									Input		Output	
	Path		t LD0 [ns]			t 1 (ns/pF)							
	IN → OUT		MIN.	TYP.	MAX.	MIN.	TYP.	MAX.		Symbol	Cin(pF)	Symbol	Cmax(pF)
L463	A → Y	(HL)	0.049	0.068	0.107	0.839	1.035	1.461		A	0.006	Y	0.208
		(LH)	0.074	0.109	0.183	0.966	1.270	1.979		B	0.007		
	B → Y	(HL)	0.052	0.072	0.114	0.839	1.035	1.461		C	0.006		
		(LH)	0.081	0.119	0.199	0.966	1.270	1.979		D	0.006		
	C → Y	(HL)	0.078	0.111	0.184	0.840	1.037	1.465		E	0.006		
		(LH)	0.064	0.091	0.150	0.965	1.269	1.978					
	D → Y	(HL)	0.082	0.118	0.196	0.840	1.037	1.465					
		(LH)	0.067	0.096	0.159	0.965	1.269	1.978					
	E → Y	(HL)	0.086	0.123	0.204	0.840	1.037	1.466					
		(LH)	0.071	0.102	0.168	0.965	1.269	1.978					
F463	A → Y	(HL)	0.065	0.090	0.144	0.422	0.522	0.738		A	0.012	Y	0.419
		(LH)	0.074	0.107	0.177	0.484	0.637	0.995		B	0.013		
	B → Y	(HL)	0.065	0.090	0.145	0.422	0.522	0.738		C	0.006		
		(LH)	0.074	0.107	0.178	0.484	0.637	0.995		D	0.006		
	C → Y	(HL)	0.079	0.112	0.184	0.423	0.523	0.740		E	0.012		
		(LH)	0.072	0.101	0.167	0.485	0.637	0.995					
	D → Y	(HL)	0.083	0.118	0.194	0.423	0.523	0.740					
		(LH)	0.075	0.107	0.176	0.485	0.637	0.995					
	E → Y	(HL)	0.086	0.123	0.202	0.423	0.523	0.740					
		(LH)	0.082	0.117	0.193	0.485	0.637	0.995					

Function	1-1-1-1-2-input AND-NOR											
Block type	Normal		with inv. A		with inv. B		with inv. C		with inv. D		with inv. E	
Drivability	Name	cells	Name	cells	Name	cells	Name	cells	Name	cells	Name	cells
	L465	5										
x2	F465	6										
x4												
x8												
x16												

Logic Diagram for "Normal"



Logic Diagram for "with inv. A type"

Logic Diagram for "with inv. B type"

Logic Diagram for "with inv. C type"

Logic Diagram for "with inv. D type"

Logic Diagram for "with inv. E type"

Logic Diagram for "with inv. F type"

Logic Diagram for "with inv. G type"

Logic Diagram for "with inv. H type"

Block type	Switching speed									Input		Output	
	Path		t LD0 [ns]			t 1 (ns/pF)							
	IN → OUT		MIN.	TYP.	MAX.	MIN.	TYP.	MAX.		Symbol	Cin(pF)	Symbol	Cmax(pF)
L465	A → Y	(HL)	0.052	0.073	0.116	0.841	1.037	1.465		A	0.006	Y	0.208
		(LH)	0.088	0.129	0.219	0.971	1.278	1.994		B	0.006		
	B → Y	(HL)	0.055	0.076	0.122	0.840	1.037	1.465		C	0.006		
		(LH)	0.094	0.139	0.233	0.971	1.278	1.994		D	0.006		
	C → Y	(HL)	0.056	0.078	0.125	0.841	1.038	1.468		E	0.006		
		(LH)	0.091	0.134	0.228	0.971	1.278	1.995		F	0.006		
	D → Y	(HL)	0.059	0.082	0.132	0.841	1.038	1.468					
		(LH)	0.097	0.143	0.242	0.971	1.278	1.994					
	E → Y	(HL)	0.070	0.100	0.163	0.843	1.041	1.475					
		(LH)	0.081	0.117	0.195	0.971	1.277	1.993					
	F → Y	(HL)	0.074	0.104	0.170	0.843	1.041	1.475					
		(LH)	0.084	0.121	0.204	0.971	1.277	1.994					
F465	A → Y	(HL)	0.058	0.081	0.129	0.422	0.521	0.737		A	0.006	Y	0.419
		(LH)	0.088	0.130	0.218	0.484	0.637	0.994		B	0.012		
	B → Y	(HL)	0.066	0.091	0.146	0.422	0.521	0.737		C	0.013		
		(LH)	0.104	0.155	0.260	0.484	0.637	0.994		D	0.006		
	C → Y	(HL)	0.067	0.093	0.148	0.422	0.521	0.737		E	0.006		
		(LH)	0.105	0.156	0.262	0.484	0.637	0.994		F	0.006		
	D → Y	(HL)	0.058	0.085	0.136	0.422	0.522	0.738					
		(LH)	0.072	0.132	0.222	0.484	0.637	0.994					
	E → Y	(HL)	0.075	0.106	0.173	0.422	0.522	0.739					
		(LH)	0.091	0.133	0.222	0.484	0.637	0.994					
	F → Y	(HL)	0.079	0.111	0.181	0.422	0.522	0.739					
		(LH)	0.100	0.147	0.245	0.484	0.637	0.994					

[MEMO]

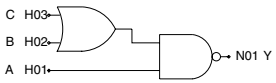
[MEMO]

2.5 OR-NAND

[MEMO]

Function	1-2-input OR-NAND											
Block type	Normal		with inv. A		with inv. B		with inv. C		with inv. D		with inv. E	
Drivability	Name	cells	Name	cells	Name	cells	Name	cells	Name	cells	Name	cells
	L431	2										
x2	F431	4										
x4												
x8												
x16												

Logic Diagram for "Normal"



Logic Diagram for "with inv. A type"

Logic Diagram for "with inv. B type"

Logic Diagram for "with inv. C type"

Logic Diagram for "with inv. D type"

Logic Diagram for "with inv. E type"

Logic Diagram for "with inv. F type"

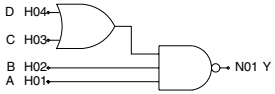
Logic Diagram for "with inv. G type"

Logic Diagram for "with inv. H type"

Block type	Switching speed									Input		Output	
	Path		t_{LD0} [ns]			t_1 (ns/pF)							
	IN → OUT		MIN.	TYP.	MAX.	MIN.	TYP.	MAX.		Symbol	Cin(pF)	Symbol	Cmax(pF)
L431	A → Y	(HL)	0.014	0.031	0.049	1.033	1.650	2.457		A	0.006	Y	0.127
		(LH)	0.012	0.017	0.026	0.962	1.266	1.973		B	0.006		
	B → Y	(HL)	0.022	0.029	0.044	1.301	1.652	2.458		C	0.012		
		(LH)	0.024	0.035	0.058	1.358	1.904	3.045					
	C → Y	(HL)	0.031	0.041	0.065	1.291	1.645	2.456					
		(LH)	0.030	0.044	0.072	1.357	1.904	3.045					
F431	A → Y	(HL)	0.013	0.028	0.044	0.521	0.830	1.235		A	0.012	Y	0.288
		(LH)	0.012	0.016	0.026	0.481	0.633	0.987		B	0.018		
	B → Y	(HL)	0.026	0.035	0.055	0.650	0.827	1.230		C	0.019		
		(LH)	0.025	0.037	0.061	0.599	0.855	1.372					
	C → Y	(HL)	0.029	0.039	0.061	0.653	0.829	1.234					
		(LH)	0.027	0.040	0.066	0.599	0.855	1.372					

Function	1-1-2-input OR-NAND											
Block type	Normal		with inv. A		with inv. B		with inv. C		with inv. D		with inv. E	
Drivability	Name	cells	Name	cells	Name	cells	Name	cells	Name	cells	Name	cells
	L432	3										
x2	F432	5										
x4												
x8												
x16												

Logic Diagram for "Normal"



Logic Diagram for "with inv. A type"

Logic Diagram for "with inv. B type"

Logic Diagram for "with inv. C type"

Logic Diagram for "with inv. D type"

Logic Diagram for "with inv. E type"

Logic Diagram for "with inv. F type"

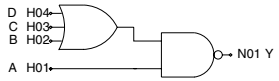
Logic Diagram for "with inv. G type"

Logic Diagram for "with inv. H type"

Block type	Switching speed									Input		Output	
	Path		t LD0 [ns]			t 1 (ns/pF)							
	IN → OUT		MIN.	TYP.	MAX.	MIN.	TYP.	MAX.		Symbol	Cin(pF)	Symbol	Cmax(pF)
L432	A → Y	(HL)	0.023	0.043	0.068	1.393	1.934	2.932		A	0.006	Y	0.151
		(LH)	0.016	0.022	0.036	0.962	1.266	1.972		B	0.006		
	B → Y	(HL)	0.026	0.048	0.077	1.392	1.934	2.932		C	0.012		
		(LH)	0.019	0.026	0.043	0.961	1.264	1.972		D	0.013		
	C → Y	(HL)	0.043	0.059	0.095	1.498	1.932	2.929					
		(LH)	0.030	0.045	0.075	0.906	1.294	2.080					
	D → Y	(HL)	0.043	0.060	0.096	1.501	1.935	2.932					
		(LH)	0.030	0.045	0.075	0.907	1.295	2.080					
F432	A → Y	(HL)	0.023	0.045	0.073	0.711	1.016	1.548		A	0.013	Y	0.270
		(LH)	0.017	0.023	0.037	0.481	0.633	0.986		B	0.013		
	B → Y	(HL)	0.023	0.045	0.073	0.711	1.016	1.548		C	0.019		
		(LH)	0.017	0.023	0.037	0.481	0.633	0.986		D	0.018		
	C → Y	(HL)	0.039	0.053	0.085	0.786	1.016	1.547					
		(LH)	0.035	0.052	0.087	0.602	0.860	1.381					
	D → Y	(HL)	0.042	0.058	0.093	0.785	1.016	1.547					
		(LH)	0.036	0.054	0.090	0.602	0.860	1.381					

Function	1-3-input OR-NAND											
Block type	Normal		with inv. A		with inv. B		with inv. C		with inv. D		with inv. E	
Drivability	Name	cells	Name	cells	Name	cells	Name	cells	Name	cells	Name	cells
	L433	4										
x2	F433	7										
x4												
x8												
x16												

Logic Diagram for "Normal"



Logic Diagram for "with inv. A type"

Logic Diagram for "with inv. B type"

Logic Diagram for "with inv. C type"

Logic Diagram for "with inv. D type"

Logic Diagram for "with inv. E type"

Logic Diagram for "with inv. F type"

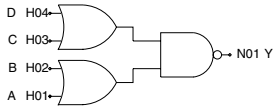
Logic Diagram for "with inv. G type"

Logic Diagram for "with inv. H type"

Block type	Switching speed									Input		Output	
	Path		t LD0 [ns]			t 1 (ns/pF)							
	IN → OUT		MIN.	TYP.	MAX.	MIN.	TYP.	MAX.		Symbol	Cin(pF)	Symbol	Cmax(pF)
L433	A → Y	(HL)	0.016	0.045	0.071	0.964	1.670	2.488		A	0.006	Y	0.133
		(LH)	0.015	0.021	0.033	0.962	1.268	1.976		B	0.018		
	B → Y	(HL)	0.044	0.058	0.092	1.302	1.661	2.482		C	0.012		
		(LH)	0.035	0.053	0.089	1.214	1.768	2.863		D	0.013		
	C → Y	(HL)	0.043	0.058	0.091	1.307	1.662	2.473					
		(LH)	0.038	0.058	0.097	1.214	1.768	2.862					
	D → Y	(HL)	0.042	0.055	0.087	1.313	1.671	2.490					
		(LH)	0.037	0.055	0.093	1.214	1.768	2.863					
F433	A → Y	(HL)	0.014	0.041	0.064	0.483	0.836	1.245		A	0.012	Y	0.239
		(LH)	0.013	0.018	0.029	0.481	0.634	0.988		B	0.026		
	B → Y	(HL)	0.041	0.054	0.084	0.657	0.836	1.245		C	0.026		
		(LH)	0.038	0.058	0.097	0.668	0.976	1.582		D	0.025		
	C → Y	(HL)	0.042	0.056	0.088	0.650	0.827	1.233					
		(LH)	0.042	0.064	0.108	0.668	0.976	1.582					
	D → Y	(HL)	0.040	0.053	0.083	0.656	0.835	1.245					
		(LH)	0.038	0.058	0.097	0.668	0.976	1.582					

Function	2-2-input OR-NAND											
Block type	Normal		with inv. A		with inv. B		with inv. C		with inv. D		with inv. E	
Drivability	Name	cells	Name	cells	Name	cells	Name	cells	Name	cells	Name	cells
	L434	3										
x2	F434	6										
x4												
x8												
x16												

Logic Diagram for "Normal"



Logic Diagram for "with inv. A type"

Logic Diagram for "with inv. B type"

Logic Diagram for "with inv. C type"

Logic Diagram for "with inv. D type"

Logic Diagram for "with inv. E type"

Logic Diagram for "with inv. F type"

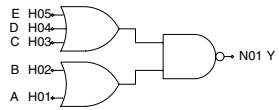
Logic Diagram for "with inv. G type"

Logic Diagram for "with inv. H type"

Block type	Switching speed									Input		Output	
	Path		t LD0 [ns]			t 1 (ns/pF)							
	IN → OUT		MIN.	TYP.	MAX.	MIN.	TYP.	MAX.		Symbol	Cin(pF)	Symbol	Cmax(pF)
L434	A → Y	(HL)	0.015	0.033	0.051	1.041	1.660	2.471		A	0.006	Y	0.118
		(LH)	0.017	0.026	0.042	1.354	1.902	3.043		B	0.012		
	B → Y	(HL)	0.022	0.047	0.074	1.048	1.668	2.484		C	0.006		
		(LH)	0.024	0.035	0.056	1.353	1.902	3.042		D	0.012		
	C → Y	(HL)	0.022	0.045	0.069	0.995	1.663	2.475					
		(LH)	0.029	0.046	0.077	1.358	1.910	3.057					
	D → Y	(HL)	0.028	0.058	0.092	0.999	1.668	2.484					
		(LH)	0.035	0.055	0.091	1.357	1.910	3.057					
F434	A → Y	(HL)	0.021	0.041	0.064	0.521	0.830	1.235		A	0.019	Y	0.267
		(LH)	0.021	0.031	0.051	0.599	0.856	1.372		B	0.019		
	B → Y	(HL)	0.023	0.045	0.070	0.522	0.831	1.237		C	0.019		
		(LH)	0.023	0.034	0.057	0.599	0.855	1.372		D	0.019		
	C → Y	(HL)	0.027	0.052	0.082	0.497	0.828	1.233					
		(LH)	0.031	0.049	0.083	0.599	0.857	1.377					
	D → Y	(HL)	0.029	0.056	0.088	0.498	0.831	1.237					
		(LH)	0.033	0.052	0.087	0.599	0.857	1.377					

Function	2-3-input OR-NAND											
Block type	Normal		with inv. A		with inv. B		with inv. C		with inv. D		with inv. E	
Drivability	Name	cells	Name	cells	Name	cells	Name	cells	Name	cells	Name	cells
	L435	5										
x2	F435	9										
x4												
x8												
x16												

Logic Diagram for "Normal"



Logic Diagram for "with inv. A type"

Logic Diagram for "with inv. B type"

Logic Diagram for "with inv. C type"

Logic Diagram for "with inv. D type"

Logic Diagram for "with inv. E type"

Logic Diagram for "with inv. F type"

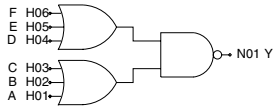
Logic Diagram for "with inv. G type"

Logic Diagram for "with inv. H type"

Block type	Switching speed									Input		Output	
	Path		t LD0 [ns]			t 1 (ns/pF)							
	IN → OUT		MIN.	TYP.	MAX.	MIN.	TYP.	MAX.		Symbol	Cin(pF)	Symbol	Cmax(pF)
L435	A → Y	(HL)	0.027	0.065	0.103	0.964	1.667	2.486		A	0.013	Y	0.106
		(LH)	0.022	0.034	0.055	0.898	1.284	2.061		B	0.012		
	B → Y	(HL)	0.027	0.065	0.102	0.965	1.668	2.486		C	0.013		
		(LH)	0.022	0.033	0.055	0.898	1.284	2.061		D	0.012		
	C → Y	(HL)	0.040	0.076	0.119	1.003	1.667	2.486		E	0.012		
		(LH)	0.048	0.078	0.131	1.334	1.955	3.171					
	D → Y	(HL)	0.041	0.077	0.122	0.998	1.659	2.472					
		(LH)	0.051	0.082	0.139	1.334	1.954	3.171					
	E → Y	(HL)	0.039	0.074	0.117	0.997	1.654	2.471					
		(LH)	0.047	0.076	0.128	1.334	1.955	3.171					
F435	A → Y	(HL)	0.021	0.054	0.084	0.486	0.837	1.246		A	0.019	Y	0.219
		(LH)	0.023	0.034	0.056	0.599	0.857	1.375		B	0.018		
	B → Y	(HL)	0.023	0.057	0.090	0.484	0.834	1.244		C	0.025		
		(LH)	0.025	0.037	0.061	0.599	0.857	1.375		D	0.026		
	C → Y	(HL)	0.036	0.069	0.109	0.501	0.834	1.244		E	0.026		
		(LH)	0.043	0.071	0.120	0.667	0.978	1.586					
	D → Y	(HL)	0.038	0.072	0.115	0.499	0.832	1.238					
		(LH)	0.048	0.077	0.131	0.667	0.978	1.586					
	E → Y	(HL)	0.037	0.071	0.111	0.502	0.836	1.246					
		(LH)	0.044	0.071	0.120	0.667	0.978	1.586					

Function	3-3-input OR-NAND											
Block type	Normal		with inv. A		with inv. B		with inv. C		with inv. D		with inv. E	
Drivability	Name	cells	Name	cells	Name	cells	Name	cells	Name	cells	Name	cells
	L436	6										
x2	F436	8										
x4												
x8												
x16												

Logic Diagram for "Normal"



Logic Diagram for "with inv. A type"

Logic Diagram for "with inv. B type"

Logic Diagram for "with inv. C type"

Logic Diagram for "with inv. D type"

Logic Diagram for "with inv. E type"

Logic Diagram for "with inv. F type"

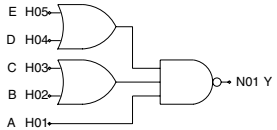
Logic Diagram for "with inv. G type"

Logic Diagram for "with inv. H type"

Block type	Switching speed									Input		Output	
	Path		t LD0 [ns]			t 1 (ns/pF)							
	IN → OUT		MIN.	TYP.	MAX.	MIN.	TYP.	MAX.		Symbol	Cin(pF)	Symbol	Cmax(pF)
L436	A → Y	(HL)	0.029	0.072	0.113	0.979	1.679	2.504		A	0.012	Y	0.100
		(LH)	0.033	0.051	0.086	1.332	1.954	3.168		B	0.013		
	B → Y	(HL)	0.032	0.076	0.120	0.973	1.671	2.492		C	0.013		
		(LH)	0.038	0.059	0.099	1.332	1.954	3.168		D	0.012		
	C → Y	(HL)	0.029	0.072	0.113	0.971	1.672	2.495		E	0.012		
		(LH)	0.033	0.051	0.084	1.332	1.954	3.168		F	0.013		
	D → Y	(HL)	0.037	0.087	0.138	0.944	1.674	2.498					
		(LH)	0.049	0.082	0.139	1.332	1.959	3.181					
	E → Y	(HL)	0.041	0.092	0.145	0.942	1.676	2.497					
		(LH)	0.054	0.090	0.151	1.332	1.959	3.181					
	F → Y	(HL)	0.038	0.087	0.137	0.943	1.679	2.504					
		(LH)	0.047	0.079	0.135	1.333	1.959	3.181					
F436	A → Y	(HL)	0.092	0.132	0.215	0.430	0.535	0.763		A	0.013	Y	0.421
		(LH)	0.082	0.122	0.203	0.482	0.634	0.989		B	0.012		
	B → Y	(HL)	0.093	0.133	0.217	0.430	0.535	0.763		C	0.013		
		(LH)	0.084	0.126	0.211	0.482	0.634	0.989		D	0.013		
	C → Y	(HL)	0.092	0.132	0.214	0.430	0.535	0.763		E	0.012		
		(LH)	0.082	0.122	0.204	0.482	0.634	0.989		F	0.012		
	D → Y	(HL)	0.096	0.140	0.228	0.430	0.535	0.763					
		(LH)	0.085	0.127	0.213	0.482	0.634	0.989					
	E → Y	(HL)	0.097	0.142	0.231	0.430	0.535	0.763					
		(LH)	0.088	0.131	0.220	0.482	0.634	0.989					
	F → Y	(HL)	0.096	0.140	0.227	0.430	0.535	0.763					
		(LH)	0.084	0.125	0.210	0.482	0.634	0.989					

Function	1-2-2-input OR-NAND											
Block type	Normal		with inv. A		with inv. B		with inv. C		with inv. D		with inv. E	
Drivability	Name	cells	Name	cells	Name	cells	Name	cells	Name	cells	Name	cells
	L437	4										
x2	F437	7										
x4												
x8												
x16												

Logic Diagram for "Normal"



Logic Diagram for "with inv. A type"

Logic Diagram for "with inv. B type"

Logic Diagram for "with inv. C type"

Logic Diagram for "with inv. D type"

Logic Diagram for "with inv. E type"

Logic Diagram for "with inv. F type"

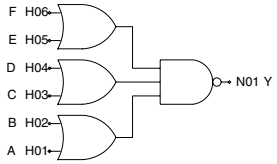
Logic Diagram for "with inv. G type"

Logic Diagram for "with inv. H type"

Block type	Switching speed									Input		Output	
	Path		t_{LD0} [ns]			t_1 (ns/pF)							
	IN → OUT		MIN.	TYP.	MAX.	MIN.	TYP.	MAX.		Symbol	Cin(pF)	Symbol	Cmax(pF)
L437	A → Y	(HL)	0.019	0.064	0.103	1.241	2.279	3.487		A	0.006	Y	0.111
		(LH)	0.015	0.021	0.033	0.962	1.268	1.976		B	0.006		
	B → Y	(HL)	0.030	0.062	0.100	1.496	2.259	3.461		C	0.012		
		(LH)	0.028	0.042	0.070	1.357	1.908	3.051		D	0.006		
	C → Y	(HL)	0.041	0.082	0.134	1.510	2.278	3.486		E	0.012		
		(LH)	0.034	0.051	0.084	1.357	1.907	3.051					
	D → Y	(HL)	0.038	0.074	0.119	1.493	2.276	3.480					
		(LH)	0.038	0.059	0.097	1.365	1.920	3.075					
	E → Y	(HL)	0.048	0.093	0.152	1.491	2.278	3.486					
		(LH)	0.044	0.067	0.111	1.365	1.920	3.075					
F437	A → Y	(HL)	0.020	0.058	0.094	0.623	1.137	1.739		A	0.013	Y	0.242
		(LH)	0.015	0.021	0.034	0.481	0.633	0.987		B	0.018		
	B → Y	(HL)	0.035	0.067	0.109	0.753	1.135	1.736		C	0.019		
		(LH)	0.028	0.042	0.069	0.599	0.856	1.374		D	0.018		
	C → Y	(HL)	0.039	0.073	0.120	0.755	1.137	1.739		E	0.019		
		(LH)	0.030	0.045	0.075	0.599	0.856	1.374					
	D → Y	(HL)	0.043	0.079	0.128	0.748	1.137	1.739					
		(LH)	0.036	0.056	0.094	0.603	0.862	1.385					
	E → Y	(HL)	0.046	0.085	0.138	0.748	1.137	1.739					
		(LH)	0.039	0.060	0.099	0.603	0.862	1.385					

Function	2-2-2-input OR-NAND											
Block type	Normal		with inv. A		with inv. B		with inv. C		with inv. D		with inv. E	
Drivability	Name	cells	Name	cells	Name	cells	Name	cells	Name	cells	Name	cells
	L438	6										
x2	F438	9										
x4												
x8												
x16												

Logic Diagram for "Normal"



Logic Diagram for "with inv. A type"

Logic Diagram for "with inv. B type"

Logic Diagram for "with inv. C type"

Logic Diagram for "with inv. D type"

Logic Diagram for "with inv. E type"

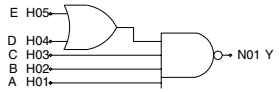
Logic Diagram for "with inv. F type"

Logic Diagram for "with inv. G type"

Logic Diagram for "with inv. H type"

Block type	Switching speed									Input		Output	
	Path		t LD0 [ns]			t 1 (ns/pF)							
	IN → OUT		MIN.	TYP.	MAX.	MIN.	TYP.	MAX.		Symbol	Cin(pF)	Symbol	Cmax(pF)
L438	A → Y	(HL)	0.022	0.051	0.083	0.622	1.141	1.745		A	0.012	Y	0.146
		(LH)	0.031	0.046	0.077	0.899	1.285	2.061		B	0.013		
	B → Y	(HL)	0.023	0.052	0.084	0.623	1.142	1.745		C	0.013		
		(LH)	0.031	0.047	0.078	0.899	1.285	2.062		D	0.013		
	C → Y	(HL)	0.029	0.066	0.108	0.606	1.141	1.745		E	0.013		
		(LH)	0.043	0.068	0.115	0.899	1.287	2.067		F	0.012		
	D → Y	(HL)	0.029	0.066	0.108	0.604	1.138	1.742					
		(LH)	0.043	0.068	0.115	0.899	1.287	2.067					
	E → Y	(HL)	0.036	0.077	0.126	0.589	1.141	1.745					
		(LH)	0.056	0.094	0.158	0.903	1.300	2.092					
	F → Y	(HL)	0.035	0.077	0.125	0.589	1.141	1.745					
		(LH)	0.056	0.093	0.157	0.903	1.300	2.091					
F438	A → Y	(HL)	0.029	0.076	0.124	0.624	1.139	1.741		A	0.018	Y	0.223
		(LH)	0.026	0.040	0.066	0.599	0.857	1.375		B	0.019		
	B → Y	(HL)	0.032	0.083	0.135	0.624	1.140	1.742		C	0.019		
		(LH)	0.029	0.043	0.072	0.599	0.857	1.375		D	0.019		
	C → Y	(HL)	0.037	0.095	0.156	0.604	1.140	1.742		E	0.019		
		(LH)	0.036	0.057	0.096	0.599	0.858	1.378		F	0.019		
	D → Y	(HL)	0.039	0.101	0.165	0.604	1.139	1.741					
		(LH)	0.038	0.060	0.101	0.599	0.858	1.378					
	E → Y	(HL)	0.043	0.105	0.171	0.588	1.136	1.737					
		(LH)	0.043	0.072	0.121	0.601	0.863	1.388					
	F → Y	(HL)	0.045	0.110	0.181	0.590	1.140	1.742					
		(LH)	0.045	0.075	0.125	0.601	0.863	1.388					

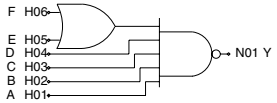
Function	1-1-1-2-input OR-NAND											
Block type	Normal		with inv. A		with inv. B		with inv. C		with inv. D		with inv. E	
Drivability	Name	cells	Name	cells	Name	cells	Name	cells	Name	cells	Name	cells
	L458	5										
x2	F458	8										
x4												
x8												
x16												

Logic Diagram for "Normal"	Logic Diagram for "with inv. A type"	Logic Diagram for "with inv. B type"
		
Logic Diagram for "with inv. C type"	Logic Diagram for "with inv. D type"	Logic Diagram for "with inv. E type"
Logic Diagram for "with inv. F type"	Logic Diagram for "with inv. G type"	Logic Diagram for "with inv. H type"

Block type	Switching speed									Input		Output	
	Path		t_{LD0} [ns]			t_1 (ns/pF)							
	IN → OUT		MIN.	TYP.	MAX.	MIN.	TYP.	MAX.		Symbol	Cin(pF)	Symbol	Cmax(pF)
L458	A → Y	(HL)	0.026	0.048	0.078	0.980	1.449	2.249		A	0.012	Y	0.166
		(LH)	0.030	0.042	0.068	0.965	1.270	1.981		B	0.012		
	B → Y	(HL)	0.027	0.048	0.079	0.980	1.449	2.249		C	0.012		
		(LH)	0.029	0.041	0.066	0.963	1.266	1.974		D	0.012		
	C → Y	(HL)	0.026	0.047	0.077	0.980	1.449	2.249		E	0.013		
		(LH)	0.030	0.041	0.067	0.965	1.270	1.981					
	D → Y	(HL)	0.048	0.068	0.113	1.100	1.449	2.249					
		(LH)	0.047	0.071	0.118	0.911	1.302	2.095					
	E → Y	(HL)	0.049	0.068	0.113	1.098	1.446	2.246					
		(LH)	0.047	0.071	0.119	0.911	1.302	2.095					
F458	A → Y	(HL)	0.034	0.062	0.103	0.653	0.965	1.498		A	0.021	Y	0.236
		(LH)	0.019	0.026	0.041	0.321	0.423	0.659		B	0.019		
	B → Y	(HL)	0.037	0.066	0.109	0.653	0.965	1.497		C	0.020		
		(LH)	0.020	0.027	0.044	0.321	0.422	0.658		D	0.019		
	C → Y	(HL)	0.038	0.069	0.115	0.653	0.965	1.498		E	0.019		
		(LH)	0.021	0.029	0.047	0.322	0.424	0.661					
	D → Y	(HL)	0.056	0.079	0.130	0.731	0.963	1.494					
		(LH)	0.054	0.081	0.136	0.605	0.864	1.389					
	E → Y	(HL)	0.060	0.084	0.139	0.732	0.964	1.497					
		(LH)	0.056	0.084	0.141	0.605	0.864	1.389					

Function	1-1-1-1-2-input OR-NAND											
Block type	Normal		with inv. A		with inv. B		with inv. C		with inv. D		with inv. E	
Drivability	Name	cells	Name	cells	Name	cells	Name	cells	Name	cells	Name	cells
	L490	5										
x2	F490	6										
x4												
x8												
x16												

Logic Diagram for "Normal"



Logic Diagram for "with inv. A type"

Logic Diagram for "with inv. B type"

Logic Diagram for "with inv. C type"

Logic Diagram for "with inv. D type"

Logic Diagram for "with inv. E type"

Logic Diagram for "with inv. F type"

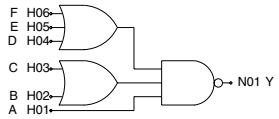
Logic Diagram for "with inv. G type"

Logic Diagram for "with inv. H type"

Block type	Switching speed									Input		Output	
	Path		t_{LD0} [ns]			t_1 (ns/pF)							
	IN → OUT		MIN.	TYP.	MAX.	MIN.	TYP.	MAX.		Symbol	Cin(pF)	Symbol	Cmax(pF)
L490	A → Y	(HL)	0.090	0.131	0.219	0.849	1.052	1.494		A	0.006	Y	0.209
		(LH)	0.053	0.075	0.122	0.963	1.266	1.972		B	0.006		
	B → Y	(HL)	0.095	0.139	0.232	0.849	1.052	1.494		C	0.006		
		(LH)	0.057	0.081	0.132	0.963	1.266	1.972		D	0.007		
	C → Y	(HL)	0.099	0.144	0.240	0.849	1.052	1.494		E	0.006		
		(LH)	0.062	0.087	0.142	0.963	1.266	1.972		F	0.012		
	D → Y	(HL)	0.076	0.129	0.214	0.849	1.052	1.494					
		(LH)	0.052	0.079	0.129	0.964	1.268	1.976					
	E → Y	(HL)	0.086	0.125	0.207	0.849	1.052	1.494					
		(LH)	0.069	0.101	0.167	0.964	1.268	1.976					
	F → Y	(HL)	0.095	0.138	0.229	0.849	1.052	1.494					
		(LH)	0.075	0.109	0.181	0.964	1.268	1.976					
F490	A → Y	(HL)	0.099	0.144	0.240	0.429	0.534	0.761		A	0.006	Y	0.421
		(LH)	0.056	0.079	0.127	0.482	0.634	0.988		B	0.006		
	B → Y	(HL)	0.103	0.151	0.252	0.429	0.534	0.761		C	0.006		
		(LH)	0.060	0.085	0.137	0.482	0.634	0.988		D	0.006		
	C → Y	(HL)	0.107	0.156	0.260	0.429	0.534	0.761		E	0.013		
		(LH)	0.065	0.091	0.147	0.482	0.634	0.988		F	0.013		
	D → Y	(HL)	0.087	0.138	0.226	0.429	0.534	0.761					
		(LH)	0.059	0.088	0.144	0.482	0.634	0.989					
	E → Y	(HL)	0.101	0.146	0.241	0.429	0.534	0.761					
		(LH)	0.074	0.108	0.178	0.482	0.634	0.989					
	F → Y	(HL)	0.101	0.146	0.240	0.429	0.534	0.761					
		(LH)	0.074	0.108	0.178	0.482	0.634	0.989					

Function	1-2-3-input OR-NAND											
Block type	Normal		with inv. A		with inv. B		with inv. C		with inv. D		with inv. E	
Drivability	Name	cells	Name	cells	Name	cells	Name	cells	Name	cells	Name	cells
	L491	5										
x2	F491	6										
x4												
x8												
x16												

Logic Diagram for "Normal"



Logic Diagram for "with inv. A type"

Logic Diagram for "with inv. B type"

Logic Diagram for "with inv. C type"

Logic Diagram for "with inv. D type"

Logic Diagram for "with inv. E type"

Logic Diagram for "with inv. F type"

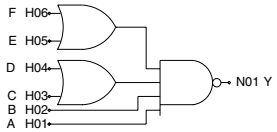
Logic Diagram for "with inv. G type"

Logic Diagram for "with inv. H type"

Block type	Switching speed									Input		Output	
	Path		t LD0 [ns]			t 1 (ns/pF)							
	IN → OUT		MIN.	TYP.	MAX.	MIN.	TYP.	MAX.		Symbol	Cin(pF)	Symbol	Cmax(pF)
L491	A → Y	(HL)	0.069	0.116	0.192	0.849	1.052	1.493		A	0.007	Y	0.209
		(LH)	0.048	0.072	0.118	0.964	1.266	1.974		B	0.006		
	B → Y	(HL)	0.081	0.118	0.194	0.849	1.052	1.493		C	0.006		
		(LH)	0.081	0.121	0.202	0.964	1.267	1.974		D	0.006		
	C → Y	(HL)	0.087	0.125	0.206	0.849	1.052	1.494		E	0.006		
		(LH)	0.087	0.130	0.217	0.964	1.267	1.974		F	0.006		
	D → Y	(HL)	0.075	0.110	0.180	0.848	1.051	1.492					
		(LH)	0.092	0.140	0.239	0.963	1.267	1.976					
	E → Y	(HL)	0.079	0.115	0.187	0.848	1.051	1.492					
		(LH)	0.106	0.161	0.273	0.963	1.267	1.976					
	F → Y	(HL)	0.080	0.117	0.190	0.848	1.051	1.493					
		(LH)	0.113	0.171	0.289	0.963	1.267	1.976					
F491	A → Y	(HL)	0.080	0.127	0.208	0.429	0.534	0.760		A	0.006	Y	0.420
		(LH)	0.056	0.084	0.136	0.482	0.634	0.988		B	0.013		
	B → Y	(HL)	0.094	0.136	0.223	0.429	0.534	0.760		C	0.013		
		(LH)	0.071	0.104	0.170	0.482	0.634	0.988		D	0.006		
	C → Y	(HL)	0.094	0.136	0.222	0.429	0.534	0.760		E	0.006		
		(LH)	0.071	0.103	0.170	0.482	0.634	0.988		F	0.006		
	D → Y	(HL)	0.084	0.123	0.201	0.429	0.533	0.760					
		(LH)	0.094	0.142	0.241	0.482	0.634	0.990					
	E → Y	(HL)	0.087	0.127	0.207	0.429	0.533	0.760					
		(LH)	0.108	0.164	0.277	0.482	0.634	0.990					
	F → Y	(HL)	0.089	0.129	0.211	0.429	0.534	0.760					
		(LH)	0.116	0.176	0.295	0.482	0.634	0.990					

Function	1-1-2-2-input OR-NAND											
Block type	Normal		with inv. A		with inv. B		with inv. C		with inv. D		with inv. E	
Drivability	Name	cells	Name	cells	Name	cells	Name	cells	Name	cells	Name	cells
	L495	5										
x2	F495	8										
x4												
x8												
x16												

Logic Diagram for "Normal"



Logic Diagram for "with inv. A type"

Logic Diagram for "with inv. B type"

Logic Diagram for "with inv. C type"

Logic Diagram for "with inv. D type"

Logic Diagram for "with inv. E type"

Logic Diagram for "with inv. F type"

Logic Diagram for "with inv. G type"

Logic Diagram for "with inv. H type"

Block type	Switching speed									Input		Output	
	Path		t LD0 [ns]			t 1 (ns/pF)							
	IN → OUT		MIN.	TYP.	MAX.	MIN.	TYP.	MAX.		Symbol	Cin(pF)	Symbol	Cmax(pF)
L495	A → Y	(HL)	0.032	0.072	0.117	1.493	2.227	3.420		A	0.006	Y	0.117
		(LH)	0.021	0.029	0.046	0.962	1.267	1.975		B	0.006		
	B → Y	(HL)	0.035	0.079	0.129	1.492	2.227	3.420		C	0.012		
		(LH)	0.023	0.033	0.053	0.962	1.267	1.976		D	0.013		
	C → Y	(HL)	0.055	0.096	0.159	1.599	2.225	3.417		E	0.013		
		(LH)	0.035	0.053	0.087	0.905	1.294	2.080		F	0.012		
	D → Y	(HL)	0.056	0.097	0.160	1.602	2.228	3.420					
		(LH)	0.035	0.053	0.088	0.905	1.294	2.080					
	E → Y	(HL)	0.063	0.106	0.175	1.601	2.228	3.420					
		(LH)	0.041	0.064	0.105	0.928	1.327	2.135					
	F → Y	(HL)	0.063	0.106	0.174	1.599	2.225	3.418					
		(LH)	0.041	0.063	0.105	0.928	1.327	2.135					
F495	A → Y	(HL)	0.031	0.075	0.124	0.781	1.217	1.880		A	0.012	Y	0.213
		(LH)	0.020	0.028	0.046	0.481	0.634	0.988		B	0.013		
	B → Y	(HL)	0.032	0.076	0.125	0.781	1.217	1.880		C	0.019		
		(LH)	0.020	0.028	0.046	0.481	0.634	0.988		D	0.019		
	C → Y	(HL)	0.050	0.090	0.149	0.856	1.218	1.880		E	0.019		
		(LH)	0.039	0.059	0.099	0.601	0.860	1.382		F	0.019		
	D → Y	(HL)	0.053	0.095	0.158	0.855	1.217	1.880					
		(LH)	0.041	0.062	0.103	0.601	0.860	1.382					
	E → Y	(HL)	0.057	0.099	0.164	0.854	1.216	1.878					
		(LH)	0.048	0.074	0.122	0.610	0.873	1.404					
	F → Y	(HL)	0.060	0.105	0.173	0.855	1.217	1.880					
		(LH)	0.050	0.076	0.127	0.610	0.873	1.404					

[MEMO]

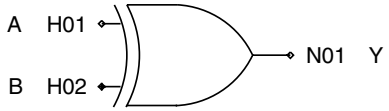
[MEMO]

2.6 Exclusive OR, Exclusive NOR

[MEMO]

Function	2-input Exclusive OR											
Block type	Standard type											
	Normal		High speed									
Drivability	Name	cells	Name	cells								
	L511	4										
x2	F511	5										
x4	F511NP	6										
x8												

Logic Diagram



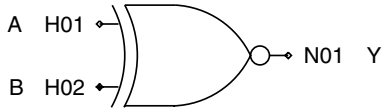
Truth Table

A	B	Y
0	0	0
0	1	1
1	0	1
1	1	0

Block type	Switching speed									Input		Output	
	Path		t_{LD0} [ns]			t_1 (ns/pF)							
	IN → OUT		MIN.	TYP.	MAX.	MIN.	TYP.	MAX.		Symbol	Cin(pF)	Symbol	Cmax(pF)
L511	A → Y	(HH)	0.016	0.021	0.034	0.783	1.107	1.826		A	0.013	Y	0.143
		(HL)	0.013	0.016	0.023	0.824	1.064	1.578		B	0.014		
		(LH)	0.016	0.023	0.038	0.797	1.127	1.860					
		(LL)	0.022	0.032	0.051	0.811	1.044	1.542					
	B → Y	(HH)	0.038	0.052	0.084	0.795	1.120	1.842					
		(HL)	0.026	0.035	0.054	0.822	1.060	1.569					
		(LH)	0.029	0.041	0.069	0.799	1.123	1.844					
		(LL)	0.042	0.060	0.098	0.822	1.061	1.570					
F511	A → Y	(HH)	0.034	0.046	0.074	0.483	0.635	0.991		A	0.013	Y	0.420
		(HL)	0.047	0.068	0.113	0.427	0.529	0.752		B	0.020		
		(LH)	0.045	0.063	0.103	0.483	0.635	0.990					
		(LL)	0.042	0.061	0.101	0.425	0.527	0.747					
	B → Y	(HH)	0.044	0.061	0.097	0.483	0.635	0.990					
		(HL)	0.066	0.096	0.158	0.427	0.529	0.752					
		(LH)	0.060	0.085	0.139	0.483	0.636	0.991					
		(LL)	0.053	0.078	0.131	0.426	0.527	0.749					
F511NP	A → Y	(HH)	0.047	0.064	0.102	0.243	0.320	0.499		A	0.013	Y	0.835
		(HL)	0.060	0.089	0.148	0.217	0.271	0.387		B	0.020		
		(LH)	0.055	0.078	0.126	0.242	0.319	0.498					
		(LL)	0.056	0.083	0.139	0.216	0.269	0.383					
	B → Y	(HH)	0.055	0.076	0.121	0.242	0.319	0.498					
		(HL)	0.081	0.117	0.195	0.217	0.271	0.387					
		(LH)	0.072	0.102	0.166	0.243	0.320	0.499					
		(LL)	0.066	0.098	0.163	0.216	0.269	0.383					

Function	2-input Exclusive NOR											
Block type	Standard type											
	Normal		High speed									
Drivability	Name	cells	Name	cells								
	L512	4										
x2	F512	5										
x4	F512NP	6										
x8												

Logic Diagram



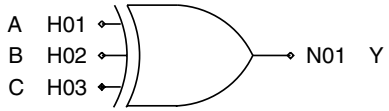
Truth Table

A	B	Y
0	0	1
0	1	0
1	0	0
1	1	1

Block type	Switching speed									Input		Output	
	Path		t_{LD0} [ns]			t_1 (ns/pF)							
	IN → OUT		MIN.	TYP.	MAX.	MIN.	TYP.	MAX.		Symbol	Cin(pF)	Symbol	Cmax(pF)
L512	A → Y	(HH)	0.017	0.023	0.036	0.783	1.106	1.823		A	0.013	Y	0.142
		(HL)	0.013	0.017	0.025	0.828	1.069	1.583		B	0.014		
		(LH)	0.016	0.023	0.039	0.795	1.125	1.859					
		(LL)	0.023	0.033	0.052	0.810	1.044	1.543					
	B → Y	(HH)	0.040	0.055	0.089	0.795	1.120	1.843					
		(HL)	0.028	0.037	0.057	0.822	1.059	1.569					
		(LH)	0.030	0.042	0.070	0.798	1.122	1.843					
		(LL)	0.043	0.060	0.097	0.826	1.064	1.574					
F512	A → Y	(HH)	0.032	0.044	0.070	0.483	0.635	0.990		A	0.013	Y	0.420
		(HL)	0.044	0.063	0.104	0.425	0.527	0.748		B	0.020		
		(LH)	0.046	0.066	0.107	0.483	0.636	0.991					
		(LL)	0.044	0.066	0.110	0.427	0.529	0.752					
	B → Y	(HH)	0.044	0.060	0.095	0.483	0.635	0.990					
		(HL)	0.065	0.094	0.155	0.427	0.529	0.752					
		(LH)	0.061	0.086	0.141	0.483	0.636	0.991					
		(LL)	0.053	0.078	0.131	0.426	0.527	0.749					
F512NP	A → Y	(HH)	0.044	0.060	0.096	0.242	0.319	0.498		A	0.013	Y	0.835
		(HL)	0.056	0.082	0.136	0.216	0.269	0.383		B	0.020		
		(LH)	0.057	0.081	0.132	0.243	0.319	0.499					
		(LL)	0.059	0.089	0.151	0.217	0.271	0.387					
	B → Y	(HH)	0.055	0.075	0.120	0.242	0.319	0.498					
		(HL)	0.079	0.116	0.192	0.217	0.271	0.387					
		(LH)	0.073	0.103	0.168	0.243	0.319	0.499					
		(LL)	0.066	0.098	0.164	0.216	0.269	0.384					

Function	3-input Exclusive OR											
Block type	Standard type											
	Normal		High speed									
Drivability	Name	cells	Name	cells								
	L516	6										
x2	F516	8										
x4	F516NP	12										
x8												

Logic Diagram



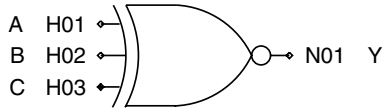
Truth Table

A	B	C	Y
0	0	0	0
0	0	1	1
0	1	0	1
0	1	1	0
1	0	0	1
1	0	1	0
1	1	0	0
1	1	1	1

Block type	Switching speed									Input		Output	
	Path		t LD0 [ns]			t 1 (ns/pF)							
	IN → OUT		MIN.	TYP.	MAX.	MIN.	TYP.	MAX.		Symbol	Cin(pF)	Symbol	Cmax(pF)
L516	A → Y	(HH)	0.032	0.045	0.072	0.965	1.269	1.978		A	0.013	Y	0.206
		(HL)	0.048	0.071	0.117	0.852	1.057	1.502		B	0.013		
		(LH)	0.048	0.070	0.115	0.971	1.277	1.992		C	0.014		
		(LL)	0.044	0.067	0.115	0.867	1.083	1.552					
	B → Y	(HH)	0.059	0.124	0.207	0.966	1.279	1.995					
		(HL)	0.072	0.125	0.208	0.852	1.099	1.576					
		(LH)	0.069	0.122	0.204	0.966	1.280	1.997					
		(LL)	0.071	0.145	0.242	0.853	1.101	1.580					
	C → Y	(HH)	0.074	0.155	0.257	0.966	1.280	1.997					
		(HL)	0.094	0.148	0.250	0.853	1.099	1.576					
		(LH)	0.087	0.146	0.245	0.966	1.279	1.995					
		(LL)	0.086	0.169	0.282	0.852	1.102	1.581					
F516	A → Y	(HH)	0.034	0.046	0.073	0.483	0.635	0.991		A	0.013	Y	0.412
		(HL)	0.047	0.068	0.113	0.427	0.529	0.751		B	0.013		
		(LH)	0.053	0.076	0.125	0.488	0.642	1.003		C	0.020		
		(LL)	0.052	0.080	0.136	0.442	0.555	0.798					
	B → Y	(HH)	0.070	0.125	0.208	0.483	0.644	1.005					
		(HL)	0.081	0.136	0.234	0.427	0.563	0.810					
		(LH)	0.079	0.124	0.209	0.483	0.644	1.006					
		(LL)	0.081	0.147	0.243	0.427	0.564	0.811					
	C → Y	(HH)	0.082	0.152	0.252	0.483	0.644	1.006					
		(HL)	0.094	0.164	0.279	0.427	0.563	0.810					
		(LH)	0.094	0.142	0.239	0.483	0.644	1.005					
		(LL)	0.092	0.168	0.277	0.427	0.564	0.811					
F516NP	A → Y	(HH)	0.043	0.059	0.094	0.242	0.319	0.497		A	0.013	Y	0.827
		(HL)	0.056	0.082	0.136	0.216	0.268	0.383		B	0.020		
		(LH)	0.059	0.085	0.139	0.244	0.321	0.502		C	0.034		
		(LL)	0.061	0.093	0.159	0.221	0.278	0.401					
	B → Y	(HH)	0.071	0.133	0.220	0.242	0.321	0.502					
		(HL)	0.084	0.148	0.252	0.216	0.281	0.404					
		(LH)	0.082	0.129	0.212	0.242	0.321	0.502					
		(LL)	0.088	0.160	0.266	0.216	0.279	0.401					
	C → Y	(HH)	0.083	0.156	0.258	0.242	0.321	0.502					
		(HL)	0.097	0.173	0.294	0.216	0.281	0.404					
		(LH)	0.094	0.142	0.233	0.242	0.321	0.502					
		(LL)	0.097	0.170	0.283	0.216	0.279	0.401					

Function	3-input Exclusive NOR											
Block type	Standard type											
	Normal		High speed									
Drivability	Name	cells	Name	cells								
	L517	6										
x2	F517	8										
x4	F517NP	12										
x8												

Logic Diagram



Truth Table

A	B	C	Y
0	0	0	1
0	0	1	0
0	1	0	0
0	1	1	1
1	0	0	0
1	0	1	1
1	1	0	1
1	1	1	0

Block type	Switching speed									Input		Output	
	Path			t_{LD0} [ns]			t_1 (ns/pF)						
	IN → OUT			MIN.	TYP.	MAX.	MIN.	TYP.	MAX.	Symbol	Cin(pF)	Symbol	Cmax(pF)
L517	A → Y		(HH)	0.033	0.045	0.072	0.965	1.269	1.978	A	0.013	Y	0.206
			(HL)	0.048	0.071	0.117	0.852	1.057	1.502	B	0.013		
			(LH)	0.048	0.070	0.115	0.971	1.277	1.992	C	0.014		
			(LL)	0.044	0.067	0.115	0.867	1.083	1.552				
	B → Y		(HH)	0.059	0.125	0.208	0.966	1.280	1.996				
			(HL)	0.072	0.126	0.209	0.852	1.102	1.580				
			(LH)	0.069	0.122	0.205	0.966	1.279	1.996				
			(LL)	0.071	0.144	0.241	0.852	1.098	1.575				
	C → Y		(HH)	0.073	0.153	0.255	0.966	1.280	1.997				
			(HL)	0.093	0.146	0.248	0.853	1.099	1.575				
			(LH)	0.088	0.146	0.246	0.966	1.279	1.996				
			(LL)	0.086	0.170	0.284	0.852	1.102	1.581				
F517	A → Y		(HH)	0.034	0.046	0.073	0.483	0.635	0.991	A	0.013	Y	0.413
			(HL)	0.047	0.068	0.113	0.427	0.529	0.751	B	0.013		
			(LH)	0.053	0.076	0.125	0.488	0.642	1.003	C	0.020		
			(LL)	0.052	0.080	0.136	0.442	0.554	0.798				
	B → Y		(HH)	0.070	0.124	0.208	0.483	0.644	1.005				
			(HL)	0.081	0.136	0.234	0.427	0.564	0.811				
			(LH)	0.079	0.125	0.210	0.483	0.644	1.005				
			(LL)	0.081	0.147	0.243	0.427	0.563	0.810				
	C → Y		(HH)	0.081	0.150	0.250	0.483	0.644	1.005				
			(HL)	0.094	0.162	0.277	0.427	0.563	0.810				
			(LH)	0.095	0.143	0.241	0.483	0.644	1.006				
			(LL)	0.093	0.169	0.280	0.427	0.564	0.812				
F517NP	A → Y		(HH)	0.043	0.059	0.094	0.242	0.319	0.497	A	0.013	Y	0.827
			(HL)	0.056	0.082	0.136	0.216	0.268	0.383	B	0.020		
			(LH)	0.059	0.085	0.139	0.244	0.321	0.502	C	0.034		
			(LL)	0.061	0.093	0.159	0.221	0.278	0.400				
	B → Y		(HH)	0.070	0.131	0.215	0.242	0.321	0.502				
			(HL)	0.083	0.143	0.244	0.216	0.279	0.401				
			(LH)	0.084	0.131	0.216	0.242	0.321	0.502				
			(LL)	0.091	0.162	0.269	0.216	0.281	0.404				
	C → Y		(HH)	0.082	0.153	0.253	0.242	0.321	0.502				
			(HL)	0.096	0.169	0.288	0.216	0.281	0.404				
			(LH)	0.095	0.145	0.239	0.242	0.321	0.502				
			(LL)	0.098	0.173	0.288	0.216	0.279	0.402				

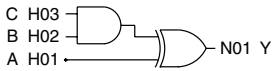
[MEMO]

[MEMO]

2.7 AND-Exclusive OR

[MEMO]

Function	1-2-input AND-Exclusive OR											
Block type	Normal		with inv. A		with inv. B		with inv. C		with inv. D		with inv. E	
Drivability	Name	cells	Name	cells	Name	cells	Name	cells	Name	cells	Name	cells
	L411	6										
x2	F411	8										
x4												
x8												
x16												

Logic Diagram for "Normal"	Logic Diagram for "with inv. A type"	Logic Diagram for "with inv. B type"
		
Logic Diagram for "with inv. C type"	Logic Diagram for "with inv. D type"	Logic Diagram for "with inv. E type"
Logic Diagram for "with inv. F type"	Logic Diagram for "with inv. G type"	Logic Diagram for "with inv. H type"

Block type	Switching speed									Input		Output	
	Path			t_{LD0} [ns]			t_1 (ns/pF)						
	IN → OUT			MIN.	TYP.	MAX.	MIN.	TYP.	MAX.	Symbol	Cin(pF)	Symbol	Cmax(pF)
L411	A → Y	(HH)		0.016	0.021	0.033	0.597	0.966	1.597	A	0.013	Y	0.145
		(HL)		0.011	0.015	0.021	0.869	1.131	1.694	B	0.020		
		(LH)		0.016	0.023	0.038	0.799	1.129	1.863	C	0.019		
		(LL)		0.023	0.032	0.052	0.811	1.044	1.542				
	B → Y	(HH)		0.046	0.065	0.107	0.797	1.122	1.844				
		(HL)		0.033	0.045	0.074	0.867	1.126	1.686				
		(LH)		0.027	0.038	0.063	0.698	0.980	1.613				
		(LL)		0.042	0.060	0.096	0.823	1.061	1.571				
	C → Y	(HH)		0.049	0.069	0.114	0.797	1.122	1.844				
		(HL)		0.036	0.050	0.081	0.867	1.127	1.687				
		(LH)		0.030	0.042	0.071	0.697	0.979	1.611				
		(LL)		0.046	0.065	0.105	0.823	1.061	1.571				
F411	A → Y	(HH)		0.020	0.027	0.042	0.319	0.551	0.908	A	0.020	Y	0.251
		(HL)		0.013	0.016	0.023	0.503	0.659	0.999	B	0.026		
		(LH)		0.018	0.026	0.043	0.455	0.640	1.053	C	0.027		
		(LL)		0.030	0.042	0.068	0.440	0.568	0.843				
	B → Y	(HH)		0.051	0.071	0.118	0.453	0.635	1.041				
		(HL)		0.037	0.052	0.083	0.502	0.657	0.996				
		(LH)		0.030	0.043	0.072	0.401	0.564	0.925				
		(LL)		0.047	0.067	0.108	0.451	0.584	0.868				
	C → Y	(HH)		0.055	0.077	0.126	0.453	0.635	1.041				
		(HL)		0.041	0.057	0.091	0.502	0.657	0.996				
		(LH)		0.034	0.048	0.080	0.402	0.564	0.925				
		(LL)		0.051	0.072	0.118	0.452	0.584	0.869				

[MEMO]

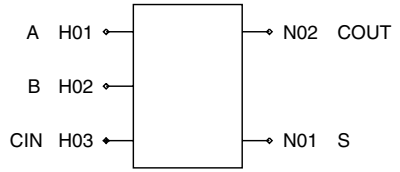
[MEMO]

2.8 Adder, Decoder, Multiplexer, Generator

[MEMO]

Function	1-Bit Full Adder											
Block type	Standard type											
	Normal		High speed									
Drivability	Name	cells	Name	cells								
	L521	8										
x2	F521	12										
x4												
x8												

Logic Diagram



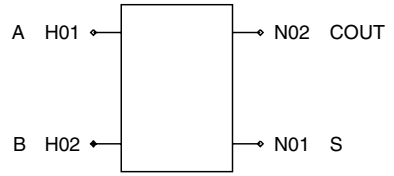
Truth Table

A	B	CIN	S	COUT
0	0	0	0	0
0	1	0	1	0
1	0	0	1	0
1	1	0	0	1
0	0	1	1	0
0	1	1	0	1
1	0	1	0	1
1	1	1	1	1

Block type	Switching speed								Input		Output	
	Path		t_{LD0} [ns]			t_1 (ns/pF)						
	IN → OUT		MIN.	TYP.	MAX.	MIN.	TYP.	MAX.	Symbol	Cin(pF)	Symbol	Cmax(pF)
L521	A → S	(HH)	0.104	0.155	0.256	0.965	1.272	1.984	A	0.013	S	0.208
		(HL)	0.093	0.138	0.225	0.851	1.057	1.503	B	0.016	COUT	0.208
		(LH)	0.093	0.142	0.237	0.967	1.272	1.984	CIN	0.007		
		(LL)	0.108	0.157	0.260	0.851	1.061	1.510				
	A → COUT	(HH)	0.101	0.153	0.253	0.967	1.273	1.986				
		(LL)	0.107	0.161	0.267	0.855	1.061	1.511				
	B → S	(HH)	0.077	0.114	0.189	0.966	1.272	1.985				
		(HL)	0.074	0.109	0.180	0.851	1.058	1.505				
		(LH)	0.077	0.115	0.191	0.967	1.272	1.984				
		(LL)	0.088	0.140	0.233	0.852	1.061	1.511				
	B → COUT	(HH)	0.071	0.112	0.185	0.968	1.274	1.986				
		(LL)	0.084	0.142	0.235	0.854	1.063	1.513				
	CIN → S	(HH)	0.059	0.082	0.131	0.968	1.273	1.986				
		(HL)	0.095	0.135	0.222	0.852	1.056	1.501				
		(LH)	0.096	0.137	0.226	0.965	1.269	1.979				
		(LL)	0.072	0.107	0.179	0.862	1.072	1.527				
	CIN → COUT	(HH)	0.059	0.082	0.131	0.970	1.276	1.989				
		(LL)	0.073	0.107	0.179	0.864	1.076	1.533				
F521	A → S	(HH)	0.088	0.130	0.214	0.483	0.636	0.991	A	0.027	S	0.417
		(HL)	0.085	0.121	0.197	0.426	0.528	0.750	B	0.024	COUT	0.417
		(LH)	0.082	0.120	0.199	0.483	0.636	0.991	CIN	0.014		
		(LL)	0.092	0.137	0.227	0.426	0.529	0.752				
	A → COUT	(HH)	0.087	0.127	0.209	0.483	0.636	0.991				
		(LL)	0.092	0.137	0.228	0.426	0.528	0.751				
	B → S	(HH)	0.069	0.102	0.168	0.483	0.636	0.991				
		(HL)	0.070	0.102	0.168	0.426	0.528	0.751				
		(LH)	0.070	0.104	0.172	0.483	0.636	0.991				
		(LL)	0.079	0.120	0.198	0.426	0.529	0.752				
	B → COUT	(HH)	0.065	0.099	0.163	0.483	0.636	0.992				
		(LL)	0.074	0.119	0.198	0.426	0.528	0.750				
	CIN → S	(HH)	0.053	0.074	0.118	0.484	0.636	0.992				
		(HL)	0.079	0.114	0.187	0.426	0.528	0.750				
		(LH)	0.078	0.111	0.182	0.483	0.635	0.991				
		(LL)	0.065	0.096	0.162	0.428	0.532	0.755				
	CIN → COUT	(HH)	0.053	0.074	0.118	0.484	0.636	0.992				
		(LL)	0.064	0.094	0.159	0.428	0.532	0.756				

Function	1-Bit Half Adder											
Block type	Standard type											
	Normal		High speed									
Drivability	Name	cells	Name	cells								
	L522	4										
x2	F522	8										
x4												
x8												

Logic Diagram



Truth Table

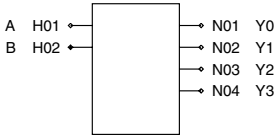
A	B	S	COUT
0	0	0	0
0	1	1	0
1	0	1	0
1	1	0	1

Block type	Switching speed									Input		Output	
	Path			t_{LD0} [ns]			t_1 (ns/pF)						
	IN → OUT			MIN.	TYP.	MAX.	MIN.	TYP.	MAX.	Symbol	Cin(pF)	Symbol	Cmax(pF)
L522	A → S	(HH)		0.042	0.058	0.093	0.966	1.271	1.983	A	0.018	S	0.209
		(HL)		0.072	0.100	0.162	0.839	1.033	1.458	B	0.011	COUT	0.208
		(LH)		0.070	0.099	0.162	0.964	1.267	1.974				
		(LL)		0.060	0.089	0.146	0.846	1.048	1.487				
	A → COUT	(HH)		0.052	0.072	0.117	0.969	1.275	1.987				
		(LL)		0.047	0.066	0.107	0.845	1.044	1.479				
	B → S	(HH)		0.043	0.059	0.095	0.966	1.269	1.978				
		(HL)		0.069	0.096	0.155	0.839	1.033	1.459				
		(LH)		0.069	0.097	0.157	0.964	1.268	1.977				
		(LL)		0.052	0.077	0.126	0.847	1.048	1.487				
	B → COUT	(HH)		0.049	0.068	0.110	0.970	1.276	1.989				
		(LL)		0.043	0.060	0.097	0.845	1.044	1.477				
F522	A → S	(HH)		0.035	0.047	0.076	0.484	0.636	0.991	A	0.025	S	0.420
		(HL)		0.047	0.068	0.113	0.427	0.529	0.752	B	0.031	COUT	0.422
		(LH)		0.045	0.063	0.103	0.483	0.635	0.990				
		(LL)		0.043	0.063	0.104	0.425	0.527	0.747				
	A → COUT	(HH)		0.034	0.047	0.077	0.483	0.635	0.989				
		(LL)		0.030	0.043	0.069	0.420	0.518	0.732				
	B → S	(HH)		0.043	0.060	0.096	0.483	0.635	0.990				
		(HL)		0.064	0.094	0.155	0.427	0.529	0.752				
		(LH)		0.059	0.084	0.138	0.483	0.635	0.991				
		(LL)		0.052	0.077	0.129	0.426	0.528	0.749				
	B → COUT	(HH)		0.037	0.051	0.083	0.483	0.635	0.989				
		(LL)		0.033	0.047	0.077	0.421	0.519	0.734				

Function	2 to 4 Decoder											
Block type	Positive output type						Negative output type					
	Normal		with ENB		with EN		Normal		with ENB		with EN	
Drivability	Name	cells	Name	cells	Name	cells	Name	cells	Name	cells	Name	cells
	L560	7					L561	5	L981	7		
x2	F560	9					F561	9	F981	12		
x4												
x8												

Logic Diagram

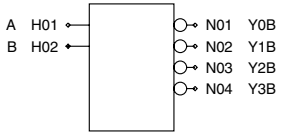
for "Positive output type"



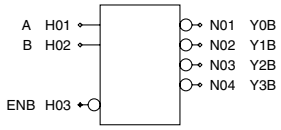
for "Positive output with ENB"

for "Positive output with EN"

for "Negative output type"



for "Negative output with ENB"



for "Negative output with EN"

Truth Table

A	B	ENB	Y0	Y1	Y2	Y3	Y0B	Y1B	Y2B	Y3B
0	0	0	1	0	0	0	0	1	1	1
1	0	0	0	1	0	0	1	0	1	1
0	1	0	0	0	1	0	1	1	0	1
1	1	0	0	0	0	1	1	1	1	0
X	X	1	0	0	0	0	1	1	1	1

X:Irrelevant

Block type	Switching speed									Input		Output	
	Path		t LD0 [ns]			t 1 (ns/pF)							
	IN → OUT		MIN.	TYP.	MAX.	MIN.	TYP.	MAX.		Symbol	Cin(pF)	Symbol	Cmax(pF)
L560	A → Y0	(HL)	0.051	0.071	0.112	0.840	1.035	1.462		A	0.018	Y0	0.210
		(LH)	0.062	0.087	0.141	0.966	1.269	1.978		B	0.019	Y1	0.209
	A → Y1	(HH)	0.038	0.053	0.086	0.966	1.269	1.978				Y2	0.209
		(LL)	0.034	0.047	0.076	0.840	1.035	1.462				Y3	0.209
	A → Y2	(HL)	0.052	0.072	0.113	0.840	1.035	1.462					
		(LH)	0.062	0.087	0.141	0.965	1.269	1.977					
	A → Y3	(HH)	0.036	0.050	0.081	0.965	1.269	1.977					
		(LL)	0.032	0.045	0.073	0.840	1.035	1.461					
	B → Y0	(HL)	0.058	0.081	0.128	0.840	1.037	1.465					
		(LH)	0.066	0.093	0.152	0.966	1.270	1.979					
	B → Y1	(HL)	0.061	0.084	0.133	0.841	1.037	1.466					
		(LH)	0.068	0.096	0.157	0.966	1.270	1.979					
	B → Y2	(HH)	0.040	0.055	0.089	0.966	1.269	1.978					
		(LL)	0.036	0.050	0.081	0.841	1.037	1.466					
	B → Y3	(HH)	0.040	0.056	0.090	0.966	1.270	1.979					
		(LL)	0.037	0.052	0.083	0.842	1.038	1.468					
F560	A → Y0	(HL)	0.058	0.080	0.128	0.422	0.521	0.737		A	0.019	Y0	0.420
		(LH)	0.069	0.097	0.158	0.484	0.637	0.993		B	0.020	Y1	0.417
	A → Y1	(HH)	0.044	0.061	0.100	0.484	0.636	0.992				Y2	0.417
		(LL)	0.039	0.056	0.090	0.421	0.520	0.735				Y3	0.420
	A → Y2	(HL)	0.059	0.082	0.130	0.421	0.520	0.735					
		(LH)	0.070	0.099	0.162	0.484	0.636	0.992					
	A → Y3	(HH)	0.043	0.060	0.097	0.484	0.637	0.993					
		(LL)	0.039	0.054	0.088	0.422	0.521	0.737					
	B → Y0	(HL)	0.065	0.089	0.142	0.422	0.522	0.739					
		(LH)	0.073	0.102	0.168	0.484	0.637	0.994					
	B → Y1	(HL)	0.065	0.090	0.144	0.422	0.521	0.737					
		(LH)	0.073	0.103	0.169	0.484	0.636	0.992					
	B → Y2	(HH)	0.048	0.066	0.107	0.484	0.636	0.992					
		(LL)	0.042	0.060	0.098	0.422	0.521	0.737					
	B → Y3	(HH)	0.046	0.064	0.103	0.484	0.637	0.993					
		(LL)	0.042	0.059	0.096	0.422	0.521	0.738					
L561	A → Y0B	(HH)	0.032	0.043	0.066	0.964	1.266	1.972		A	0.018	Y0B	0.194
		(LL)	0.041	0.057	0.092	1.289	1.641	2.448		B	0.020	Y1B	0.194
	A → Y1B	(HL)	0.015	0.019	0.030	1.288	1.639	2.443				Y2B	0.194
		(LH)	0.012	0.016	0.025	0.962	1.264	1.969				Y3B	0.194
	A → Y2B	(HH)	0.032	0.043	0.067	0.964	1.266	1.973					
		(LL)	0.041	0.058	0.093	1.290	1.641	2.448					
	A → Y3B	(HL)	0.015	0.020	0.030	1.288	1.639	2.443					
		(LH)	0.012	0.016	0.025	0.962	1.264	1.969					
	B → Y0B	(HH)	0.037	0.049	0.077	0.963	1.266	1.973					
		(LL)	0.043	0.061	0.099	1.289	1.641	2.447					
	B → Y1B	(HH)	0.037	0.049	0.077	0.962	1.265	1.972					
		(LL)	0.043	0.061	0.100	1.290	1.641	2.448					
	B → Y2B	(HL)	0.019	0.025	0.039	1.287	1.636	2.439					
		(LH)	0.015	0.020	0.032	0.962	1.265	1.971					
	B → Y3B	(HL)	0.019	0.025	0.038	1.288	1.639	2.443					
		(LH)	0.015	0.021	0.033	0.962	1.264	1.971					
F561	A → Y0B	(HH)	0.032	0.042	0.065	0.482	0.633	0.987		A	0.019	Y0B	0.422
		(LL)	0.062	0.093	0.155	0.430	0.536	0.764		B	0.020	Y1B	0.419
	A → Y1B	(HL)	0.082	0.119	0.194	0.429	0.533	0.760				Y2B	0.418
		(LH)	0.058	0.082	0.132	0.482	0.634	0.987				Y3B	0.422
	A → Y2B	(HH)	0.032	0.043	0.066	0.482	0.633	0.987					
		(LL)	0.061	0.092	0.155	0.429	0.533	0.760					
	A → Y3B	(HL)	0.081	0.118	0.193	0.430	0.536	0.764					
		(LH)	0.059	0.082	0.131	0.482	0.634	0.988					

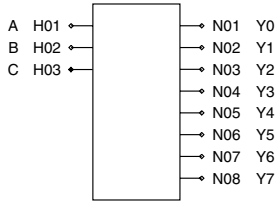
Block type	Switching speed								Input		Output	
	Path		t_{LD0} [ns]			t_1 (ns/pF)						
	IN → OUT		MIN.	TYP.	MAX.	MIN.	TYP.	MAX.	Symbol	Cin(pF)	Symbol	Cmax(pF)
	B → Y0B	(HH)	0.035	0.047	0.072	0.482	0.634	0.989				
		(LL)	0.069	0.104	0.172	0.430	0.536	0.764				
	B → Y1B	(HH)	0.035	0.048	0.074	0.482	0.634	0.988				
		(LL)	0.069	0.104	0.172	0.429	0.533	0.760				
	B → Y2B	(HL)	0.088	0.128	0.211	0.429	0.533	0.760				
		(LH)	0.063	0.088	0.142	0.482	0.634	0.989				
	B → Y3B	(HL)	0.087	0.127	0.209	0.430	0.535	0.763				
		(LH)	0.062	0.086	0.138	0.482	0.634	0.989				
L981	A → Y0B	(HH)	0.033	0.044	0.069	0.964	1.267	1.973	A	0.019	Y0B	0.191
		(LL)	0.042	0.059	0.095	1.290	1.641	2.448	B	0.014	Y1B	0.191
	A → Y1B	(HL)	0.015	0.020	0.030	1.288	1.639	2.444	ENB	0.011	Y2B	0.190
		(LH)	0.012	0.016	0.025	0.962	1.264	1.969			Y3B	0.191
	A → Y2B	(HH)	0.034	0.045	0.070	0.964	1.267	1.973				
		(LL)	0.043	0.060	0.097	1.290	1.642	2.449				
	A → Y3B	(HL)	0.014	0.019	0.029	1.288	1.638	2.441				
		(LH)	0.012	0.016	0.025	0.962	1.264	1.969				
	B → Y0B	(HH)	0.041	0.055	0.086	0.964	1.267	1.974				
		(LL)	0.075	0.112	0.188	1.296	1.653	2.471				
	B → Y1B	(HH)	0.041	0.056	0.086	0.963	1.266	1.974				
		(LL)	0.076	0.113	0.189	1.297	1.654	2.474				
	B → Y2B	(HL)	0.088	0.129	0.212	1.295	1.651	2.467				
		(LH)	0.059	0.082	0.132	0.963	1.266	1.974				
	B → Y3B	(HL)	0.086	0.127	0.209	1.295	1.653	2.471				
		(LH)	0.058	0.081	0.130	0.963	1.266	1.973				
	ENB → Y0B	(HH)	0.043	0.058	0.092	0.964	1.267	1.976				
		(LL)	0.079	0.118	0.197	1.297	1.655	2.475				
	ENB → Y1B	(HH)	0.043	0.059	0.092	0.963	1.267	1.975				
		(LL)	0.079	0.118	0.196	1.297	1.654	2.473				
	ENB → Y2B	(HH)	0.043	0.058	0.092	0.964	1.267	1.976				
		(LL)	0.079	0.117	0.196	1.297	1.655	2.474				
	ENB → Y3B	(HH)	0.042	0.057	0.090	0.963	1.267	1.975				
		(LL)	0.077	0.115	0.192	1.296	1.653	2.472				
F981	A → Y0B	(HH)	0.032	0.043	0.066	0.482	0.633	0.987	A	0.021	Y0B	0.418
		(LL)	0.061	0.091	0.153	0.429	0.533	0.760	B	0.013	Y1B	0.421
	A → Y1B	(HL)	0.083	0.120	0.196	0.431	0.536	0.766	ENB	0.007	Y2B	0.421
		(LH)	0.061	0.085	0.137	0.482	0.634	0.988			Y3B	0.419
	A → Y2B	(HH)	0.031	0.042	0.065	0.482	0.633	0.987				
		(LL)	0.062	0.093	0.156	0.430	0.536	0.764				
	A → Y3B	(HL)	0.083	0.121	0.197	0.429	0.534	0.760				
		(LH)	0.061	0.086	0.138	0.482	0.634	0.987				
	B → Y0B	(HH)	0.083	0.115	0.184	0.482	0.634	0.989				
		(LL)	0.122	0.178	0.294	0.429	0.533	0.760				
	B → Y1B	(HH)	0.082	0.113	0.182	0.482	0.634	0.989				
		(LL)	0.122	0.178	0.293	0.430	0.536	0.764				
	B → Y2B	(HL)	0.104	0.153	0.252	0.430	0.536	0.764				
		(LH)	0.068	0.096	0.154	0.482	0.634	0.989				
	B → Y3B	(HL)	0.104	0.152	0.250	0.429	0.534	0.760				
		(LH)	0.069	0.096	0.155	0.482	0.634	0.989				
	ENB → Y0B	(HH)	0.093	0.129	0.207	0.482	0.634	0.989				
		(LL)	0.132	0.193	0.320	0.429	0.533	0.760				
	ENB → Y1B	(HH)	0.092	0.128	0.204	0.482	0.634	0.989				
		(LL)	0.132	0.193	0.319	0.430	0.536	0.764				
	ENB → Y2B	(HH)	0.093	0.129	0.206	0.482	0.634	0.989				
		(LL)	0.132	0.193	0.319	0.430	0.536	0.764				
	ENB → Y3B	(HH)	0.093	0.129	0.207	0.482	0.634	0.989				
		(LL)	0.132	0.193	0.320	0.429	0.534	0.761				

[MEMO]

Function	3 to 8 Decoder											
Block type	Positive output type						Negative output type					
	Normal		with ENB		with EN		Normal		with ENB		with EN	
Drivability	Name	cells	Name	cells	Name	cells	Name	cells	Name	cells	Name	cells
	L567	19					L568	15	L982	17		
x2	F567	23					F568	23	F982	25		
x4												
x8												

Logic Diagram

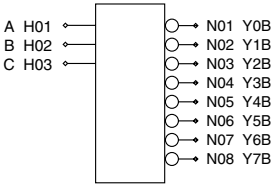
for "Positive output type"



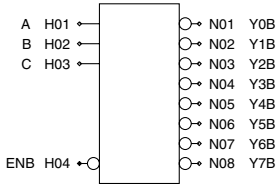
for "Positive output with ENB"

for "Positive output with EN"

for "Negative output type"



for "Negative output with ENB"



for "Negative output with EN"

Truth Table

A	B	C	ENB	Y0	Y1	Y2	Y3	Y4	Y5	Y6	Y7	Y0B	Y1B	Y2B	Y3B	Y4B	Y5B	Y6B	Y7B
0	0	0	0	1	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1
1	0	0	0	0	1	0	0	0	0	0	0	1	0	1	1	1	1	1	1
0	1	0	0	0	0	1	0	0	0	0	0	1	1	0	1	1	1	1	1
1	1	0	0	0	0	0	1	0	0	0	0	1	1	1	0	1	1	1	1
0	0	1	0	0	0	0	0	1	0	0	0	1	1	1	1	0	1	1	1
1	0	1	0	0	0	0	0	0	1	0	0	1	1	1	1	1	0	1	1
0	1	1	0	0	0	0	0	0	0	1	0	1	1	1	1	1	1	0	1
1	1	1	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	0
X	X	X	1	X	X	X	X	X	X	X	X	1	1	1	1	1	1	1	1

X:Irrelevant

Block type	Switching speed									Input		Output	
	Path		t LD0 [ns]			t 1 (ns/pF)							
	IN → OUT		MIN.	TYP.	MAX.	MIN.	TYP.	MAX.		Symbol	Cin(pF)	Symbol	Cmax(pF)
L567	A → Y0	(HL)	0.076	0.104	0.163	0.841	1.037	1.466		A	0.006	Y0	0.208
		(LH)	0.103	0.146	0.239	0.971	1.278	1.993		B	0.007	Y1	0.208
	A → Y1	(HH)	0.133	0.184	0.297	0.971	1.277	1.993		C	0.007	Y2	0.208
		(LL)	0.122	0.172	0.277	0.841	1.037	1.466				Y3	0.208
	A → Y2	(HL)	0.076	0.104	0.164	0.841	1.037	1.466				Y4	0.208
		(LH)	0.103	0.146	0.240	0.971	1.278	1.993				Y5	0.208
	A → Y3	(HH)	0.134	0.186	0.299	0.971	1.278	1.994				Y6	0.208
		(LL)	0.123	0.173	0.278	0.841	1.038	1.467				Y7	0.208
	A → Y4	(HL)	0.076	0.104	0.163	0.841	1.037	1.466					
		(LH)	0.103	0.146	0.240	0.971	1.277	1.993					
	A → Y5	(HH)	0.134	0.186	0.300	0.971	1.278	1.994					
		(LL)	0.123	0.173	0.278	0.841	1.038	1.467					
	A → Y6	(HL)	0.076	0.104	0.164	0.841	1.038	1.467					
		(LH)	0.104	0.147	0.241	0.971	1.278	1.994					
	A → Y7	(HH)	0.134	0.186	0.300	0.971	1.278	1.994					
		(LL)	0.123	0.173	0.279	0.841	1.038	1.467					
	B → Y0	(HL)	0.083	0.114	0.181	0.841	1.039	1.469					
		(LH)	0.110	0.156	0.256	0.971	1.278	1.994					
	B → Y1	(HL)	0.083	0.114	0.180	0.842	1.039	1.469					
		(LH)	0.110	0.155	0.256	0.971	1.278	1.994					
	B → Y2	(HH)	0.141	0.197	0.320	0.971	1.277	1.993					
		(LL)	0.135	0.189	0.305	0.841	1.038	1.469					
	B → Y3	(HH)	0.143	0.199	0.322	0.971	1.278	1.995					
		(LL)	0.136	0.190	0.307	0.842	1.039	1.470					
	B → Y4	(HL)	0.083	0.115	0.181	0.841	1.038	1.469					
		(LH)	0.110	0.156	0.257	0.971	1.277	1.993					
	B → Y5	(HL)	0.084	0.115	0.182	0.842	1.039	1.470					
		(LH)	0.111	0.157	0.258	0.972	1.279	1.996					
	B → Y6	(HH)	0.142	0.197	0.320	0.971	1.278	1.994					
		(LL)	0.135	0.189	0.305	0.842	1.039	1.469					
	B → Y7	(HH)	0.142	0.198	0.321	0.971	1.278	1.995					
		(LL)	0.135	0.190	0.306	0.842	1.039	1.470					
	C → Y0	(HL)	0.090	0.123	0.195	0.843	1.042	1.476					
		(LH)	0.111	0.160	0.267	0.971	1.278	1.994					
	C → Y1	(HL)	0.089	0.123	0.194	0.843	1.042	1.476					
		(LH)	0.110	0.159	0.265	0.971	1.278	1.995					
	C → Y2	(HL)	0.090	0.124	0.196	0.843	1.042	1.476					
		(LH)	0.112	0.161	0.268	0.971	1.278	1.994					
	C → Y3	(HL)	0.090	0.124	0.196	0.843	1.042	1.477					
		(LH)	0.112	0.161	0.268	0.972	1.279	1.995					
	C → Y4	(HH)	0.151	0.211	0.344	0.971	1.277	1.993					
		(LL)	0.147	0.206	0.332	0.843	1.042	1.475					
	C → Y5	(HH)	0.153	0.214	0.347	0.972	1.279	1.995					
		(LL)	0.147	0.207	0.333	0.843	1.042	1.477					
	C → Y6	(HH)	0.152	0.213	0.347	0.971	1.278	1.995					
		(LL)	0.148	0.207	0.334	0.843	1.042	1.477					
	C → Y7	(HH)	0.153	0.215	0.349	0.971	1.278	1.995					
		(LL)	0.148	0.208	0.335	0.843	1.043	1.477					
F567	A → Y0	(HL)	0.084	0.116	0.183	0.422	0.522	0.739		A	0.006	Y0	0.414
		(LH)	0.115	0.163	0.267	0.488	0.643	1.005		B	0.007	Y1	0.414
	A → Y1	(HH)	0.149	0.206	0.332	0.488	0.643	1.005		C	0.007	Y2	0.414
		(LL)	0.134	0.188	0.303	0.422	0.522	0.739				Y3	0.414
	A → Y2	(HL)	0.085	0.117	0.185	0.423	0.523	0.740				Y4	0.414
		(LH)	0.117	0.165	0.271	0.489	0.644	1.006				Y5	0.414
	A → Y3	(HH)	0.150	0.208	0.334	0.489	0.644	1.006				Y6	0.414
		(LL)	0.135	0.189	0.305	0.423	0.522	0.740				Y7	0.414

Block type	Switching speed									Input		Output	
	Path		t_{LD0} [ns]			t_1 (ns/pF)							
	IN → OUT		MIN.	TYP.	MAX.	MIN.	TYP.	MAX.		Symbol	Cin(pF)	Symbol	Cmax(pF)
	A → Y4	(HL)	0.085	0.116	0.183	0.422	0.522	0.739					
		(LH)	0.116	0.164	0.269	0.488	0.643	1.005					
	A → Y5	(HH)	0.149	0.207	0.333	0.488	0.643	1.005					
		(LL)	0.135	0.189	0.304	0.422	0.522	0.739					
	A → Y6	(HL)	0.085	0.117	0.184	0.423	0.522	0.739					
		(LH)	0.117	0.165	0.270	0.488	0.643	1.005					
	A → Y7	(HH)	0.149	0.207	0.334	0.488	0.643	1.005					
		(LL)	0.135	0.189	0.304	0.423	0.522	0.739					
	B → Y0	(HL)	0.093	0.129	0.203	0.423	0.523	0.740					
		(LH)	0.124	0.176	0.289	0.489	0.644	1.006					
	B → Y1	(HL)	0.094	0.129	0.204	0.423	0.523	0.740					
		(LH)	0.125	0.177	0.290	0.489	0.644	1.006					
	B → Y2	(HH)	0.160	0.223	0.360	0.489	0.644	1.006					
		(LL)	0.150	0.210	0.339	0.423	0.523	0.741					
	B → Y3	(HH)	0.161	0.223	0.361	0.489	0.644	1.006					
		(LL)	0.150	0.211	0.339	0.423	0.523	0.741					
	B → Y4	(HL)	0.094	0.129	0.204	0.422	0.522	0.740					
		(LH)	0.124	0.176	0.290	0.488	0.644	1.005					
	B → Y5	(HL)	0.095	0.130	0.206	0.423	0.523	0.741					
		(LH)	0.125	0.178	0.292	0.488	0.644	1.005					
	B → Y6	(HH)	0.159	0.222	0.358	0.488	0.643	1.005					
		(LL)	0.149	0.210	0.337	0.423	0.523	0.741					
	B → Y7	(HH)	0.159	0.222	0.359	0.488	0.643	1.005					
		(LL)	0.149	0.210	0.338	0.423	0.523	0.741					
	C → Y0	(HL)	0.100	0.138	0.218	0.424	0.525	0.745					
		(LH)	0.126	0.180	0.300	0.489	0.644	1.006					
	C → Y1	(HL)	0.100	0.138	0.218	0.424	0.525	0.745					
		(LH)	0.126	0.181	0.301	0.489	0.644	1.007					
	C → Y2	(HL)	0.101	0.139	0.220	0.424	0.525	0.745					
		(LH)	0.127	0.181	0.302	0.489	0.645	1.007					
	C → Y3	(HL)	0.102	0.140	0.221	0.424	0.525	0.745					
		(LH)	0.128	0.183	0.304	0.489	0.645	1.007					
	C → Y4	(HH)	0.168	0.236	0.383	0.489	0.644	1.005					
		(LL)	0.162	0.227	0.366	0.423	0.524	0.744					
	C → Y5	(HH)	0.169	0.236	0.385	0.489	0.644	1.006					
		(LL)	0.163	0.228	0.367	0.423	0.524	0.744					
	C → Y6	(HH)	0.169	0.237	0.385	0.489	0.644	1.006					
		(LL)	0.163	0.228	0.366	0.424	0.525	0.744					
	C → Y7	(HH)	0.169	0.237	0.386	0.489	0.644	1.006					
		(LL)	0.163	0.228	0.367	0.424	0.525	0.744					
L568	A → Y0B	(HH)	0.054	0.072	0.111	0.967	1.271	1.981	A	0.006	Y0B	0.131
		(LL)	0.074	0.104	0.168	1.740	2.262	3.461	B	0.007	Y1B	0.131
	A → Y1B	(HL)	0.104	0.143	0.226	1.737	2.258	3.454	C	0.007	Y2B	0.131
		(LH)	0.099	0.138	0.222	0.964	1.267	1.974			Y3B	0.131
	A → Y2B	(HH)	0.054	0.072	0.111	0.967	1.271	1.981			Y4B	0.131
		(LL)	0.075	0.104	0.168	1.740	2.262	3.461			Y5B	0.131
	A → Y3B	(HL)	0.105	0.144	0.228	1.737	2.258	3.455			Y6B	0.131
		(LH)	0.100	0.139	0.223	0.964	1.267	1.974			Y7B	0.131
	A → Y4B	(HH)	0.054	0.072	0.112	0.967	1.271	1.981				
		(LL)	0.075	0.105	0.169	1.741	2.264	3.464				
	A → Y5B	(HL)	0.105	0.144	0.228	1.739	2.260	3.457				
		(LH)	0.100	0.139	0.223	0.964	1.267	1.974				
	A → Y6B	(HH)	0.054	0.072	0.112	0.968	1.272	1.981				
		(LL)	0.075	0.105	0.170	1.742	2.264	3.463				
	A → Y7B	(HL)	0.106	0.145	0.229	1.739	2.260	3.457				
		(LH)	0.100	0.140	0.224	0.964	1.267	1.973				

Block type	Switching speed									Input		Output	
	Path		t_{LD0} [ns]			t_1 (ns/pF)							
	IN → OUT		MIN.	TYP.	MAX.	MIN.	TYP.	MAX.		Symbol	Cin(pF)	Symbol	Cmax(pF)
	B → Y0B	(HH)	0.059	0.080	0.124	0.967	1.271	1.981					
		(LL)	0.080	0.113	0.182	1.741	2.264	3.464					
	B → Y1B	(HH)	0.059	0.079	0.124	0.967	1.271	1.980					
		(LL)	0.080	0.112	0.182	1.740	2.263	3.462					
	B → Y2B	(HL)	0.110	0.152	0.243	1.738	2.259	3.456					
		(LH)	0.108	0.151	0.243	0.963	1.266	1.974					
	B → Y3B	(HL)	0.111	0.153	0.244	1.739	2.260	3.457					
		(LH)	0.109	0.152	0.244	0.964	1.267	1.975					
	B → Y4B	(HH)	0.059	0.080	0.124	0.967	1.271	1.980					
		(LL)	0.080	0.113	0.183	1.742	2.265	3.464					
	B → Y5B	(HH)	0.059	0.080	0.124	0.967	1.271	1.980					
		(LL)	0.080	0.113	0.183	1.743	2.265	3.465					
	B → Y6B	(HL)	0.111	0.153	0.244	1.740	2.261	3.459					
		(LH)	0.109	0.152	0.244	0.963	1.266	1.974					
	B → Y7B	(HL)	0.112	0.154	0.246	1.740	2.261	3.458					
		(LH)	0.109	0.152	0.245	0.963	1.266	1.974					
	C → Y0B	(HH)	0.064	0.087	0.136	0.968	1.274	1.988					
		(LL)	0.082	0.117	0.193	1.739	2.261	3.460					
	C → Y1B	(HH)	0.064	0.087	0.136	0.969	1.274	1.988					
		(LL)	0.082	0.117	0.193	1.739	2.261	3.460					
	C → Y2B	(HH)	0.064	0.087	0.136	0.968	1.274	1.988					
		(LL)	0.081	0.117	0.193	1.739	2.261	3.459					
	C → Y3B	(HH)	0.065	0.087	0.136	0.969	1.274	1.988					
		(LL)	0.082	0.118	0.194	1.739	2.261	3.459					
	C → Y4B	(HL)	0.119	0.166	0.267	1.741	2.262	3.460					
		(LH)	0.118	0.165	0.266	0.966	1.271	1.983					
	C → Y5B	(HL)	0.119	0.166	0.267	1.740	2.262	3.459					
		(LH)	0.119	0.166	0.266	0.966	1.271	1.982					
	C → Y6B	(HL)	0.119	0.166	0.267	1.741	2.263	3.461					
		(LH)	0.119	0.166	0.266	0.966	1.271	1.983					
	C → Y7B	(HL)	0.120	0.167	0.269	1.739	2.260	3.457					
		(LH)	0.119	0.166	0.267	0.965	1.270	1.981					
F568	A → Y0B	(HH)	0.126	0.172	0.272	0.482	0.634	0.988	A	0.007	Y0B	0.417
		(LL)	0.186	0.269	0.441	0.445	0.562	0.812	B	0.006	Y1B	0.418
	A → Y1B	(HL)	0.134	0.194	0.317	0.445	0.561	0.811	C	0.007	Y2B	0.417
		(LH)	0.093	0.130	0.209	0.482	0.634	0.989			Y3B	0.417
	A → Y2B	(HH)	0.125	0.172	0.272	0.482	0.634	0.988			Y4B	0.418
		(LL)	0.185	0.268	0.440	0.444	0.561	0.811			Y5B	0.418
	A → Y3B	(HL)	0.133	0.192	0.314	0.444	0.561	0.811			Y6B	0.418
		(LH)	0.093	0.129	0.209	0.482	0.634	0.989			Y7B	0.418
	A → Y4B	(HH)	0.125	0.172	0.271	0.482	0.634	0.988				
		(LL)	0.186	0.270	0.442	0.446	0.563	0.814				
	A → Y5B	(HL)	0.134	0.194	0.316	0.445	0.562	0.812				
		(LH)	0.093	0.129	0.209	0.482	0.634	0.989				
	A → Y6B	(HH)	0.125	0.171	0.271	0.482	0.634	0.988				
		(LL)	0.185	0.269	0.441	0.446	0.563	0.814				
	A → Y7B	(HL)	0.134	0.194	0.317	0.445	0.562	0.813				
		(LH)	0.092	0.129	0.208	0.482	0.634	0.989				
	B → Y0B	(HH)	0.128	0.176	0.279	0.482	0.634	0.989				
		(LL)	0.193	0.283	0.467	0.445	0.562	0.812				
	B → Y1B	(HH)	0.128	0.176	0.279	0.482	0.634	0.989				
		(LL)	0.193	0.283	0.466	0.445	0.561	0.811				
	B → Y2B	(HL)	0.143	0.210	0.345	0.444	0.561	0.811				
		(LH)	0.094	0.132	0.213	0.482	0.635	0.989				
	B → Y3B	(HL)	0.143	0.210	0.345	0.444	0.561	0.811				
		(LH)	0.093	0.131	0.212	0.482	0.635	0.990				

Block type	Switching speed									Input		Output	
	Path		t_{LD0} [ns]			t_1 (ns/pF)							
	IN → OUT		MIN.	TYP.	MAX.	MIN.	TYP.	MAX.		Symbol	Cin(pF)	Symbol	Cmax(pF)
	B → Y4B	(HH)	0.128	0.176	0.279	0.483	0.635	0.990					
		(LL)	0.194	0.285	0.469	0.446	0.563	0.814					
	B → Y5B	(HH)	0.128	0.176	0.279	0.483	0.635	0.990					
		(LL)	0.193	0.284	0.468	0.445	0.562	0.813					
	B → Y6B	(HL)	0.144	0.212	0.348	0.446	0.563	0.814					
		(LH)	0.094	0.132	0.213	0.482	0.635	0.990					
	B → Y7B	(HL)	0.143	0.211	0.347	0.445	0.562	0.813					
		(LH)	0.094	0.131	0.213	0.482	0.635	0.990					
	C → Y0B	(HH)	0.147	0.202	0.320	0.483	0.637	0.993					
		(LL)	0.217	0.319	0.524	0.445	0.562	0.813					
	C → Y1B	(HH)	0.147	0.202	0.320	0.483	0.636	0.993					
		(LL)	0.216	0.317	0.523	0.445	0.561	0.812					
	C → Y2B	(HH)	0.147	0.201	0.319	0.483	0.637	0.993					
		(LL)	0.217	0.318	0.524	0.444	0.561	0.812					
	C → Y3B	(HH)	0.146	0.201	0.319	0.484	0.637	0.993					
		(LL)	0.216	0.318	0.523	0.445	0.561	0.811					
	C → Y4B	(HL)	0.160	0.236	0.388	0.445	0.562	0.814					
		(LH)	0.106	0.149	0.240	0.484	0.637	0.994					
	C → Y5B	(HL)	0.159	0.234	0.385	0.445	0.561	0.812					
		(LH)	0.105	0.148	0.238	0.483	0.636	0.993					
	C → Y6B	(HL)	0.159	0.235	0.386	0.445	0.562	0.813					
		(LH)	0.106	0.149	0.240	0.483	0.637	0.993					
	C → Y7B	(HL)	0.159	0.235	0.386	0.445	0.562	0.813					
		(LH)	0.106	0.148	0.239	0.483	0.637	0.993					
L982	A → Y0B	(HH)	0.055	0.073	0.113	0.967	1.272	1.981	A	0.006	Y0B	0.130	
		(LL)	0.076	0.106	0.170	1.740	2.262	3.461	B	0.007	Y1B	0.129	
	A → Y1B	(HL)	0.105	0.144	0.228	1.737	2.258	3.454	C	0.014	Y2B	0.129	
		(LH)	0.100	0.140	0.225	0.964	1.267	1.974	ENB	0.011	Y3B	0.129	
	A → Y2B	(HH)	0.055	0.073	0.113	0.968	1.272	1.981			Y4B	0.129	
		(LL)	0.076	0.106	0.170	1.740	2.262	3.461			Y5B	0.129	
	A → Y3B	(HL)	0.106	0.145	0.230	1.737	2.258	3.455			Y6B	0.129	
		(LH)	0.101	0.141	0.226	0.964	1.267	1.974			Y7B	0.128	
	A → Y4B	(HH)	0.055	0.073	0.113	0.968	1.272	1.981					
		(LL)	0.076	0.106	0.171	1.742	2.265	3.464					
	A → Y5B	(HL)	0.106	0.145	0.230	1.739	2.260	3.457					
		(LH)	0.101	0.140	0.226	0.964	1.267	1.973					
	A → Y6B	(HH)	0.055	0.073	0.114	0.968	1.272	1.982					
		(LL)	0.076	0.107	0.172	1.742	2.264	3.463					
	A → Y7B	(HL)	0.107	0.146	0.231	1.739	2.260	3.456					
		(LH)	0.101	0.141	0.227	0.964	1.267	1.973					
	B → Y0B	(HH)	0.060	0.080	0.125	0.967	1.271	1.981					
		(LL)	0.081	0.114	0.184	1.741	2.264	3.464					
	B → Y1B	(HH)	0.060	0.080	0.125	0.967	1.271	1.981					
		(LL)	0.081	0.113	0.183	1.740	2.263	3.462					
	B → Y2B	(HL)	0.111	0.153	0.244	1.738	2.259	3.456					
		(LH)	0.109	0.152	0.245	0.963	1.266	1.973					
	B → Y3B	(HL)	0.111	0.154	0.245	1.738	2.259	3.456					
		(LH)	0.109	0.153	0.246	0.964	1.267	1.975					
	B → Y4B	(HH)	0.060	0.080	0.126	0.967	1.271	1.981					
		(LL)	0.081	0.114	0.184	1.742	2.265	3.464					
	B → Y5B	(HH)	0.060	0.081	0.126	0.967	1.271	1.981					
		(LL)	0.081	0.114	0.184	1.743	2.265	3.465					
	B → Y6B	(HL)	0.112	0.154	0.245	1.740	2.261	3.458					
		(LH)	0.109	0.153	0.246	0.963	1.266	1.974					
	B → Y7B	(HL)	0.112	0.155	0.247	1.740	2.261	3.457					
		(LH)	0.110	0.153	0.247	0.963	1.266	1.974					

Block type	Switching speed									Input		Output	
	Path		t_{LD0} [ns]			t_1 (ns/pF)							
	IN → OUT		MIN.	TYP.	MAX.	MIN.	TYP.	MAX.		Symbol	Cin(pF)	Symbol	Cmax(pF)
	C → Y0B	(HH)	0.061	0.082	0.128	0.966	1.271	1.983					
		(LL)	0.114	0.172	0.291	1.744	2.271	3.481					
	C → Y1B	(HH)	0.060	0.081	0.127	0.967	1.272	1.984					
		(LL)	0.114	0.172	0.290	1.744	2.272	3.483					
	C → Y2B	(HH)	0.060	0.082	0.128	0.966	1.271	1.983					
		(LL)	0.114	0.172	0.291	1.743	2.271	3.481					
	C → Y3B	(HH)	0.061	0.082	0.128	0.967	1.272	1.984					
		(LL)	0.114	0.172	0.291	1.745	2.273	3.484					
	C → Y4B	(HL)	0.131	0.194	0.324	1.747	2.276	3.487					
		(LH)	0.081	0.111	0.178	0.966	1.271	1.983					
	C → Y5B	(HL)	0.132	0.195	0.326	1.746	2.274	3.484					
		(LH)	0.081	0.112	0.179	0.966	1.271	1.983					
	C → Y6B	(HL)	0.131	0.195	0.324	1.747	2.276	3.487					
		(LH)	0.081	0.112	0.179	0.966	1.271	1.983					
	C → Y7B	(HL)	0.132	0.196	0.327	1.744	2.272	3.481					
		(LH)	0.081	0.112	0.179	0.966	1.270	1.982					
	ENB → Y0B	(HH)	0.063	0.086	0.135	0.967	1.272	1.985					
		(LL)	0.118	0.178	0.299	1.746	2.275	3.488					
	ENB → Y1B	(HH)	0.063	0.086	0.134	0.967	1.272	1.985					
		(LL)	0.117	0.177	0.297	1.746	2.275	3.488					
	ENB → Y2B	(HH)	0.063	0.086	0.135	0.967	1.272	1.985					
		(LL)	0.118	0.178	0.299	1.746	2.275	3.487					
	ENB → Y3B	(HH)	0.063	0.086	0.135	0.967	1.272	1.985					
		(LL)	0.118	0.178	0.299	1.746	2.276	3.488					
	ENB → Y4B	(HH)	0.065	0.088	0.138	0.967	1.272	1.985					
		(LL)	0.122	0.183	0.308	1.749	2.279	3.493					
	ENB → Y5B	(HH)	0.065	0.088	0.138	0.967	1.272	1.985					
		(LL)	0.122	0.184	0.308	1.749	2.279	3.493					
	ENB → Y6B	(HH)	0.065	0.088	0.138	0.967	1.272	1.985					
		(LL)	0.122	0.183	0.308	1.749	2.279	3.493					
	ENB → Y7B	(HH)	0.066	0.089	0.139	0.967	1.272	1.985					
		(LL)	0.123	0.185	0.310	1.749	2.279	3.493					
F982	A → Y0B	(HH)	0.126	0.173	0.274	0.482	0.634	0.988	A	0.007	Y0B	0.417	
		(LL)	0.187	0.271	0.444	0.445	0.562	0.812	B	0.006	Y1B	0.418	
	A → Y1B	(HL)	0.135	0.195	0.319	0.445	0.562	0.812	C	0.013	Y2B	0.417	
		(LH)	0.094	0.131	0.212	0.482	0.634	0.989	ENB	0.007	Y3B	0.417	
	A → Y2B	(HH)	0.126	0.173	0.274	0.482	0.634	0.988			Y4B	0.418	
		(LL)	0.186	0.270	0.443	0.444	0.561	0.811			Y5B	0.418	
	A → Y3B	(HL)	0.134	0.193	0.316	0.444	0.561	0.811			Y6B	0.418	
		(LH)	0.094	0.131	0.211	0.482	0.634	0.989			Y7B	0.418	
	A → Y4B	(HH)	0.126	0.173	0.273	0.482	0.634	0.988					
		(LL)	0.187	0.271	0.445	0.446	0.563	0.814					
	A → Y5B	(HL)	0.134	0.194	0.318	0.445	0.561	0.812					
		(LH)	0.094	0.131	0.211	0.482	0.634	0.989					
	A → Y6B	(HH)	0.126	0.173	0.273	0.482	0.634	0.988					
		(LL)	0.186	0.270	0.443	0.446	0.563	0.814					
	A → Y7B	(HL)	0.135	0.195	0.319	0.445	0.562	0.813					
		(LH)	0.094	0.131	0.211	0.482	0.634	0.989					
	B → Y0B	(HH)	0.129	0.177	0.281	0.482	0.634	0.989					
		(LL)	0.194	0.285	0.470	0.445	0.562	0.812					
	B → Y1B	(HH)	0.129	0.177	0.281	0.482	0.634	0.989					
		(LL)	0.194	0.285	0.469	0.445	0.561	0.812					
	B → Y2B	(HL)	0.144	0.211	0.347	0.444	0.561	0.811					
		(LH)	0.095	0.133	0.216	0.482	0.635	0.989					
	B → Y3B	(HL)	0.144	0.211	0.347	0.444	0.561	0.811					
		(LH)	0.095	0.133	0.216	0.482	0.635	0.990					

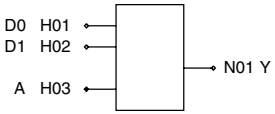
Block type	Switching speed								Input		Output	
	Path		t_{LD0} [ns]			t_1 (ns/pF)						
	IN → OUT		MIN.	TYP.	MAX.	MIN.	TYP.	MAX.	Symbol	Cin(pF)	Symbol	Cmax(pF)
	B → Y4B	(HH)	0.129	0.177	0.281	0.482	0.635	0.990				
		(LL)	0.195	0.286	0.472	0.446	0.563	0.814				
	B → Y5B	(HH)	0.129	0.177	0.281	0.483	0.635	0.990				
		(LL)	0.194	0.285	0.470	0.445	0.562	0.812				
	B → Y6B	(HL)	0.145	0.213	0.350	0.446	0.563	0.814				
		(LH)	0.095	0.134	0.216	0.482	0.635	0.990				
	B → Y7B	(HL)	0.144	0.212	0.349	0.445	0.562	0.813				
		(LH)	0.095	0.133	0.216	0.482	0.635	0.990				
	C → Y0B	(HH)	0.117	0.163	0.261	0.484	0.637	0.993				
		(LL)	0.194	0.287	0.477	0.445	0.562	0.813				
	C → Y1B	(HH)	0.117	0.163	0.262	0.483	0.636	0.993				
		(LL)	0.194	0.286	0.476	0.445	0.562	0.812				
	C → Y2B	(HH)	0.116	0.162	0.261	0.484	0.637	0.994				
		(LL)	0.194	0.287	0.476	0.445	0.561	0.812				
	C → Y3B	(HH)	0.116	0.162	0.261	0.484	0.637	0.994				
		(LL)	0.194	0.286	0.476	0.445	0.561	0.812				
	C → Y4B	(HL)	0.177	0.262	0.434	0.446	0.563	0.814				
		(LH)	0.102	0.143	0.231	0.484	0.637	0.994				
	C → Y5B	(HL)	0.175	0.259	0.430	0.445	0.562	0.813				
		(LH)	0.101	0.142	0.229	0.483	0.636	0.993				
	C → Y6B	(HL)	0.176	0.260	0.432	0.446	0.563	0.814				
		(LH)	0.102	0.143	0.230	0.484	0.637	0.993				
	C → Y7B	(HL)	0.176	0.260	0.431	0.445	0.563	0.814				
		(LH)	0.102	0.142	0.230	0.484	0.637	0.993				
	ENB → Y0B	(HH)	0.126	0.176	0.282	0.483	0.636	0.993				
		(LL)	0.205	0.303	0.502	0.445	0.562	0.813				
	ENB → Y1B	(HH)	0.126	0.176	0.283	0.483	0.636	0.993				
		(LL)	0.205	0.302	0.501	0.445	0.562	0.812				
	ENB → Y2B	(HH)	0.126	0.176	0.282	0.483	0.636	0.993				
		(LL)	0.205	0.302	0.502	0.444	0.561	0.812				
	ENB → Y3B	(HH)	0.126	0.176	0.283	0.483	0.636	0.993				
		(LL)	0.205	0.302	0.501	0.445	0.561	0.811				
	ENB → Y4B	(HH)	0.127	0.177	0.284	0.483	0.637	0.993				
		(LL)	0.206	0.304	0.504	0.446	0.563	0.814				
	ENB → Y5B	(HH)	0.126	0.176	0.282	0.483	0.636	0.993				
		(LL)	0.204	0.301	0.499	0.445	0.562	0.813				
	ENB → Y6B	(HH)	0.127	0.177	0.284	0.483	0.637	0.993				
		(LL)	0.206	0.304	0.504	0.446	0.563	0.814				
	ENB → Y7B	(HH)	0.127	0.177	0.283	0.483	0.636	0.993				
		(LL)	0.205	0.303	0.503	0.445	0.562	0.814				

[MEMO]

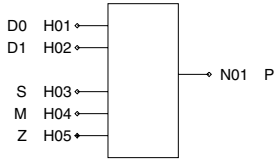
Function	2 to 1 Multiplexer (Positive Out)											
Block type	Standard type						High-speed type					
	Normal		with Booth Function		with ENB		Normal		with Booth Function		with ENB	
Drivability	Name	cells	Name	cells	Name	cells	Name	cells	Name	cells	Name	cells
	L565	3	L57D	7	L571	4						
x2	F565	4	F57D	10	F571	6						
x4	F565NP	6			F571NP	8						
x8												

Logic Diagram

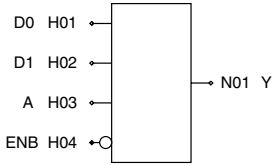
for "Standard type"



for "Standard type with Booth Function"



for "Standard type with ENB"



for "High-speed typee"

for "High-speed type with Booth Function"

for "High-speed type with ENB"

Truth Table

D0	D1	A	ENB	Y
X	X	X	1	0
A	X	0	0	A
X	B	1	0	B

X:Irrelevant

D0	D1	S	M	Z	P
A	X	0	1	0	A
X	B	1	1	0	B
C	X	0	0	1	CB
X	D	1	0	1	DB
X	X	X	0	0	1
X	X	X	1	1	0

X:Irrelevant

F57D and L57D

Block type	Switching speed									Input		Output	
	Path			t LD0 [ns]			t 1 (ns/pF)						
	IN → OUT			MIN.	TYP.	MAX.	MIN.	TYP.	MAX.	Symbol	Cin(pF)	Symbol	Cmax(pF)
L565	D0 → Y	(HH)		0.047	0.065	0.105	0.966	1.270	1.980	D0	0.007	Y	0.208
		(LL)		0.056	0.083	0.139	0.852	1.057	1.503	D1	0.006		
	D1 → Y	(HH)		0.044	0.061	0.098	0.966	1.270	1.979	A	0.013		
		(LL)		0.054	0.080	0.135	0.852	1.056	1.500				
	A → Y	(HH)		0.032	0.045	0.073	0.966	1.269	1.978				
		(HL)		0.047	0.069	0.115	0.852	1.056	1.500				
		(LH)		0.046	0.065	0.107	0.966	1.270	1.980				
		(LL)		0.043	0.064	0.108	0.851	1.055	1.499				
F565	D0 → Y	(HH)		0.055	0.076	0.123	0.485	0.637	0.994	D0	0.007	Y	0.416
		(LL)		0.066	0.098	0.165	0.432	0.538	0.767	D1	0.006		
	D1 → Y	(HH)		0.052	0.072	0.116	0.484	0.637	0.993	A	0.014		
		(LL)		0.065	0.096	0.161	0.431	0.537	0.766				
	A → Y	(HH)		0.040	0.056	0.092	0.485	0.637	0.993				
		(HL)		0.057	0.084	0.140	0.431	0.537	0.766				
		(LH)		0.053	0.076	0.124	0.484	0.637	0.993				
		(LL)		0.054	0.081	0.137	0.431	0.537	0.766				
F565NP	D0 → Y	(HH)		0.054	0.075	0.121	0.243	0.319	0.499	D0	0.012	Y	0.836
		(LL)		0.064	0.095	0.160	0.217	0.271	0.388	D1	0.013		
	D1 → Y	(HH)		0.055	0.076	0.121	0.243	0.319	0.499	A	0.014		
		(LL)		0.066	0.099	0.166	0.217	0.271	0.388				
	A → Y	(HH)		0.048	0.066	0.104	0.243	0.320	0.499				
		(HL)		0.062	0.091	0.151	0.217	0.271	0.388				
		(LH)		0.058	0.083	0.134	0.243	0.319	0.498				
		(LL)		0.061	0.091	0.153	0.217	0.271	0.388				
L57D	D0 → P	(HH)		0.082	0.117	0.192	0.903	1.289	2.070	D0	0.007	P	0.172
		(HL)		0.099	0.138	0.223	0.650	0.828	1.233	D1	0.007		
		(LH)		0.100	0.146	0.244	0.896	1.279	2.052	S	0.013		
		(LL)		0.088	0.130	0.218	0.672	0.863	1.295	M	0.013		
	D1 → P	(HH)		0.083	0.119	0.195	0.903	1.289	2.071	Z	0.013		
		(HL)		0.101	0.140	0.225	0.650	0.828	1.233				
		(LH)		0.102	0.150	0.251	0.896	1.279	2.052				
		(LL)		0.091	0.134	0.226	0.672	0.864	1.297				
	S → P	(HH)		0.070	0.135	0.225	0.896	1.289	2.070				
		(HL)		0.076	0.128	0.206	0.650	0.863	1.296				
		(LH)		0.080	0.134	0.226	0.896	1.289	2.071				
		(LL)		0.075	0.144	0.234	0.650	0.862	1.295				
	M → P	(HL)		0.018	0.028	0.044	0.522	0.832	1.239				
		(LH)		0.029	0.042	0.069	0.899	1.282	2.055				
	Z → P	(HL)		0.025	0.042	0.066	0.500	0.832	1.239				
		(LH)		0.044	0.071	0.119	0.901	1.288	2.068				
F57D	D0 → P	(HH)		0.078	0.111	0.183	0.600	0.857	1.376	D0	0.013	P	0.257
		(HL)		0.106	0.149	0.239	0.433	0.552	0.822	D1	0.012		
		(LH)		0.101	0.147	0.244	0.597	0.853	1.368	S	0.013		
		(LL)		0.079	0.118	0.199	0.442	0.565	0.845	M	0.019		
	D1 → P	(HH)		0.075	0.108	0.177	0.600	0.857	1.376	Z	0.019		
		(HL)		0.104	0.145	0.233	0.433	0.552	0.822				
		(LH)		0.101	0.147	0.244	0.597	0.853	1.368				
		(LL)		0.080	0.118	0.199	0.442	0.565	0.845				
	S → P	(HH)		0.069	0.142	0.234	0.597	0.857	1.376				
		(HL)		0.073	0.141	0.227	0.433	0.565	0.845				
		(LH)		0.080	0.142	0.235	0.597	0.857	1.376				
		(LL)		0.072	0.159	0.257	0.433	0.565	0.845				
	M → P	(HL)		0.018	0.029	0.045	0.348	0.554	0.825				
		(LH)		0.030	0.044	0.072	0.599	0.855	1.370				
	Z → P	(HL)		0.025	0.044	0.069	0.333	0.554	0.825				
		(LH)		0.045	0.072	0.121	0.600	0.857	1.376				

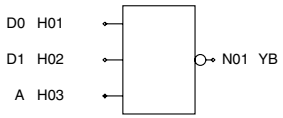
Block type	Switching speed									Input		Output	
	Path		t_{LD0} [ns]			t_1 (ns/pF)							
	IN → OUT		MIN.	TYP.	MAX.	MIN.	TYP.	MAX.		Symbol	Cin(pF)	Symbol	Cmax(pF)
L571	D0 → Y	(HH)	0.050	0.071	0.114	1.356	1.903	3.043		D0	0.006	Y	0.134
		(LL)	0.058	0.085	0.142	0.852	1.056	1.501		D1	0.007		
	D1 → Y	(HH)	0.052	0.073	0.117	1.356	1.903	3.043		A	0.013		
		(LL)	0.061	0.089	0.150	0.853	1.058	1.503		ENB	0.012		
	A → Y	(HH)	0.039	0.055	0.089	1.356	1.902	3.042					
		(HL)	0.052	0.075	0.124	0.853	1.057	1.502					
		(LH)	0.051	0.073	0.120	1.356	1.903	3.043					
		(LL)	0.048	0.071	0.118	0.851	1.055	1.499					
	ENB → Y	(HL)	0.016	0.020	0.030	0.841	1.037	1.463					
		(LH)	0.022	0.031	0.051	1.354	1.899	3.037					
F571	D0 → Y	(HH)	0.065	0.090	0.145	0.527	0.748	1.198		D0	0.006	Y	0.341
		(LL)	0.082	0.121	0.202	0.436	0.544	0.778		D1	0.007		
	D1 → Y	(HH)	0.066	0.092	0.148	0.527	0.748	1.199		A	0.013		
		(LL)	0.085	0.125	0.209	0.436	0.544	0.779		ENB	0.025		
	A → Y	(HH)	0.054	0.075	0.121	0.527	0.748	1.199					
		(HL)	0.074	0.108	0.180	0.436	0.544	0.778					
		(LH)	0.064	0.090	0.148	0.527	0.747	1.198					
		(LL)	0.072	0.109	0.183	0.435	0.544	0.777					
	ENB → Y	(HL)	0.019	0.025	0.036	0.421	0.518	0.731					
		(LH)	0.023	0.034	0.056	0.525	0.745	1.194					
F571NP	D0 → Y	(HH)	0.104	0.147	0.240	0.242	0.319	0.497		D0	0.006	Y	0.840
		(LL)	0.103	0.149	0.247	0.211	0.261	0.369		D1	0.007		
	D1 → Y	(HH)	0.106	0.149	0.243	0.242	0.319	0.497		A	0.013		
		(LL)	0.106	0.153	0.254	0.211	0.261	0.369		ENB	0.007		
	A → Y	(HH)	0.093	0.131	0.214	0.242	0.319	0.497					
		(HL)	0.097	0.139	0.228	0.211	0.261	0.369					
		(LH)	0.105	0.150	0.246	0.242	0.319	0.497					
		(LL)	0.093	0.135	0.223	0.211	0.261	0.369					
	ENB → Y	(HL)	0.063	0.088	0.140	0.211	0.261	0.370					
		(LH)	0.073	0.103	0.168	0.242	0.319	0.497					

[MEMO]

Function	2 to 1 Multiplexer (Negative Out)											
Block type	Standard type						High-speed type					
	Normal		with ENB		with EN		Normal		with ENB		with EN	
Drivability	Name	cells	Name	cells	Name	cells	Name	cells	Name	cells	Name	cells
	L57B	4										
x2	F57B	6										
x4	F57BNP	6										
x8												

Logic Diagram

for "Standard type" for "Standard type with ENB" for "Standard type with EN"



for "High-speed typee" for "High-speed type with ENB" for "High-speed type with EN"

Truth Table

D0	D1	A	ENB	YB
X	X	X	1	1
A	X	0	0	AB
X	B	1	0	BB

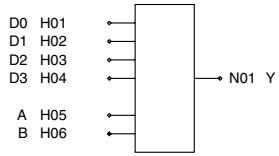
X:Irrelevant

Block type	Switching speed									Input		Output	
	Path			t LD0 [ns]			t 1 (ns/pF)						
	IN → OUT			MIN.	TYP.	MAX.	MIN.	TYP.	MAX.	Symbol	Cin(pF)	Symbol	Cmax(pF)
L57B	D0 → YB		(HL)	0.022	0.030	0.045	0.825	1.064	1.574	D0	0.014	YB	0.150
			(LH)	0.022	0.031	0.051	0.794	1.118	1.840	D1	0.012		
	D1 → YB		(HL)	0.019	0.026	0.040	0.827	1.065	1.575	A	0.013		
			(LH)	0.021	0.030	0.051	0.793	1.119	1.841				
	A → YB		(HH)	0.017	0.023	0.036	0.782	1.104	1.821				
			(HL)	0.013	0.017	0.025	0.830	1.071	1.585				
			(LH)	0.017	0.024	0.040	0.795	1.124	1.856				
			(LL)	0.023	0.033	0.053	0.815	1.049	1.548				
F57B	D0 → YB		(HL)	0.021	0.029	0.044	0.450	0.582	0.866	D0	0.019	YB	0.264
			(LH)	0.021	0.030	0.051	0.452	0.634	1.039	D1	0.020		
	D1 → YB		(HL)	0.022	0.030	0.046	0.449	0.580	0.864	A	0.027		
			(LH)	0.024	0.034	0.057	0.452	0.634	1.039				
	A → YB		(HH)	0.017	0.023	0.037	0.445	0.625	1.026				
			(HL)	0.013	0.017	0.025	0.450	0.583	0.869				
			(LH)	0.016	0.024	0.040	0.452	0.637	1.047				
			(LL)	0.023	0.033	0.053	0.443	0.572	0.850				
F57BNP	D0 → YB		(HL)	0.077	0.109	0.176	0.211	0.260	0.368	D0	0.006	YB	0.843
			(LH)	0.082	0.120	0.201	0.241	0.317	0.494	D1	0.007		
	D1 → YB		(HL)	0.079	0.111	0.179	0.211	0.260	0.368	A	0.013		
			(LH)	0.085	0.124	0.208	0.241	0.317	0.494				
	A → YB		(HH)	0.075	0.109	0.181	0.241	0.317	0.494				
			(HL)	0.066	0.093	0.151	0.211	0.260	0.368				
			(LH)	0.072	0.107	0.180	0.241	0.317	0.494				
			(LL)	0.078	0.111	0.181	0.211	0.260	0.368				

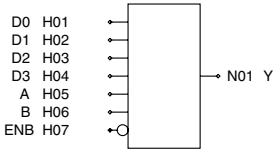
Function	4 to 1 Multiplexer (Positive Out)											
Block type	Standard type						High-speed type					
	Normal		with ENB		with EN		Normal		with ENB		with EN	
Drivability	Name	cells	Name	cells	Name	cells	Name	cells	Name	cells	Name	cells
	L564	7	L570	8								
x2	F564	9	F570	9								
x4	F564NP	14	F570NP	14								
x8												

Logic Diagram

for "Standard type"



for "Standard type with ENB"



for "Standard type with EN"

for "High-speed typee"

for "High-speed type with ENB"

for "High-speed type with EN"

Truth Table

D0	D1	D2	D3	A	B	ENB	Y
X	X	X	X	X	X	1	0
A	X	X	X	0	0	0	A
X	B	X	X	1	0	0	B
X	X	C	X	0	1	0	C
X	X	X	D	1	1	0	D

X:Irrelevant

Block type	Switching speed									Input		Output	
	Path		t LD0 [ns]			t 1 (ns/pF)							
	IN → OUT		MIN.	TYP.	MAX.	MIN.	TYP.	MAX.		Symbol	Cin(pF)	Symbol	Cmax(pF)
L564	D0 → Y	(HH)	0.076	0.108	0.178	0.975	1.283	2.002		D0	0.006	Y	0.206
		(LL)	0.090	0.138	0.239	0.889	1.119	1.612		D1	0.006		
	D1 → Y	(HH)	0.077	0.110	0.181	0.975	1.283	2.003		D2	0.007		
		(LL)	0.094	0.144	0.248	0.890	1.121	1.615		D3	0.007		
	D2 → Y	(HH)	0.075	0.107	0.177	0.975	1.283	2.002		A	0.021		
		(LL)	0.091	0.139	0.240	0.888	1.118	1.610		B	0.013		
	D3 → Y	(HH)	0.077	0.109	0.180	0.975	1.283	2.002					
		(LL)	0.094	0.143	0.248	0.889	1.119	1.612					
	A → Y	(HH)	0.064	0.095	0.158	0.975	1.284	2.004					
		(HL)	0.085	0.133	0.229	0.889	1.121	1.615					
		(LH)	0.080	0.118	0.197	0.974	1.283	2.002					
		(LL)	0.082	0.138	0.238	0.887	1.118	1.611					
	B → Y	(HH)	0.039	0.055	0.091	0.974	1.282	2.000					
		(HL)	0.057	0.086	0.146	0.885	1.113	1.603					
		(LH)	0.053	0.077	0.128	0.975	1.283	2.002					
		(LL)	0.051	0.078	0.133	0.881	1.107	1.595					
F564	D0 → Y	(HH)	0.069	0.099	0.162	0.488	0.642	1.003		D0	0.012	Y	0.417
		(LL)	0.080	0.123	0.214	0.444	0.558	0.803		D1	0.012		
	D1 → Y	(HH)	0.069	0.098	0.162	0.488	0.642	1.003		D2	0.013		
		(LL)	0.083	0.127	0.221	0.444	0.559	0.804		D3	0.014		
	D2 → Y	(HH)	0.070	0.099	0.162	0.488	0.642	1.003		A	0.022		
		(LL)	0.082	0.126	0.218	0.444	0.558	0.803		B	0.013		
	D3 → Y	(HH)	0.070	0.099	0.162	0.488	0.642	1.002					
		(LL)	0.085	0.129	0.224	0.444	0.559	0.804					
	A → Y	(HH)	0.062	0.091	0.149	0.488	0.642	1.003					
		(HL)	0.082	0.126	0.214	0.444	0.558	0.804					
		(LH)	0.079	0.118	0.195	0.487	0.642	1.003					
		(LL)	0.079	0.131	0.225	0.443	0.558	0.803					
	B → Y	(HH)	0.042	0.059	0.097	0.488	0.642	1.003					
		(HL)	0.061	0.091	0.155	0.443	0.558	0.802					
		(LH)	0.055	0.079	0.130	0.488	0.642	1.003					
		(LL)	0.057	0.088	0.150	0.442	0.556	0.800					
F564NP	D0 → Y	(HH)	0.075	0.107	0.175	0.244	0.322	0.502		D0	0.018	Y	0.831
		(LL)	0.087	0.133	0.230	0.222	0.280	0.402		D1	0.018		
	D1 → Y	(HH)	0.073	0.103	0.168	0.244	0.321	0.502		D2	0.019		
		(LL)	0.088	0.135	0.232	0.222	0.279	0.402		D3	0.020		
	D2 → Y	(HH)	0.074	0.105	0.172	0.244	0.322	0.502		A	0.036		
		(LL)	0.089	0.136	0.233	0.222	0.280	0.403		B	0.013		
	D3 → Y	(HH)	0.075	0.106	0.172	0.244	0.322	0.502					
		(LL)	0.093	0.141	0.242	0.222	0.280	0.403					
	A → Y	(HH)	0.065	0.094	0.153	0.244	0.322	0.502					
		(HL)	0.094	0.147	0.247	0.222	0.280	0.403					
		(LH)	0.093	0.144	0.237	0.244	0.322	0.502					
		(LL)	0.081	0.135	0.231	0.222	0.280	0.403					
	B → Y	(HH)	0.051	0.070	0.113	0.244	0.322	0.502					
		(HL)	0.066	0.099	0.168	0.222	0.280	0.402					
		(LH)	0.061	0.087	0.143	0.244	0.321	0.502					
		(LL)	0.065	0.099	0.169	0.222	0.279	0.401					
L570	D0 → Y	(HH)	0.093	0.132	0.217	0.910	1.298	2.081		D0	0.006	Y	0.193
		(LL)	0.100	0.153	0.265	0.502	0.649	0.954		D1	0.006		
	D1 → Y	(HH)	0.094	0.134	0.220	0.910	1.298	2.082		D2	0.007		
		(LL)	0.104	0.158	0.274	0.502	0.649	0.956		D3	0.007		
	D2 → Y	(HH)	0.093	0.131	0.216	0.910	1.298	2.081		A	0.021		
		(LL)	0.101	0.154	0.266	0.501	0.647	0.952		B	0.013		
	D3 → Y	(HH)	0.094	0.133	0.218	0.910	1.297	2.081		ENB	0.012		
		(LL)	0.104	0.158	0.274	0.502	0.649	0.954					

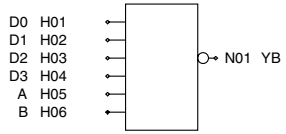
Block type	Switching speed									Input		Output	
	Path		t_{LD0} [ns]			t_1 (ns/pF)							
	IN → OUT		MIN.	TYP.	MAX.	MIN.	TYP.	MAX.		Symbol	Cin(pF)	Symbol	Cmax(pF)
	A → Y	(HH)	0.081	0.119	0.197	0.910	1.299	2.083					
		(HL)	0.094	0.147	0.253	0.501	0.649	0.955					
		(LH)	0.097	0.142	0.235	0.909	1.297	2.081					
		(LL)	0.093	0.154	0.266	0.500	0.648	0.953					
	B → Y	(HH)	0.056	0.080	0.131	0.913	1.300	2.085					
		(HL)	0.068	0.102	0.174	0.498	0.644	0.947					
		(LH)	0.069	0.100	0.164	0.911	1.299	2.083					
		(LL)	0.063	0.097	0.167	0.494	0.638	0.941					
	ENB → Y	(HL)	0.023	0.031	0.045	0.841	1.036	1.462					
		(LH)	0.025	0.037	0.060	0.902	1.286	2.062					
F570	D0 → Y	(HH)	0.125	0.178	0.294	0.484	0.637	0.994		D0	0.006	Y	0.420
		(LL)	0.127	0.190	0.326	0.422	0.521	0.737		D1	0.006		
	D1 → Y	(HH)	0.127	0.180	0.297	0.484	0.637	0.994		D2	0.007		
		(LL)	0.131	0.196	0.336	0.422	0.521	0.737		D3	0.007		
	D2 → Y	(HH)	0.125	0.177	0.292	0.484	0.637	0.994		A	0.021		
		(LL)	0.128	0.191	0.327	0.422	0.521	0.737		B	0.013		
	D3 → Y	(HH)	0.126	0.179	0.295	0.484	0.637	0.994		ENB	0.006		
		(LL)	0.131	0.196	0.335	0.422	0.521	0.737					
	A → Y	(HH)	0.113	0.165	0.273	0.484	0.637	0.994					
		(HL)	0.122	0.186	0.316	0.422	0.521	0.737					
		(LH)	0.129	0.189	0.313	0.484	0.637	0.994					
		(LL)	0.119	0.190	0.325	0.422	0.521	0.737					
	B → Y	(HH)	0.088	0.125	0.206	0.484	0.637	0.994					
		(HL)	0.094	0.139	0.234	0.422	0.521	0.737					
		(LH)	0.103	0.147	0.243	0.484	0.637	0.994					
		(LL)	0.089	0.131	0.222	0.422	0.521	0.737					
	ENB → Y	(HL)	0.056	0.078	0.126	0.422	0.522	0.738					
		(LH)	0.063	0.089	0.147	0.484	0.637	0.994					
F570NP	D0 → Y	(HH)	0.124	0.176	0.291	0.242	0.319	0.497		D0	0.012	Y	0.840
		(LL)	0.125	0.186	0.318	0.211	0.261	0.369		D1	0.012		
	D1 → Y	(HH)	0.124	0.176	0.290	0.242	0.319	0.497		D2	0.013		
		(LL)	0.127	0.190	0.325	0.211	0.261	0.369		D3	0.014		
	D2 → Y	(HH)	0.124	0.176	0.290	0.242	0.319	0.497		A	0.022		
		(LL)	0.127	0.189	0.322	0.211	0.261	0.369		B	0.013		
	D3 → Y	(HH)	0.125	0.177	0.290	0.242	0.319	0.497		ENB	0.012		
		(LL)	0.129	0.193	0.328	0.211	0.261	0.369					
	A → Y	(HH)	0.117	0.169	0.277	0.242	0.319	0.497					
		(HL)	0.126	0.189	0.319	0.211	0.261	0.369					
		(LH)	0.133	0.195	0.323	0.242	0.319	0.497					
		(LL)	0.123	0.195	0.330	0.211	0.261	0.369					
	B → Y	(HH)	0.097	0.137	0.225	0.242	0.319	0.497					
		(HL)	0.105	0.155	0.259	0.211	0.261	0.369					
		(LH)	0.110	0.157	0.258	0.242	0.319	0.497					
		(LL)	0.101	0.151	0.255	0.211	0.261	0.369					
	ENB → Y	(HL)	0.056	0.078	0.125	0.211	0.261	0.370					
		(LH)	0.064	0.090	0.147	0.242	0.319	0.497					

[MEMO]

Function	4 to 1 Multiplexer (Negative Out)											
Block type	Standard type						High-speed type					
	Normal		with ENB		with EN		Normal		with ENB		with EN	
Drivability	Name	cells	Name	cells	Name	cells	Name	cells	Name	cells	Name	cells
	L57A	8										
x2	F57A	10										
x4	F57ANP	12										
x8												

Logic Diagram

for "Standard type" for "Standard type with ENB" for "Standard type with EN"



for "High-speed typee" for "High-speed type with ENB" for "High-speed type with EN"

Truth Table

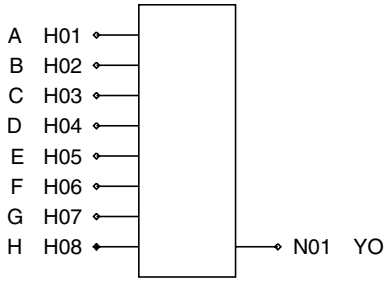
D0	D1	D2	D3	A	B	ENB	YB
X	X	X	X	X	X	1	1
A	X	X	X	0	0	0	AB
X	B	X	X	1	0	0	BB
X	X	C	X	0	1	0	CB
X	X	X	D	1	1	0	DB

X:Irrelevant

Block type	Switching speed									Input		Output	
	Path			t LD0 [ns]			t 1 (ns/pF)						
	IN	→	OUT	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.	Symbol	Cin(pF)	Symbol	Cmax(pF)
L57A	D0	→ YB	(HL)	0.093	0.134	0.223	0.853	1.058	1.504	D0	0.007	YB	0.208
			(LH)	0.095	0.138	0.232	0.966	1.271	1.981	D1	0.007		
	D1	→ YB	(HL)	0.095	0.137	0.227	0.853	1.058	1.504	D2	0.006		
			(LH)	0.097	0.142	0.239	0.966	1.271	1.981	D3	0.006		
	D2	→ YB	(HL)	0.095	0.137	0.228	0.855	1.061	1.508	A	0.028		
			(LH)	0.094	0.138	0.231	0.967	1.272	1.983	B	0.014		
	D3	→ YB	(HL)	0.097	0.140	0.233	0.855	1.061	1.509				
			(LH)	0.098	0.143	0.240	0.967	1.272	1.983				
	A	→ YB	(HH)	0.087	0.132	0.219	0.965	1.272	1.983				
			(HL)	0.081	0.124	0.207	0.853	1.061	1.509				
			(LH)	0.082	0.130	0.217	0.965	1.272	1.983				
			(LL)	0.092	0.143	0.239	0.852	1.061	1.509				
	B	→ YB	(HH)	0.033	0.045	0.073	0.966	1.270	1.979				
			(HL)	0.048	0.071	0.117	0.854	1.059	1.506				
			(LH)	0.046	0.066	0.108	0.966	1.270	1.980				
			(LL)	0.043	0.064	0.108	0.851	1.056	1.501				
F57A	D0	→ YB	(HL)	0.095	0.138	0.229	0.433	0.540	0.771	D0	0.013	YB	0.419
			(LH)	0.091	0.131	0.219	0.485	0.638	0.996	D1	0.014		
	D1	→ YB	(HL)	0.096	0.139	0.230	0.433	0.540	0.771	D2	0.012		
			(LH)	0.093	0.135	0.225	0.485	0.638	0.996	D3	0.012		
	D2	→ YB	(HL)	0.094	0.137	0.228	0.433	0.540	0.771	A	0.022		
			(LH)	0.087	0.127	0.211	0.485	0.638	0.996	B	0.013		
	D3	→ YB	(HL)	0.094	0.137	0.228	0.433	0.540	0.771				
			(LH)	0.090	0.131	0.218	0.485	0.638	0.996				
	A	→ YB	(HH)	0.092	0.134	0.220	0.485	0.638	0.996				
			(HL)	0.085	0.132	0.219	0.433	0.540	0.771				
			(LH)	0.081	0.129	0.213	0.485	0.638	0.996				
			(LL)	0.106	0.157	0.263	0.433	0.540	0.771				
	B	→ YB	(HH)	0.040	0.055	0.089	0.485	0.638	0.995				
			(HL)	0.056	0.082	0.137	0.433	0.540	0.771				
			(LH)	0.052	0.073	0.120	0.485	0.638	0.995				
			(LL)	0.053	0.080	0.135	0.433	0.539	0.770				
F57ANP	D0	→ YB	(HL)	0.101	0.146	0.243	0.217	0.271	0.387	D0	0.013	YB	0.835
			(LH)	0.099	0.143	0.238	0.243	0.320	0.499	D1	0.014		
	D1	→ YB	(HL)	0.102	0.147	0.244	0.217	0.271	0.387	D2	0.012		
			(LH)	0.101	0.147	0.244	0.243	0.320	0.499	D3	0.012		
	D2	→ YB	(HL)	0.098	0.143	0.238	0.217	0.271	0.387	A	0.022		
			(LH)	0.093	0.135	0.225	0.243	0.320	0.499	B	0.013		
	D3	→ YB	(HL)	0.098	0.143	0.238	0.217	0.271	0.387				
			(LH)	0.095	0.139	0.232	0.243	0.320	0.499				
	A	→ YB	(HH)	0.096	0.145	0.239	0.243	0.320	0.499				
			(HL)	0.090	0.139	0.230	0.217	0.271	0.387				
			(LH)	0.089	0.143	0.236	0.243	0.320	0.499				
			(LL)	0.110	0.166	0.277	0.217	0.271	0.387				
	B	→ YB	(HH)	0.047	0.064	0.102	0.243	0.319	0.499				
			(HL)	0.060	0.088	0.147	0.217	0.271	0.387				
			(LH)	0.057	0.081	0.131	0.243	0.319	0.499				
			(LL)	0.059	0.089	0.150	0.217	0.271	0.387				

Function	8-Bit Odd Parity Generator											
Block type	Standard type											
	Normal		High speed									
Drivability	Name	cells	Name	cells								
	L581	17										
x2	F581	20										
x4												
x8												

Logic Diagram



Truth Table

A	B	C	D	E	F	G	H	YO
Σ of 1's at A through H is Odd								1
Σ of 1's at A through H is Even								0

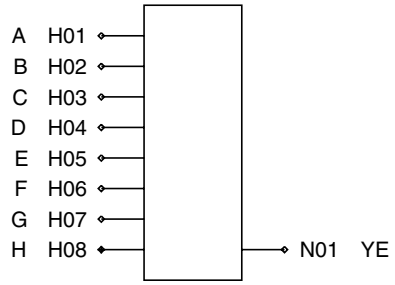
Block type	Switching speed									Input		Output	
	Path			t_{LD0} [ns]			t_1 (ns/pF)						
	IN → OUT			MIN.	TYP.	MAX.	MIN.	TYP.	MAX.	Symbol	Cin(pF)	Symbol	Cmax(pF)
L581	A → YO	(HH)		0.132	0.232	0.387	0.966	1.274	1.987	A	0.013	YO	0.207
		(HL)		0.126	0.238	0.409	0.853	1.065	1.516	B	0.007		
		(LH)		0.135	0.227	0.381	0.966	1.274	1.988	C	0.013		
		(LL)		0.136	0.245	0.413	0.853	1.065	1.517	D	0.007		
	B → YO	(HH)		0.152	0.274	0.456	0.966	1.274	1.987	E	0.013		
		(HL)		0.146	0.281	0.480	0.853	1.065	1.517	F	0.007		
		(LH)		0.160	0.260	0.435	0.966	1.274	1.988	G	0.013		
		(LL)		0.167	0.286	0.479	0.853	1.065	1.516	H	0.007		
	C → YO	(HH)		0.124	0.210	0.349	0.966	1.273	1.987				
		(HL)		0.136	0.241	0.404	0.853	1.065	1.516				
		(LH)		0.135	0.226	0.375	0.966	1.273	1.987				
		(LL)		0.132	0.236	0.400	0.853	1.065	1.516				
	D → YO	(HH)		0.144	0.251	0.417	0.966	1.273	1.986				
		(HL)		0.158	0.282	0.472	0.853	1.065	1.516				
		(LH)		0.158	0.265	0.438	0.966	1.273	1.987				
		(LL)		0.154	0.269	0.451	0.853	1.065	1.516				
	E → YO	(HH)		0.117	0.203	0.339	0.966	1.273	1.987				
		(HL)		0.115	0.215	0.369	0.850	1.060	1.509				
		(LH)		0.125	0.199	0.337	0.966	1.274	1.987				
		(LL)		0.123	0.219	0.372	0.850	1.060	1.509				
	F → YO	(HH)		0.137	0.246	0.409	0.966	1.273	1.987				
		(HL)		0.134	0.259	0.441	0.850	1.060	1.509				
		(LH)		0.148	0.236	0.395	0.966	1.274	1.987				
		(LL)		0.154	0.260	0.434	0.849	1.060	1.509				
	G → YO	(HH)		0.120	0.196	0.328	0.966	1.273	1.986				
		(HL)		0.127	0.220	0.368	0.850	1.060	1.508				
		(LH)		0.128	0.202	0.335	0.966	1.273	1.986				
		(LL)		0.125	0.216	0.364	0.850	1.060	1.508				
	H → YO	(HH)		0.140	0.237	0.396	0.966	1.273	1.986				
		(HL)		0.147	0.261	0.436	0.850	1.060	1.508				
		(LH)		0.152	0.243	0.400	0.966	1.273	1.986				
		(LL)		0.149	0.257	0.429	0.850	1.060	1.508				
F581	A → YO	(HH)		0.133	0.228	0.380	0.483	0.637	0.993	A	0.014	YO	0.413
		(HL)		0.130	0.239	0.412	0.426	0.531	0.755	B	0.012		
		(LH)		0.127	0.211	0.351	0.483	0.636	0.993	C	0.013		
		(LL)		0.130	0.237	0.398	0.426	0.531	0.754	D	0.013		
	B → YO	(HH)		0.132	0.259	0.431	0.483	0.637	0.993	E	0.013		
		(HL)		0.129	0.272	0.467	0.426	0.531	0.754	F	0.013		
		(LH)		0.135	0.241	0.403	0.483	0.636	0.993	G	0.013		
		(LL)		0.150	0.268	0.451	0.426	0.531	0.755	H	0.007		
	C → YO	(HH)		0.132	0.219	0.365	0.483	0.636	0.993				
		(HL)		0.144	0.246	0.413	0.426	0.531	0.755				
		(LH)		0.136	0.222	0.368	0.483	0.637	0.993				
		(LL)		0.133	0.229	0.385	0.426	0.531	0.755				
	D → YO	(HH)		0.135	0.250	0.418	0.483	0.636	0.993				
		(HL)		0.148	0.277	0.466	0.426	0.531	0.755				
		(LH)		0.144	0.254	0.420	0.483	0.637	0.993				
		(LL)		0.141	0.261	0.438	0.426	0.531	0.755				
	E → YO	(HH)		0.120	0.208	0.352	0.483	0.636	0.993				
		(HL)		0.120	0.219	0.375	0.425	0.530	0.753				
		(LH)		0.118	0.196	0.328	0.483	0.636	0.993				
		(LL)		0.118	0.215	0.360	0.425	0.529	0.752				
	F → YO	(HH)		0.120	0.241	0.407	0.483	0.636	0.993				
		(HL)		0.119	0.253	0.431	0.425	0.529	0.752				
		(LH)		0.127	0.230	0.384	0.483	0.636	0.993				
		(LL)		0.138	0.249	0.416	0.425	0.530	0.753				

Block type	Switching speed								Input		Output	
	Path		t_{LD0} [ns]			t_1 (ns/pF)						
	IN → OUT		MIN.	TYP.	MAX.	MIN.	TYP.	MAX.	Symbol	Cin(pF)	Symbol	Cmax(pF)
	G → YO	(HH)	0.122	0.204	0.340	0.483	0.636	0.993				
		(HL)	0.132	0.223	0.372	0.425	0.530	0.753				
		(LH)	0.131	0.207	0.343	0.483	0.636	0.993				
		(LL)	0.130	0.219	0.369	0.425	0.530	0.753				
	H → YO	(HH)	0.140	0.243	0.406	0.483	0.636	0.993				
		(HL)	0.150	0.262	0.438	0.425	0.530	0.753				
		(LH)	0.152	0.244	0.403	0.483	0.636	0.993				
		(LL)	0.150	0.250	0.418	0.425	0.530	0.753				

[MEMO]

Function	8-Bit Even Parity Generator											
Block type	Standard type											
	Normal		High speed									
Drivability	Name	cells	Name	cells								
	L582	17										
x2	F582	20										
x4												
x8												

Logic Diagram



Truth Table

A	B	C	D	E	F	G	H	YE
Σ of 1's at A through H is Odd								0
Σ of 1's at A through H is Even								1

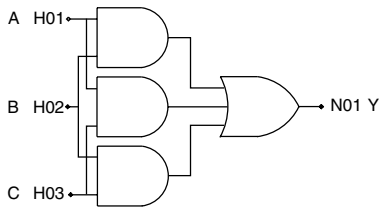
Block type	Switching speed									Input		Output	
	Path			t_{LD0} [ns]			t_1 (ns/pF)						
	IN → OUT			MIN.	TYP.	MAX.	MIN.	TYP.	MAX.	Symbol	Cin(pF)	Symbol	Cmax(pF)
L582	A → YE	(HH)		0.132	0.232	0.386	0.966	1.274	1.988	A	0.013	YE	0.207
		(HL)		0.126	0.238	0.409	0.852	1.066	1.518	B	0.007		
		(LH)		0.136	0.226	0.380	0.966	1.274	1.988	C	0.013		
		(LL)		0.136	0.245	0.412	0.852	1.066	1.518	D	0.007		
	B → YE	(HH)		0.151	0.274	0.455	0.966	1.274	1.988	E	0.013		
		(HL)		0.146	0.281	0.480	0.852	1.066	1.518	F	0.007		
		(LH)		0.160	0.260	0.434	0.966	1.274	1.988	G	0.013		
		(LL)		0.166	0.286	0.478	0.852	1.066	1.518	H	0.007		
	C → YE	(HH)		0.126	0.209	0.348	0.966	1.274	1.987				
		(HL)		0.136	0.241	0.404	0.852	1.066	1.517				
		(LH)		0.136	0.225	0.374	0.966	1.273	1.987				
		(LL)		0.132	0.236	0.399	0.852	1.066	1.517				
	D → YE	(HH)		0.145	0.251	0.416	0.966	1.273	1.987				
		(HL)		0.158	0.282	0.472	0.852	1.066	1.517				
		(LH)		0.159	0.264	0.437	0.966	1.273	1.987				
		(LL)		0.154	0.269	0.451	0.852	1.066	1.517				
	E → YE	(HH)		0.117	0.204	0.340	0.966	1.274	1.988				
		(HL)		0.116	0.213	0.367	0.851	1.058	1.505				
		(LH)		0.123	0.200	0.337	0.965	1.274	1.988				
		(LL)		0.124	0.218	0.370	0.851	1.058	1.505				
	F → YE	(HH)		0.137	0.247	0.410	0.965	1.274	1.988				
		(HL)		0.136	0.258	0.439	0.851	1.058	1.505				
		(LH)		0.146	0.235	0.394	0.965	1.274	1.988				
		(LL)		0.155	0.259	0.432	0.851	1.058	1.505				
	G → YE	(HH)		0.119	0.195	0.327	0.966	1.273	1.987				
		(HL)		0.128	0.218	0.366	0.851	1.058	1.505				
		(LH)		0.127	0.203	0.336	0.966	1.273	1.987				
		(LL)		0.126	0.215	0.362	0.851	1.058	1.505				
	H → YE	(HH)		0.139	0.236	0.395	0.966	1.273	1.987				
		(HL)		0.148	0.260	0.434	0.851	1.058	1.505				
		(LH)		0.151	0.244	0.401	0.966	1.273	1.987				
		(LL)		0.150	0.256	0.427	0.851	1.058	1.505				
F582	A → YE	(HH)		0.133	0.228	0.380	0.483	0.637	0.993	A	0.014	YE	0.413
		(HL)		0.130	0.240	0.414	0.426	0.531	0.755	B	0.012		
		(LH)		0.128	0.211	0.353	0.483	0.636	0.993	C	0.013		
		(LL)		0.130	0.237	0.399	0.426	0.531	0.755	D	0.013		
	B → YE	(HH)		0.132	0.259	0.432	0.483	0.637	0.994	E	0.013		
		(HL)		0.129	0.273	0.468	0.426	0.531	0.754	F	0.013		
		(LH)		0.136	0.242	0.406	0.483	0.636	0.993	G	0.013		
		(LL)		0.150	0.269	0.452	0.426	0.531	0.755	H	0.007		
	C → YE	(HH)		0.137	0.220	0.368	0.483	0.637	0.993				
		(HL)		0.144	0.247	0.414	0.426	0.531	0.755				
		(LH)		0.137	0.222	0.368	0.483	0.636	0.993				
		(LL)		0.133	0.235	0.397	0.426	0.531	0.755				
	D → YE	(HH)		0.140	0.251	0.420	0.483	0.637	0.993				
		(HL)		0.148	0.278	0.467	0.426	0.531	0.755				
		(LH)		0.145	0.254	0.420	0.483	0.636	0.993				
		(LL)		0.141	0.267	0.450	0.426	0.531	0.755				
	E → YE	(HH)		0.120	0.208	0.351	0.483	0.637	0.994				
		(HL)		0.120	0.218	0.374	0.425	0.529	0.752				
		(LH)		0.117	0.196	0.328	0.483	0.636	0.993				
		(LL)		0.118	0.214	0.359	0.425	0.528	0.751				
	F → YE	(HH)		0.120	0.241	0.407	0.483	0.637	0.994				
		(HL)		0.119	0.252	0.430	0.425	0.528	0.751				
		(LH)		0.127	0.230	0.384	0.483	0.636	0.993				
		(LL)		0.137	0.249	0.415	0.425	0.529	0.752				

Block type	Switching speed								Input		Output	
	Path		t_{LD0} [ns]			t_1 (ns/pF)						
	IN → OUT		MIN.	TYP.	MAX.	MIN.	TYP.	MAX.	Symbol	Cin(pF)	Symbol	Cmax(pF)
	G → YE	(HH)	0.126	0.204	0.341	0.483	0.637	0.994				
		(HL)	0.133	0.222	0.371	0.426	0.529	0.751				
		(LH)	0.131	0.207	0.342	0.483	0.636	0.993				
		(LL)	0.130	0.219	0.368	0.425	0.529	0.751				
	H → YE	(HH)	0.144	0.244	0.406	0.483	0.637	0.994				
		(HL)	0.151	0.262	0.437	0.426	0.529	0.751				
		(LH)	0.151	0.244	0.402	0.483	0.636	0.993				
		(LL)	0.151	0.255	0.427	0.425	0.529	0.751				

[MEMO]

Function	3-Bit Majority Gate											
Block type	Standard type											
	Normal		High speed									
Drivability	Name	cells	Name	cells								
	L584	3										
x2	F584	4										
x4												
x8												

Logic Diagram



Truth Table

A	B	C	Y
1	1	X	1
1	X	1	1
X	1	1	1
All other combinations			0

X : Irrelevant

Block type	Switching speed									Input		Output	
	Path		t LD0 [ns]			t 1 (ns/pF)							
	IN → OUT		MIN.	TYP.	MAX.	MIN.	TYP.	MAX.		Symbol	Cin(pF)	Symbol	Cmax(pF)
L584	A → Y	(HH)	0.051	0.071	0.116	0.968	1.275	1.990		A	0.011	Y	0.208
		(LL)	0.073	0.112	0.188	0.856	1.065	1.520		B	0.012		
	B → Y	(HH)	0.045	0.071	0.115	0.969	1.274	1.988		C	0.006		
		(LL)	0.064	0.110	0.185	0.856	1.084	1.554					
	C → Y	(HH)	0.042	0.064	0.104	0.968	1.274	1.987					
		(LL)	0.057	0.099	0.166	0.856	1.089	1.563					
F584	A → Y	(HH)	0.060	0.083	0.134	0.485	0.639	0.999		A	0.011	Y	0.416
		(LL)	0.086	0.132	0.220	0.433	0.542	0.776		B	0.012		
	B → Y	(HH)	0.053	0.083	0.135	0.486	0.640	0.998		C	0.006		
		(LL)	0.076	0.129	0.217	0.433	0.552	0.795					
	C → Y	(HH)	0.050	0.076	0.123	0.485	0.640	0.999					
		(LL)	0.069	0.118	0.198	0.433	0.555	0.799					

[MEMO]

[MEMO]

2.9 D-latch

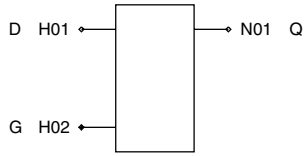
[MEMO]

Function	D-latch											
Block type	Standard type											
	Normal				Q output				QB output			
Drivability	Name	cells	Name	cells	Name	cells	Name	cells	Name	cells	Name	cells
					L601NQ	4						
x2					F601NQ	5						
x4					F601NQP	6						
x8												

Logic Diagram for "Normal"

Truth Table for "Normal"

Logic Diagram for "Q output"



Truth Table for "Q output"

D	G	Q
0	1	0
1	1	1
X	0	Latch

X:Irrelevant

Logic Diagram for "QB output"

Truth Table for "QB output"

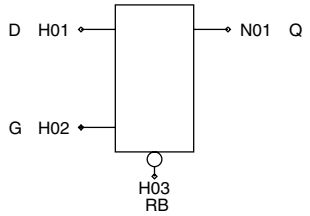
Block type	Switching speed								Input		Output	
	Path		t LD0 [ns]			t 1 (ns/pF)						
	IN → OUT		MIN.	TYP.	MAX.	MIN.	TYP.	MAX.	Symbol	Cin(pF)	Symbol	Cmax(pF)
L601NQ	D → Q	(HH)	0.056	0.078	0.125	0.971	1.277	1.992	D	0.006	Q	0.208
		(LL)	0.069	0.103	0.172	0.867	1.081	1.544	G	0.006		
	G → Q	(HH)	0.077	0.107	0.171	0.971	1.277	1.992				
		(HL)	0.080	0.116	0.190	0.866	1.080	1.543				
	Set up time	D	0.118		0.182							
	Hold time	D	0.051		0.038							
	Min Pulse	G	0.153		0.318							
F601NQ	D → Q	(HH)	0.063	0.087	0.141	0.487	0.641	1.001	D	0.006	Q	0.416
		(LL)	0.078	0.116	0.195	0.439	0.550	0.789	G	0.006		
	G → Q	(HH)	0.083	0.115	0.185	0.487	0.641	1.001				
		(HL)	0.089	0.130	0.215	0.439	0.550	0.789				
	Set up time	D	0.126		0.204							
	Hold time	D	0.046		0.029							
	Min Pulse	G	0.162		0.342							
F601NQP	D → Q	(HH)	0.061	0.084	0.136	0.244	0.321	0.502	D	0.012	Q	0.835
		(LL)	0.072	0.108	0.182	0.220	0.276	0.396	G	0.006		
	G → Q	(HH)	0.087	0.120	0.192	0.244	0.321	0.502				
		(HL)	0.092	0.134	0.222	0.220	0.276	0.396				
	Set up time	D	0.122		0.198							
	Hold time	D	0.052		0.038							
	Min Pulse	G	0.165		0.351							

Function	D-latch with RB											
Block type	Standard type											
	Normal				Q output				QB output			
Drivability	Name	cells	Name	cells	Name	cells	Name	cells	Name	cells	Name	cells
					L603NQ	5						
x2					F603NQ	5						
x4					F603NQP	6						
x8												

Logic Diagram for "Normal"

Truth Table for "Normal"

Logic Diagram for "Q output"



Truth Table for "Q output"

D	G	RB	Q
1	1	1	1
0	1	1	0
X	0	1	Latch
X	X	0	0

X:Irrelevant

Logic Diagram for "QB output"

Truth Table for "QB output"

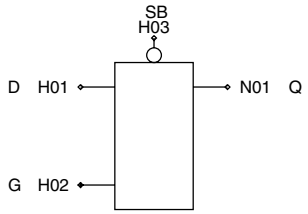
Block type	Switching speed									Input		Output	
	Path			t_{LD0} [ns]			t_1 (ns/pF)						
	IN → OUT			MIN.	TYP.	MAX.	MIN.	TYP.	MAX.	Symbol	Cin(pF)	Symbol	Cmax(pF)
L603NQ	D → Q		(HH)	0.083	0.118	0.195	1.003	1.325	2.077	D	0.006	Q	0.205
			(LL)	0.074	0.110	0.185	0.873	1.092	1.564	G	0.006		
	G → Q		(HH)	0.093	0.131	0.212	1.003	1.325	2.077	RB	0.007		
			(HL)	0.085	0.123	0.203	0.872	1.091	1.563				
	RB → Q		(HH)	0.090	0.127	0.209	1.003	1.325	2.077				
			(LL)	0.063	0.100	0.161	0.848	1.081	1.550				
	Set up time	D		0.121		0.193							
	Hold time	D		0.027		0.000							
	Release time	RB		0.121		0.187							
	Removal time	RB		0.025		0.000							
	Min Pulse	G		0.162		0.339							
	Min Pulse	RB		0.182		0.354							
F603NQ	D → Q		(HH)	0.091	0.128	0.212	0.505	0.669	1.050	D	0.006	Q	0.411
			(LL)	0.081	0.120	0.203	0.444	0.558	0.802	G	0.006		
	G → Q		(HH)	0.100	0.140	0.228	0.505	0.669	1.050	RB	0.007		
			(HL)	0.092	0.134	0.223	0.443	0.557	0.802				
	RB → Q		(HH)	0.098	0.138	0.227	0.505	0.669	1.050				
			(LL)	0.068	0.108	0.174	0.426	0.546	0.785				
	Set up time	D		0.130		0.216							
	Hold time	D		0.022		0.000							
	Release time	RB		0.132		0.210							
	Removal time	RB		0.019		0.000							
	Min Pulse	G		0.169		0.354							
	Min Pulse	RB		0.193		0.375							
F603NQP	D → Q		(HH)	0.111	0.156	0.257	0.256	0.340	0.535	D	0.006	Q	0.809
			(LL)	0.100	0.148	0.249	0.228	0.289	0.419	G	0.006		
	G → Q		(HH)	0.119	0.166	0.270	0.256	0.340	0.535	RB	0.007		
			(HL)	0.110	0.162	0.270	0.228	0.289	0.419				
	RB → Q		(HH)	0.118	0.166	0.273	0.256	0.340	0.535				
			(LL)	0.083	0.130	0.209	0.214	0.277	0.400				
	Set up time	D		0.151		0.262							
	Hold time	D		0.006		0.000							
	Release time	RB		0.154		0.257							
	Removal time	RB		0.001		0.000							
	Min Pulse	G		0.188		0.397							
	Min Pulse	RB		0.220		0.425							

Function	D-latch with SB											
Block type	Standard type											
	Normal				Q output				QB output			
Drivability	Name	cells	Name	cells	Name	cells	Name	cells	Name	cells	Name	cells
					L60KNQ	5						
x2					F60KNQ	6						
x4					F60KNQP	7						
x8												

Logic Diagram for "Normal"

Truth Table for "Normal"

Logic Diagram for "Q output"



Truth Table for "Q output"

D	G	SB	Q
0	1	1	0
1	1	1	1
X	0	1	Latch
X	X	0	1

X:Irrelevant

Logic Diagram for "QB output"

Truth Table for "QB output"

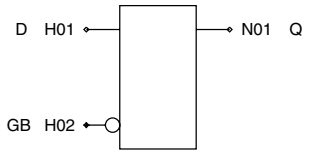
Block type	Switching speed									Input		Output	
	Path			t LD0 [ns]			t 1 (ns/pF)						
	IN → OUT			MIN.	TYP.	MAX.	MIN.	TYP.	MAX.	Symbol	Cin(pF)	Symbol	Cmax(pF)
L60KNQ	D → Q		(HH)	0.061	0.085	0.137	0.973	1.280	1.996	D	0.006	Q	0.207
			(LL)	0.116	0.179	0.306	0.952	1.225	1.804	G	0.006		
	G → Q		(HH)	0.081	0.113	0.181	0.973	1.280	1.996	SB	0.006		
			(HL)	0.102	0.152	0.255	0.950	1.222	1.799				
	SB → Q		(HL)	0.143	0.215	0.362	0.952	1.225	1.804				
			(LH)	0.070	0.099	0.158	0.968	1.286	2.010				
	Set up time	D		0.158		0.301							
	Hold time	D		0.046		0.028							
	Release time	SB		0.186		0.364							
	Removal time	SB		0.000		0.000							
	Min Pulse	G		0.174		0.379							
	Min Pulse	SB		0.191		0.460							
F60KNQ	D → Q		(HH)	0.068	0.095	0.153	0.488	0.643	1.004	D	0.006	Q	0.414
			(LL)	0.130	0.199	0.341	0.487	0.630	0.932	G	0.006		
	G → Q		(HH)	0.088	0.122	0.196	0.488	0.643	1.004	SB	0.006		
			(HL)	0.115	0.172	0.290	0.487	0.630	0.931				
	SB → Q		(HL)	0.156	0.236	0.397	0.487	0.630	0.932				
			(LH)	0.076	0.106	0.169	0.484	0.645	1.009				
	Set up time	D		0.173		0.338							
	Hold time	D		0.041		0.019							
	Release time	SB		0.201		0.402							
	Removal time	SB		0.000		0.000							
	Min Pulse	G		0.186		0.413							
	Min Pulse	SB		0.205		0.495							
F60KNQP	D → Q		(HH)	0.064	0.089	0.143	0.244	0.322	0.502	D	0.012	Q	0.820
			(LL)	0.139	0.214	0.367	0.248	0.322	0.478	G	0.006		
	G → Q		(HH)	0.090	0.125	0.199	0.244	0.322	0.502	SB	0.006		
			(HL)	0.123	0.183	0.309	0.248	0.322	0.478				
	SB → Q		(HL)	0.165	0.248	0.418	0.248	0.322	0.478				
			(LH)	0.088	0.127	0.199	0.242	0.326	0.511				
	Set up time	D		0.185		0.370							
	Hold time	D		0.049		0.032							
	Release time	SB		0.213		0.434							
	Removal time	SB		0.000		0.000							
	Min Pulse	G		0.194		0.434							
	Min Pulse	SB		0.218		0.521							

Function	D-latch (GB)											
Block type	Standard type											
	Normal				Q output				QB output			
Drivability	Name	cells	Name	cells	Name	cells	Name	cells	Name	cells	Name	cells
					L604NQ	4						
x2					F604NQ	5						
x4					F604NQP	6						
x8												

Logic Diagram for "Normal"

Truth Table for "Normal"

Logic Diagram for "Q output"



Truth Table for "Q output"

D	GB	Q
1	0	1
0	0	0
X	1	Latch

X:Irrelevant

Logic Diagram for "QB output"

Truth Table for "QB output"

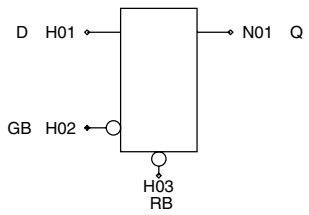
Block type	Switching speed									Input		Output	
	Path			t LD0 [ns]			t 1 (ns/pF)						
	IN → OUT			MIN.	TYP.	MAX.	MIN.	TYP.	MAX.	Symbol	Cin(pF)	Symbol	Cmax(pF)
L604NQ	D → Q		(HH)	0.054	0.075	0.121	0.971	1.277	1.991	D	0.006	Q	0.208
			(LL)	0.067	0.099	0.166	0.866	1.080	1.542	GB	0.006		
	GB → Q		(LH)	0.073	0.103	0.168	0.971	1.277	1.992				
			(LL)	0.087	0.128	0.212	0.866	1.079	1.541				
	Set up time		D	0.112		0.154							
	Hold time		D	0.042		0.000							
	Min Pulse		GB	0.156		0.333							
F604NQ	D → Q		(HH)	0.061	0.085	0.137	0.487	0.641	1.001	D	0.006	Q	0.415
			(LL)	0.076	0.112	0.189	0.439	0.550	0.788	GB	0.006		
	GB → Q		(LH)	0.080	0.113	0.185	0.487	0.641	1.001				
			(LL)	0.095	0.140	0.233	0.439	0.549	0.788				
	Set up time		D	0.120		0.174							
	Hold time		D	0.036		0.000							
	Min Pulse		GB	0.165		0.355							
F604NQP	D → Q		(HH)	0.060	0.084	0.135	0.244	0.321	0.502	D	0.012	Q	0.834
			(LL)	0.072	0.107	0.181	0.220	0.276	0.396	GB	0.006		
	GB → Q		(LH)	0.085	0.120	0.194	0.244	0.321	0.502				
			(LL)	0.097	0.143	0.238	0.220	0.276	0.396				
	Set up time		D	0.119		0.170							
	Hold time		D	0.042		0.000							
	Min Pulse		GB	0.168		0.361							

Function	D-latch (GB) with RB											
Block type	Standard type											
	Normal				Q output				QB output			
Drivability	Name	cells	Name	cells	Name	cells	Name	cells	Name	cells	Name	cells
					L605NQ	5						
x2					F605NQ	5						
x4					F605NQP	6						
x8												

Logic Diagram for "Normal"

Truth Table for "Normal"

Logic Diagram for "Q output"



Truth Table for "Q output"

D	GB	RB	Q
1	0	1	1
0	0	1	0
X	1	1	Latch
X	X	0	0

X:Irrelevant

Logic Diagram for "QB output"

Truth Table for "QB output"

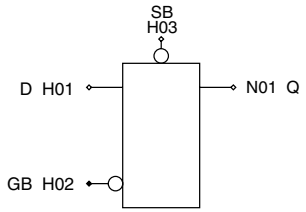
Block type	Switching speed									Input		Output	
	Path			t_{LD0} [ns]			t_1 (ns/pF)						
	IN → OUT			MIN.	TYP.	MAX.	MIN.	TYP.	MAX.	Symbol	Cin(pF)	Symbol	Cmax(pF)
L605NQ	D → Q		(HH)	0.082	0.116	0.192	1.004	1.327	2.080	D	0.007	Q	0.205
			(LL)	0.073	0.108	0.182	0.872	1.090	1.560	GB	0.006		
	GB → Q		(LH)	0.090	0.128	0.212	1.004	1.327	2.080	RB	0.007		
			(LL)	0.091	0.133	0.222	0.871	1.089	1.560				
	RB → Q		(HH)	0.088	0.124	0.205	1.004	1.327	2.080				
			(LL)	0.064	0.099	0.159	0.848	1.077	1.543				
	Set up time	D		0.136		0.209							
	Hold time	D		0.037		0.000							
	Release time	RB		0.138		0.222							
	Removal time	RB		0.007		0.000							
	Min Pulse	GB		0.162		0.344							
	Min Pulse	RB		0.179		0.348							
F605NQ	D → Q		(HH)	0.089	0.126	0.209	0.506	0.670	1.052	D	0.007	Q	0.411
			(LL)	0.080	0.118	0.200	0.443	0.556	0.800	GB	0.006		
	GB → Q		(LH)	0.098	0.139	0.229	0.506	0.670	1.052	RB	0.007		
			(LL)	0.097	0.143	0.239	0.443	0.556	0.800				
	RB → Q		(HH)	0.096	0.135	0.223	0.506	0.670	1.052				
			(LL)	0.070	0.107	0.173	0.426	0.544	0.781				
	Set up time	D		0.146		0.231							
	Hold time	D		0.032		0.000							
	Release time	RB		0.148		0.246							
	Removal time	RB		0.001		0.000							
	Min Pulse	GB		0.170		0.362							
	Min Pulse	RB		0.191		0.369							
F605NQP	D → Q		(HH)	0.110	0.154	0.254	0.256	0.341	0.536	D	0.007	Q	0.808
			(LL)	0.099	0.146	0.246	0.227	0.288	0.418	GB	0.006		
	GB → Q		(LH)	0.118	0.167	0.275	0.256	0.341	0.536	RB	0.007		
			(LL)	0.114	0.169	0.283	0.228	0.288	0.418				
	RB → Q		(HH)	0.116	0.163	0.268	0.256	0.341	0.536				
			(LL)	0.085	0.129	0.208	0.214	0.276	0.398				
	Set up time	D		0.167		0.278							
	Hold time	D		0.016		0.000							
	Release time	RB		0.170		0.292							
	Removal time	RB		0.000		0.000							
	Min Pulse	GB		0.190		0.406							
	Min Pulse	RB		0.217		0.420							

Function	D-latch (GB) with SB											
Block type	Standard type											
	Normal				Q output				QB output			
Drivability	Name	cells	Name	cells	Name	cells	Name	cells	Name	cells	Name	cells
					L60NNQ	5						
x2					F60NNQ	6						
x4					F60NNQP	7						
x8												

Logic Diagram for "Normal"

Truth Table for "Normal"

Logic Diagram for "Q output"



Truth Table for "Q output"

D	GB	SB	Q
1	0	1	1
0	0	1	0
X	1	1	Latch
X	X	0	0

X:Irrelevant

Logic Diagram for "QB output"

Truth Table for "QB output"

Block type	Switching speed									Input		Output	
	Path			t LD0 [ns]			t 1 (ns/pF)						
	IN → OUT			MIN.	TYP.	MAX.	MIN.	TYP.	MAX.	Symbol	Cin(pF)	Symbol	Cmax(pF)
L60NNQ	D → Q		(HH)	0.060	0.083	0.135	0.972	1.280	1.996	D	0.007	Q	0.207
			(LL)	0.114	0.175	0.300	0.953	1.227	1.809	GB	0.006		
	GB → Q		(LH)	0.078	0.111	0.180	0.973	1.280	1.996	SB	0.006		
			(LL)	0.113	0.169	0.285	0.953	1.226	1.807				
	SB → Q		(HL)	0.141	0.212	0.356	0.953	1.227	1.809				
			(LH)	0.070	0.099	0.157	0.968	1.285	2.007				
	Set up time	D		0.146		0.274							
	Hold time	D		0.026		0.000							
	Release time	SB		0.173		0.338							
	Removal time	SB		0.000		0.000							
	Min Pulse	GB		0.183		0.406							
	Min Pulse	SB		0.189		0.453							
F60NNQ	D → Q		(HH)	0.067	0.093	0.150	0.488	0.643	1.004	D	0.007	Q	0.415
			(LL)	0.128	0.196	0.334	0.487	0.631	0.933	GB	0.006		
	GB → Q		(LH)	0.086	0.121	0.197	0.488	0.643	1.004	SB	0.006		
			(LL)	0.125	0.187	0.316	0.487	0.631	0.933				
	SB → Q		(HL)	0.154	0.232	0.390	0.487	0.631	0.933				
			(LH)	0.076	0.106	0.168	0.484	0.644	1.007				
	Set up time	D		0.161		0.311							
	Hold time	D		0.021		0.000							
	Release time	SB		0.189		0.375							
	Removal time	SB		0.000		0.000							
	Min Pulse	GB		0.195		0.437							
	Min Pulse	SB		0.203		0.488							
F60NNQP	D → Q		(HH)	0.064	0.088	0.142	0.244	0.322	0.502	D	0.012	Q	0.821
			(LL)	0.138	0.212	0.364	0.248	0.323	0.478	GB	0.006		
	GB → Q		(LH)	0.088	0.124	0.201	0.244	0.321	0.502	SB	0.006		
			(LL)	0.131	0.195	0.331	0.248	0.322	0.478				
	SB → Q		(HL)	0.164	0.247	0.416	0.248	0.323	0.478				
			(LH)	0.089	0.126	0.199	0.242	0.326	0.511				
	Set up time	D		0.174		0.345							
	Hold time	D		0.027		0.000							
	Release time	SB		0.203		0.410							
	Removal time	SB		0.000		0.000							
	Min Pulse	GB		0.201		0.453							
	Min Pulse	SB		0.217		0.518							

[MEMO]

[MEMO]

2.10 D-F/F

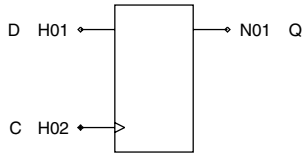
[MEMO]

Function	D-F/F											
Block type	Standard type											
	Normal				Q output				QB output			
Drivability	Name	cells	Name	cells	Name	cells	Name	cells	Name	cells	Name	cells
					L611NQ	6						
x2					F611NQ	7						
x4					F611NQP	8						
x8												

Logic Diagram for "Normal"

Truth Table for "Normal"

Logic Diagram for "Q output"



Truth Table for "Q output"

D	C	Q
0	↗	0
1	↗	1
X	↘	Hold

X:Irrelevant

Logic Diagram for "QB output"

Truth Table for "QB output"

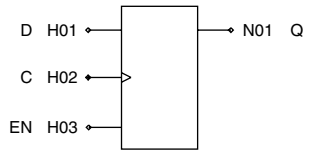
Block type	Switching speed									Input		Output	
	Path			t_{LD0} [ns]			t_1 (ns/pF)						
	IN → OUT			MIN.	TYP.	MAX.	MIN.	TYP.	MAX.	Symbol	Cin(pF)	Symbol	Cmax(pF)
L611NQ	C → Q		(HH)	0.094	0.132	0.213	0.965	1.269	1.978	D	0.006	Q	0.209
			(HL)	0.111	0.155	0.248	0.843	1.041	1.472	C	0.006		
	Set up time	D		0.103		0.156							
	Hold time	D		0.061		0.047							
	Min Pulse	C		0.192		0.392							
F611NQ	C → Q		(HH)	0.100	0.141	0.228	0.483	0.635	0.990	D	0.006	Q	0.419
			(HL)	0.119	0.166	0.265	0.424	0.524	0.742	C	0.006		
	Set up time	D		0.102		0.156							
	Hold time	D		0.061		0.047							
	Min Pulse	C		0.200		0.410							
F611NQP	C → Q		(HH)	0.105	0.150	0.243	0.241	0.317	0.495	D	0.006	Q	0.843
			(HL)	0.117	0.163	0.262	0.211	0.261	0.369	C	0.006		
	Set up time	D		0.103		0.154							
	Hold time	D		0.062		0.048							
	Min Pulse	C		0.198		0.406							

Function	D-F/F with EN											
Block type	Standard type											
	Normal				Q output				QB output			
Drivability	Name	cells	Name	cells	Name	cells	Name	cells	Name	cells	Name	cells
					L611EQ	8						
x2					F611EQ	9						
x4					F611EQP	10						
x8												

Logic Diagram for "Normal"

Truth Table for "Normal"

Logic Diagram for "Q output"



Truth Table for "Q output"

D	C	EN	Q
0	↗	1	0
1	↗	1	1
X	↗	0	Hold
X	↘	X	Hold

X:Irrelevant

Logic Diagram for "QB output"

Truth Table for "QB output"

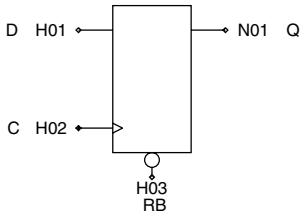
Block type	Switching speed								Input		Output	
	Path		t_{LD0} [ns]			t_1 (ns/pF)						
	IN → OUT		MIN.	TYP.	MAX.	MIN.	TYP.	MAX.	Symbol	Cin(pF)	Symbol	Cmax(pF)
L611EQ	C → Q	(HH)	0.089	0.126	0.204	0.966	1.270	1.980	D	0.006	Q	0.209
		(HL)	0.107	0.150	0.241	0.845	1.043	1.476	C	0.007		
	Set up time	D	0.159		0.349				EN	0.013		
	Set up time	EN	0.186		0.402							
	Hold time	D	0.010		0.000							
	Hold time	EN	0.005		0.000							
	Min Pulse	C	0.183		0.379							
F611EQ	C → Q	(HH)	0.095	0.135	0.218	0.483	0.636	0.992	D	0.006	Q	0.418
		(HL)	0.115	0.161	0.259	0.424	0.525	0.744	C	0.007		
	Set up time	D	0.159		0.349				EN	0.013		
	Set up time	EN	0.186		0.401							
	Hold time	D	0.010		0.000							
	Hold time	EN	0.005		0.000							
	Min Pulse	C	0.192		0.398							
F611EQP	C → Q	(HH)	0.103	0.147	0.240	0.241	0.318	0.495	D	0.006	Q	0.843
		(HL)	0.116	0.162	0.262	0.212	0.262	0.371	C	0.007		
	Set up time	D	0.162		0.354				EN	0.013		
	Set up time	EN	0.188		0.407							
	Hold time	D	0.011		0.000							
	Hold time	EN	0.006		0.000							
	Min Pulse	C	0.193		0.401							

Function	D-F/F with RB											
Block type	Standard type											
	Normal				Q output				QB output			
Drivability	Name	cells	Name	cells	Name	cells	Name	cells	Name	cells	Name	cells
					L615NQ	7						
x2					F615NQ	8						
x4					F615NQP	10						
x8												

Logic Diagram for "Normal"

Truth Table for "Normal"

Logic Diagram for "Q output"



Truth Table for "Q output"

D	C	RB	Q
0	↗	1	0
1	↗	1	1
X	↘	1	Hold
X	X	0	0

X:Irrelevant

Logic Diagram for "QB output"

Truth Table for "QB output"

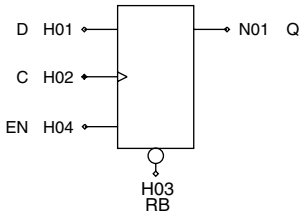
Block type	Switching speed									Input		Output	
	Path			t_{LD0} [ns]			t_1 (ns/pF)						
	IN → OUT			MIN.	TYP.	MAX.	MIN.	TYP.	MAX.	Symbol	Cin(pF)	Symbol	Cmax(pF)
L615NQ	C → Q		(HH)	0.104	0.147	0.239	0.970	1.277	1.991	D	0.007	Q	0.209
			(HL)	0.112	0.156	0.251	0.844	1.043	1.476	C	0.007		
	RB → Q		(LL)	0.044	0.063	0.101	0.845	1.047	1.484	RB	0.013		
	Set up time		D	0.105		0.161							
	Hold time		D	0.058		0.040							
	Release time		RB	0.006		0.000							
	Removal time		RB	0.136		0.195							
	Min Pulse		C	0.191		0.393							
	Min Pulse		RB	0.116		0.235							
F615NQ	C → Q		(HH)	0.115	0.162	0.263	0.487	0.641	1.001	D	0.007	Q	0.419
			(HL)	0.119	0.167	0.268	0.425	0.526	0.745	C	0.007		
	RB → Q		(LL)	0.050	0.071	0.116	0.424	0.527	0.748	RB	0.013		
	Set up time		D	0.106		0.161							
	Hold time		D	0.058		0.041							
	Release time		RB	0.007		0.000							
	Removal time		RB	0.135		0.193							
	Min Pulse		C	0.199		0.411							
	Min Pulse		RB	0.129		0.261							
F615NQP	C → Q		(HH)	0.122	0.173	0.283	0.243	0.320	0.499	D	0.007	Q	0.838
			(HL)	0.121	0.170	0.273	0.212	0.262	0.371	C	0.007		
	RB → Q		(LL)	0.046	0.065	0.105	0.212	0.263	0.373	RB	0.020		
	Set up time		D	0.106		0.161							
	Hold time		D	0.059		0.042							
	Release time		RB	0.009		0.000							
	Removal time		RB	0.133		0.189							
	Min Pulse		C	0.203		0.425							
	Min Pulse		RB	0.120		0.243							

Function	D-F/F with RB, EN											
Block type	Standard type											
	Normal				Q output				QB output			
Drivability	Name	cells	Name	cells	Name	cells	Name	cells	Name	cells	Name	cells
					L615EQ	9						
x2					F615EQ	10						
x4					F615EQP	12						
x8												

Logic Diagram for "Normal"

Truth Table for "Normal"

Logic Diagram for "Q output"



Truth Table for "Q output"

D	C	EN	RB	Q
0	↗	1	1	0
1	↗	1	1	1
X	↗	0	1	Hold
X	↘	X	1	Hold
X	X	X	0	0

X:Irrelevant

Logic Diagram for "QB output"

Truth Table for "QB output"

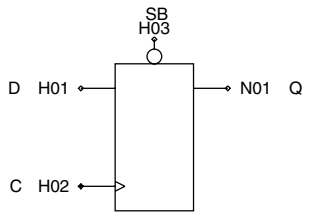
Block type	Switching speed									Input		Output	
	Path			t_{LD0} [ns]			t_1 (ns/pF)						
	IN → OUT			MIN.	TYP.	MAX.	MIN.	TYP.	MAX.	Symbol	Cin(pF)	Symbol	Cmax(pF)
L615EQ	C → Q		(HH)	0.101	0.144	0.236	0.972	1.279	1.995	D	0.006	Q	0.209
			(HL)	0.109	0.153	0.247	0.846	1.045	1.480	C	0.007		
	RB → Q		(LL)	0.044	0.063	0.102	0.846	1.049	1.488	RB	0.013		
	Set up time	D		0.161		0.355				EN	0.013		
	Set up time	EN		0.188		0.408							
	Hold time	D		0.008		0.000							
	Hold time	EN		0.004		0.000							
	Release time	RB		0.009		0.000							
	Removal time	RB		0.133		0.190							
	Min Pulse	C		0.186		0.385							
	Min Pulse	RB		0.117		0.237							
F615EQ	C → Q		(HH)	0.111	0.157	0.256	0.488	0.642	1.003	D	0.006	Q	0.416
			(HL)	0.117	0.164	0.264	0.425	0.527	0.747	C	0.007		
	RB → Q		(LL)	0.052	0.073	0.119	0.425	0.527	0.749	RB	0.013		
	Set up time	D		0.161		0.356				EN	0.013		
	Set up time	EN		0.188		0.409							
	Hold time	D		0.008		0.000							
	Hold time	EN		0.004		0.000							
	Release time	RB		0.010		0.000							
	Removal time	RB		0.133		0.191							
	Min Pulse	C		0.194		0.403							
	Min Pulse	RB		0.131		0.265							
F615EQP	C → Q		(HH)	0.123	0.177	0.290	0.243	0.320	0.499	D	0.006	Q	0.838
			(HL)	0.122	0.171	0.276	0.212	0.262	0.371	C	0.007		
	RB → Q		(LL)	0.046	0.065	0.106	0.212	0.263	0.373	RB	0.020		
	Set up time	D		0.163		0.360				EN	0.013		
	Set up time	EN		0.190		0.413							
	Hold time	D		0.009		0.000							
	Hold time	EN		0.007		0.000							
	Release time	RB		0.014		0.000							
	Removal time	RB		0.128		0.183							
	Min Pulse	C		0.203		0.428							
	Min Pulse	RB		0.120		0.244							

Function	D-F/F with SB											
Block type	Standard type											
	Normal				Q output				QB output			
Drivability	Name	cells	Name	cells	Name	cells	Name	cells	Name	cells	Name	cells
					L616NQ	7						
x2					F616NQ	8						
x4					F616NQP	9						
x8												

Logic Diagram for "Normal"

Truth Table for "Normal"

Logic Diagram for "Q output"



Truth Table for "Q output"

D	C	SB	Q
0	↗	1	0
1	↗	1	1
X	↘	1	Hold
X	X	0	1

X:Irrelevant

Logic Diagram for "QB output"

Truth Table for "QB output"

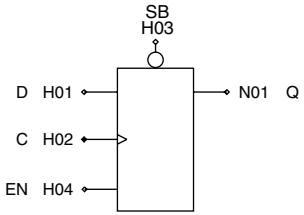
Block type	Switching speed								Input		Output	
	Path		t LD0 [ns]			t 1 (ns/pF)						
	IN → OUT		MIN.	TYP.	MAX.	MIN.	TYP.	MAX.	Symbol	Cin(pF)	Symbol	Cmax(pF)
L616NQ	C → Q	(HH)	0.092	0.130	0.209	0.965	1.269	1.978	D	0.007	Q	0.209
		(HL)	0.115	0.161	0.261	0.844	1.043	1.476	C	0.007		
	SB → Q	(LH)	0.085	0.136	0.226	0.964	1.268	1.976	SB	0.014		
	Set up time	D	0.108		0.189							
	Hold time	D	0.055		0.039							
	Release time	SB	0.062		0.075							
	Removal time	SB	0.079		0.082							
	Min Pulse	C	0.195		0.404							
	Min Pulse	SB	0.177		0.384							
F616NQ	C → Q	(HH)	0.099	0.139	0.224	0.483	0.635	0.991	D	0.007	Q	0.419
		(HL)	0.123	0.173	0.280	0.424	0.525	0.744	C	0.007		
	SB → Q	(LH)	0.091	0.146	0.242	0.483	0.635	0.989	SB	0.014		
	Set up time	D	0.108		0.188							
	Hold time	D	0.055		0.040							
	Release time	SB	0.062		0.075							
	Removal time	SB	0.079		0.082							
	Min Pulse	C	0.203		0.422							
	Min Pulse	SB	0.185		0.401							
F616NQP	C → Q	(HH)	0.106	0.151	0.245	0.241	0.317	0.495	D	0.007	Q	0.842
		(HL)	0.126	0.177	0.288	0.212	0.262	0.371	C	0.007		
	SB → Q	(LH)	0.096	0.154	0.256	0.241	0.317	0.495	SB	0.014		
	Set up time	D	0.110		0.192							
	Hold time	D	0.056		0.041							
	Release time	SB	0.064		0.078							
	Removal time	SB	0.077		0.078							
	Min Pulse	C	0.207		0.431							
	Min Pulse	SB	0.195		0.420							

Function	D-F/F with SB, EN											
Block type	Standard type											
	Normal				Q output				QB output			
Drivability	Name	cells	Name	cells	Name	cells	Name	cells	Name	cells	Name	cells
					L616EQ	9						
x2					F616EQ	10						
x4					F616EQP	11						
x8												

Logic Diagram for "Normal"

Truth Table for "Normal"

Logic Diagram for "Q output"



Truth Table for "Q output"

D	C	EN	SB	Q
0	↗	1	1	0
1	↗	1	1	1
X	↗	0	1	Hold
X	↘	X	1	Hold
X	X	X	0	1

X:Irrelevant

Logic Diagram for "QB output"

Truth Table for "QB output"

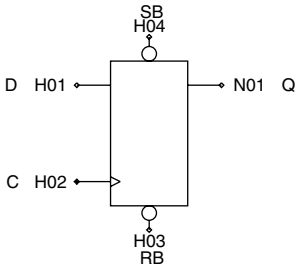
Block type	Switching speed									Input		Output	
	Path			t_{LD0} [ns]			t_1 (ns/pF)						
	IN → OUT			MIN.	TYP.	MAX.	MIN.	TYP.	MAX.	Symbol	Cin(pF)	Symbol	Cmax(pF)
L616EQ	C → Q		(HH)	0.090	0.127	0.207	0.965	1.269	1.979	D	0.006	Q	0.210
			(HL)	0.114	0.160	0.260	0.844	1.043	1.476	C	0.007		
	SB → Q		(LH)	0.094	0.139	0.232	0.964	1.268	1.976	SB	0.014		
	Set up time	D		0.179		0.394				EN	0.012		
	Set up time	EN		0.207		0.448							
	Hold time	D		0.011		0.000							
	Hold time	EN		0.003		0.000							
	Release time	SB		0.067		0.082							
	Removal time	SB		0.075		0.075							
	Min Pulse	C		0.191		0.398							
	Min Pulse	SB		0.181		0.391							
F616EQ	C → Q		(HH)	0.095	0.134	0.216	0.483	0.636	0.992	D	0.006	Q	0.421
			(HL)	0.120	0.169	0.274	0.425	0.526	0.746	C	0.007		
	SB → Q		(LH)	0.097	0.147	0.243	0.482	0.635	0.990	SB	0.014		
	Set up time	D		0.170		0.373				EN	0.014		
	Set up time	EN		0.195		0.425							
	Hold time	D		0.015		0.000							
	Hold time	EN		0.008		0.000							
	Release time	SB		0.064		0.078							
	Removal time	SB		0.077		0.078							
	Min Pulse	C		0.198		0.414							
	Min Pulse	SB		0.187		0.404							
F616EQP	C → Q		(HH)	0.104	0.148	0.242	0.241	0.317	0.495	D	0.006	Q	0.843
			(HL)	0.125	0.177	0.287	0.212	0.262	0.371	C	0.007		
	SB → Q		(LH)	0.106	0.156	0.261	0.241	0.317	0.495	SB	0.014		
	Set up time	D		0.182		0.398				EN	0.012		
	Set up time	EN		0.209		0.451							
	Hold time	D		0.011		0.000							
	Hold time	EN		0.002		0.000							
	Release time	SB		0.069		0.085							
	Removal time	SB		0.073		0.071							
	Min Pulse	C		0.203		0.425							
	Min Pulse	SB		0.197		0.426							

Function	D-F/F with RB, SB											
Block type	Standard type											
	Normal				Q output				QB output			
Drivability	Name	cells	Name	cells	Name	cells	Name	cells	Name	cells	Name	cells
					L617NQ	8						
x2					F617NQ	9						
x4					F617NQP	10						
x8												

Logic Diagram for "Normal"

Truth Table for "Normal"

Logic Diagram for "Q output"



Truth Table for "Q output"

D	C	RB	SB	Q	
0	↗	1	1	0	
1	↗	1	1	1	
X	↘	1	1	Hold	
X	X	0	1	0	
X	X	1	0	1	
X	X	0	0	0	← Prohibition

X:Irrelevant

Logic Diagram for "QB output"

Truth Table for "QB output"

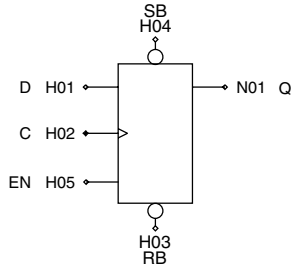
Block type	Switching speed									Input		Output	
	Path			t LD0 [ns]			t 1 (ns/pF)						
	IN → OUT			MIN.	TYP.	MAX.	MIN.	TYP.	MAX.	Symbol	Cin(pF)	Symbol	Cmax(pF)
L617NQ	C → Q		(HH)	0.110	0.156	0.253	0.972	1.279	1.996	D	0.007	Q	0.208
			(HL)	0.122	0.172	0.278	0.848	1.049	1.487	C	0.007		
	RB → Q		(LL)	0.047	0.067	0.108	0.849	1.053	1.495	RB	0.013		
	SB → Q		(LH)	0.106	0.159	0.265	0.968	1.274	1.987	SB	0.014		
	Set up time		D	0.109		0.194							
	Hold time		D	0.054		0.037							
	Release time		RB	0.000		0.000							
	Release time		SB	0.058		0.072							
	Removal time		RB	0.144		0.211							
	Removal time		SB	0.084		0.089							
	Min Pulse		C	0.203		0.421							
	Min Pulse		RB	0.122		0.246							
	Min Pulse		SB	0.195		0.422							
F617NQ	C → Q		(HH)	0.117	0.166	0.270	0.487	0.641	1.001	D	0.006	Q	0.418
			(HL)	0.127	0.179	0.290	0.425	0.527	0.748	C	0.006		
	RB → Q		(LL)	0.049	0.070	0.114	0.425	0.528	0.750	RB	0.014		
	SB → Q		(LH)	0.109	0.171	0.285	0.485	0.639	0.998	SB	0.014		
	Set up time		D	0.109		0.195							
	Hold time		D	0.056		0.042							
	Release time		RB	0.002		0.000							
	Release time		SB	0.062		0.079							
	Removal time		RB	0.141		0.204							
	Removal time		SB	0.080		0.083							
	Min Pulse		C	0.208		0.434							
	Min Pulse		RB	0.127		0.258							
	Min Pulse		SB	0.205		0.444							
F617NQP	C → Q		(HH)	0.133	0.187	0.304	0.245	0.323	0.506	D	0.007	Q	0.828
			(HL)	0.142	0.200	0.324	0.215	0.267	0.381	C	0.006		
	RB → Q		(LL)	0.065	0.092	0.149	0.214	0.267	0.380	RB	0.014		
	SB → Q		(LH)	0.127	0.195	0.323	0.244	0.322	0.504	SB	0.014		
	Set up time		D	0.109		0.195							
	Hold time		D	0.055		0.041							
	Release time		RB	0.002		0.000							
	Release time		SB	0.061		0.078							
	Removal time		RB	0.141		0.205							
	Removal time		SB	0.081		0.085							
	Min Pulse		C	0.223		0.467							
	Min Pulse		RB	0.155		0.312							
	Min Pulse		SB	0.224		0.483							

Function	D-F/F with RB, SB, EN											
Block type	Standard type											
	Normal				Q output				QB output			
Drivability	Name	cells	Name	cells	Name	cells	Name	cells	Name	cells	Name	cells
					L617EQ	10						
x2					F617EQ	11						
x4					F617EQP	12						
x8												

Logic Diagram for "Normal"

Truth Table for "Normal"

Logic Diagram for "Q output"



Truth Table for "Q output"

D	C	RB	SB	EN	Q	
0	↗	1	1	1	0	
1	↗	1	1	1	1	
X	↗	1	1	0	Hold	
X	↘	1	1	X	Hold	
X	X	0	1	X	0	
X	X	1	0	X	1	
X	X	0	0	X	0	← Prohibition

X:Irrelevant

Logic Diagram for "QB output"

Truth Table for "QB output"

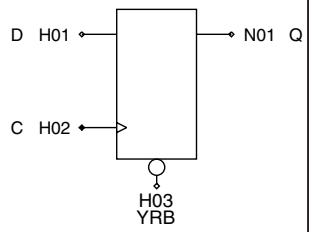
Block type	Switching speed								Input		Output	
	Path		t_{LD0} [ns]			t_1 (ns/pF)						
	IN → OUT		MIN.	TYP.	MAX.	MIN.	TYP.	MAX.	Symbol	Cin(pF)	Symbol	Cmax(pF)
L617EQ	C → Q	(HH)	0.110	0.156	0.254	0.972	1.279	1.997	D	0.006	Q	0.207
		(HL)	0.122	0.172	0.279	0.850	1.052	1.492	C	0.007		
	RB → Q	(LL)	0.046	0.066	0.107	0.849	1.054	1.498	RB	0.013		
	SB → Q	(LH)	0.111	0.171	0.283	0.968	1.274	1.987	SB	0.014		
	Set up time	D	0.179		0.398				EN	0.013		
	Set up time	EN	0.205		0.451							
	Hold time	D	0.011		0.000							
	Hold time	EN	0.004		0.000							
	Release time	RB	0.000		0.000							
	Release time	SB	0.060		0.074							
	Removal time	RB	0.144		0.212							
	Removal time	SB	0.082		0.086							
	Min Pulse	C	0.203		0.423							
	Min Pulse	RB	0.121		0.245							
	Min Pulse	SB	0.207		0.447							
F617EQ	C → Q	(HH)	0.114	0.161	0.262	0.488	0.642	1.003	D	0.006	Q	0.418
		(HL)	0.125	0.177	0.286	0.426	0.528	0.750	C	0.007		
	RB → Q	(LL)	0.050	0.071	0.115	0.426	0.529	0.752	RB	0.013		
	SB → Q	(LH)	0.114	0.169	0.280	0.486	0.640	0.999	SB	0.014		
	Set up time	D	0.173		0.385				EN	0.014		
	Set up time	EN	0.198		0.437							
	Hold time	D	0.014		0.000							
	Hold time	EN	0.006		0.000							
	Release time	RB	0.000		0.000							
	Release time	SB	0.059		0.074							
	Removal time	RB	0.145		0.212							
	Removal time	SB	0.083		0.087							
	Min Pulse	C	0.206		0.429							
	Min Pulse	RB	0.129		0.260							
	Min Pulse	SB	0.203		0.439							
F617EQP	C → Q	(HH)	0.132	0.186	0.301	0.245	0.324	0.507	D	0.006	Q	0.828
		(HL)	0.142	0.199	0.322	0.215	0.268	0.381	C	0.007		
	RB → Q	(LL)	0.065	0.092	0.149	0.214	0.267	0.380	RB	0.013		
	SB → Q	(LH)	0.133	0.194	0.321	0.244	0.322	0.504	SB	0.014		
	Set up time	D	0.173		0.386				EN	0.014		
	Set up time	EN	0.198		0.437							
	Hold time	D	0.014		0.000							
	Hold time	EN	0.006		0.000							
	Release time	RB	0.000		0.000							
	Release time	SB	0.059		0.074							
	Removal time	RB	0.145		0.212							
	Removal time	SB	0.083		0.087							
	Min Pulse	C	0.223		0.466							
	Min Pulse	RB	0.156		0.313							
	Min Pulse	SB	0.222		0.480							

Function	D-F/F with RB (Sync)											
Block type	Standard type											
	Normal				Q output				QB output			
Drivability	Name	cells	Name	cells	Name	cells	Name	cells	Name	cells	Name	cells
					L6Z5NQ	7						
x2					F6Z5NQ	7						
x4					F6Z5NQP	8						
x8												

Logic Diagram for "Normal"

Truth Table for "Normal"

Logic Diagram for "Q output"



Truth Table for "Q output"

D	C	YRB	Q
0	↗	1	0
1	↗	1	1
X	↗	0	0
X	↘	X	Hold

X:Irrelevant

Logic Diagram for "QB output"

Truth Table for "QB output"

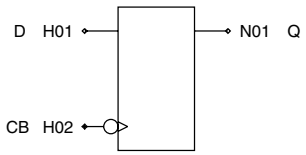
Block type	Switching speed								Input		Output	
	Path		t LD0 [ns]			t 1 (ns/pF)						
	IN → OUT		MIN.	TYP.	MAX.	MIN.	TYP.	MAX.	Symbol	Cin(pF)	Symbol	Cmax(pF)
L6Z5NQ	C → Q	(HH)	0.091	0.129	0.208	0.965	1.268	1.977	D	0.006	Q	0.209
		(HL)	0.109	0.152	0.243	0.843	1.040	1.470	C	0.006		
	Set up time	D	0.121		0.202				YRB	0.006		
	Set up time	YRB	0.120		0.207							
	Hold time	D	0.057		0.037							
	Hold time	YRB	0.053		0.028							
	Min Pulse	C	0.190		0.387							
F6Z5NQ	C → Q	(HH)	0.097	0.137	0.221	0.483	0.635	0.991	D	0.006	Q	0.421
		(HL)	0.116	0.162	0.259	0.424	0.524	0.743	C	0.006		
	Set up time	D	0.121		0.202				YRB	0.006		
	Set up time	YRB	0.120		0.207							
	Hold time	D	0.057		0.038							
	Hold time	YRB	0.053		0.029							
	Min Pulse	C	0.196		0.403							
F6Z5NQP	C → Q	(HH)	0.110	0.154	0.248	0.242	0.318	0.497	D	0.006	Q	0.839
		(HL)	0.131	0.184	0.295	0.214	0.266	0.377	C	0.006		
	Set up time	D	0.121		0.203				YRB	0.006		
	Set up time	YRB	0.120		0.208							
	Hold time	D	0.057		0.038							
	Hold time	YRB	0.053		0.029							
	Min Pulse	C	0.212		0.440							

Function	D-F/F (CB)											
Block type	Standard type											
	Normal				Q output				QB output			
Drivability	Name	cells	Name	cells	Name	cells	Name	cells	Name	cells	Name	cells
					L631NQ	6						
x2					F631NQ	7						
x4					F631NQP	8						
x8												

Logic Diagram for "Normal"

Truth Table for "Normal"

Logic Diagram for "Q output"



Truth Table for "Q output"

D	CB	Q
0	↘	0
1	↘	1
X	↗	Hold

X:Irrelevant

Logic Diagram for "QB output"

Truth Table for "QB output"

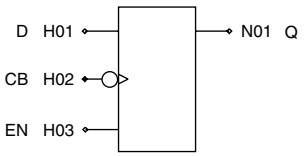
Block type	Switching speed								Input		Output	
	Path		t LD0 [ns]			t 1 (ns/pF)						
	IN → OUT		MIN.	TYP.	MAX.	MIN.	TYP.	MAX.	Symbol	Cin(pF)	Symbol	Cmax(pF)
L631NQ	CB → Q	(LH)	0.112	0.160	0.263	0.965	1.269	1.978	D	0.006	Q	0.209
		(LL)	0.099	0.140	0.227	0.843	1.041	1.472	CB	0.007		
	Set up time	D	0.107		0.168							
	Hold time	D	0.072		0.090							
	Min Pulse	CB	0.189		0.397							
F631NQ	CB → Q	(LH)	0.119	0.170	0.278	0.483	0.635	0.990	D	0.006	Q	0.419
		(LL)	0.107	0.151	0.245	0.424	0.524	0.742	CB	0.007		
	Set up time	D	0.107		0.168							
	Hold time	D	0.073		0.091							
	Min Pulse	CB	0.196		0.413							
F631NQP	CB → Q	(LH)	0.119	0.172	0.282	0.241	0.317	0.495	D	0.006	Q	0.843
		(LL)	0.106	0.151	0.245	0.211	0.261	0.369	CB	0.007		
	Set up time	D	0.108		0.169							
	Hold time	D	0.073		0.092							
	Min Pulse	CB	0.197		0.419							

Function	D-F/F (CB) with EN											
Block type	Standard type											
	Normal				Q output				QB output			
Drivability	Name	cells	Name	cells	Name	cells	Name	cells	Name	cells	Name	cells
					L631EQ	8						
x2					F631EQ	9						
x4					F631EQP	10						
x8												

Logic Diagram for "Normal"

Truth Table for "Normal"

Logic Diagram for "Q output"



Truth Table for "Q output"

D	CB	EN	Q
0	↘	1	0
1	↘	1	1
X	↘	0	Hold
X	↗	X	Hold

X:Irrelevant

Logic Diagram for "QB output"

Truth Table for "QB output"

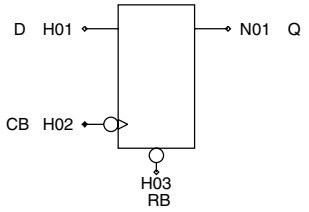
Block type	Switching speed									Input		Output	
	Path			t_{LD0} [ns]			t_1 (ns/pF)						
	IN → OUT			MIN.	TYP.	MAX.	MIN.	TYP.	MAX.	Symbol	Cin(pF)	Symbol	Cmax(pF)
L631EQ	CB → Q		(LH)	0.108	0.155	0.254	0.966	1.270	1.980	D	0.006	Q	0.209
			(LL)	0.096	0.136	0.222	0.845	1.043	1.476	CB	0.006		
	Set up time	D		0.177		0.361				EN	0.013		
	Set up time	EN		0.204		0.414							
	Hold time	D		0.049		0.043							
	Hold time	EN		0.035		0.005							
	Min Pulse	CB		0.183		0.387							
F631EQ	CB → Q		(LH)	0.114	0.164	0.268	0.483	0.636	0.992	D	0.006	Q	0.418
			(LL)	0.104	0.147	0.239	0.424	0.525	0.744	CB	0.006		
	Set up time	D		0.177		0.361				EN	0.013		
	Set up time	EN		0.204		0.414							
	Hold time	D		0.049		0.043							
	Hold time	EN		0.035		0.006							
	Min Pulse	CB		0.189		0.401							
F631EQP	CB → Q		(LH)	0.118	0.170	0.281	0.241	0.318	0.495	D	0.006	Q	0.843
			(LL)	0.108	0.153	0.249	0.212	0.262	0.371	CB	0.006		
	Set up time	D		0.178		0.363				EN	0.013		
	Set up time	EN		0.205		0.416							
	Hold time	D		0.050		0.046							
	Hold time	EN		0.037		0.009							
	Min Pulse	CB		0.194		0.415							

Function	D-F/F (CB) with RB											
Block type	Standard type											
	Normal				Q output				QB output			
Drivability	Name	cells	Name	cells	Name	cells	Name	cells	Name	cells	Name	cells
					L635NQ	7						
x2					F635NQ	8						
x4					F635NQP	10						
x8												

Logic Diagram for "Normal"

Truth Table for "Normal"

Logic Diagram for "Q output"



Truth Table for "Q output"

D	CB	RB	Q
0	↘	1	0
1	↘	1	1
X	↗	1	Hold
X	X	0	0

X:Irrelevant

Logic Diagram for "QB output"

Truth Table for "QB output"

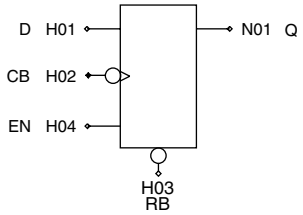
Block type	Switching speed									Input		Output	
	Path			t_{LD0} [ns]			t_1 (ns/pF)						
	IN → OUT			MIN.	TYP.	MAX.	MIN.	TYP.	MAX.	Symbol	Cin(pF)	Symbol	Cmax(pF)
L635NQ	CB → Q		(LH)	0.123	0.176	0.290	0.970	1.277	1.992	D	0.007	Q	0.209
			(LL)	0.100	0.142	0.232	0.844	1.043	1.476	CB	0.007		
	RB → Q		(LL)	0.044	0.063	0.101	0.845	1.047	1.484	RB	0.013		
	Set up time	D		0.109		0.172							
	Hold time	D		0.069		0.084							
	Release time	RB		0.000		0.000							
	Removal time	RB		0.147		0.230							
	Min Pulse	CB		0.199		0.424							
	Min Pulse	RB		0.116		0.235							
F635NQ	CB → Q		(LH)	0.133	0.190	0.312	0.487	0.641	1.001	D	0.007	Q	0.419
			(LL)	0.109	0.154	0.251	0.425	0.526	0.745	CB	0.007		
	RB → Q		(LL)	0.050	0.071	0.116	0.424	0.527	0.748	RB	0.013		
	Set up time	D		0.109		0.172							
	Hold time	D		0.069		0.084							
	Release time	RB		0.000		0.000							
	Removal time	RB		0.147		0.229							
	Min Pulse	CB		0.209		0.446							
	Min Pulse	RB		0.129		0.261							
F635NQP	CB → Q		(LH)	0.136	0.196	0.323	0.243	0.320	0.499	D	0.007	Q	0.838
			(LL)	0.113	0.160	0.262	0.212	0.262	0.371	CB	0.007		
	RB → Q		(LL)	0.046	0.065	0.106	0.212	0.263	0.373	RB	0.020		
	Set up time	D		0.110		0.173							
	Hold time	D		0.069		0.085							
	Release time	RB		0.000		0.000							
	Removal time	RB		0.144		0.223							
	Min Pulse	CB		0.213		0.459							
	Min Pulse	RB		0.121		0.245							

Function	D-F/F (CB) with RB, EN											
Block type	Standard type											
	Normal				Q output				QB output			
Drivability	Name	cells	Name	cells	Name	cells	Name	cells	Name	cells	Name	cells
					L635EQ	9						
x2					F635EQ	10						
x4					F635EQP	12						
x8												

Logic Diagram for "Normal"

Truth Table for "Normal"

Logic Diagram for "Q output"



Truth Table for "Q output"

D	CB	RB	EN	Q
0	↘	1	1	0
1	↘	1	1	1
X	↘	1	0	Hold
X	↗	1	X	Hold
X	X	0	X	0

X:Irrelevant

Logic Diagram for "QB output"

Truth Table for "QB output"

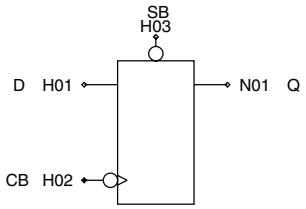
Block type	Switching speed									Input		Output	
	Path			t_{LD0} [ns]			t_1 (ns/pF)						
	IN → OUT			MIN.	TYP.	MAX.	MIN.	TYP.	MAX.	Symbol	Cin(pF)	Symbol	Cmax(pF)
L635EQ	CB → Q		(LH)	0.122	0.175	0.288	0.972	1.279	1.995	D	0.006	Q	0.209
			(LL)	0.100	0.142	0.231	0.845	1.045	1.479	CB	0.006		
	RB → Q		(LL)	0.045	0.064	0.103	0.846	1.048	1.487	RB	0.013		
	Set up time	D		0.179		0.368				EN	0.013		
	Set up time	EN		0.206		0.421							
	Hold time	D		0.047		0.043							
	Hold time	EN		0.033		0.006							
	Release time	RB		0.000		0.000							
	Removal time	RB		0.144		0.225							
	Min Pulse	CB		0.196		0.421							
	Min Pulse	RB		0.117		0.237							
F635EQ	CB → Q		(LH)	0.130	0.187	0.308	0.488	0.642	1.002	D	0.006	Q	0.416
			(LL)	0.107	0.152	0.248	0.425	0.526	0.746	CB	0.006		
	RB → Q		(LL)	0.052	0.074	0.119	0.424	0.527	0.748	RB	0.013		
	Set up time	D		0.179		0.368				EN	0.013		
	Set up time	EN		0.206		0.421							
	Hold time	D		0.047		0.044							
	Hold time	EN		0.033		0.006							
	Release time	RB		0.000		0.000							
	Removal time	RB		0.144		0.226							
	Min Pulse	CB		0.205		0.441							
	Min Pulse	RB		0.131		0.265							
F635EQP	CB → Q		(LH)	0.139	0.201	0.332	0.243	0.320	0.499	D	0.006	Q	0.838
			(LL)	0.116	0.165	0.269	0.212	0.262	0.371	CB	0.006		
	RB → Q		(LL)	0.046	0.065	0.106	0.212	0.263	0.373	RB	0.020		
	Set up time	D		0.179		0.367				EN	0.013		
	Set up time	EN		0.205		0.419							
	Hold time	D		0.050		0.049							
	Hold time	EN		0.037		0.013							
	Release time	RB		0.002		0.000							
	Removal time	RB		0.140		0.220							
	Min Pulse	CB		0.217		0.469							
	Min Pulse	RB		0.120		0.244							

Function	D-F/F (CB) with SB											
Block type	Standard type											
	Normal				Q output				QB output			
Drivability	Name	cells	Name	cells	Name	cells	Name	cells	Name	cells	Name	cells
					L636NQ	7						
x2					F636NQ	8						
x4					F636NQP	9						
x8												

Logic Diagram for "Normal"

Truth Table for "Normal"

Logic Diagram for "Q output"



Truth Table for "Q output"

D	CB	SB	Q
0	↘	1	0
1	↘	1	1
X	↗	1	Hold
X	X	0	1

X:Irrelevant

Logic Diagram for "QB output"

Truth Table for "QB output"

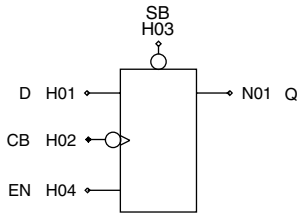
Block type	Switching speed									Input		Output	
	Path			t_{LD0} [ns]			t_1 (ns/pF)						
	IN → OUT			MIN.	TYP.	MAX.	MIN.	TYP.	MAX.	Symbol	Cin(pF)	Symbol	Cmax(pF)
L636NQ	CB → Q		(LH)	0.109	0.156	0.256	0.965	1.269	1.978	D	0.007	Q	0.209
			(LL)	0.102	0.146	0.239	0.844	1.043	1.476	CB	0.007		
	SB → Q		(LH)	0.085	0.136	0.226	0.964	1.268	1.976	SB	0.014		
	Set up time	D		0.116		0.193							
	Hold time	D		0.069		0.083							
	Release time	SB		0.062		0.070							
	Removal time	SB		0.080		0.093							
	Min Pulse	CB		0.185		0.391							
	Min Pulse	SB		0.177		0.384							
F636NQ	CB → Q		(LH)	0.116	0.165	0.271	0.483	0.635	0.991	D	0.007	Q	0.418
			(LL)	0.110	0.157	0.258	0.424	0.525	0.744	CB	0.007		
	SB → Q		(LH)	0.092	0.146	0.242	0.483	0.635	0.989	SB	0.014		
	Set up time	D		0.116		0.192							
	Hold time	D		0.070		0.084							
	Release time	SB		0.062		0.070							
	Removal time	SB		0.080		0.093							
	Min Pulse	CB		0.191		0.405							
	Min Pulse	SB		0.185		0.400							
F636NQP	CB → Q		(LH)	0.119	0.171	0.282	0.241	0.317	0.495	D	0.007	Q	0.842
			(LL)	0.115	0.164	0.270	0.212	0.262	0.371	CB	0.007		
	SB → Q		(LH)	0.096	0.153	0.255	0.241	0.317	0.495	SB	0.014		
	Set up time	D		0.117		0.194							
	Hold time	D		0.071		0.085							
	Release time	SB		0.062		0.071							
	Removal time	SB		0.079		0.091							
	Min Pulse	CB		0.196		0.418							
	Min Pulse	SB		0.194		0.419							

Function	D-F/F (CB) with SB, EN											
Block type	Standard type											
	Normal				Q output				QB output			
Drivability	Name	cells	Name	cells	Name	cells	Name	cells	Name	cells	Name	cells
					L636EQ	9						
x2					F636EQ	10						
x4					F636EQP	11						
x8												

Logic Diagram for "Normal"

Truth Table for "Normal"

Logic Diagram for "Q output"



Truth Table for "Q output"

D	CB	SB	EN	Q
0	↘	1	1	0
1	↘	1	1	1
X	↘	1	0	Hold
X	↗	1	X	Hold
X	X	0	X	1

X:Irrelevant

Logic Diagram for "QB output"

Truth Table for "QB output"

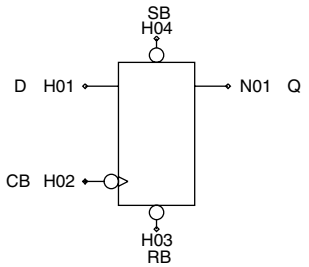
Block type	Switching speed								Input		Output	
	Path		t LD0 [ns]			t 1 (ns/pF)						
	IN → OUT		MIN.	TYP.	MAX.	MIN.	TYP.	MAX.	Symbol	Cin(pF)	Symbol	Cmax(pF)
L636EQ	CB → Q	(LH)	0.109	0.156	0.257	0.965	1.269	1.979	D	0.006	Q	0.209
		(LL)	0.103	0.147	0.241	0.844	1.043	1.476	CB	0.006		
	SB → Q	(LH)	0.093	0.139	0.231	0.964	1.268	1.976	SB	0.014		
	Set up time	D	0.186		0.388				EN	0.012		
	Set up time	EN	0.213		0.442							
	Hold time	D	0.051		0.044							
	Hold time	EN	0.037		0.006							
	Release time	SB	0.062		0.070							
	Removal time	SB	0.080		0.094							
	Min Pulse	CB	0.184		0.391							
	Min Pulse	SB	0.180		0.389							
F636EQ	CB → Q	(LH)	0.115	0.165	0.271	0.483	0.636	0.991	D	0.006	Q	0.419
		(LL)	0.111	0.159	0.261	0.424	0.525	0.744	CB	0.006		
	SB → Q	(LH)	0.101	0.149	0.248	0.483	0.635	0.989	SB	0.014		
	Set up time	D	0.187		0.393				EN	0.012		
	Set up time	EN	0.214		0.447							
	Hold time	D	0.050		0.043							
	Hold time	EN	0.036		0.005							
	Release time	SB	0.062		0.071							
	Removal time	SB	0.079		0.094							
	Min Pulse	CB	0.190		0.405							
	Min Pulse	SB	0.189		0.407							
F636EQP	CB → Q	(LH)	0.118	0.171	0.283	0.241	0.317	0.495	D	0.006	Q	0.843
		(LL)	0.117	0.167	0.274	0.212	0.262	0.371	CB	0.006		
	SB → Q	(LH)	0.105	0.157	0.261	0.241	0.317	0.495	SB	0.014		
	Set up time	D	0.188		0.394				EN	0.012		
	Set up time	EN	0.215		0.447							
	Hold time	D	0.051		0.045							
	Hold time	EN	0.038		0.007							
	Release time	SB	0.063		0.072							
	Removal time	SB	0.079		0.093							
	Min Pulse	CB	0.197		0.418							
	Min Pulse	SB	0.198		0.426							

Function	D-F/F (CB) with RB, SB											
Block type	Standard type											
	Normal				Q output				QB output			
Drivability	Name	cells	Name	cells	Name	cells	Name	cells	Name	cells	Name	cells
					L637NQ	8						
x2					F637NQ	9						
x4					F637NQP	10						
x8												

Logic Diagram for "Normal"

Truth Table for "Normal"

Logic Diagram for "Q output"



Truth Table for "Q output"

D	CB	RB	SB	Q	
0	↘	1	1	0	
1	↘	1	1	1	
X	↗	1	1	Hold	
X	X	0	1	0	
X	X	1	0	1	
X	X	0	0	0	← Prohibition

X:Irrelevant

Logic Diagram for "QB output"

Truth Table for "QB output"

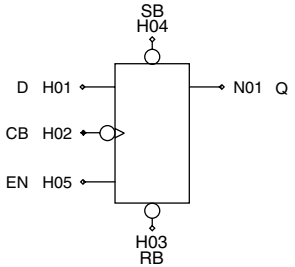
Block type	Switching speed									Input		Output	
	Path			t LD0 [ns]			t 1 (ns/pF)						
	IN → OUT			MIN.	TYP.	MAX.	MIN.	TYP.	MAX.	Symbol	Cin(pF)	Symbol	Cmax(pF)
L637NQ	CB → Q		(LH)	0.128	0.183	0.302	0.972	1.279	1.996	D	0.007	Q	0.208
			(LL)	0.108	0.155	0.253	0.848	1.049	1.488	CB	0.007		
	RB → Q		(LL)	0.047	0.067	0.108	0.849	1.053	1.495	RB	0.013		
	SB → Q		(LH)	0.106	0.159	0.265	0.968	1.274	1.987	SB	0.014		
	Set up time		D	0.120		0.202							
	Hold time		D	0.069		0.085							
	Release time		RB	0.000		0.000							
	Release time		SB	0.061		0.070							
	Removal time		RB	0.155		0.243							
	Removal time		SB	0.081		0.094							
	Min Pulse		CB	0.203		0.435							
	Min Pulse		RB	0.122		0.246							
	Min Pulse		SB	0.195		0.422							
F637NQ	CB → Q		(LH)	0.134	0.192	0.316	0.487	0.641	1.001	D	0.007	Q	0.418
			(LL)	0.115	0.164	0.268	0.425	0.527	0.748	CB	0.007		
	RB → Q		(LL)	0.049	0.070	0.114	0.425	0.528	0.750	RB	0.014		
	SB → Q		(LH)	0.109	0.171	0.285	0.485	0.639	0.998	SB	0.014		
	Set up time		D	0.118		0.199							
	Hold time		D	0.069		0.085							
	Release time		RB	0.000		0.000							
	Release time		SB	0.062		0.075							
	Removal time		RB	0.154		0.241							
	Removal time		SB	0.080		0.092							
	Min Pulse		CB	0.210		0.451							
	Min Pulse		RB	0.127		0.258							
	Min Pulse		SB	0.205		0.444							
F637NQP	CB → Q		(LH)	0.151	0.215	0.352	0.245	0.323	0.506	D	0.006	Q	0.828
			(LL)	0.129	0.184	0.301	0.215	0.267	0.381	CB	0.007		
	RB → Q		(LL)	0.065	0.092	0.149	0.214	0.267	0.380	RB	0.014		
	SB → Q		(LH)	0.127	0.195	0.323	0.244	0.322	0.504	SB	0.014		
	Set up time		D	0.118		0.199							
	Hold time		D	0.069		0.085							
	Release time		RB	0.000		0.000							
	Release time		SB	0.062		0.074							
	Removal time		RB	0.154		0.241							
	Removal time		SB	0.080		0.093							
	Min Pulse		CB	0.226		0.486							
	Min Pulse		RB	0.155		0.312							
	Min Pulse		SB	0.224		0.483							

Function	D-F/F (CB) with RB, SB, EN											
Block type	Standard type											
	Normal				Q output				QB output			
Drivability	Name	cells	Name	cells	Name	cells	Name	cells	Name	cells	Name	cells
					L637EQ	10						
x2					F637EQ	11						
x4					F637EQP	12						
x8												

Logic Diagram for "Normal"

Truth Table for "Normal"

Logic Diagram for "Q output"



Truth Table for "Q output"

D	CB	RB	SB	EN	Q	
0	↘	1	1	1	0	
1	↘	1	1	1	1	
X	↘	1	1	0	Hold	
X	↗	1	1	X	Hold	
X	X	0	1	X	0	
X	X	1	0	X	1	
X	X	0	0	X	0	← Prohibition

X:Irrelevant

Logic Diagram for "QB output"

Truth Table for "QB output"

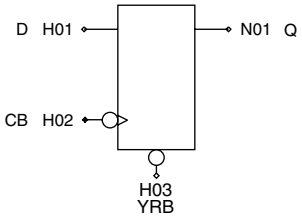
Block type	Switching speed									Input		Output	
	Path			t_{LD0} [ns]			t_1 (ns/pF)						
	IN → OUT			MIN.	TYP.	MAX.	MIN.	TYP.	MAX.	Symbol	Cin(pF)	Symbol	Cmax(pF)
L637EQ	CB → Q		(LH)	0.129	0.184	0.303	0.972	1.280	1.997	D	0.006	Q	0.207
			(LL)	0.109	0.155	0.254	0.850	1.052	1.492	CB	0.007		
	RB → Q		(LL)	0.046	0.066	0.107	0.849	1.054	1.498	RB	0.013		
	SB → Q		(LH)	0.111	0.170	0.283	0.968	1.274	1.987	SB	0.014		
	Set up time		D	0.191		0.401				EN	0.013		
	Set up time		EN	0.217		0.454							
	Hold time		D	0.051		0.047							
	Hold time		EN	0.038		0.011							
	Release time		RB	0.000		0.000							
	Release time		SB	0.060		0.069							
	Removal time		RB	0.154		0.242							
	Removal time		SB	0.082		0.096							
	Min Pulse		CB	0.204		0.438							
	Min Pulse		RB	0.121		0.245							
	Min Pulse		SB	0.207		0.446							
F637EQ	CB → Q		(LH)	0.131	0.188	0.309	0.487	0.642	1.003	D	0.006	Q	0.418
			(LL)	0.111	0.158	0.261	0.426	0.528	0.750	CB	0.007		
	RB → Q		(LL)	0.050	0.071	0.115	0.426	0.529	0.752	RB	0.013		
	SB → Q		(LH)	0.114	0.169	0.281	0.486	0.640	0.999	SB	0.014		
	Set up time		D	0.186		0.391				EN	0.014		
	Set up time		EN	0.211		0.442							
	Hold time		D	0.052		0.048							
	Hold time		EN	0.040		0.015							
	Release time		RB	0.000		0.000							
	Release time		SB	0.061		0.070							
	Removal time		RB	0.152		0.240							
	Removal time		SB	0.081		0.095							
	Min Pulse		CB	0.206		0.443							
	Min Pulse		RB	0.128		0.260							
	Min Pulse		SB	0.203		0.440							
F637EQP	CB → Q		(LH)	0.149	0.212	0.349	0.245	0.324	0.507	D	0.006	Q	0.828
			(LL)	0.127	0.181	0.297	0.215	0.268	0.381	CB	0.007		
	RB → Q		(LL)	0.065	0.092	0.149	0.214	0.267	0.381	RB	0.013		
	SB → Q		(LH)	0.132	0.195	0.322	0.244	0.322	0.504	SB	0.014		
	Set up time		D	0.186		0.392				EN	0.014		
	Set up time		EN	0.211		0.442							
	Hold time		D	0.052		0.049							
	Hold time		EN	0.041		0.016							
	Release time		RB	0.000		0.000							
	Release time		SB	0.060		0.071							
	Removal time		RB	0.153		0.240							
	Removal time		SB	0.082		0.095							
	Min Pulse		CB	0.224		0.482							
	Min Pulse		RB	0.156		0.313							
	Min Pulse		SB	0.223		0.482							

Function	D-F/F (CB) with RB (Sync)											
Block type	Standard type											
	Normal				Q output				QB output			
Drivability	Name	cells	Name	cells	Name	cells	Name	cells	Name	cells	Name	cells
					L6Y5NQ	7						
x2					F6Y5NQ	7						
x4					F6Y5NQP	8						
x8												

Logic Diagram for "Normal"

Truth Table for "Normal"

Logic Diagram for "Q output"



Truth Table for "Q output"

D	CB	YRB	Q
0	↘	1	0
1	↘	1	1
X	↗	X	Hold
X	↗	0	0

X:Irrelevant

Logic Diagram for "QB output"

Truth Table for "QB output"

Block type	Switching speed									Input		Output	
	Path			t_{LD0} [ns]			t_1 (ns/pF)						
	IN → OUT			MIN.	TYP.	MAX.	MIN.	TYP.	MAX.	Symbol	Cin(pF)	Symbol	Cmax(pF)
L6Y5NQ	CB → Q		(LH)	0.110	0.158	0.259	0.964	1.268	1.977	D	0.006	Q	0.209
			(LL)	0.097	0.137	0.223	0.842	1.040	1.470	CB	0.007		
	Set up time	D		0.114		0.181				YRB	0.006		
	Set up time	YRB		0.114		0.186							
	Hold time	D		0.054		0.051							
	Hold time	YRB		0.055		0.046							
	Min Pulse	CB		0.187		0.394							
F6Y5NQ	CB → Q		(LH)	0.116	0.166	0.272	0.483	0.635	0.991	D	0.006	Q	0.421
			(LL)	0.104	0.147	0.239	0.424	0.524	0.743	CB	0.007		
	Set up time	D		0.114		0.181				YRB	0.006		
	Set up time	YRB		0.114		0.187							
	Hold time	D		0.054		0.051							
	Hold time	YRB		0.055		0.046							
	Min Pulse	CB		0.193		0.407							
F6Y5NQP	CB → Q		(LH)	0.129	0.184	0.300	0.242	0.318	0.497	D	0.006	Q	0.839
			(LL)	0.120	0.170	0.277	0.214	0.266	0.377	CB	0.007		
	Set up time	D		0.113		0.182				YRB	0.006		
	Set up time	YRB		0.114		0.187							
	Hold time	D		0.054		0.052							
	Hold time	YRB		0.055		0.046							
	Min Pulse	CB		0.206		0.435							

[MEMO]

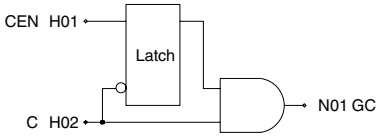
[MEMO]

2.11 Gating Cell

[MEMO]

Function	Gating Cell with Latch Posedge											
Block type	Single output type						Multi output type					
Drivability	Name	cells	Name	cells	Name	cells	Name	cells	Name	cells	Name	cells
x2	FCGP1	6										
x4	FCGP1NP	8										
x6												
x8	FCGP1NT	12										
x10												
x12	FCGP1NU	16										
x14												
x16												

Logic Diagram for "Single output type"



CEN	C	GC
0	↗	0
0	↘	0
1	↗	↗
1	↘	↘

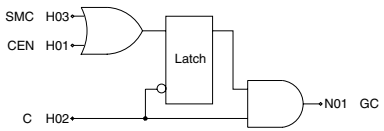
Please call Renesas Electronics when you use these blocks.
Because these blocks depend on design flow.

Logic Diagram for "Multi output type"

Block type	Switching speed									Input		Output	
	Path		t LD0 [ns]			t 1 (ns/pF)							
	IN → OUT		MIN.	TYP.	MAX.	MIN.	TYP.	MAX.		Symbol	Cin(pF)	Symbol	Cmax(pF)
FCGP1	C → GC	(HH)	0.042	0.059	0.096	0.484	0.637	0.993		CEN	0.007	GC	0.420
		(LL)	0.038	0.053	0.086	0.422	0.521	0.737		C	0.013		
	Set up time	CEN	0.109		0.169								
	Hold time	CEN	0.044		0.000								
	Min Pulse	C	0.138		0.239								
FCGP1NP	C → GC	(HH)	0.038	0.053	0.085	0.242	0.318	0.496		CEN	0.007	GC	0.841
		(LL)	0.062	0.088	0.142	0.282	0.350	0.496		C	0.019		
	Set up time	CEN	0.112		0.185								
	Hold time	CEN	0.041		0.000								
	Min Pulse	C	0.169		0.309								
FCGP1NT	C → GC	(HH)	0.040	0.056	0.090	0.121	0.159	0.249		CEN	0.007	GC	1.682
		(LL)	0.048	0.067	0.108	0.141	0.174	0.246		C	0.032		
	Set up time	CEN	0.119		0.217								
	Hold time	CEN	0.035		0.000								
	Min Pulse	C	0.126		0.249								
FCGP1NU	C → GC	(HH)	0.041	0.057	0.092	0.081	0.106	0.166		CEN	0.007	GC	2.523
		(LL)	0.045	0.063	0.101	0.094	0.116	0.163		C	0.046		
	Set up time	CEN	0.128		0.248								
	Hold time	CEN	0.028		0.000								
	Min Pulse	C	0.125		0.235								

Function	Gating Cell with Latch Posedge Precontrol											
Block type	Single output type						Multi output type					
Drivability	Name	cells	Name	cells	Name	cells	Name	cells	Name	cells	Name	cells
x2	FCGP2	6										
x4	FCGP2NP	8										
x6												
x8	FCGP2NT	12										
x10												
x12	FCGP2NU	16										
x14												
x16												

Logic Diagram for "Single output type"



CEN	C	SMC	GC
0	↗	0	0
0	↘	0	0
1	↗	0	↗
1	↘	0	↘
X	↗	1	↗
X	↘	1	↘

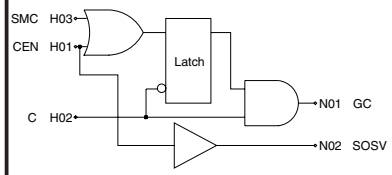
Please call Renesas Electronics when you use these blocks.
Because these blocks depend on design flow.

Logic Diagram for "Multi output type"

Block type	Switching speed									Input		Output	
	Path		t LD0 [ns]			t 1 (ns/pF)							
	IN → OUT		MIN.	TYP.	MAX.	MIN.	TYP.	MAX.		Symbol	Cin(pF)	Symbol	Cmax(pF)
FCGP2	C → GC	(HH)	0.043	0.059	0.096	0.484	0.637	0.993		CEN	0.007	GC	0.419
		(LL)	0.038	0.053	0.086	0.422	0.521	0.737		C	0.013		
	Set up time	CEN	0.129		0.235					SMC	0.006		
	Set up time	SMC	0.131		0.251								
	Hold time	CEN	0.030		0.000								
	Hold time	SMC	0.027		0.000								
	Min Pulse	C	0.138		0.239								
FCGP2NP	C → GC	(HH)	0.038	0.053	0.085	0.242	0.318	0.496		CEN	0.007	GC	0.841
		(LL)	0.062	0.088	0.142	0.282	0.350	0.496		C	0.019		
	Set up time	CEN	0.139		0.253					SMC	0.006		
	Set up time	SMC	0.141		0.269								
	Hold time	CEN	0.028		0.000								
	Hold time	SMC	0.025		0.000								
	Min Pulse	C	0.169		0.309								
FCGP2NT	C → GC	(HH)	0.040	0.056	0.090	0.121	0.159	0.249		CEN	0.007	GC	1.682
		(LL)	0.048	0.067	0.108	0.141	0.174	0.246		C	0.032		
	Set up time	CEN	0.145		0.270					SMC	0.006		
	Set up time	SMC	0.147		0.285								
	Hold time	CEN	0.023		0.000								
	Hold time	SMC	0.020		0.000								
	Min Pulse	C	0.126		0.249								
FCGP2NU	C → GC	(HH)	0.041	0.057	0.092	0.081	0.106	0.166		CEN	0.007	GC	2.522
		(LL)	0.045	0.063	0.101	0.094	0.116	0.163		C	0.046		
	Set up time	CEN	0.153		0.288					SMC	0.006		
	Set up time	SMC	0.154		0.304								
	Hold time	CEN	0.018		0.000								
	Hold time	SMC	0.014		0.000								
	Min Pulse	C	0.125		0.235								

Function	Gating Cell with Latch Posedge Precontrol OBS											
Block type	Single output type						Multi output type					
Drivability	Name	cells	Name	cells	Name	cells	Name	cells	Name	cells	Name	cells
x2	FCGP3	7										
x4	FCGP3NP	9										
x6												
x8	FCGP3NT	13										
x10												
x12	FCGP3NU	17										
x14												
x16												

Logic Diagram for "Single output type"



CEN	C	SMC	GC	SOSV
0	↗	0	0	0
0	↘	0	0	0
1	↗	0	↗	1
1	↘	0	↘	1
X	↗	1	↗	X
X	↘	1	↘	X

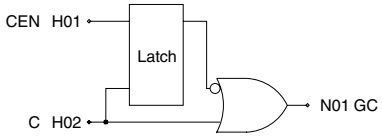
Please call Renesas Electronics when you use these blocks.
Because these blocks depend on design flow.

Logic Diagram for "Multi output type"

Block type	Switching speed									Input		Output	
	Path			t_{LD0} [ns]			t_1 (ns/pF)						
	IN → OUT			MIN.	TYP.	MAX.	MIN.	TYP.	MAX.	Symbol	Cin(pF)	Symbol	Cmax(pF)
FCGP3	CEN → SOSV		(HH)	0.025	0.033	0.051	0.962	1.264	1.970	CEN	0.013	GC	0.420
			(LL)	0.028	0.039	0.063	0.837	1.030	1.452	C	0.013	SOSV	0.210
	C → GC		(HH)	0.042	0.059	0.095	0.484	0.637	0.993	SMC	0.006		
			(LL)	0.038	0.053	0.086	0.422	0.521	0.737				
	Set up time	CEN		0.130		0.237							
	Set up time	SMC		0.132		0.253							
	Hold time	CEN		0.030		0.000							
	Hold time	SMC		0.026		0.000							
	Min Pulse	C		0.138		0.239							
FCGP3NP	CEN → SOSV		(HH)	0.025	0.033	0.051	0.962	1.263	1.969	CEN	0.013	GC	0.841
			(LL)	0.028	0.039	0.064	0.836	1.029	1.451	C	0.019	SOSV	0.210
	C → GC		(HH)	0.038	0.052	0.084	0.242	0.318	0.496	SMC	0.006		
			(LL)	0.062	0.088	0.142	0.282	0.349	0.495				
	Set up time	CEN		0.139		0.253							
	Set up time	SMC		0.141		0.270							
	Hold time	CEN		0.028		0.000							
	Hold time	SMC		0.024		0.000							
	Min Pulse	C		0.168		0.308							
FCGP3NT	CEN → SOSV		(HH)	0.025	0.033	0.051	0.961	1.263	1.968	CEN	0.013	GC	1.682
			(LL)	0.028	0.039	0.064	0.836	1.029	1.450	C	0.033	SOSV	0.210
	C → GC		(HH)	0.040	0.055	0.089	0.121	0.159	0.248	SMC	0.006		
			(LL)	0.047	0.067	0.108	0.141	0.174	0.246				
	Set up time	CEN		0.145		0.272							
	Set up time	SMC		0.148		0.288							
	Hold time	CEN		0.023		0.000							
	Hold time	SMC		0.019		0.000							
	Min Pulse	C		0.125		0.248							
FCGP3NU	CEN → SOSV		(HH)	0.025	0.034	0.052	0.961	1.263	1.968	CEN	0.013	GC	2.523
			(LL)	0.028	0.040	0.064	0.836	1.029	1.450	C	0.046	SOSV	0.210
	C → GC		(HH)	0.041	0.056	0.091	0.081	0.106	0.166	SMC	0.006		
			(LL)	0.045	0.063	0.101	0.094	0.116	0.163				
	Set up time	CEN		0.153		0.291							
	Set up time	SMC		0.156		0.308							
	Hold time	CEN		0.017		0.000							
	Hold time	SMC		0.014		0.000							
	Min Pulse	C		0.125		0.234							

Function	Gating Cell with Latch Negedge											
Block type	Single output type						Multi output type					
Drivability	Name	cells	Name	cells	Name	cells	Name	cells	Name	cells	Name	cells
x2	FCGN1	6										
x4	FCGN1NP	8										
x6												
x8	FCGN1NT	12										
x10												
x12	FCGN1NU	16										
x14												
x16												

Logic Diagram for "Single output type"



CEN	C	GC
0	↗	1
0	↘	1
1	↗	↗
1	↘	↘

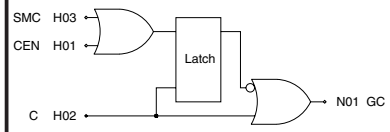
Please call Renesas Electronics when you use these blocks.
Because these blocks depend on design flow.

Logic Diagram for "Multi output type"

Block type	Switching speed									Input		Output	
	Path		t_{LD0} [ns]			t_1 (ns/pF)							
	IN → OUT		MIN.	TYP.	MAX.	MIN.	TYP.	MAX.		Symbol	Cin(pF)	Symbol	Cmax(pF)
FCGN1	C → GC	(HH)	0.031	0.042	0.065	0.482	0.634	0.988		CEN	0.006	GC	0.421
		(LL)	0.061	0.092	0.155	0.430	0.535	0.764		C	0.013		
	Set up time	CEN	0.114		0.215								
	Hold time	CEN	0.051		0.036								
	Min Pulse	C	0.159		0.292								
FCGN1NP	C → GC	(HH)	0.032	0.043	0.066	0.241	0.317	0.494		CEN	0.006	GC	0.843
		(LL)	0.063	0.094	0.158	0.215	0.268	0.383		C	0.020		
	Set up time	CEN	0.116		0.224								
	Hold time	CEN	0.052		0.036								
	Min Pulse	C	0.161		0.295								
FCGN1NT	C → GC	(HH)	0.037	0.050	0.077	0.121	0.159	0.247		CEN	0.006	GC	1.684
		(LL)	0.059	0.089	0.148	0.107	0.134	0.191		C	0.033		
	Set up time	CEN	0.124		0.245								
	Hold time	CEN	0.052		0.036								
	Min Pulse	C	0.143		0.275								
FCGN1NU	C → GC	(HH)	0.040	0.054	0.083	0.081	0.106	0.165		CEN	0.006	GC	2.524
		(LL)	0.058	0.087	0.145	0.072	0.089	0.127		C	0.046		
	Set up time	CEN	0.134		0.267								
	Hold time	CEN	0.052		0.036								
	Min Pulse	C	0.136		0.268								

Function	Gating Cell with Latch Negedge Precontrol											
Block type	Single output type						Multi output type					
Drivability	Name	cells	Name	cells	Name	cells	Name	cells	Name	cells	Name	cells
x2	FCGN2	7										
x4	FCGN2NP	9										
x6												
x8	FCGN2NT	13										
x10												
x12	FCGN2NU	17										
x14												
x16												

Logic Diagram for "Single output type"



CEN	C	SMC	GC
0	↗	0	1
0	↘	0	1
1	↗	0	↗
1	↘	0	↘
X	↗	1	↗
X	↘	1	↘

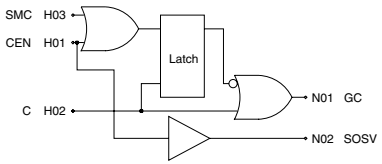
Please call Renesas Electronics when you use these blocks.
Because these blocks depend on design flow.

Logic Diagram for "Multi output type"

Block type	Switching speed									Input		Output	
	Path		t LD0 [ns]			t 1 (ns/pF)							
	IN → OUT		MIN.	TYP.	MAX.	MIN.	TYP.	MAX.		Symbol	Cin(pF)	Symbol	Cmax(pF)
FCGN2	C → GC	(HH)	0.031	0.042	0.065	0.482	0.634	0.988		CEN	0.007	GC	0.421
		(LL)	0.061	0.092	0.155	0.430	0.535	0.763		C	0.014		
	Set up time	CEN	0.144		0.262					SMC	0.006		
	Set up time	SMC	0.146		0.278								
	Hold time	CEN	0.048		0.030								
	Hold time	SMC	0.045		0.023								
	Min Pulse	C	0.159		0.291								
FCGN2NP	C → GC	(HH)	0.032	0.042	0.065	0.241	0.317	0.494		CEN	0.007	GC	0.843
		(LL)	0.062	0.093	0.156	0.215	0.268	0.383		C	0.020		
	Set up time	CEN	0.146		0.268					SMC	0.006		
	Set up time	SMC	0.148		0.283								
	Hold time	CEN	0.049		0.030								
	Hold time	SMC	0.045		0.023								
	Min Pulse	C	0.160		0.293								
FCGN2NT	C → GC	(HH)	0.037	0.050	0.077	0.121	0.159	0.247		CEN	0.007	GC	1.684
		(LL)	0.059	0.088	0.147	0.107	0.134	0.191		C	0.032		
	Set up time	CEN	0.155		0.288					SMC	0.006		
	Set up time	SMC	0.157		0.304								
	Hold time	CEN	0.049		0.030								
	Hold time	SMC	0.045		0.023								
	Min Pulse	C	0.143		0.274								
FCGN2NU	C → GC	(HH)	0.040	0.054	0.082	0.081	0.106	0.165		CEN	0.007	GC	2.524
		(LL)	0.058	0.087	0.145	0.072	0.089	0.127		C	0.045		
	Set up time	CEN	0.165		0.312					SMC	0.006		
	Set up time	SMC	0.167		0.328								
	Hold time	CEN	0.049		0.030								
	Hold time	SMC	0.045		0.023								
	Min Pulse	C	0.136		0.268								

Function	Gating Cell with Latch Negedge Precontrol OBS											
Block type	Single output type						Multi output type					
Drivability	Name	cells	Name	cells	Name	cells	Name	cells	Name	cells	Name	cells
x2	FCGN3	8										
x4	FCGN3NP	10										
x6												
x8	FCGN3NT	14										
x10												
x12	FCGN3NU	18										
x14												
x16												

Logic Diagram for "Single output type"



CEN	C	SMC	GC	SOSV
0	↗	0	1	0
0	↘	0	1	0
1	↗	0	↗	1
1	↘	0	↘	1
X	↗	1	↗	X
X	↘	1	↘	X

Please call Renesas Electronics when you use these blocks.
Because these blocks depend on design flow.

Logic Diagram for "Multi output type"

Block type	Switching speed									Input		Output	
	Path			t_{LD0} [ns]			t_1 (ns/pF)						
	IN → OUT			MIN.	TYP.	MAX.	MIN.	TYP.	MAX.	Symbol	Cin(pF)	Symbol	Cmax(pF)
FCGN3	CEN → SOSV		(HH)	0.025	0.033	0.051	0.962	1.264	1.970	CEN	0.013	GC	0.421
			(LL)	0.028	0.039	0.063	0.837	1.030	1.452	C	0.013	SOSV	0.210
	C → GC		(HH)	0.031	0.042	0.065	0.482	0.634	0.988	SMC	0.006		
			(LL)	0.061	0.092	0.155	0.430	0.535	0.764				
	Set up time	CEN		0.143		0.260							
	Set up time	SMC		0.145		0.276							
	Hold time	CEN		0.048		0.029							
	Hold time	SMC		0.045		0.022							
	Min Pulse	C		0.159		0.291							
FCGN3NP	CEN → SOSV		(HH)	0.025	0.033	0.051	0.962	1.264	1.969	CEN	0.013	GC	0.844
			(LL)	0.028	0.039	0.064	0.836	1.029	1.451	C	0.021	SOSV	0.210
	C → GC		(HH)	0.032	0.043	0.066	0.241	0.317	0.494	SMC	0.006		
			(LL)	0.063	0.095	0.159	0.215	0.268	0.383				
	Set up time	CEN		0.145		0.264							
	Set up time	SMC		0.147		0.280							
	Hold time	CEN		0.048		0.029							
	Hold time	SMC		0.045		0.022							
	Min Pulse	C		0.162		0.296							
FCGN3NT	CEN → SOSV		(HH)	0.025	0.034	0.052	0.961	1.263	1.968	CEN	0.013	GC	1.684
			(LL)	0.028	0.039	0.064	0.836	1.029	1.451	C	0.033	SOSV	0.210
	C → GC		(HH)	0.038	0.050	0.077	0.121	0.159	0.247	SMC	0.006		
			(LL)	0.060	0.090	0.149	0.107	0.134	0.191				
	Set up time	CEN		0.152		0.282							
	Set up time	SMC		0.155		0.298							
	Hold time	CEN		0.049		0.029							
	Hold time	SMC		0.045		0.023							
	Min Pulse	C		0.144		0.277							
FCGN3NU	CEN → SOSV		(HH)	0.025	0.034	0.052	0.961	1.263	1.968	CEN	0.013	GC	2.524
			(LL)	0.028	0.039	0.064	0.836	1.029	1.450	C	0.046	SOSV	0.209
	C → GC		(HH)	0.040	0.054	0.083	0.081	0.106	0.165	SMC	0.006		
			(LL)	0.059	0.088	0.146	0.072	0.089	0.127				
	Set up time	CEN		0.163		0.306							
	Set up time	SMC		0.165		0.322							
	Hold time	CEN		0.049		0.030							
	Hold time	SMC		0.045		0.023							
	Min Pulse	C		0.137		0.269							

[MEMO]

[MEMO]

Chapter 3

Scan Path Block

3.1 Robust Scan

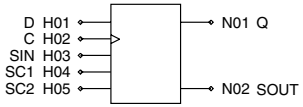
[MEMO]

Function	Robust Scan D-F/F											
Block type	Standard type											
	Normal				Q output				QB output			
Drivability	Name	cells	Name	cells	Name	cells	Name	cells	Name	cells	Name	cells
					SPL611NQ	10						
x2					SP611NQ	10						
x4					SP611NQP	11						
x8												

Logic Diagram for "Normal"

Truth Table for "Normal"

Logic Diagram for "Q output"



Truth Table for "Q output"

D	C	SIN	SC1	SC2	Q	SOUT
DATA	↗	X	0	1	DATA	DATAB
X	↘	X	0	1	Hold	
DATA	↗	X	0	↗	DATA	DATAB
X	1	SIN	↗	↗	SINB	SIN
X	1	X	X	0	Hold	

X:Irrelevant

Logic Diagram for "QB output"

Truth Table for "QB output"

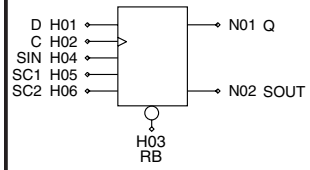
Block type	Switching speed								Input		Output	
	Path		t LD0 [ns]			t 1 (ns/pF)						
	IN → OUT		MIN.	TYP.	MAX.	MIN.	TYP.	MAX.	Symbol	Cin(pF)	Symbol	Cmax(pF)
SPL611NQ	C → Q	(HH)	0.102	0.145	0.238	0.965	1.270	1.980	D	0.007	Q	0.209
		(HL)	0.119	0.167	0.269	0.844	1.043	1.476	C	0.006	SOUT	0.210
	C → SOUT	(HH)	0.146	0.204	0.330	0.962	1.264	1.970	SIN	0.034		
		(HL)	0.136	0.195	0.320	0.843	1.041	1.473	SC1	0.013		
	SC2 → Q	(HH)	0.102	0.154	0.265	0.965	1.270	1.981	SC2	0.013		
		(HL)	0.092	0.132	0.218	0.844	1.043	1.476				
	SC2 → SOUT	(HH)	0.119	0.170	0.279	0.962	1.264	1.970				
		(HL)	0.136	0.204	0.347	0.843	1.041	1.473				
	Set up time	D	0.122		0.252							
	Set up time	SIN	3.070		3.070							
	Set up time	SC1	3.070		3.070							
	Hold time	D	0.048		0.029							
	Hold time	SIN	3.070		3.070							
	Hold time	SC1	3.070		3.070							
	Min Pulse	C	0.225		0.471							
	Min Pulse	SC1	3.000		3.000							
	Min Pulse	SC2	0.209		0.476							
SP611NQ	C → Q	(HH)	0.108	0.154	0.252	0.483	0.636	0.993	D	0.007	Q	0.420
		(HL)	0.125	0.176	0.284	0.425	0.526	0.745	C	0.006	SOUT	0.210
	C → SOUT	(HH)	0.156	0.218	0.353	0.959	1.260	1.964	SIN	0.034		
		(HL)	0.145	0.208	0.342	0.837	1.031	1.455	SC1	0.013		
	SC2 → Q	(HH)	0.109	0.163	0.280	0.483	0.636	0.993	SC2	0.013		
		(HL)	0.099	0.142	0.234	0.425	0.526	0.746				
	SC2 → SOUT	(HH)	0.129	0.184	0.302	0.959	1.260	1.964				
		(HL)	0.146	0.218	0.370	0.837	1.031	1.455				
	Set up time	D	0.122		0.253							
	Set up time	SIN	3.070		3.070							
	Set up time	SC1	3.070		3.070							
	Hold time	D	0.049		0.030							
	Hold time	SIN	3.070		3.070							
	Hold time	SC1	3.070		3.070							
	Min Pulse	C	0.234		0.493							
	Min Pulse	SC1	3.000		3.000							
	Min Pulse	SC2	0.219		0.499							
SP611NQP	C → Q	(HH)	0.123	0.175	0.285	0.242	0.319	0.498	D	0.007	Q	0.837
		(HL)	0.142	0.200	0.323	0.214	0.266	0.379	C	0.006	SOUT	0.210
	C → SOUT	(HH)	0.173	0.243	0.394	0.958	1.259	1.962	SIN	0.034		
		(HL)	0.161	0.231	0.379	0.835	1.028	1.449	SC1	0.013		
	SC2 → Q	(HH)	0.125	0.185	0.314	0.242	0.319	0.498	SC2	0.013		
		(HL)	0.116	0.165	0.272	0.214	0.267	0.379				
	SC2 → SOUT	(HH)	0.147	0.209	0.344	0.958	1.259	1.962				
		(HL)	0.163	0.242	0.409	0.835	1.028	1.449				
	Set up time	D	0.122		0.255							
	Set up time	SIN	3.070		3.070							
	Set up time	SC1	3.070		3.070							
	Hold time	D	0.049		0.031							
	Hold time	SIN	3.070		3.070							
	Hold time	SC1	3.070		3.070							
	Min Pulse	C	0.252		0.535							
	Min Pulse	SC1	3.000		3.000							
	Min Pulse	SC2	0.238		0.537							

Function	Robust Scan D-F/F with RB											
Block type	Standard type											
	Normal				Q output				QB output			
Drivability	Name	cells	Name	cells	Name	cells	Name	cells	Name	cells	Name	cells
					SPL615NQ	11						
x2					SP615NQ	11						
x4					SP615NQP	12						
x8												

Logic Diagram for "Normal"

Truth Table for "Normal"

Logic Diagram for "Q output"



Truth Table for "Q output"

D	C	RB	SIN	SC1	SC2	Q	SOUT
DATA	↗	1	X	0	1	DATA	DATAB
X	↘	1	X	X	1	Hold	
X	X	0	X	X	X	0	1
DATA	↗	1	X	0	↗	DATA	DATAB
X	1	1	SIN	↗	↗	SINB	SIN
X	1	1	X	X	0	Hold	

X:Irrelevant

Logic Diagram for "QB output"

Truth Table for "QB output"

Block type	Switching speed								Input		Output	
	Path		t_{LD0} [ns]			t_1 (ns/pF)						
	IN → OUT		MIN.	TYP.	MAX.	MIN.	TYP.	MAX.	Symbol	Cin(pF)	Symbol	Cmax(pF)
SPL615NQ	C → Q	(HH)	0.114	0.163	0.269	0.973	1.281	2.000	D	0.007	Q	0.208
		(HL)	0.121	0.170	0.275	0.848	1.048	1.485	C	0.006	SOUT	0.207
	C → SOUT	(HH)	0.150	0.210	0.340	0.962	1.264	1.970	RB	0.013		
		(HL)	0.151	0.217	0.357	0.843	1.041	1.473	SIN	0.034		
	RB → Q	(LL)	0.045	0.064	0.103	0.848	1.052	1.492	SC1	0.013		
	RB → SOUT	(LH)	0.074	0.125	0.201	0.961	1.271	1.983	SC2	0.014		
	SC2 → Q	(HH)	0.116	0.174	0.298	0.973	1.281	2.001				
		(HL)	0.093	0.134	0.222	0.848	1.048	1.485				
	SC2 → SOUT	(HH)	0.122	0.174	0.287	0.962	1.264	1.970				
		(HL)	0.153	0.228	0.387	0.843	1.041	1.473				
	Set up time	D	0.126		0.262							
	Set up time	SIN	3.070		3.070							
	Set up time	SC1	3.070		3.070							
	Hold time	D	0.052		0.032							
	Hold time	SIN	3.070		3.070							
	Hold time	SC1	3.070		3.070							
	Release time	RB	0.020		0.000							
	Removal time	RB	0.120		0.166							
	Min Pulse	C	0.234		0.499							
	Min Pulse	RB	0.164		0.339							
	Min Pulse	SC1	3.000		3.000							
	Min Pulse	SC2	0.222		0.515							
SP615NQ	C → Q	(HH)	0.122	0.175	0.288	0.488	0.644	1.006	D	0.007	Q	0.417
		(HL)	0.127	0.179	0.290	0.426	0.529	0.751	C	0.006	SOUT	0.208
	C → SOUT	(HH)	0.159	0.223	0.362	0.959	1.260	1.963	RB	0.013		
		(HL)	0.163	0.234	0.385	0.836	1.030	1.454	SIN	0.034		
	RB → Q	(LL)	0.051	0.072	0.116	0.426	0.530	0.754	SC1	0.013		
	RB → SOUT	(LH)	0.082	0.138	0.223	0.959	1.262	1.967	SC2	0.014		
	SC2 → Q	(HH)	0.125	0.186	0.318	0.488	0.644	1.006				
		(HL)	0.100	0.143	0.237	0.426	0.529	0.751				
	SC2 → SOUT	(HH)	0.131	0.187	0.309	0.959	1.260	1.963				
		(HL)	0.166	0.245	0.416	0.836	1.030	1.453				
	Set up time	D	0.126		0.263							
	Set up time	SIN	3.070		3.070							
	Set up time	SC1	3.070		3.070							
	Hold time	D	0.052		0.033							
	Hold time	SIN	3.070		3.070							
	Hold time	SC1	3.070		3.070							
	Release time	RB	0.021		0.000							
	Removal time	RB	0.120		0.166							
	Min Pulse	C	0.245		0.527							
	Min Pulse	RB	0.181		0.375							
	Min Pulse	SC1	3.000		3.000							
	Min Pulse	SC2	0.234		0.544							
SP615NQP	C → Q	(HH)	0.142	0.202	0.331	0.246	0.325	0.508	D	0.007	Q	0.827
		(HL)	0.144	0.202	0.326	0.215	0.268	0.382	C	0.006	SOUT	0.208
	C → SOUT	(HH)	0.176	0.248	0.402	0.958	1.259	1.962	RB	0.013		
		(HL)	0.184	0.264	0.435	0.834	1.026	1.447	SIN	0.034		
	RB → Q	(LL)	0.066	0.093	0.151	0.214	0.269	0.383	SC1	0.013		
	RB → SOUT	(LH)	0.098	0.164	0.265	0.958	1.259	1.962	SC2	0.014		
	SC2 → Q	(HH)	0.145	0.214	0.362	0.246	0.325	0.508				
		(HL)	0.116	0.166	0.274	0.215	0.268	0.382				
	SC2 → SOUT	(HH)	0.149	0.212	0.349	0.958	1.259	1.961				
		(HL)	0.188	0.276	0.466	0.834	1.026	1.446				
	Set up time	D	0.126		0.266							
	Set up time	SIN	3.070		3.070							

Block type	Switching speed								Input		Output	
	Path		t_{LD0} [ns]			t_1 (ns/pF)						
	IN →	OUT	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.	Symbol	Cin(pF)	Symbol	Cmax(pF)
	Set up time	SC1	3.070		3.070							
	Hold time	D	0.052		0.034							
	Hold time	SIN	3.070		3.070							
	Hold time	SC1	3.070		3.070							
	Release time	RB	0.023		0.000							
	Removal time	RB	0.120		0.166							
	Min Pulse	C	0.267		0.576							
	Min Pulse	RB	0.212		0.434							
	Min Pulse	SC1	3.000		3.000							
	Min Pulse	SC2	0.256		0.594							

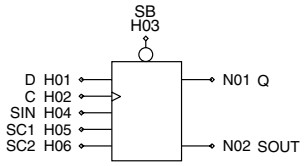
[MEMO]

Function	Robust Scan D-F/F with SB											
Block type	Standard type											
	Normal				Q output				QB output			
Drivability	Name	cells	Name	cells	Name	cells	Name	cells	Name	cells	Name	cells
					SPL616NQ	11						
x2					SP616NQ	11						
x4					SP616NQP	12						
x8												

Logic Diagram for "Normal"

Truth Table for "Normal"

Logic Diagram for "Q output"



Truth Table for "Q output"

D	C	SB	SIN	SC1	SC2	Q	SOUT
DATA	↗	1	X	0	1	DATA	DATAB
X	↘	1	X	X	1	Hold	
X	X	0	X	X	X	1	0
DATA	↗	1	X	0	↗	DATA	DATAB
X	1	1	SIN	↗	↗	SINB	SIN
X	1	1	X	X	0	Hold	

X:Irrelevant

Logic Diagram for "QB output"

Truth Table for "QB output"

Block type	Switching speed									Input		Output	
	Path		t_{LD0} [ns]			t_1 (ns/pF)							
	IN → OUT		MIN.	TYP.	MAX.	MIN.	TYP.	MAX.		Symbol	Cin(pF)	Symbol	Cmax(pF)
SPL616NQ	C → Q	(HH)	0.094	0.134	0.219	0.964	1.268	1.978		D	0.007	Q	0.209
		(HL)	0.119	0.168	0.273	0.844	1.043	1.476		C	0.006	SOUT	0.209
	C → SOUT	(HH)	0.163	0.231	0.378	0.967	1.272	1.984		SB	0.015		
		(HL)	0.131	0.187	0.307	0.845	1.045	1.479		SIN	0.035		
	SB → Q	(LH)	0.099	0.185	0.318	0.961	1.266	1.974		SC1	0.013		
	SB → SOUT	(LL)	0.052	0.096	0.156	0.847	1.064	1.519		SC2	0.014		
	SC2 → Q	(HH)	0.095	0.144	0.249	0.964	1.268	1.978					
		(HL)	0.096	0.140	0.236	0.844	1.043	1.477					
	SC2 → SOUT	(HH)	0.140	0.202	0.340	0.967	1.272	1.984					
		(HL)	0.132	0.197	0.338	0.845	1.044	1.479					
	Set up time	D	0.135		0.283								
	Set up time	SIN	3.070		3.070								
	Set up time	SC1	3.070		3.070								
	Hold time	D	0.040		0.018								
	Hold time	SIN	3.070		3.070								
	Hold time	SC1	3.070		3.070								
	Release time	SB	0.085		0.154								
	Removal time	SB	0.060		0.044								
	Min Pulse	C	0.244		0.521								
	Min Pulse	SB	0.216		0.487								
	Min Pulse	SC1	3.000		3.000								
	Min Pulse	SC2	0.241		0.498								
SP616NQ	C → Q	(HH)	0.104	0.148	0.241	0.483	0.636	0.993		D	0.007	Q	0.419
		(HL)	0.129	0.183	0.297	0.426	0.527	0.748		C	0.006	SOUT	0.208
	C → SOUT	(HH)	0.178	0.252	0.413	0.960	1.262	1.967		SB	0.014		
		(HL)	0.145	0.208	0.341	0.837	1.032	1.457		SIN	0.035		
	SB → Q	(LH)	0.105	0.197	0.337	0.482	0.635	0.991		SC1	0.013		
	SB → SOUT	(LL)	0.052	0.098	0.161	0.840	1.043	1.478		SC2	0.014		
	SC2 → Q	(HH)	0.105	0.158	0.272	0.483	0.636	0.993					
		(HL)	0.107	0.156	0.262	0.426	0.527	0.749					
	SC2 → SOUT	(HH)	0.156	0.225	0.377	0.960	1.262	1.967					
		(HL)	0.147	0.218	0.371	0.837	1.031	1.456					
	Set up time	D	0.136		0.285								
	Set up time	SIN	3.070		3.070								
	Set up time	SC1	3.070		3.070								
	Hold time	D	0.041		0.020								
	Hold time	SIN	3.070		3.070								
	Hold time	SC1	3.070		3.070								
	Release time	SB	0.086		0.156								
	Removal time	SB	0.060		0.044								
	Min Pulse	C	0.259		0.556								
	Min Pulse	SB	0.226		0.507								
	Min Pulse	SC1	3.000		3.000								
	Min Pulse	SC2	0.259		0.536								
SP616NQP	C → Q	(HH)	0.118	0.168	0.273	0.242	0.319	0.498		D	0.007	Q	0.834
		(HL)	0.147	0.207	0.337	0.215	0.267	0.381		C	0.006	SOUT	0.208
	C → SOUT	(HH)	0.198	0.281	0.459	0.958	1.259	1.962		SB	0.014		
		(HL)	0.161	0.230	0.377	0.835	1.028	1.449		SIN	0.035		
	SB → Q	(LH)	0.119	0.220	0.372	0.241	0.318	0.497		SC1	0.013		
	SB → SOUT	(LL)	0.053	0.101	0.167	0.837	1.034	1.461		SC2	0.014		
	SC2 → Q	(HH)	0.121	0.180	0.306	0.242	0.319	0.498					
		(HL)	0.125	0.181	0.302	0.215	0.267	0.381					
	SC2 → SOUT	(HH)	0.176	0.254	0.424	0.958	1.259	1.962					
		(HL)	0.164	0.243	0.410	0.835	1.028	1.449					
	Set up time	D	0.136		0.287								
	Set up time	SIN	3.070		3.070								

Block type	Switching speed								Input		Output	
	Path		t_{LD0} [ns]			t_1 (ns/pF)						
	IN →	OUT	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.	Symbol	Cin(pF)	Symbol	Cmax(pF)
	Set up time	SC1	3.070		3.070							
	Hold time	D	0.042		0.022							
	Hold time	SIN	3.070		3.070							
	Hold time	SC1	3.070		3.070							
	Release time	SB	0.086		0.158							
	Removal time	SB	0.060		0.044							
	Min Pulse	C	0.279		0.603							
	Min Pulse	SB	0.244		0.542							
	Min Pulse	SC1	3.000		3.000							
	Min Pulse	SC2	0.280		0.584							

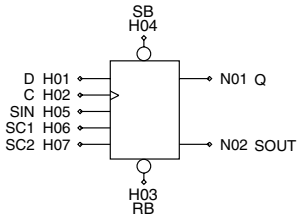
[MEMO]

Function	Robust Scan D-F/F with RB, SB											
Block type	Standard type											
	Normal				Q output				QB output			
Drivability	Name	cells	Name	cells	Name	cells	Name	cells	Name	cells	Name	cells
					SPL617NQ	12						
x2					SP617NQ	12						
x4					SP617NQP	13						
x8												

Logic Diagram for "Normal"

Truth Table for "Normal"

Logic Diagram for "Q output"



Truth Table for "Q output"

D	C	RB	SB	SIN	SC1	SC2	Q	SOUT
DATA	↗	1	1	X	0	1	DATA	DATAB
X	↘	1	1	X	X	1	Hold	
X	X	1	0	X	X	X	1	0
X	X	0	1	X	X	X	0	0
X	X	0	0	X	X	X	Prohibition	
DATA	↗	1	1	X	0	↗	DATA	DATAB
X	1	1	1	SIN	↗	↗	SINB	SIN
X	1	1	1	X	X	0	Hold	

X:Irrelevant

Logic Diagram for "QB output"

Truth Table for "QB output"

Block type	Switching speed									Input		Output	
	Path			t LD0 [ns]			t 1 (ns/pF)						
	IN → OUT			MIN.	TYP.	MAX.	MIN.	TYP.	MAX.	Symbol	Cin(pF)	Symbol	Cmax(pF)
SPL617NQ	C → Q		(HH)	0.119	0.170	0.280	0.973	1.282	2.001	D	0.007	Q	0.207
			(HL)	0.126	0.178	0.290	0.850	1.051	1.492	C	0.007	SOUT	0.204
	C → SOUT		(HH)	0.174	0.246	0.402	0.967	1.272	1.984	RB	0.013		
			(HL)	0.159	0.228	0.376	0.845	1.044	1.479	SB	0.015		
	RB → Q		(LL)	0.046	0.065	0.105	0.849	1.055	1.497	SIN	0.034		
	RB → SOUT		(LH)	0.094	0.166	0.271	0.966	1.291	2.021	SC1	0.014		
	SB → Q		(LH)	0.120	0.217	0.370	0.965	1.275	1.989	SC2	0.014		
	SB → SOUT		(LL)	0.052	0.096	0.157	0.850	1.073	1.536				
	SC2 → Q		(HH)	0.117	0.176	0.301	0.973	1.282	2.002				
			(HL)	0.104	0.151	0.254	0.850	1.052	1.493				
	SC2 → SOUT		(HH)	0.151	0.218	0.366	0.967	1.272	1.984				
			(HL)	0.157	0.234	0.398	0.844	1.044	1.478				
	Set up time		D	0.130		0.275							
	Set up time		SIN	3.070		3.070							
	Set up time		SC1	3.070		3.070							
	Hold time		D	0.046		0.029							
	Hold time		SIN	3.070		3.070							
	Hold time		SC1	3.070		3.070							
	Release time		RB	0.010		0.000							
	Release time		SB	0.084		0.153							
	Removal time		RB	0.130		0.184							
	Removal time		SB	0.063		0.046							
	Min Pulse		C	0.256		0.547							
	Min Pulse		RB	0.193		0.409							
	Min Pulse		SB	0.242		0.539							
	Min Pulse		SC1	3.000		3.000							
	Min Pulse		SC2	0.252		0.524							
SP617NQ	C → Q		(HH)	0.127	0.181	0.298	0.489	0.644	1.007	D	0.007	Q	0.416
			(HL)	0.133	0.188	0.306	0.428	0.531	0.754	C	0.007	SOUT	0.204
	C → SOUT		(HH)	0.184	0.261	0.427	0.961	1.263	1.969	RB	0.013		
			(HL)	0.171	0.245	0.405	0.837	1.032	1.456	SB	0.015		
	RB → Q		(LL)	0.052	0.073	0.118	0.427	0.532	0.757	SIN	0.034		
	RB → SOUT		(LH)	0.103	0.181	0.296	0.961	1.270	1.982	SC1	0.013		
	SB → Q		(LH)	0.128	0.229	0.389	0.485	0.641	1.001	SC2	0.014		
	SB → SOUT		(LL)	0.053	0.100	0.164	0.841	1.046	1.484				
	SC2 → Q		(HH)	0.126	0.187	0.319	0.488	0.644	1.007				
			(HL)	0.111	0.161	0.270	0.428	0.531	0.755				
	SC2 → SOUT		(HH)	0.162	0.234	0.392	0.961	1.263	1.969				
			(HL)	0.170	0.251	0.427	0.837	1.031	1.456				
	Set up time		D	0.130		0.277							
	Set up time		SIN	3.070		3.070							
	Set up time		SC1	3.070		3.070							
	Hold time		D	0.046		0.029							
	Hold time		SIN	3.070		3.070							
	Hold time		SC1	3.070		3.070							
	Release time		RB	0.012		0.000							
	Release time		SB	0.084		0.155							
	Removal time		RB	0.130		0.185							
	Removal time		SB	0.063		0.046							
	Min Pulse		C	0.266		0.572							
	Min Pulse		RB	0.212		0.447							
	Min Pulse		SB	0.251		0.558							
	Min Pulse		SC1	3.000		3.000							
	Min Pulse		SC2	0.263		0.553							

Block type	Switching speed								Input		Output	
	Path		t_{LD0} [ns]			t_1 (ns/pF)						
	IN → OUT		MIN.	TYP.	MAX.	MIN.	TYP.	MAX.	Symbol	Cin(pF)	Symbol	Cmax(pF)
SP617NQP	C → Q	(HH)	0.147	0.208	0.341	0.246	0.325	0.509	D	0.007	Q	0.823
		(HL)	0.151	0.212	0.345	0.216	0.269	0.384	C	0.007	SOUT	0.206
	C → SOUT	(HH)	0.204	0.289	0.472	0.959	1.260	1.963	RB	0.013		
		(HL)	0.192	0.276	0.455	0.834	1.027	1.448	SB	0.015		
	RB → Q	(LL)	0.067	0.095	0.153	0.215	0.270	0.385	SIN	0.034		
	RB → SOUT	(LH)	0.120	0.208	0.340	0.959	1.262	1.968	SC1	0.013		
	SB → Q	(LH)	0.147	0.258	0.434	0.244	0.323	0.505	SC2	0.014		
	SB → SOUT	(LL)	0.053	0.103	0.170	0.838	1.035	1.463				
	SC2 → Q	(HH)	0.146	0.215	0.364	0.246	0.325	0.509				
		(HL)	0.128	0.186	0.310	0.216	0.269	0.384				
	SC2 → SOUT	(HH)	0.182	0.262	0.438	0.959	1.260	1.963				
		(HL)	0.191	0.283	0.478	0.834	1.027	1.447				
	Set up time	D	0.131		0.279							
	Set up time	SIN	3.070		3.070							
	Set up time	SC1	3.070		3.070							
	Hold time	D	0.047		0.030							
	Hold time	SIN	3.070		3.070							
	Hold time	SC1	3.070		3.070							
	Release time	RB	0.016		0.000							
	Release time	SB	0.084		0.157							
	Removal time	RB	0.130		0.185							
	Removal time	SB	0.063		0.046							
	Min Pulse	C	0.286		0.617							
	Min Pulse	RB	0.244		0.510							
	Min Pulse	SB	0.272		0.603							
	Min Pulse	SC1	3.000		3.000							
	Min Pulse	SC2	0.284		0.604							

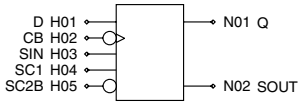
[MEMO]

Function	Robust Scan D-F/F (CB)											
Block type	Standard type											
	Normal				Q output				QB output			
Drivability	Name	cells	Name	cells	Name	cells	Name	cells	Name	cells	Name	cells
					SPL631NQ	10						
x2					SP631NQ	10						
x4					SP631NQP	11						
x8												

Logic Diagram for "Normal"

Truth Table for "Normal"

Logic Diagram for "Q output"



Truth Table for "Q output"

D	CB	SIN	SC1	SC2B	Q	SOUT
DATA	↘	X	0	0	DATA	DATAB
X	↗	X	0	0	Hold	
DATA	↘	X	0	↘	DATA	DATAB
X	0	SIN	↗	↘	SINB	SIN
X	0	X	X	1	Hold	

X:Irrelevant

Logic Diagram for "QB output"

Truth Table for "QB output"

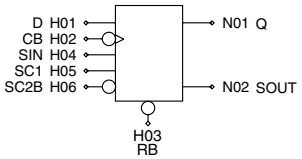
Block type	Switching speed								Input		Output	
	Path			t LD0 [ns]			t 1 (ns/pF)					
	IN → OUT		MIN.	TYP.	MAX.	MIN.	TYP.	MAX.	Symbol	Cin(pF)	Symbol	Cmax(pF)
SPL631NQ	CB → Q	(LH)	0.122	0.177	0.294	0.965	1.270	1.980	D	0.007	Q	0.209
		(LL)	0.104	0.149	0.243	0.844	1.042	1.475	CB	0.006	SOUT	0.210
	CB → SOUT	(LH)	0.132	0.187	0.306	0.962	1.265	1.970	SIN	0.033		
		(LL)	0.157	0.228	0.378	0.843	1.042	1.474	SC1	0.013		
	SC2B → Q	(LH)	0.100	0.152	0.264	0.965	1.270	1.981	SC2B	0.014		
		(LL)	0.102	0.147	0.244	0.844	1.043	1.476				
	SC2B → SOUT	(LH)	0.129	0.185	0.306	0.962	1.264	1.970				
		(LL)	0.135	0.203	0.348	0.843	1.041	1.474				
	Set up time	D	0.126		0.219							
	Set up time	SIN	3.070		3.070							
	Set up time	SC1	3.070		3.070							
	Hold time	D	0.060		0.075							
	Hold time	SIN	3.070		3.070							
	Hold time	SC1	3.070		3.070							
	Min Pulse	CB	0.233		0.511							
	Min Pulse	SC1	3.000		3.000							
	Min Pulse	SC2B	0.216		0.479							
SP631NQ	CB → Q	(LH)	0.128	0.186	0.308	0.483	0.636	0.993	D	0.007	Q	0.421
		(LL)	0.111	0.158	0.259	0.425	0.526	0.745	CB	0.006	SOUT	0.210
	CB → SOUT	(LH)	0.141	0.201	0.329	0.959	1.260	1.964	SIN	0.033		
		(LL)	0.166	0.241	0.400	0.837	1.031	1.455	SC1	0.013		
	SC2B → Q	(LH)	0.106	0.161	0.278	0.483	0.636	0.993	SC2B	0.014		
		(LL)	0.109	0.156	0.259	0.425	0.526	0.745				
	SC2B → SOUT	(LH)	0.139	0.199	0.329	0.959	1.260	1.964				
		(LL)	0.144	0.217	0.371	0.837	1.031	1.455				
	Set up time	D	0.126		0.220							
	Set up time	SIN	3.070		3.070							
	Set up time	SC1	3.070		3.070							
	Hold time	D	0.060		0.075							
	Hold time	SIN	3.070		3.070							
	Hold time	SC1	3.070		3.070							
	Min Pulse	CB	0.243		0.533							
	Min Pulse	SC1	3.000		3.000							
	Min Pulse	SC2B	0.228		0.503							
SP631NQP	CB → Q	(LH)	0.144	0.207	0.342	0.242	0.319	0.498	D	0.007	Q	0.838
		(LL)	0.128	0.182	0.297	0.214	0.266	0.379	CB	0.006	SOUT	0.210
	CB → SOUT	(LH)	0.159	0.226	0.371	0.958	1.259	1.962	SIN	0.033		
		(LL)	0.183	0.265	0.438	0.835	1.028	1.449	SC1	0.013		
	SC2B → Q	(LH)	0.122	0.183	0.313	0.242	0.319	0.498	SC2B	0.014		
		(LL)	0.126	0.180	0.297	0.214	0.266	0.379				
	SC2B → SOUT	(LH)	0.157	0.225	0.371	0.958	1.259	1.962				
		(LL)	0.161	0.241	0.409	0.835	1.028	1.449				
	Set up time	D	0.126		0.222							
	Set up time	SIN	3.070		3.070							
	Set up time	SC1	3.070		3.070							
	Hold time	D	0.060		0.076							
	Hold time	SIN	3.070		3.070							
	Hold time	SC1	3.070		3.070							
	Min Pulse	CB	0.259		0.571							
	Min Pulse	SC1	3.000		3.000							
	Min Pulse	SC2B	0.246		0.543							

Function	Robust Scan D-F/F (CB) with RB											
Block type	Standard type											
	Normal				Q output				QB output			
Drivability	Name	cells	Name	cells	Name	cells	Name	cells	Name	cells	Name	cells
					SPL635NQ	11						
x2					SP635NQ	11						
x4					SP635NQP	12						
x8												

Logic Diagram for "Normal"

Truth Table for "Normal"

Logic Diagram for "Q output"



Truth Table for "Q output"

D	CB	RB	SIN	SC1	SC2B	Q	SOUT
DATA	↘	1	X	0	0	DATA	DATAB
X	↗	1	X	X	0	Hold	
X	X	0	X	X	X	Hold	
DATA	↘	1	X	0	↘	DATA	DATAB
X	0	1	SIN	↗	↘	SINB	SIN
X	0	1	X	X	1	Hold	

X:Irrelevant

Logic Diagram for "QB output"

Truth Table for "QB output"

Block type	Switching speed								Input		Output	
	Path		t LD0 [ns]			t 1 (ns/pF)						
	IN → OUT		MIN.	TYP.	MAX.	MIN.	TYP.	MAX.	Symbol	Cin(pF)	Symbol	Cmax(pF)
SPL635NQ	CB → Q	(LH)	0.138	0.201	0.334	0.973	1.281	2.000	D	0.007	Q	0.208
		(LL)	0.107	0.153	0.251	0.847	1.048	1.484	CB	0.006	SOUT	0.207
	CB → SOUT	(LH)	0.136	0.193	0.316	0.962	1.264	1.970	RB	0.013		
		(LL)	0.175	0.254	0.422	0.843	1.041	1.473	SIN	0.033		
	RB → Q	(LL)	0.045	0.064	0.103	0.848	1.052	1.492	SC1	0.013		
	RB → SOUT	(LH)	0.074	0.124	0.200	0.961	1.271	1.983	SC2B	0.014		
	SC2B → Q	(LH)	0.114	0.173	0.299	0.973	1.281	2.001				
		(LL)	0.104	0.150	0.250	0.848	1.048	1.485				
	SC2B → SOUT	(LH)	0.133	0.190	0.314	0.962	1.264	1.970				
		(LL)	0.151	0.227	0.387	0.843	1.041	1.473				
	Set up time	D	0.126		0.226							
	Set up time	SIN	3.070		3.070							
	Set up time	SC1	3.070		3.070							
	Hold time	D	0.061		0.078							
	Hold time	SIN	3.070		3.070							
	Hold time	SC1	3.070		3.070							
	Release time	RB	0.003		0.000							
	Removal time	RB	0.140		0.222							
	Min Pulse	CB	0.253		0.558							
	Min Pulse	RB	0.163		0.339							
	Min Pulse	SC1	3.000		3.000							
	Min Pulse	SC2B	0.236		0.520							
SP635NQ	CB → Q	(LH)	0.147	0.213	0.353	0.488	0.644	1.006	D	0.007	Q	0.418
		(LL)	0.114	0.162	0.266	0.426	0.528	0.750	CB	0.006	SOUT	0.208
	CB → SOUT	(LH)	0.145	0.206	0.338	0.959	1.260	1.963	RB	0.013		
		(LL)	0.187	0.271	0.450	0.836	1.030	1.453	SIN	0.033		
	RB → Q	(LL)	0.051	0.072	0.116	0.426	0.530	0.754	SC1	0.013		
	RB → SOUT	(LH)	0.082	0.138	0.222	0.959	1.262	1.967	SC2B	0.014		
	SC2B → Q	(LH)	0.123	0.186	0.319	0.488	0.644	1.006				
		(LL)	0.111	0.160	0.265	0.426	0.529	0.751				
	SC2B → SOUT	(LH)	0.142	0.203	0.336	0.959	1.260	1.963				
		(LL)	0.164	0.244	0.416	0.836	1.030	1.453				
	Set up time	D	0.126		0.227							
	Set up time	SIN	3.070		3.070							
	Set up time	SC1	3.070		3.070							
	Hold time	D	0.061		0.078							
	Hold time	SIN	3.070		3.070							
	Hold time	SC1	3.070		3.070							
	Release time	RB	0.004		0.000							
	Removal time	RB	0.140		0.222							
	Min Pulse	CB	0.264		0.586							
	Min Pulse	RB	0.181		0.374							
	Min Pulse	SC1	3.000		3.000							
	Min Pulse	SC2B	0.249		0.549							
SP635NQP	CB → Q	(LH)	0.166	0.240	0.396	0.246	0.324	0.508	D	0.007	Q	0.828
		(LL)	0.130	0.184	0.302	0.215	0.268	0.382	CB	0.006	SOUT	0.208
	CB → SOUT	(LH)	0.162	0.230	0.377	0.958	1.259	1.962	RB	0.013		
		(LL)	0.208	0.301	0.499	0.834	1.026	1.447	SIN	0.033		
	RB → Q	(LL)	0.066	0.093	0.150	0.214	0.269	0.383	SC1	0.013		
	RB → SOUT	(LH)	0.098	0.162	0.263	0.958	1.259	1.962	SC2B	0.014		
	SC2B → Q	(LH)	0.143	0.213	0.363	0.246	0.324	0.508				
		(LL)	0.127	0.182	0.301	0.215	0.268	0.382				
	SC2B → SOUT	(LH)	0.159	0.227	0.376	0.958	1.259	1.962				
		(LL)	0.185	0.274	0.465	0.834	1.026	1.446				
	Set up time	D	0.126		0.228							
	Set up time	SIN	3.070		3.070							

Block type	Switching speed								Input		Output	
	Path		t_{LD0} [ns]			t_1 (ns/pF)						
	IN →	OUT	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.	Symbol	Cin(pF)	Symbol	Cmax(pF)
	Set up time	SC1	3.070		3.070							
	Hold time	D	0.061		0.079							
	Hold time	SIN	3.070		3.070							
	Hold time	SC1	3.070		3.070							
	Release time	RB	0.006		0.000							
	Removal time	RB	0.140		0.222							
	Min Pulse	CB	0.285		0.634							
	Min Pulse	RB	0.211		0.432							
	Min Pulse	SC1	3.000		3.000							
	Min Pulse	SC2B	0.271		0.599							

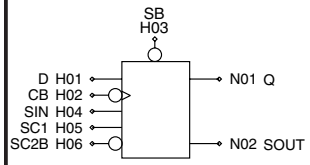
[MEMO]

Function	Robust Scan D-F/F (CB) with SB											
Block type	Standard type											
	Normal				Q output				QB output			
Drivability	Name	cells	Name	cells	Name	cells	Name	cells	Name	cells	Name	cells
					SPL636NQ	11						
x2					SP636NQ	11						
x4					SP636NQP	12						
x8												

Logic Diagram for "Normal"

Truth Table for "Normal"

Logic Diagram for "Q output"



Truth Table for "Q output"

D	CB	SB	SIN	SC1	SC2B	Q	SOUT
DATA	↘	1	X	0	0	DATA	DATAB
X	↗	1	X	X	0	Hold	
X	X	0	X	X	X	1	0
DATA	↘	1	X	0	↘	DATA	DATAB
X	0	1	SIN	↗	↘	SINB	SIN
X	0	1	X	X	1	Hold	

X:Irrelevant

Logic Diagram for "QB output"

Truth Table for "QB output"

Block type	Switching speed								Input		Output	
	Path		t LD0 [ns]			t 1 (ns/pF)						
	IN → OUT		MIN.	TYP.	MAX.	MIN.	TYP.	MAX.	Symbol	Cin(pF)	Symbol	Cmax(pF)
SPL636NQ	CB → Q	(LH)	0.119	0.173	0.289	0.965	1.269	1.979	D	0.007	Q	0.209
		(LL)	0.103	0.148	0.243	0.845	1.043	1.478	CB	0.006	SOUT	0.209
	CB → SOUT	(LH)	0.148	0.211	0.350	0.968	1.273	1.985	SB	0.015		
		(LL)	0.156	0.228	0.379	0.845	1.045	1.479	SIN	0.035		
	SB → Q	(LH)	0.101	0.188	0.322	0.961	1.266	1.975	SC1	0.013		
	SB → SOUT	(LL)	0.052	0.097	0.158	0.848	1.066	1.523	SC2B	0.014		
	SC2B → Q	(LH)	0.095	0.145	0.253	0.964	1.269	1.979				
		(LL)	0.109	0.159	0.267	0.845	1.044	1.479				
	SC2B → SOUT	(LH)	0.153	0.223	0.374	0.968	1.273	1.985				
		(LL)	0.132	0.200	0.343	0.845	1.045	1.479				
	Set up time	D	0.141		0.281							
	Set up time	SIN	3.070		3.070							
	Set up time	SC1	3.070		3.070							
	Hold time	D	0.060		0.072							
	Hold time	SIN	3.070		3.070							
	Hold time	SC1	3.070		3.070							
	Release time	SB	0.085		0.150							
	Removal time	SB	0.060		0.053							
	Min Pulse	CB	0.234		0.514							
	Min Pulse	SB	0.219		0.493							
	Min Pulse	SC1	3.000		3.000							
	Min Pulse	SC2B	0.212		0.478							
SP636NQ	CB → Q	(LH)	0.127	0.185	0.306	0.483	0.636	0.993	D	0.007	Q	0.419
		(LL)	0.113	0.162	0.266	0.426	0.527	0.748	CB	0.006	SOUT	0.208
	CB → SOUT	(LH)	0.162	0.231	0.381	0.960	1.262	1.968	SB	0.014		
		(LL)	0.168	0.245	0.406	0.837	1.032	1.456	SIN	0.035		
	SB → Q	(LH)	0.105	0.197	0.336	0.482	0.635	0.991	SC1	0.013		
	SB → SOUT	(LL)	0.052	0.098	0.161	0.840	1.043	1.478	SC2B	0.014		
	SC2B → Q	(LH)	0.103	0.158	0.272	0.483	0.636	0.993				
		(LL)	0.119	0.173	0.290	0.426	0.527	0.749				
	SC2B → SOUT	(LH)	0.167	0.242	0.405	0.960	1.262	1.967				
		(LL)	0.145	0.218	0.372	0.837	1.032	1.456				
	Set up time	D	0.142		0.284							
	Set up time	SIN	3.070		3.070							
	Set up time	SC1	3.070		3.070							
	Hold time	D	0.060		0.073							
	Hold time	SIN	3.070		3.070							
	Hold time	SC1	3.070		3.070							
	Release time	SB	0.086		0.153							
	Removal time	SB	0.060		0.052							
	Min Pulse	CB	0.246		0.541							
	Min Pulse	SB	0.226		0.507							
	Min Pulse	SC1	3.000		3.000							
	Min Pulse	SC2B	0.226		0.510							
SP636NQP	CB → Q	(LH)	0.142	0.205	0.339	0.242	0.319	0.498	D	0.007	Q	0.835
		(LL)	0.130	0.186	0.306	0.215	0.267	0.380	CB	0.006	SOUT	0.208
	CB → SOUT	(LH)	0.181	0.259	0.427	0.958	1.259	1.962	SB	0.014		
		(LL)	0.185	0.268	0.443	0.835	1.028	1.449	SIN	0.035		
	SB → Q	(LH)	0.119	0.219	0.371	0.241	0.318	0.497	SC1	0.013		
	SB → SOUT	(LL)	0.053	0.101	0.167	0.837	1.034	1.461	SC2B	0.014		
	SC2B → Q	(LH)	0.119	0.179	0.306	0.242	0.319	0.498				
		(LL)	0.136	0.198	0.331	0.215	0.267	0.381				
	SC2B → SOUT	(LH)	0.188	0.271	0.452	0.958	1.259	1.962				
		(LL)	0.162	0.242	0.410	0.835	1.028	1.449				
	Set up time	D	0.142		0.287							
	Set up time	SIN	3.070		3.070							

Block type	Switching speed								Input		Output	
	Path		t_{LD0} [ns]			t_1 (ns/pF)						
	IN →	OUT	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.	Symbol	Cin(pF)	Symbol	Cmax(pF)
	Set up time	SC1	3.070		3.070							
	Hold time	D	0.061		0.075							
	Hold time	SIN	3.070		3.070							
	Hold time	SC1	3.070		3.070							
	Release time	SB	0.086		0.156							
	Removal time	SB	0.060		0.052							
	Min Pulse	CB	0.262		0.579							
	Min Pulse	SB	0.244		0.542							
	Min Pulse	SC1	3.000		3.000							
	Min Pulse	SC2B	0.246		0.556							

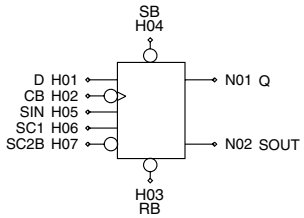
[MEMO]

Function	Robust Scan D-F/F (CB) with RB, SB											
Block type	Standard type											
	Normal				Q output				QB output			
Drivability	Name	cells	Name	cells	Name	cells	Name	cells	Name	cells	Name	cells
					SPL637NQ	12						
x2					SP637NQ	12						
x4					SP637NQP	13						
x8												

Logic Diagram for "Normal"

Truth Table for "Normal"

Logic Diagram for "Q output"



Truth Table for "Q output"

D	CB	RB	SB	SIN	SC1	SC2B	Q	SOUT
DATA	↘	1	1	X	0	0	DATA	DATAB
X	↗	1	1	X	X	0	Hold	
X	X	1	0	X	X	X	1	0
X	X	0	1	X	X	X	0	1
X	X	0	0	X	X	X	Prohibition	
DATA	↘	1	1	X	0	↘	DATA	DATAB
X	0	1	1	SIN	↗	↘	SINB	SIN
X	0	1	1	X	X	1	Hold	

X:Irrelevant

Logic Diagram for "QB output"

Truth Table for "QB output"

Block type	Switching speed									Input		Output	
	Path			t LD0 [ns]			t 1 (ns/pF)						
	IN → OUT			MIN.	TYP.	MAX.	MIN.	TYP.	MAX.	Symbol	Cin(pF)	Symbol	Cmax(pF)
SPL637NQ	CB → Q		(LH)	0.138	0.199	0.331	0.974	1.283	2.003	D	0.007	Q	0.207
			(LL)	0.113	0.162	0.266	0.850	1.052	1.493	CB	0.007	SOUT	0.203
	CB → SOUT		(LH)	0.162	0.231	0.382	0.968	1.273	1.986	RB	0.013		
			(LL)	0.179	0.259	0.431	0.845	1.045	1.480	SB	0.015		
	RB → Q		(LL)	0.046	0.065	0.105	0.849	1.055	1.498	SIN	0.033		
	RB → SOUT		(LH)	0.095	0.168	0.275	0.967	1.291	2.021	SC1	0.013		
	SB → Q		(LH)	0.122	0.214	0.364	0.965	1.275	1.989	SC2B	0.014		
	SB → SOUT		(LL)	0.053	0.098	0.160	0.850	1.075	1.538				
	SC2B → Q		(LH)	0.115	0.174	0.300	0.974	1.283	2.003				
			(LL)	0.114	0.167	0.281	0.850	1.053	1.494				
	SC2B → SOUT		(LH)	0.163	0.236	0.397	0.967	1.273	1.985				
			(LL)	0.156	0.234	0.399	0.845	1.045	1.480				
	Set up time		D	0.140		0.278							
	Set up time		SIN	3.070		3.070							
	Set up time		SC1	3.070		3.070							
	Hold time		D	0.063		0.078							
	Hold time		SIN	3.070		3.070							
	Hold time		SC1	3.070		3.070							
	Release time		RB	0.000		0.000							
	Release time		SB	0.089		0.156							
	Removal time		RB	0.151		0.241							
	Removal time		SB	0.056		0.041							
	Min Pulse		CB	0.256		0.567							
	Min Pulse		RB	0.195		0.413							
	Min Pulse		SB	0.240		0.533							
	Min Pulse		SC1	3.000		3.000							
	Min Pulse		SC2B	0.237		0.531							
SP637NQ	CB → Q		(LH)	0.146	0.210	0.349	0.489	0.645	1.008	D	0.007	Q	0.416
			(LL)	0.120	0.171	0.282	0.428	0.531	0.755	CB	0.007	SOUT	0.204
	CB → SOUT		(LH)	0.172	0.246	0.407	0.961	1.264	1.970	RB	0.013		
			(LL)	0.191	0.276	0.459	0.837	1.032	1.456	SB	0.015		
	RB → Q		(LL)	0.052	0.073	0.118	0.427	0.532	0.757	SIN	0.033		
	RB → SOUT		(LH)	0.104	0.183	0.300	0.961	1.270	1.983	SC1	0.013		
	SB → Q		(LH)	0.129	0.226	0.383	0.485	0.641	1.001	SC2B	0.014		
	SB → SOUT		(LL)	0.054	0.102	0.167	0.841	1.046	1.485				
	SC2B → Q		(LH)	0.123	0.185	0.318	0.489	0.645	1.008				
			(LL)	0.121	0.177	0.297	0.428	0.531	0.756				
	SC2B → SOUT		(LH)	0.174	0.252	0.422	0.961	1.263	1.969				
			(LL)	0.168	0.251	0.428	0.837	1.032	1.456				
	Set up time		D	0.140		0.279							
	Set up time		SIN	3.070		3.070							
	Set up time		SC1	3.070		3.070							
	Hold time		D	0.063		0.079							
	Hold time		SIN	3.070		3.070							
	Hold time		SC1	3.070		3.070							
	Release time		RB	0.000		0.000							
	Release time		SB	0.090		0.157							
	Removal time		RB	0.151		0.241							
	Removal time		SB	0.056		0.041							
	Min Pulse		CB	0.268		0.595							
	Min Pulse		RB	0.214		0.451							
	Min Pulse		SB	0.249		0.552							
	Min Pulse		SC1	3.000		3.000							
	Min Pulse		SC2B	0.250		0.560							

Block type	Switching speed								Input		Output	
	Path		t_{LD0} [ns]			t_1 (ns/pF)						
	IN → OUT		MIN.	TYP.	MAX.	MIN.	TYP.	MAX.	Symbol	Cin(pF)	Symbol	Cmax(pF)
SP637NQP	CB → Q	(LH)	0.166	0.238	0.393	0.246	0.325	0.509	D	0.007	Q	0.824
		(LL)	0.137	0.196	0.322	0.216	0.269	0.384	CB	0.007	SOUT	0.205
	CB → SOUT	(LH)	0.192	0.274	0.453	0.959	1.260	1.964	RB	0.013		
		(LL)	0.212	0.307	0.510	0.834	1.027	1.448	SB	0.015		
	RB → Q	(LL)	0.067	0.095	0.153	0.215	0.270	0.385	SIN	0.033		
	RB → SOUT	(LH)	0.122	0.210	0.344	0.959	1.262	1.968	SC1	0.013		
	SB → Q	(LH)	0.148	0.254	0.429	0.244	0.323	0.505	SC2B	0.014		
	SB → SOUT	(LL)	0.055	0.105	0.173	0.838	1.035	1.463				
	SC2B → Q	(LH)	0.144	0.213	0.362	0.246	0.325	0.509				
		(LL)	0.139	0.201	0.337	0.216	0.269	0.385				
	SC2B → SOUT	(LH)	0.194	0.280	0.468	0.959	1.260	1.963				
		(LL)	0.190	0.283	0.480	0.834	1.027	1.447				
	Set up time	D	0.141		0.282							
	Set up time	SIN	3.070		3.070							
	Set up time	SC1	3.070		3.070							
	Hold time	D	0.063		0.080							
	Hold time	SIN	3.070		3.070							
	Hold time	SC1	3.070		3.070							
	Release time	RB	0.000		0.000							
	Release time	SB	0.090		0.161							
	Removal time	RB	0.151		0.241							
	Removal time	SB	0.056		0.041							
	Min Pulse	CB	0.290		0.646							
	Min Pulse	RB	0.246		0.514							
	Min Pulse	SB	0.270		0.598							
	Min Pulse	SC1	3.000		3.000							
	Min Pulse	SC2B	0.272		0.612							

[MEMO]

[MEMO]

[MEMO]

3.2 Robust Scan (Pseudo Type)

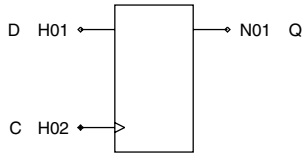
[MEMO]

Function	Robust Scan (Pseudo Cell) D-F/F											
Block type	Standard type											
	Normal				Q output				QB output			
Drivability	Name	cells	Name	cells	Name	cells	Name	cells	Name	cells	Name	cells
					SPL611NQU	10						
x2					SP611NQU	10						
x4					SP611NQPU	11						
x8												

Logic Diagram for "Normal"

Truth Table for "Normal"

Logic Diagram for "Q output"



Truth Table for "Q output"

D	C	Q
0	↗	0
1	↗	1
X	↘	Hold

X:Irrelevant

Logic Diagram for "QB output"

Truth Table for "QB output"

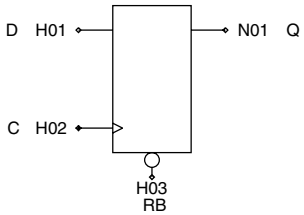
Block type	Switching speed									Input		Output	
	Path			t_{LD0} [ns]			t_1 (ns/pF)						
	IN → OUT			MIN.	TYP.	MAX.	MIN.	TYP.	MAX.	Symbol	Cin(pF)	Symbol	Cmax(pF)
SPL611NQU	C → Q		(HH)	0.102	0.145	0.238	0.965	1.270	1.980	D	0.007	Q	0.209
			(HL)	0.119	0.167	0.269	0.844	1.043	1.476	C	0.006		
	Set up time	D		0.122		0.252							
	Hold time	D		0.048		0.029							
	Min Pulse	C		0.225		0.471							
SP611NQU	C → Q		(HH)	0.108	0.154	0.252	0.483	0.636	0.993	D	0.007	Q	0.420
			(HL)	0.125	0.176	0.284	0.425	0.526	0.745	C	0.006		
	Set up time	D		0.122		0.253							
	Hold time	D		0.049		0.030							
	Min Pulse	C		0.234		0.493							
SP611NQPU	C → Q		(HH)	0.123	0.175	0.285	0.242	0.319	0.498	D	0.007	Q	0.837
			(HL)	0.142	0.200	0.323	0.214	0.266	0.379	C	0.006		
	Set up time	D		0.122		0.255							
	Hold time	D		0.049		0.031							
	Min Pulse	C		0.252		0.535							

Function	Robust Scan (Pseudo Cell) D-F/F with RB											
Block type	Standard type											
	Normal				Q output				QB output			
Drivability	Name	cells	Name	cells	Name	cells	Name	cells	Name	cells	Name	cells
					SPL615NQU	11						
x2					SP615NQU	11						
x4					SP615NQPU	12						
x8												

Logic Diagram for "Normal"

Truth Table for "Normal"

Logic Diagram for "Q output"



Truth Table for "Q output"

D	C	RB	Q
0	↗	1	0
1	↗	1	1
X	↘	1	Hold
X	X	0	0

X:Irrelevant

Logic Diagram for "QB output"

Truth Table for "QB output"

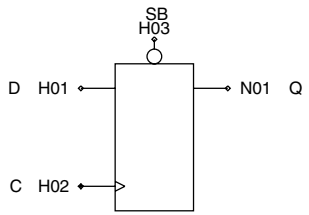
Block type	Switching speed									Input		Output	
	Path		t_{LD0} [ns]			t_1 (ns/pF)							
	IN → OUT		MIN.	TYP.	MAX.	MIN.	TYP.	MAX.		Symbol	Cin(pF)	Symbol	Cmax(pF)
SPL615NQU	C → Q	(HH)	0.114	0.163	0.269	0.973	1.281	2.000		D	0.007	Q	0.208
		(HL)	0.121	0.170	0.275	0.848	1.048	1.485		C	0.006		
	RB → Q	(LL)	0.045	0.064	0.103	0.848	1.052	1.492		RB	0.013		
	Set up time	D	0.126		0.262								
	Hold time	D	0.052		0.032								
	Release time	RB	0.020		0.000								
	Removal time	RB	0.120		0.166								
	Min Pulse	C	0.234		0.499								
	Min Pulse	RB	0.164		0.339								
SP615NQU	C → Q	(HH)	0.122	0.175	0.288	0.488	0.644	1.006		D	0.007	Q	0.417
		(HL)	0.127	0.179	0.290	0.426	0.529	0.751		C	0.006		
	RB → Q	(LL)	0.051	0.072	0.116	0.426	0.530	0.754		RB	0.013		
	Set up time	D	0.126		0.263								
	Hold time	D	0.052		0.033								
	Release time	RB	0.021		0.000								
	Removal time	RB	0.120		0.166								
	Min Pulse	C	0.245		0.527								
	Min Pulse	RB	0.181		0.375								
SP615NQPU	C → Q	(HH)	0.142	0.202	0.331	0.246	0.325	0.508		D	0.007	Q	0.827
		(HL)	0.144	0.202	0.326	0.215	0.268	0.382		C	0.006		
	RB → Q	(LL)	0.066	0.093	0.151	0.214	0.269	0.383		RB	0.013		
	Set up time	D	0.126		0.266								
	Hold time	D	0.052		0.034								
	Release time	RB	0.023		0.000								
	Removal time	RB	0.120		0.166								
	Min Pulse	C	0.267		0.576								
	Min Pulse	RB	0.212		0.434								

Function	Robust Scan (Pseudo Cell) D-F/F with SB											
Block type	Standard type											
	Normal				Q output				QB output			
Drivability	Name	cells	Name	cells	Name	cells	Name	cells	Name	cells	Name	cells
					SPL616NQU	11						
x2					SP616NQU	11						
x4					SP616NQPU	12						
x8												

Logic Diagram for "Normal"

Truth Table for "Normal"

Logic Diagram for "Q output"



Truth Table for "Q output"

D	C	SB	Q
0	↗	1	0
1	↗	1	1
X	↘	1	Hold
X	X	0	1

X:Irrelevant

Logic Diagram for "QB output"

Truth Table for "QB output"

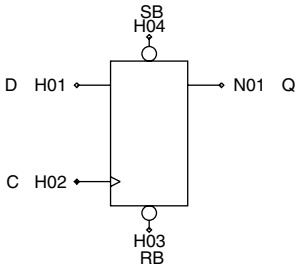
Block type	Switching speed									Input		Output	
	Path		t_{LD0} [ns]			t_1 (ns/pF)							
	IN → OUT		MIN.	TYP.	MAX.	MIN.	TYP.	MAX.		Symbol	Cin(pF)	Symbol	Cmax(pF)
SPL616NQU	C → Q	(HH)	0.094	0.134	0.219	0.964	1.268	1.978		D	0.007	Q	0.209
		(HL)	0.119	0.168	0.273	0.844	1.043	1.476		C	0.006		
	SB → Q	(LH)	0.099	0.185	0.318	0.961	1.266	1.974		SB	0.015		
	Set up time	D	0.135		0.283								
	Hold time	D	0.040		0.018								
	Release time	SB	0.085		0.154								
	Removal time	SB	0.060		0.044								
	Min Pulse	C	0.244		0.521								
	Min Pulse	SB	0.216		0.487								
SP616NQU	C → Q	(HH)	0.104	0.148	0.241	0.483	0.636	0.993		D	0.007	Q	0.419
		(HL)	0.129	0.183	0.297	0.426	0.527	0.748		C	0.006		
	SB → Q	(LH)	0.105	0.197	0.337	0.482	0.635	0.991		SB	0.014		
	Set up time	D	0.136		0.285								
	Hold time	D	0.041		0.020								
	Release time	SB	0.086		0.156								
	Removal time	SB	0.060		0.044								
	Min Pulse	C	0.259		0.556								
	Min Pulse	SB	0.226		0.507								
SP616NQPU	C → Q	(HH)	0.118	0.168	0.273	0.242	0.319	0.498		D	0.007	Q	0.834
		(HL)	0.147	0.207	0.337	0.215	0.267	0.381		C	0.006		
	SB → Q	(LH)	0.119	0.220	0.372	0.241	0.318	0.497		SB	0.014		
	Set up time	D	0.136		0.287								
	Hold time	D	0.042		0.022								
	Release time	SB	0.086		0.158								
	Removal time	SB	0.060		0.044								
	Min Pulse	C	0.279		0.603								
	Min Pulse	SB	0.244		0.542								

Function	Robust Scan (Pseudo Cell) D-F/F with RB, SB											
Block type	Standard type											
	Normal				Q output				QB output			
Drivability	Name	cells	Name	cells	Name	cells	Name	cells	Name	cells	Name	cells
					SPL617NQU	12						
x2					SP617NQU	12						
x4					SP617NQPU	13						
x8												

Logic Diagram for "Normal"

Truth Table for "Normal"

Logic Diagram for "Q output"



Truth Table for "Q output"

D	C	RB	SB	Q	
0	↗	1	1	0	
1	↗	1	1	1	
X	↘	1	1	Hold	
X	X	0	1	0	
X	X	1	0	1	
X	X	0	0	0	← Prohibition

X:Irrelevant

Logic Diagram for "QB output"

Truth Table for "QB output"

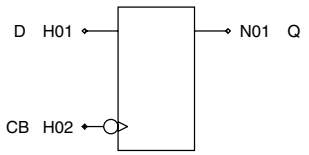
Block type	Switching speed									Input		Output	
	Path			t_{LD0} [ns]			t_1 (ns/pF)						
	IN → OUT			MIN.	TYP.	MAX.	MIN.	TYP.	MAX.	Symbol	Cin(pF)	Symbol	Cmax(pF)
SPL617NQU	C → Q		(HH)	0.119	0.170	0.280	0.973	1.282	2.001	D	0.007	Q	0.207
			(HL)	0.126	0.178	0.290	0.850	1.051	1.492	C	0.007		
	RB → Q		(LL)	0.046	0.065	0.105	0.849	1.055	1.497	RB	0.013		
	SB → Q		(LH)	0.120	0.217	0.370	0.965	1.275	1.989	SB	0.015		
	Set up time	D		0.130		0.275							
	Hold time	D		0.046		0.029							
	Release time	RB		0.010		0.000							
	Release time	SB		0.084		0.153							
	Removal time	RB		0.130		0.184							
	Removal time	SB		0.063		0.046							
	Min Pulse	C		0.256		0.547							
	Min Pulse	RB		0.193		0.409							
	Min Pulse	SB		0.242		0.539							
SP617NQU	C → Q		(HH)	0.127	0.181	0.298	0.489	0.644	1.007	D	0.007	Q	0.416
			(HL)	0.133	0.188	0.306	0.428	0.531	0.754	C	0.007		
	RB → Q		(LL)	0.052	0.073	0.118	0.427	0.532	0.757	RB	0.013		
	SB → Q		(LH)	0.128	0.229	0.389	0.485	0.641	1.001	SB	0.015		
	Set up time	D		0.130		0.277							
	Hold time	D		0.046		0.029							
	Release time	RB		0.012		0.000							
	Release time	SB		0.084		0.155							
	Removal time	RB		0.130		0.185							
	Removal time	SB		0.063		0.046							
	Min Pulse	C		0.266		0.572							
	Min Pulse	RB		0.212		0.447							
	Min Pulse	SB		0.251		0.558							
SP617NQPU	C → Q		(HH)	0.147	0.208	0.341	0.246	0.325	0.509	D	0.007	Q	0.823
			(HL)	0.151	0.212	0.345	0.216	0.269	0.384	C	0.007		
	RB → Q		(LL)	0.067	0.095	0.153	0.215	0.270	0.385	RB	0.013		
	SB → Q		(LH)	0.147	0.258	0.434	0.244	0.323	0.505	SB	0.015		
	Set up time	D		0.131		0.279							
	Hold time	D		0.047		0.030							
	Release time	RB		0.016		0.000							
	Release time	SB		0.084		0.157							
	Removal time	RB		0.130		0.185							
	Removal time	SB		0.063		0.046							
	Min Pulse	C		0.286		0.617							
	Min Pulse	RB		0.244		0.510							
	Min Pulse	SB		0.272		0.603							

Function	Robust Scan (Pseudo Cell) D-F/F (CB)											
Block type	Standard type											
	Normal				Q output				QB output			
Drivability	Name	cells	Name	cells	Name	cells	Name	cells	Name	cells	Name	cells
					SPL631NQU	10						
x2					SP631NQU	10						
x4					SP631NQPU	11						
x8												

Logic Diagram for "Normal"

Truth Table for "Normal"

Logic Diagram for "Q output"



Truth Table for "Q output"

D	CB	Q
0	↘	0
1	↘	1
X	↗	Hold

X:Irrelevant

Logic Diagram for "QB output"

Truth Table for "QB output"

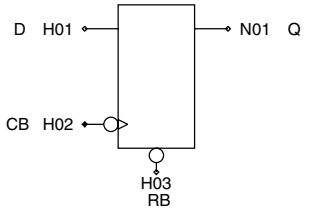
Block type	Switching speed									Input		Output	
	Path			t_{LD0} [ns]			t_1 (ns/pF)						
	IN → OUT			MIN.	TYP.	MAX.	MIN.	TYP.	MAX.	Symbol	Cin(pF)	Symbol	Cmax(pF)
SPL631NQU	CB → Q		(LH)	0.122	0.177	0.294	0.965	1.270	1.980	D	0.007	Q	0.209
			(LL)	0.104	0.149	0.243	0.844	1.042	1.475	CB	0.006		
	Set up time	D		0.126		0.219							
	Hold time	D		0.060		0.075							
	Min Pulse	CB		0.233		0.511							
SP631NQU	CB → Q		(LH)	0.128	0.186	0.308	0.483	0.636	0.993	D	0.007	Q	0.421
			(LL)	0.111	0.158	0.259	0.425	0.526	0.745	CB	0.006		
	Set up time	D		0.126		0.220							
	Hold time	D		0.060		0.075							
	Min Pulse	CB		0.243		0.533							
SP631NQPU	CB → Q		(LH)	0.144	0.207	0.342	0.242	0.319	0.498	D	0.007	Q	0.838
			(LL)	0.128	0.182	0.297	0.214	0.266	0.379	CB	0.006		
	Set up time	D		0.126		0.222							
	Hold time	D		0.060		0.076							
	Min Pulse	CB		0.259		0.571							

Function	Robust Scan (Pseudo Cell) D-F/F (CB) with RB											
Block type	Standard type											
	Normal				Q output				QB output			
Drivability	Name	cells	Name	cells	Name	cells	Name	cells	Name	cells	Name	cells
					SPL635NQU	11						
x2					SP635NQU	11						
x4					SP635NQPU	12						
x8												

Logic Diagram for "Normal"

Truth Table for "Normal"

Logic Diagram for "Q output"



Truth Table for "Q output"

D	CB	RB	Q
0	↘	1	0
1	↘	1	1
X	↗	1	Hold
X	X	0	0

X:Irrelevant

Logic Diagram for "QB output"

Truth Table for "QB output"

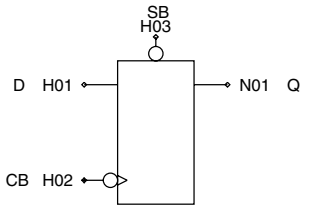
Block type	Switching speed									Input		Output	
	Path			t_{LD0} [ns]			t_1 (ns/pF)						
	IN → OUT			MIN.	TYP.	MAX.	MIN.	TYP.	MAX.	Symbol	Cin(pF)	Symbol	Cmax(pF)
SPL635NQU	CB → Q		(LH)	0.138	0.201	0.334	0.973	1.281	2.000	D	0.007	Q	0.208
			(LL)	0.107	0.153	0.251	0.847	1.048	1.484	CB	0.006		
	RB → Q		(LL)	0.045	0.064	0.103	0.848	1.052	1.492	RB	0.013		
	Set up time		D	0.126		0.226							
	Hold time		D	0.061		0.078							
	Release time		RB	0.003		0.000							
	Removal time		RB	0.140		0.222							
	Min Pulse		CB	0.253		0.558							
	Min Pulse		RB	0.163		0.339							
SP635NQU	CB → Q		(LH)	0.147	0.213	0.353	0.488	0.644	1.006	D	0.007	Q	0.418
			(LL)	0.114	0.162	0.266	0.426	0.528	0.750	CB	0.006		
	RB → Q		(LL)	0.051	0.072	0.116	0.426	0.530	0.754	RB	0.013		
	Set up time		D	0.126		0.227							
	Hold time		D	0.061		0.078							
	Release time		RB	0.004		0.000							
	Removal time		RB	0.140		0.222							
	Min Pulse		CB	0.264		0.586							
	Min Pulse		RB	0.181		0.374							
SP635NQPU	CB → Q		(LH)	0.166	0.240	0.396	0.246	0.324	0.508	D	0.007	Q	0.828
			(LL)	0.130	0.184	0.302	0.215	0.268	0.382	CB	0.006		
	RB → Q		(LL)	0.066	0.093	0.150	0.214	0.269	0.383	RB	0.013		
	Set up time		D	0.126		0.228							
	Hold time		D	0.061		0.079							
	Release time		RB	0.006		0.000							
	Removal time		RB	0.140		0.222							
	Min Pulse		CB	0.285		0.634							
	Min Pulse		RB	0.211		0.432							

Function	Robust Scan (Pseudo Cell) D-F/F (CB) with SB											
Block type	Standard type											
	Normal				Q output				QB output			
Drivability	Name	cells	Name	cells	Name	cells	Name	cells	Name	cells	Name	cells
					SPL636NQU	11						
x2					SP636NQU	11						
x4					SP636NQPU	12						
x8												

Logic Diagram for "Normal"

Truth Table for "Normal"

Logic Diagram for "Q output"



Truth Table for "Q output"

D	CB	SB	Q
0	↘	1	0
1	↘	1	1
X	↗	1	Hold
X	X	0	1

X:Irrelevant

Logic Diagram for "QB output"

Truth Table for "QB output"

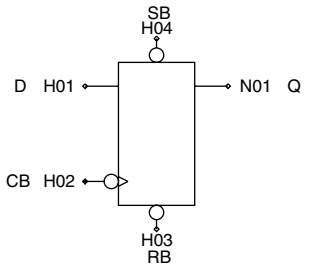
Block type	Switching speed									Input		Output	
	Path			t_{LD0} [ns]			t_1 (ns/pF)						
	IN → OUT			MIN.	TYP.	MAX.	MIN.	TYP.	MAX.	Symbol	Cin(pF)	Symbol	Cmax(pF)
SPL636NQU	CB → Q		(LH)	0.119	0.173	0.289	0.965	1.269	1.979	D	0.007	Q	0.209
			(LL)	0.103	0.148	0.243	0.845	1.043	1.478	CB	0.006		
	SB → Q		(LH)	0.101	0.188	0.322	0.961	1.266	1.975	SB	0.015		
	Set up time	D		0.141		0.281							
	Hold time	D		0.060		0.072							
	Release time	SB		0.085		0.150							
	Removal time	SB		0.060		0.053							
	Min Pulse	CB		0.234		0.514							
	Min Pulse	SB		0.219		0.493							
SP636NQU	CB → Q		(LH)	0.127	0.185	0.306	0.483	0.636	0.993	D	0.007	Q	0.419
			(LL)	0.113	0.162	0.266	0.426	0.527	0.748	CB	0.006		
	SB → Q		(LH)	0.105	0.197	0.336	0.482	0.635	0.991	SB	0.014		
	Set up time	D		0.142		0.284							
	Hold time	D		0.060		0.073							
	Release time	SB		0.086		0.153							
	Removal time	SB		0.060		0.052							
	Min Pulse	CB		0.246		0.541							
	Min Pulse	SB		0.226		0.507							
SP636NQPU	CB → Q		(LH)	0.142	0.205	0.339	0.242	0.319	0.498	D	0.007	Q	0.835
			(LL)	0.130	0.186	0.306	0.215	0.267	0.380	CB	0.006		
	SB → Q		(LH)	0.119	0.219	0.371	0.241	0.318	0.497	SB	0.014		
	Set up time	D		0.142		0.287							
	Hold time	D		0.061		0.075							
	Release time	SB		0.086		0.156							
	Removal time	SB		0.060		0.052							
	Min Pulse	CB		0.262		0.579							
	Min Pulse	SB		0.244		0.542							

Function	Robust Scan (Pseudo Cell) D-F/F (CB) with RB, SB											
Block type	Standard type											
	Normal				Q output				QB output			
Drivability	Name	cells	Name	cells	Name	cells	Name	cells	Name	cells	Name	cells
					SPL637NQU	12						
x2					SP637NQU	12						
x4					SP637NQPU	13						
x8												

Logic Diagram for "Normal"

Truth Table for "Normal"

Logic Diagram for "Q output"



Truth Table for "Q output"

D	CB	RB	SB	Q	
0	↘	1	1	0	
1	↘	1	1	1	
X	↗	1	1	Hold	
X	X	0	1	0	
X	X	1	0	1	
X	X	0	0	0	← Prohibition

X:Irrelevant

Logic Diagram for "QB output"

Truth Table for "QB output"

Block type	Switching speed									Input		Output	
	Path			t LD0 [ns]			t 1 (ns/pF)						
	IN → OUT			MIN.	TYP.	MAX.	MIN.	TYP.	MAX.	Symbol	Cin(pF)	Symbol	Cmax(pF)
SPL637NQU	CB → Q		(LH)	0.138	0.199	0.331	0.974	1.283	2.003	D	0.007	Q	0.207
			(LL)	0.113	0.162	0.266	0.850	1.052	1.493	CB	0.007		
	RB → Q		(LL)	0.046	0.065	0.105	0.849	1.055	1.498	RB	0.013		
	SB → Q		(LH)	0.122	0.214	0.364	0.965	1.275	1.989	SB	0.015		
	Set up time		D	0.140		0.278							
	Hold time		D	0.063		0.078							
	Release time		RB	0.000		0.000							
	Release time		SB	0.089		0.156							
	Removal time		RB	0.151		0.241							
	Removal time		SB	0.056		0.041							
	Min Pulse		CB	0.256		0.567							
	Min Pulse		RB	0.195		0.413							
	Min Pulse		SB	0.240		0.533							
SP637NQU	CB → Q		(LH)	0.146	0.210	0.349	0.489	0.645	1.008	D	0.007	Q	0.416
			(LL)	0.120	0.171	0.282	0.428	0.531	0.755	CB	0.007		
	RB → Q		(LL)	0.052	0.073	0.118	0.427	0.532	0.757	RB	0.013		
	SB → Q		(LH)	0.129	0.226	0.383	0.485	0.641	1.001	SB	0.015		
	Set up time		D	0.140		0.279							
	Hold time		D	0.063		0.079							
	Release time		RB	0.000		0.000							
	Release time		SB	0.090		0.157							
	Removal time		RB	0.151		0.241							
	Removal time		SB	0.056		0.041							
	Min Pulse		CB	0.268		0.595							
	Min Pulse		RB	0.214		0.451							
	Min Pulse		SB	0.249		0.552							
SP637NQPU	CB → Q		(LH)	0.166	0.238	0.393	0.246	0.325	0.509	D	0.007	Q	0.824
			(LL)	0.137	0.196	0.322	0.216	0.269	0.384	CB	0.007		
	RB → Q		(LL)	0.067	0.095	0.153	0.215	0.270	0.385	RB	0.013		
	SB → Q		(LH)	0.148	0.254	0.429	0.244	0.323	0.505	SB	0.015		
	Set up time		D	0.141		0.282							
	Hold time		D	0.063		0.080							
	Release time		RB	0.000		0.000							
	Release time		SB	0.090		0.161							
	Removal time		RB	0.151		0.241							
	Removal time		SB	0.056		0.041							
	Min Pulse		CB	0.290		0.646							
	Min Pulse		RB	0.246		0.514							
	Min Pulse		SB	0.270		0.598							

[MEMO]

[MEMO]

3.3 MUX Scan

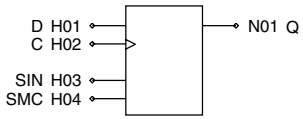
[MEMO]

Function	MUX Scan D-F/F											
Block type	Standard type											
	Normal				Q output				QB output			
Drivability	Name	cells	Name	cells	Name	cells	Name	cells	Name	cells	Name	cells
					SWL611NQ	8						
x2					SW611NQ	9						
x4					SW611NQP	10						
x8												

Logic Diagram for "Normal"

Truth Table for "Normal"

Logic Diagram for "Q output"



Truth Table for "Q output"

D	C	SIN	SMC	Q
0	↗	X	0	0
1	↗	X	0	1
X	↗	SIN	1	SIN
X	↘	X	X	Hold

X:Irrelevant

Logic Diagram for "QB output"

Truth Table for "QB output"

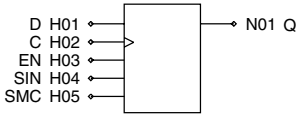
Block type	Switching speed									Input		Output	
	Path		t_{LD0} [ns]			t_1 (ns/pF)							
	IN → OUT		MIN.	TYP.	MAX.	MIN.	TYP.	MAX.		Symbol	Cin(pF)	Symbol	Cmax(pF)
SWL611NQ	C → Q	(HH)	0.089	0.126	0.204	0.965	1.269	1.978		D	0.006	Q	0.209
		(HL)	0.107	0.150	0.242	0.844	1.042	1.473		C	0.007		
	Set up time	D	0.159		0.340					SIN	0.006		
	Set up time	SIN	0.159		0.341					SMC	0.013		
	Set up time	SMC	0.184		0.398								
	Hold time	D	0.010		0.000								
	Hold time	SIN	0.009		0.000								
	Hold time	SMC	0.009		0.000								
	Min Pulse	C	0.184		0.380								
SW611NQ	C → Q	(HH)	0.095	0.135	0.218	0.483	0.635	0.991		D	0.006	Q	0.418
		(HL)	0.114	0.160	0.259	0.424	0.524	0.743		C	0.007		
	Set up time	D	0.159		0.341					SIN	0.006		
	Set up time	SIN	0.159		0.341					SMC	0.013		
	Set up time	SMC	0.184		0.399								
	Hold time	D	0.010		0.000								
	Hold time	SIN	0.009		0.000								
	Hold time	SMC	0.009		0.000								
	Min Pulse	C	0.192		0.397								
SW611NQP	C → Q	(HH)	0.103	0.147	0.240	0.241	0.317	0.495		D	0.006	Q	0.843
		(HL)	0.116	0.163	0.263	0.212	0.262	0.370		C	0.007		
	Set up time	D	0.161		0.345					SIN	0.006		
	Set up time	SIN	0.161		0.345					SMC	0.013		
	Set up time	SMC	0.187		0.403								
	Hold time	D	0.010		0.000								
	Hold time	SIN	0.010		0.000								
	Hold time	SMC	0.010		0.000								
	Min Pulse	C	0.194		0.402								

Function	MUX Scan D-F/F with EN											
Block type	Standard type											
	Normal				Q output				QB output			
Drivability	Name	cells	Name	cells	Name	cells	Name	cells	Name	cells	Name	cells
					SWL611EQ	11						
x2					SW611EQ	11						
x4					SW611EQP	12						
x8												

Logic Diagram for "Normal"

Truth Table for "Normal"

Logic Diagram for "Q output"



Truth Table for "Q output"

D	C	EN	SIN	SMC	Q
0	↗	1	X	0	0
1	↗	1	X	0	1
X	↗	0	X	0	Hold
X	↗	X	SIN	1	SIN
X	↘	X	X	X	Hold

X:Irrelevant

Logic Diagram for "QB output"

Truth Table for "QB output"

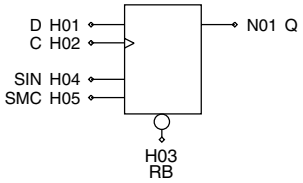
Block type	Switching speed									Input		Output	
	Path		t_{LD0} [ns]			t_1 (ns/pF)							
	IN → OUT		MIN.	TYP.	MAX.	MIN.	TYP.	MAX.		Symbol	Cin(pF)	Symbol	Cmax(pF)
SWL611EQ	C → Q	(HH)	0.094	0.133	0.216	0.965	1.269	1.978		D	0.006	Q	0.209
		(HL)	0.108	0.152	0.245	0.843	1.040	1.470		C	0.007		
	Set up time	D	0.224		0.517					EN	0.014		
	Set up time	EN	0.257		0.591					SIN	0.007		
	Set up time	SIN	0.181		0.390					SMC	0.013		
	Set up time	SMC	0.257		0.608								
	Hold time	D	0.000		0.000								
	Hold time	EN	0.000		0.000								
	Hold time	SIN	0.000		0.000								
	Hold time	SMC	0.000		0.000								
	Min Pulse	C	0.188		0.387								
SW611EQ	C → Q	(HH)	0.100	0.141	0.228	0.483	0.635	0.991		D	0.006	Q	0.421
		(HL)	0.115	0.162	0.261	0.424	0.524	0.743		C	0.007		
	Set up time	D	0.224		0.517					EN	0.014		
	Set up time	EN	0.256		0.590					SIN	0.007		
	Set up time	SIN	0.181		0.389					SMC	0.013		
	Set up time	SMC	0.257		0.608								
	Hold time	D	0.000		0.000								
	Hold time	EN	0.000		0.000								
	Hold time	SIN	0.000		0.000								
	Hold time	SMC	0.000		0.000								
	Min Pulse	C	0.195		0.403								
SW611EQP	C → Q	(HH)	0.114	0.160	0.257	0.242	0.319	0.497		D	0.006	Q	0.839
		(HL)	0.131	0.184	0.296	0.214	0.266	0.378		C	0.007		
	Set up time	D	0.224		0.516					EN	0.014		
	Set up time	EN	0.256		0.590					SIN	0.007		
	Set up time	SIN	0.180		0.389					SMC	0.013		
	Set up time	SMC	0.257		0.607								
	Hold time	D	0.000		0.000								
	Hold time	EN	0.000		0.000								
	Hold time	SIN	0.000		0.000								
	Hold time	SMC	0.000		0.000								
	Min Pulse	C	0.211		0.439								

Function	MUX Scan D-F/F with RB											
Block type	Standard type											
	Normal				Q output				QB output			
Drivability	Name	cells	Name	cells	Name	cells	Name	cells	Name	cells	Name	cells
					SWL615NQ	9						
x2					SW615NQ	10						
x4					SW615NQP	12						
x8												

Logic Diagram for "Normal"

Truth Table for "Normal"

Logic Diagram for "Q output"



Truth Table for "Q output"

D	C	RB	SIN	SMC	Q
0	↗	1	X	0	0
1	↗	1	X	0	1
X	↗	1	SIN	1	SIN
X	↘	1	X	X	Hold
X	X	0	X	X	0

X:Irrelevant

Logic Diagram for "QB output"

Truth Table for "QB output"

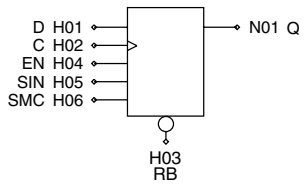
Block type	Switching speed									Input		Output	
	Path		t_{LD0} [ns]			t_1 (ns/pF)							
	IN → OUT		MIN.	TYP.	MAX.	MIN.	TYP.	MAX.		Symbol	Cin(pF)	Symbol	Cmax(pF)
SWL615NQ	C → Q	(HH)	0.102	0.145	0.237	0.971	1.278	1.994		D	0.006	Q	0.209
		(HL)	0.109	0.153	0.248	0.845	1.045	1.479		C	0.007		
	RB → Q	(LL)	0.045	0.064	0.103	0.846	1.048	1.487		RB	0.012		
	Set up time	D	0.160		0.347					SIN	0.006		
	Set up time	SIN	0.161		0.347					SMC	0.013		
	Set up time	SMC	0.186		0.405								
	Hold time	D	0.008		0.000								
	Hold time	SIN	0.008		0.000								
	Hold time	SMC	0.008		0.000								
	Release time	RB	0.009		0.000								
	Removal time	RB	0.133		0.190								
	Min Pulse	C	0.186		0.386								
	Min Pulse	RB	0.118		0.239								
SW615NQ	C → Q	(HH)	0.111	0.157	0.257	0.488	0.642	1.002		D	0.006	Q	0.416
		(HL)	0.117	0.164	0.265	0.425	0.526	0.746		C	0.007		
	RB → Q	(LL)	0.052	0.074	0.120	0.424	0.527	0.749		RB	0.012		
	Set up time	D	0.160		0.347					SIN	0.006		
	Set up time	SIN	0.161		0.347					SMC	0.013		
	Set up time	SMC	0.186		0.405								
	Hold time	D	0.008		0.000								
	Hold time	SIN	0.008		0.000								
	Hold time	SMC	0.008		0.000								
	Release time	RB	0.010		0.000								
	Removal time	RB	0.133		0.191								
	Min Pulse	C	0.194		0.403								
	Min Pulse	RB	0.132		0.267								
SW615NQP	C → Q	(HH)	0.124	0.177	0.290	0.243	0.320	0.499		D	0.006	Q	0.838
		(HL)	0.122	0.171	0.276	0.212	0.262	0.371		C	0.007		
	RB → Q	(LL)	0.046	0.065	0.106	0.212	0.263	0.373		RB	0.019		
	Set up time	D	0.162		0.351					SIN	0.006		
	Set up time	SIN	0.163		0.351					SMC	0.013		
	Set up time	SMC	0.188		0.409								
	Hold time	D	0.009		0.000								
	Hold time	SIN	0.009		0.000								
	Hold time	SMC	0.009		0.000								
	Release time	RB	0.014		0.000								
	Removal time	RB	0.128		0.182								
	Min Pulse	C	0.203		0.428								
	Min Pulse	RB	0.120		0.244								

Function	MUX Scan D-F/F with RB, EN											
Block type	Standard type											
	Normal				Q output				QB output			
Drivability	Name	cells	Name	cells	Name	cells	Name	cells	Name	cells	Name	cells
					SWL615EQ	12						
x2					SW615EQ	12						
x4					SW615EQP	14						
x8												

Logic Diagram for "Normal"

Truth Table for "Normal"

Logic Diagram for "Q output"



Truth Table for "Q output"

D	C	RB	EN	SIN	SMC	Q
0	↗	1	1	X	0	0
1	↗	1	1	X	0	1
X	↗	1	0	X	0	Hold
X	↗	1	X	SIN	1	SIN
X	↘	1	X	X	X	Hold
X	X	0	X	X	X	0

X:Irrelevant

Logic Diagram for "QB output"

Truth Table for "QB output"

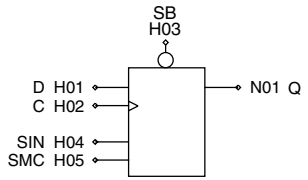
Block type	Switching speed								Input		Output	
	Path		t LD0 [ns]			t 1 (ns/pF)						
	IN → OUT		MIN.	TYP.	MAX.	MIN.	TYP.	MAX.	Symbol	Cin(pF)	Symbol	Cmax(pF)
SWL615EQ	C → Q	(HH)	0.113	0.160	0.261	0.972	1.279	1.995	D	0.006	Q	0.209
		(HL)	0.116	0.162	0.261	0.846	1.045	1.480	C	0.007		
	RB → Q	(LL)	0.046	0.066	0.106	0.848	1.052	1.493	RB	0.013		
	Set up time	D	0.219		0.510				EN	0.014		
	Set up time	EN	0.252		0.583				SIN	0.007		
	Set up time	SIN	0.177		0.383				SMC	0.013		
	Set up time	SMC	0.253		0.601							
	Hold time	D	0.000		0.000							
	Hold time	EN	0.000		0.000							
	Hold time	SIN	0.000		0.000							
	Hold time	SMC	0.000		0.000							
	Release time	RB	0.013		0.000							
	Removal time	RB	0.130		0.184							
	Min Pulse	C	0.194		0.401							
	Min Pulse	RB	0.119		0.242							
SW615EQ	C → Q	(HH)	0.120	0.170	0.277	0.488	0.642	1.003	D	0.006	Q	0.418
		(HL)	0.122	0.170	0.275	0.426	0.527	0.748	C	0.007		
	RB → Q	(LL)	0.052	0.074	0.120	0.426	0.529	0.753	RB	0.013		
	Set up time	D	0.219		0.509				EN	0.014		
	Set up time	EN	0.251		0.583				SIN	0.007		
	Set up time	SIN	0.177		0.384				SMC	0.013		
	Set up time	SMC	0.253		0.601							
	Hold time	D	0.000		0.000							
	Hold time	EN	0.000		0.000							
	Hold time	SIN	0.000		0.000							
	Hold time	SMC	0.000		0.000							
	Release time	RB	0.013		0.000							
	Removal time	RB	0.130		0.184							
	Min Pulse	C	0.200		0.415							
	Min Pulse	RB	0.132		0.266							
SW615EQP	C → Q	(HH)	0.126	0.181	0.296	0.243	0.320	0.500	D	0.006	Q	0.838
		(HL)	0.123	0.173	0.279	0.212	0.262	0.372	C	0.007		
	RB → Q	(LL)	0.047	0.067	0.108	0.212	0.263	0.374	RB	0.020		
	Set up time	D	0.221		0.513				EN	0.014		
	Set up time	EN	0.253		0.587				SIN	0.007		
	Set up time	SIN	0.178		0.387				SMC	0.013		
	Set up time	SMC	0.254		0.605							
	Hold time	D	0.000		0.000							
	Hold time	EN	0.000		0.000							
	Hold time	SIN	0.000		0.000							
	Hold time	SMC	0.000		0.000							
	Release time	RB	0.015		0.000							
	Removal time	RB	0.127		0.179							
	Min Pulse	C	0.206		0.434							
	Min Pulse	RB	0.122		0.247							

Function	MUX Scan D-F/F with SB											
Block type	Standard type											
	Normal				Q output				QB output			
Drivability	Name	cells	Name	cells	Name	cells	Name	cells	Name	cells	Name	cells
					SWL616NQ	9						
x2					SW616NQ	10						
x4					SW616NQP	11						
x8												

Logic Diagram for "Normal"

Truth Table for "Normal"

Logic Diagram for "Q output"



Truth Table for "Q output"

D	C	SB	SIN	SMC	Q
0	↗	1	X	0	0
1	↗	1	X	0	1
X	↗	1	SIN	1	SIN
X	↘	1	X	X	Hold
X	X	0	X	X	1

X:Irrelevant

Logic Diagram for "QB output"

Truth Table for "QB output"

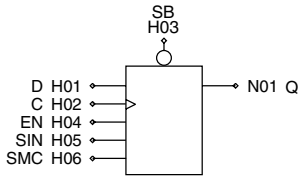
Block type	Switching speed									Input		Output	
	Path		t_{LD0} [ns]			t_1 (ns/pF)							
	IN → OUT		MIN.	TYP.	MAX.	MIN.	TYP.	MAX.		Symbol	Cin(pF)	Symbol	Cmax(pF)
SWL616NQ	C → Q	(HH)	0.090	0.128	0.207	0.965	1.269	1.978		D	0.006	Q	0.209
		(HL)	0.114	0.160	0.260	0.844	1.043	1.475		C	0.007		
	SB → Q	(LH)	0.086	0.136	0.227	0.964	1.268	1.976		SB	0.014		
	Set up time	D	0.178		0.385					SIN	0.006		
	Set up time	SIN	0.178		0.386					SMC	0.012		
	Set up time	SMC	0.205		0.445								
	Hold time	D	0.010		0.000								
	Hold time	SIN	0.010		0.000								
	Hold time	SMC	0.010		0.000								
	Release time	SB	0.066		0.081								
	Removal time	SB	0.075		0.077								
	Min Pulse	C	0.191		0.397								
	Min Pulse	SB	0.178		0.385								
SW616NQ	C → Q	(HH)	0.097	0.137	0.221	0.483	0.635	0.990		D	0.006	Q	0.419
		(HL)	0.122	0.172	0.280	0.424	0.524	0.743		C	0.007		
	SB → Q	(LH)	0.093	0.146	0.243	0.482	0.634	0.989		SB	0.014		
	Set up time	D	0.178		0.386					SIN	0.006		
	Set up time	SIN	0.178		0.386					SMC	0.012		
	Set up time	SMC	0.205		0.446								
	Hold time	D	0.010		0.000								
	Hold time	SIN	0.010		0.000								
	Hold time	SMC	0.010		0.000								
	Release time	SB	0.066		0.081								
	Removal time	SB	0.075		0.077								
	Min Pulse	C	0.199		0.417								
	Min Pulse	SB	0.186		0.402								
SW616NQP	C → Q	(HH)	0.104	0.149	0.242	0.241	0.317	0.495		D	0.006	Q	0.843
		(HL)	0.125	0.177	0.287	0.212	0.262	0.371		C	0.007		
	SB → Q	(LH)	0.097	0.154	0.257	0.241	0.317	0.495		SB	0.014		
	Set up time	D	0.180		0.389					SIN	0.006		
	Set up time	SIN	0.181		0.389					SMC	0.012		
	Set up time	SMC	0.208		0.449								
	Hold time	D	0.010		0.000								
	Hold time	SIN	0.010		0.000								
	Hold time	SMC	0.011		0.000								
	Release time	SB	0.068		0.084								
	Removal time	SB	0.073		0.073								
	Min Pulse	C	0.203		0.425								
	Min Pulse	SB	0.195		0.421								

Function	MUX Scan D-F/F with SB, EN											
Block type	Standard type											
	Normal				Q output				QB output			
Drivability	Name	cells	Name	cells	Name	cells	Name	cells	Name	cells	Name	cells
					SWL616EQ	12						
x2					SW616EQ	12						
x4					SW616EQP	13						
x8												

Logic Diagram for "Normal"

Truth Table for "Normal"

Logic Diagram for "Q output"



Truth Table for "Q output"

D	C	SB	EN	SIN	SMC	Q
0	↗	1	1	X	0	0
1	↗	1	1	X	0	1
X	↗	1	0	X	0	Hold
X	↗	1	X	SIN	1	SIN
X	↘	1	X	X	X	Hold
X	X	0	X	X	X	1

X:Irrelevant

Logic Diagram for "QB output"

Truth Table for "QB output"

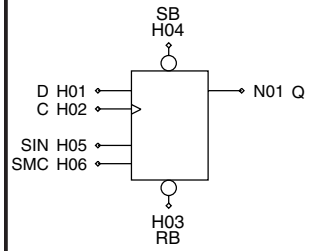
Block type	Switching speed								Input		Output	
	Path		t LD0 [ns]			t 1 (ns/pF)						
	IN → OUT		MIN.	TYP.	MAX.	MIN.	TYP.	MAX.	Symbol	Cin(pF)	Symbol	Cmax(pF)
SWL616EQ	C → Q	(HH)	0.086	0.122	0.199	0.965	1.269	1.979	D	0.006	Q	0.209
		(HL)	0.133	0.183	0.283	0.847	1.048	1.483	C	0.007		
	SB → Q	(LH)	0.096	0.148	0.241	0.963	1.266	1.974	SB	0.013		
	Set up time	D	0.240		0.560				EN	0.014		
	Set up time	EN	0.272		0.633				SIN	0.007		
	Set up time	SIN	0.195		0.430				SMC	0.013		
	Set up time	SMC	0.271		0.647							
	Hold time	D	0.000		0.000							
	Hold time	EN	0.000		0.000							
	Hold time	SIN	0.000		0.000							
	Hold time	SMC	0.000		0.000							
	Release time	SB	0.063		0.075							
	Removal time	SB	0.078		0.083							
	Min Pulse	C	0.212		0.421							
	Min Pulse	SB	0.192		0.403							
SW616EQ	C → Q	(HH)	0.091	0.130	0.211	0.483	0.636	0.992	D	0.006	Q	0.421
		(HL)	0.141	0.194	0.301	0.427	0.528	0.749	C	0.007		
	SB → Q	(LH)	0.102	0.156	0.255	0.482	0.635	0.990	SB	0.013		
	Set up time	D	0.240		0.560				EN	0.014		
	Set up time	EN	0.272		0.634				SIN	0.007		
	Set up time	SIN	0.195		0.430				SMC	0.013		
	Set up time	SMC	0.271		0.648							
	Hold time	D	0.000		0.000							
	Hold time	EN	0.000		0.000							
	Hold time	SIN	0.000		0.000							
	Hold time	SMC	0.000		0.000							
	Release time	SB	0.063		0.075							
	Removal time	SB	0.078		0.083							
	Min Pulse	C	0.220		0.439							
	Min Pulse	SB	0.200		0.418							
SW616EQP	C → Q	(HH)	0.104	0.147	0.239	0.242	0.319	0.498	D	0.006	Q	0.838
		(HL)	0.160	0.220	0.341	0.215	0.268	0.381	C	0.007		
	SB → Q	(LH)	0.116	0.175	0.284	0.242	0.318	0.496	SB	0.013		
	Set up time	D	0.240		0.561				EN	0.014		
	Set up time	EN	0.272		0.634				SIN	0.007		
	Set up time	SIN	0.195		0.431				SMC	0.013		
	Set up time	SMC	0.271		0.649							
	Hold time	D	0.000		0.000							
	Hold time	EN	0.000		0.000							
	Hold time	SIN	0.000		0.000							
	Hold time	SMC	0.000		0.000							
	Release time	SB	0.063		0.076							
	Removal time	SB	0.078		0.083							
	Min Pulse	C	0.239		0.479							
	Min Pulse	SB	0.215		0.449							

Function	MUX Scan D-F/F with RB, SB											
Block type	Standard type											
	Normal				Q output				QB output			
Drivability	Name	cells	Name	cells	Name	cells	Name	cells	Name	cells	Name	cells
					SWL617NQ	10						
x2					SW617NQ	11						
x4					SW617NQP	12						
x8												

Logic Diagram for "Normal"

Truth Table for "Normal"

Logic Diagram for "Q output"



Truth Table for "Q output"

D	C	RB	SB	SIN	SMC	Q
0	↗	1	1	X	0	0
1	↗	1	1	X	0	1
X	↗	1	1	SIN	1	SIN
X	↘	1	1	X	X	Hold
X	X	0	1	X	X	0
X	X	1	0	X	X	1
X	X	0	0	X	X	Prohibition

X:Irrelevant

Logic Diagram for "QB output"

Truth Table for "QB output"

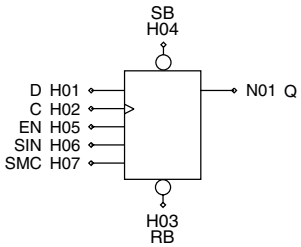
Block type	Switching speed								Input		Output	
	Path		t LD0 [ns]			t 1 (ns/pF)						
	IN → OUT		MIN.	TYP.	MAX.	MIN.	TYP.	MAX.	Symbol	Cin(pF)	Symbol	Cmax(pF)
SWL617NQ	C → Q	(HH)	0.111	0.157	0.256	0.970	1.276	1.992	D	0.006	Q	0.207
		(HL)	0.123	0.173	0.280	0.849	1.050	1.488	C	0.007		
	RB → Q	(LL)	0.047	0.067	0.108	0.848	1.052	1.494	RB	0.013		
	SB → Q	(LH)	0.106	0.159	0.266	0.967	1.273	1.986	SB	0.014		
	Set up time	D	0.177		0.388				SIN	0.006		
	Set up time	SIN	0.177		0.388				SMC	0.013		
	Set up time	SMC	0.203		0.447							
	Hold time	D	0.011		0.000							
	Hold time	SIN	0.010		0.000							
	Hold time	SMC	0.011		0.000							
	Release time	RB	0.000		0.000							
	Release time	SB	0.058		0.072							
	Removal time	RB	0.145		0.212							
	Removal time	SB	0.083		0.089							
	Min Pulse	C	0.205		0.425							
	Min Pulse	RB	0.122		0.246							
	Min Pulse	SB	0.195		0.422							
SW617NQ	C → Q	(HH)	0.115	0.162	0.263	0.487	0.642	1.002	D	0.006	Q	0.418
		(HL)	0.126	0.177	0.287	0.426	0.528	0.749	C	0.007		
	RB → Q	(LL)	0.050	0.071	0.115	0.426	0.529	0.752	RB	0.012		
	SB → Q	(LH)	0.107	0.164	0.273	0.486	0.639	0.998	SB	0.014		
	Set up time	D	0.171		0.376				SIN	0.006		
	Set up time	SIN	0.170		0.374				SMC	0.013		
	Set up time	SMC	0.199		0.437							
	Hold time	D	0.013		0.000							
	Hold time	SIN	0.014		0.000							
	Hold time	SMC	0.014		0.000							
	Release time	RB	0.000		0.000							
	Release time	SB	0.058		0.072							
	Removal time	RB	0.145		0.212							
	Removal time	SB	0.084		0.089							
	Min Pulse	C	0.207		0.430							
	Min Pulse	RB	0.129		0.261							
	Min Pulse	SB	0.198		0.429							
SW617NQP	C → Q	(HH)	0.133	0.187	0.303	0.245	0.324	0.507	D	0.006	Q	0.827
		(HL)	0.142	0.200	0.323	0.215	0.268	0.381	C	0.007		
	RB → Q	(LL)	0.065	0.093	0.150	0.214	0.267	0.380	RB	0.012		
	SB → Q	(LH)	0.126	0.190	0.314	0.245	0.323	0.504	SB	0.014		
	Set up time	D	0.171		0.377				SIN	0.006		
	Set up time	SIN	0.170		0.375				SMC	0.013		
	Set up time	SMC	0.199		0.437							
	Hold time	D	0.013		0.000							
	Hold time	SIN	0.014		0.000							
	Hold time	SMC	0.014		0.000							
	Release time	RB	0.000		0.000							
	Release time	SB	0.058		0.072							
	Removal time	RB	0.145		0.212							
	Removal time	SB	0.084		0.089							
	Min Pulse	C	0.223		0.467							
	Min Pulse	RB	0.156		0.314							
	Min Pulse	SB	0.217		0.471							

Function	MUX Scan D-F/F with RB, SB, EN											
Block type	Standard type											
	Normal				Q output				QB output			
Drivability	Name	cells	Name	cells	Name	cells	Name	cells	Name	cells	Name	cells
					SWL617EQ	13						
x2					SW617EQ	13						
x4					SW617EQP	14						
x8												

Logic Diagram for "Normal"

Truth Table for "Normal"

Logic Diagram for "Q output"



Truth Table for "Q output"

D	SIN	SMC	C	EN	RB	SB	Q
0	X	0	↗	1	1	1	0
1	X	0	↗	1	1	1	1
X	X	0	↗	0	1	1	Hold
X	SIN	1	↗	X	1	1	SIN
X	X	X	↘	X	1	1	Hold
X	X	X	X	X	1	0	1
X	X	X	X	X	0	1	0
X	X	X	X	X	0	0	Prohibition

X:Irrelevant

Logic Diagram for "QB output"

Truth Table for "QB output"

Block type	Switching speed								Input		Output	
	Path		t_{LD0} [ns]			t_1 (ns/pF)						
	IN → OUT		MIN.	TYP.	MAX.	MIN.	TYP.	MAX.	Symbol	Cin(pF)	Symbol	Cmax(pF)
SWL617EQ	C → Q	(HH)	0.107	0.151	0.246	0.971	1.278	1.994	D	0.006	Q	0.208
		(HL)	0.119	0.167	0.271	0.847	1.047	1.484	C	0.007		
	RB → Q	(LL)	0.045	0.063	0.102	0.848	1.050	1.490	RB	0.013		
	SB → Q	(LH)	0.106	0.158	0.263	0.968	1.273	1.986	SB	0.014		
	Set up time	D	0.245		0.574				EN	0.014		
	Set up time	EN	0.277		0.647				SIN	0.006		
	Set up time	SIN	0.198		0.440				SMC	0.013		
	Set up time	SMC	0.276		0.661							
	Hold time	D	0.000		0.000							
	Hold time	EN	0.000		0.000							
	Hold time	SIN	0.000		0.000							
	Hold time	SMC	0.000		0.000							
	Release time	RB	0.000		0.000							
	Release time	SB	0.058		0.071							
	Removal time	RB	0.145		0.212							
	Removal time	SB	0.084		0.090							
	Min Pulse	C	0.200		0.414							
	Min Pulse	RB	0.116		0.236							
	Min Pulse	SB	0.195		0.422							
SW617EQ	C → Q	(HH)	0.114	0.161	0.262	0.487	0.642	1.003	D	0.006	Q	0.418
		(HL)	0.125	0.176	0.286	0.426	0.528	0.749	C	0.007		
	RB → Q	(LL)	0.050	0.071	0.115	0.426	0.529	0.752	RB	0.013		
	SB → Q	(LH)	0.114	0.169	0.280	0.486	0.640	0.998	SB	0.014		
	Set up time	D	0.245		0.574				EN	0.014		
	Set up time	EN	0.277		0.647				SIN	0.006		
	Set up time	SIN	0.198		0.440				SMC	0.013		
	Set up time	SMC	0.276		0.661							
	Hold time	D	0.000		0.000							
	Hold time	EN	0.000		0.000							
	Hold time	SIN	0.000		0.000							
	Hold time	SMC	0.000		0.000							
	Release time	RB	0.000		0.000							
	Release time	SB	0.058		0.071							
	Removal time	RB	0.145		0.212							
	Removal time	SB	0.084		0.090							
	Min Pulse	C	0.206		0.429							
	Min Pulse	RB	0.128		0.260							
	Min Pulse	SB	0.203		0.439							
SW617EQP	C → Q	(HH)	0.132	0.186	0.301	0.245	0.324	0.507	D	0.006	Q	0.828
		(HL)	0.141	0.199	0.322	0.215	0.268	0.381	C	0.007		
	RB → Q	(LL)	0.065	0.092	0.149	0.214	0.267	0.380	RB	0.013		
	SB → Q	(LH)	0.133	0.194	0.321	0.244	0.322	0.504	SB	0.014		
	Set up time	D	0.245		0.575				EN	0.014		
	Set up time	EN	0.277		0.648				SIN	0.006		
	Set up time	SIN	0.198		0.441				SMC	0.013		
	Set up time	SMC	0.276		0.662							
	Hold time	D	0.000		0.000							
	Hold time	EN	0.000		0.000							
	Hold time	SIN	0.000		0.000							
	Hold time	SMC	0.000		0.000							
	Release time	RB	0.000		0.000							
	Release time	SB	0.058		0.072							
	Removal time	RB	0.145		0.212							
	Removal time	SB	0.084		0.090							
	Min Pulse	C	0.222		0.465							
	Min Pulse	RB	0.156		0.313							

Block type	Switching speed									Input		Output	
	Path			t_{LD0} [ns]			t_1 (ns/pF)						
	IN	→	OUT	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.	Symbol	Cin(pF)	Symbol	Cmax(pF)
	Min Pulse		SB	0.222		0.481							

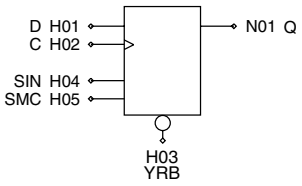
[MEMO]

Function	MUX Scan D-F/F with RB (Sync)											
Block type	Standard type											
	Normal				Q output				QB output			
Drivability	Name	cells	Name	cells	Name	cells	Name	cells	Name	cells	Name	cells
					SWL6Z5NQ	9						
x2					SW6Z5NQ	10						
x4					SW6Z5NQP	11						
x8												

Logic Diagram for "Normal"

Truth Table for "Normal"

Logic Diagram for "Q output"



Truth Table for "Q output"

D	SIN	SMC	C	YRB	Q
0	X	0	↗	1	0
1	X	0	↗	1	1
X	X	0	↗	0	0
X	SIN	1	↗	X	SIN
X	X	X	↘	X	Hold

X:Irrelevant

Logic Diagram for "QB output"

Truth Table for "QB output"

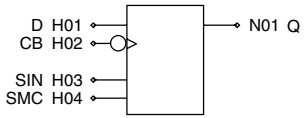
Block type	Switching speed									Input		Output	
	Path		t_{LD0} [ns]			t_1 (ns/pF)							
	IN → OUT		MIN.	TYP.	MAX.	MIN.	TYP.	MAX.		Symbol	Cin(pF)	Symbol	Cmax(pF)
SWL6Z5NQ	C → Q	(HH)	0.089	0.125	0.203	0.966	1.270	1.979		D	0.006	Q	0.210
		(HL)	0.107	0.150	0.243	0.844	1.042	1.474		C	0.007		
	Set up time	D	0.176		0.354					YRB	0.006		
	Set up time	YRB	0.178		0.375					SIN	0.007		
	Set up time	SIN	0.171		0.363					SMC	0.014		
	Set up time	SMC	0.205		0.439								
	Hold time	D	0.000		0.000								
	Hold time	YRB	0.000		0.000								
	Hold time	SIN	0.000		0.000								
	Hold time	SMC	0.000		0.000								
	Min Pulse	C	0.186		0.383								
SW6Z5NQ	C → Q	(HH)	0.095	0.134	0.217	0.483	0.635	0.991		D	0.006	Q	0.419
		(HL)	0.115	0.161	0.260	0.424	0.524	0.743		C	0.007		
	Set up time	D	0.176		0.354					YRB	0.006		
	Set up time	YRB	0.178		0.375					SIN	0.007		
	Set up time	SIN	0.171		0.363					SMC	0.014		
	Set up time	SMC	0.205		0.440								
	Hold time	D	0.000		0.000								
	Hold time	YRB	0.000		0.000								
	Hold time	SIN	0.000		0.000								
	Hold time	SMC	0.000		0.000								
	Min Pulse	C	0.193		0.401								
SW6Z5NQP	C → Q	(HH)	0.103	0.147	0.240	0.241	0.317	0.495		D	0.006	Q	0.843
		(HL)	0.117	0.165	0.266	0.212	0.262	0.371		C	0.007		
	Set up time	D	0.176		0.358					YRB	0.006		
	Set up time	YRB	0.179		0.379					SIN	0.007		
	Set up time	SIN	0.173		0.368					SMC	0.014		
	Set up time	SMC	0.206		0.444								
	Hold time	D	0.000		0.000								
	Hold time	YRB	0.000		0.000								
	Hold time	SIN	0.000		0.000								
	Hold time	SMC	0.000		0.000								
	Min Pulse	C	0.196		0.407								

Function	MUX Scan D-F/F (CB)											
Block type	Standard type											
	Normal				Q output				QB output			
Drivability	Name	cells	Name	cells	Name	cells	Name	cells	Name	cells	Name	cells
					SWL631NQ	8						
x2					SW631NQ	9						
x4					SW631NQP	10						
x8												

Logic Diagram for "Normal"

Truth Table for "Normal"

Logic Diagram for "Q output"



Truth Table for "Q output"

D	CB	SIN	SMC	Q
0	↘	X	0	0
1	↘	X	0	1
X	↘	SIN	1	SIN
X	↗	X	X	Hold

X:Irrelevant

Logic Diagram for "QB output"

Truth Table for "QB output"

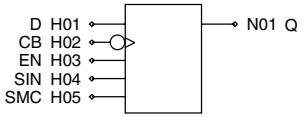
Block type	Switching speed									Input		Output	
	Path			t_{LD0} [ns]			t_1 (ns/pF)						
	IN → OUT			MIN.	TYP.	MAX.	MIN.	TYP.	MAX.	Symbol	Cin(pF)	Symbol	Cmax(pF)
SWL631NQ	CB → Q		(LH)	0.108	0.155	0.254	0.965	1.269	1.978	D	0.006	Q	0.209
			(LL)	0.096	0.136	0.222	0.844	1.041	1.473	CB	0.006		
	Set up time	D		0.174		0.351				SIN	0.006		
	Set up time	SIN		0.175		0.351				SMC	0.013		
	Set up time	SMC		0.203		0.413							
	Hold time	D		0.054		0.057							
	Hold time	SIN		0.054		0.057							
	Hold time	SMC		0.054		0.050							
	Min Pulse	CB		0.183		0.387							
SW631NQ	CB → Q		(LH)	0.114	0.164	0.268	0.483	0.635	0.991	D	0.006	Q	0.418
			(LL)	0.104	0.147	0.240	0.424	0.524	0.743	CB	0.006		
	Set up time	D		0.174		0.351				SIN	0.006		
	Set up time	SIN		0.175		0.351				SMC	0.013		
	Set up time	SMC		0.203		0.413							
	Hold time	D		0.054		0.057							
	Hold time	SIN		0.054		0.057							
	Hold time	SMC		0.054		0.050							
	Min Pulse	CB		0.189		0.401							
SW631NQP	CB → Q		(LH)	0.118	0.170	0.281	0.241	0.317	0.495	D	0.006	Q	0.843
			(LL)	0.108	0.153	0.249	0.212	0.262	0.370	CB	0.006		
	Set up time	D		0.175		0.352				SIN	0.006		
	Set up time	SIN		0.175		0.353				SMC	0.013		
	Set up time	SMC		0.204		0.414							
	Hold time	D		0.055		0.060							
	Hold time	SIN		0.055		0.060							
	Hold time	SMC		0.055		0.053							
	Min Pulse	CB		0.194		0.415							

Function	MUX Scan D-F/F (CB) with EN											
Block type	Standard type											
	Normal				Q output				QB output			
Drivability	Name	cells	Name	cells	Name	cells	Name	cells	Name	cells	Name	cells
					SWL631EQ	11						
x2					SW631EQ	11						
x4					SW631EQP	12						
x8												

Logic Diagram for "Normal"

Truth Table for "Normal"

Logic Diagram for "Q output"



Truth Table for "Q output"

D	SIN	SMC	CB	EN	Q
0	X	0	↘	1	0
1	X	0	↘	1	1
X	X	0	↘	0	Hold
X	SIN	1	↘	X	SIN
X	X	X	↗	X	Hold

X:Irrelevant

Logic Diagram for "QB output"

Truth Table for "QB output"

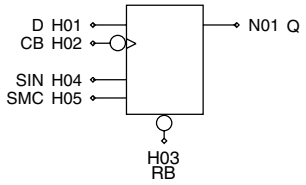
Block type	Switching speed									Input		Output	
	Path		t_{LD0} [ns]			t_1 (ns/pF)							
	IN → OUT		MIN.	TYP.	MAX.	MIN.	TYP.	MAX.		Symbol	Cin(pF)	Symbol	Cmax(pF)
SWL631EQ	CB → Q	(LH)	0.111	0.159	0.261	0.965	1.269	1.978		D	0.006	Q	0.209
		(LL)	0.097	0.138	0.225	0.843	1.040	1.470		CB	0.007		
	Set up time	D	0.217		0.512					EN	0.014		
	Set up time	EN	0.250		0.586					SIN	0.007		
	Set up time	SIN	0.180		0.388					SMC	0.013		
	Set up time	SMC	0.253		0.605								
	Hold time	D	0.000		0.000								
	Hold time	EN	0.000		0.000								
	Hold time	SIN	0.012		0.000								
	Hold time	SMC	0.011		0.000								
	Min Pulse	CB	0.185		0.393								
SW631EQ	CB → Q	(LH)	0.117	0.167	0.273	0.483	0.635	0.991		D	0.006	Q	0.421
		(LL)	0.104	0.148	0.241	0.424	0.524	0.743		CB	0.007		
	Set up time	D	0.217		0.512					EN	0.014		
	Set up time	EN	0.250		0.586					SIN	0.007		
	Set up time	SIN	0.180		0.389					SMC	0.013		
	Set up time	SMC	0.253		0.606								
	Hold time	D	0.000		0.000								
	Hold time	EN	0.000		0.000								
	Hold time	SIN	0.012		0.000								
	Hold time	SMC	0.011		0.000								
	Min Pulse	CB	0.191		0.405								
SW631EQP	CB → Q	(LH)	0.130	0.185	0.302	0.242	0.319	0.497		D	0.006	Q	0.839
		(LL)	0.120	0.170	0.278	0.214	0.266	0.378		CB	0.007		
	Set up time	D	0.217		0.513					EN	0.014		
	Set up time	EN	0.250		0.587					SIN	0.007		
	Set up time	SIN	0.180		0.389					SMC	0.013		
	Set up time	SMC	0.253		0.606								
	Hold time	D	0.000		0.000								
	Hold time	EN	0.000		0.000								
	Hold time	SIN	0.012		0.000								
	Hold time	SMC	0.011		0.000								
	Min Pulse	CB	0.204		0.433								

Function	MUX Scan D-F/F (CB) with RB											
Block type	Standard type											
	Normal				Q output				QB output			
Drivability	Name	cells	Name	cells	Name	cells	Name	cells	Name	cells	Name	cells
					SWL635NQ	9						
x2					SW635NQ	10						
x4					SW635NQP	12						
x8												

Logic Diagram for "Normal"

Truth Table for "Normal"

Logic Diagram for "Q output"



Truth Table for "Q output"

D	CB	RB	SIN	SMC	Q
0	↘	1	X	0	0
1	↘	1	X	0	1
X	↘	1	SIN	1	SIN
X	↗	1	X	X	Hold
X	X	0	X	X	0

X:Irrelevant

Logic Diagram for "QB output"

Truth Table for "QB output"

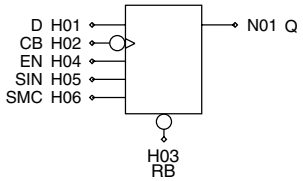
Block type	Switching speed									Input		Output	
	Path			t_{LD0} [ns]			t_1 (ns/pF)						
	IN → OUT			MIN.	TYP.	MAX.	MIN.	TYP.	MAX.	Symbol	Cin(pF)	Symbol	Cmax(pF)
SWL635NQ	CB → Q		(LH)	0.122	0.175	0.288	0.971	1.278	1.993	D	0.006	Q	0.209
			(LL)	0.100	0.142	0.232	0.845	1.044	1.478	CB	0.006		
	RB → Q		(LL)	0.045	0.064	0.104	0.845	1.048	1.485	RB	0.013		
	Set up time	D		0.177		0.358				SIN	0.006		
	Set up time	SIN		0.177		0.358				SMC	0.013		
	Set up time	SMC		0.205		0.419							
	Hold time	D		0.052		0.057							
	Hold time	SIN		0.052		0.057							
	Hold time	SMC		0.052		0.050							
	Release time	RB		0.000		0.000							
	Removal time	RB		0.144		0.225							
	Min Pulse	CB		0.196		0.421							
	Min Pulse	RB		0.118		0.239							
SW635NQ	CB → Q		(LH)	0.131	0.187	0.308	0.487	0.642	1.002	D	0.006	Q	0.416
			(LL)	0.108	0.153	0.249	0.424	0.526	0.745	CB	0.006		
	RB → Q		(LL)	0.052	0.074	0.120	0.424	0.526	0.748	RB	0.013		
	Set up time	D		0.176		0.358				SIN	0.006		
	Set up time	SIN		0.177		0.358				SMC	0.013		
	Set up time	SMC		0.206		0.420							
	Hold time	D		0.052		0.057							
	Hold time	SIN		0.052		0.057							
	Hold time	SMC		0.052		0.051							
	Release time	RB		0.000		0.000							
	Removal time	RB		0.144		0.225							
	Min Pulse	CB		0.205		0.441							
	Min Pulse	RB		0.132		0.267							
SW635NQP	CB → Q		(LH)	0.139	0.200	0.331	0.243	0.320	0.499	D	0.006	Q	0.838
			(LL)	0.116	0.165	0.268	0.212	0.262	0.371	CB	0.006		
	RB → Q		(LL)	0.046	0.065	0.106	0.212	0.263	0.373	RB	0.019		
	Set up time	D		0.176		0.358				SIN	0.006		
	Set up time	SIN		0.177		0.358				SMC	0.013		
	Set up time	SMC		0.205		0.419							
	Hold time	D		0.055		0.063							
	Hold time	SIN		0.055		0.063							
	Hold time	SMC		0.055		0.056							
	Release time	RB		0.002		0.000							
	Removal time	RB		0.140		0.220							
	Min Pulse	CB		0.216		0.468							
	Min Pulse	RB		0.120		0.244							

Function	MUX Scan D-F/F (CB) with RB, EN											
Block type	Standard type											
	Normal				Q output				QB output			
Drivability	Name	cells	Name	cells	Name	cells	Name	cells	Name	cells	Name	cells
					SWL635EQ	12						
x2					SW635EQ	12						
x4					SW635EQP	14						
x8												

Logic Diagram for "Normal"

Truth Table for "Normal"

Logic Diagram for "Q output"



Truth Table for "Q output"

D	SIN	SMC	CB	EN	RB	Q
0	X	0	↘	1	1	0
1	X	0	↘	1	1	1
X	X	0	↘	0	1	Hold
X	SIN	1	↘	X	1	SIN
X	X	X	↗	X	1	Hold
X	X	X	X	X	0	0

X:Irrelevant

Logic Diagram for "QB output"

Truth Table for "QB output"

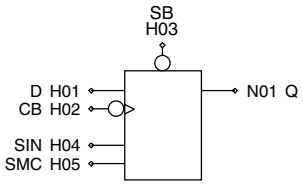
Block type	Switching speed									Input		Output	
	Path			t LD0 [ns]			t 1 (ns/pF)						
	IN → OUT			MIN.	TYP.	MAX.	MIN.	TYP.	MAX.	Symbol	Cin(pF)	Symbol	Cmax(pF)
SWL635EQ	CB → Q		(LH)	0.131	0.188	0.309	0.972	1.279	1.995	D	0.006	Q	0.209
			(LL)	0.106	0.150	0.245	0.846	1.045	1.480	CB	0.006		
	RB → Q		(LL)	0.046	0.066	0.106	0.848	1.052	1.493	RB	0.013		
	Set up time	D		0.212		0.500				EN	0.014		
	Set up time	EN		0.245		0.575				SIN	0.007		
	Set up time	SIN		0.176		0.380				SMC	0.013		
	Set up time	SMC		0.249		0.596							
	Hold time	D		0.000		0.000							
	Hold time	EN		0.000		0.000							
	Hold time	SIN		0.009		0.000							
	Hold time	SMC		0.008		0.000							
	Release time	RB		0.005		0.000							
	Removal time	RB		0.138		0.217							
	Min Pulse	CB		0.207		0.444							
	Min Pulse	RB		0.119		0.242							
SW635EQ	CB → Q		(LH)	0.138	0.198	0.325	0.488	0.642	1.003	D	0.006	Q	0.418
			(LL)	0.112	0.159	0.258	0.426	0.527	0.748	CB	0.006		
	RB → Q		(LL)	0.052	0.074	0.120	0.426	0.529	0.753	RB	0.013		
	Set up time	D		0.212		0.500				EN	0.014		
	Set up time	EN		0.245		0.574				SIN	0.007		
	Set up time	SIN		0.176		0.380				SMC	0.013		
	Set up time	SMC		0.249		0.596							
	Hold time	D		0.000		0.000							
	Hold time	EN		0.000		0.000							
	Hold time	SIN		0.009		0.000							
	Hold time	SMC		0.008		0.000							
	Release time	RB		0.005		0.000							
	Removal time	RB		0.138		0.217							
	Min Pulse	CB		0.214		0.460							
	Min Pulse	RB		0.132		0.266							
SW635EQP	CB → Q		(LH)	0.140	0.202	0.334	0.243	0.320	0.500	D	0.006	Q	0.837
			(LL)	0.116	0.164	0.267	0.212	0.262	0.372	CB	0.006		
	RB → Q		(LL)	0.047	0.067	0.108	0.212	0.263	0.374	RB	0.020		
	Set up time	D		0.213		0.503				EN	0.014		
	Set up time	EN		0.246		0.577				SIN	0.007		
	Set up time	SIN		0.177		0.382				SMC	0.013		
	Set up time	SMC		0.250		0.598							
	Hold time	D		0.000		0.000							
	Hold time	EN		0.000		0.000							
	Hold time	SIN		0.010		0.000							
	Hold time	SMC		0.010		0.000							
	Release time	RB		0.008		0.000							
	Removal time	RB		0.135		0.210							
	Min Pulse	CB		0.217		0.470							
	Min Pulse	RB		0.122		0.247							

Function	MUX Scan D-F/F (CB) with SB											
Block type	Standard type											
	Normal				Q output				QB output			
Drivability	Name	cells	Name	cells	Name	cells	Name	cells	Name	cells	Name	cells
					SWL636NQ	9						
x2					SW636NQ	10						
x4					SW636NQP	11						
x8												

Logic Diagram for "Normal"

Truth Table for "Normal"

Logic Diagram for "Q output"



Truth Table for "Q output"

D	CB	SB	SIN	SMC	Q
0	↘	1	X	0	0
1	↘	1	X	0	1
X	↘	1	SIN	1	SIN
X	↗	1	X	X	Hold
X	X	0	X	X	1

X:Irrelevant

Logic Diagram for "QB output"

Truth Table for "QB output"

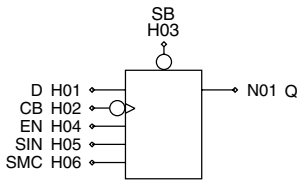
Block type	Switching speed									Input		Output	
	Path		t_{LD0} [ns]			t_1 (ns/pF)							
	IN → OUT		MIN.	TYP.	MAX.	MIN.	TYP.	MAX.		Symbol	Cin(pF)	Symbol	Cmax(pF)
SWL636NQ	CB → Q	(LH)	0.109	0.156	0.257	0.965	1.269	1.978		D	0.006	Q	0.209
		(LL)	0.103	0.148	0.242	0.844	1.042	1.475		CB	0.006		
	SB → Q	(LH)	0.086	0.136	0.227	0.964	1.268	1.976		SB	0.014		
	Set up time	D	0.183		0.380					SIN	0.006		
	Set up time	SIN	0.183		0.380					SMC	0.012		
	Set up time	SMC	0.212		0.441								
	Hold time	D	0.056		0.058								
	Hold time	SIN	0.056		0.058								
	Hold time	SMC	0.057		0.052								
	Release time	SB	0.061		0.068								
	Removal time	SB	0.080		0.095								
	Min Pulse	CB	0.185		0.391								
	Min Pulse	SB	0.178		0.385								
SW636NQ	CB → Q	(LH)	0.115	0.165	0.271	0.483	0.635	0.991		D	0.006	Q	0.419
		(LL)	0.112	0.159	0.262	0.424	0.524	0.743		CB	0.006		
	SB → Q	(LH)	0.093	0.146	0.243	0.483	0.635	0.989		SB	0.014		
	Set up time	D	0.183		0.380					SIN	0.006		
	Set up time	SIN	0.183		0.380					SMC	0.012		
	Set up time	SMC	0.212		0.442								
	Hold time	D	0.056		0.058								
	Hold time	SIN	0.056		0.058								
	Hold time	SMC	0.057		0.052								
	Release time	SB	0.061		0.069								
	Removal time	SB	0.080		0.095								
	Min Pulse	CB	0.191		0.406								
	Min Pulse	SB	0.186		0.402								
SW636NQP	CB → Q	(LH)	0.119	0.172	0.284	0.241	0.317	0.495		D	0.006	Q	0.843
		(LL)	0.117	0.167	0.274	0.212	0.262	0.371		CB	0.006		
	SB → Q	(LH)	0.097	0.154	0.256	0.241	0.317	0.495		SB	0.014		
	Set up time	D	0.183		0.381					SIN	0.006		
	Set up time	SIN	0.184		0.381					SMC	0.012		
	Set up time	SMC	0.213		0.443								
	Hold time	D	0.057		0.060								
	Hold time	SIN	0.057		0.060								
	Hold time	SMC	0.058		0.054								
	Release time	SB	0.062		0.069								
	Removal time	SB	0.080		0.094								
	Min Pulse	CB	0.197		0.419								
	Min Pulse	SB	0.195		0.421								

Function	MUX Scan D-F/F (CB) with SB, EN											
Block type	Standard type											
	Normal				Q output				QB output			
Drivability	Name	cells	Name	cells	Name	cells	Name	cells	Name	cells	Name	cells
					SWL636EQ	12						
x2					SW636EQ	12						
x4					SW636EQP	13						
x8												

Logic Diagram for "Normal"

Truth Table for "Normal"

Logic Diagram for "Q output"



Truth Table for "Q output"

D	CB	SB	EN	SIN	SMC	Q
0	↘	1	1	X	0	0
1	↘	1	1	X	0	1
X	↘	1	0	X	0	Hold
X	↘	1	X	SIN	1	SIN
X	↗	1	X	X	X	Hold
X	X	0	X	X	X	1
X	X	1	X	X	X	0

X:Irrelevant

Logic Diagram for "QB output"

Truth Table for "QB output"

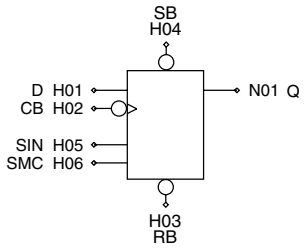
Block type	Switching speed								Input		Output	
	Path		t LD0 [ns]			t 1 (ns/pF)						
	IN → OUT		MIN.	TYP.	MAX.	MIN.	TYP.	MAX.	Symbol	Cin(pF)	Symbol	Cmax(pF)
SWL636EQ	CB → Q	(LH)	0.111	0.158	0.257	0.965	1.269	1.979	D	0.006	Q	0.209
		(LL)	0.128	0.173	0.266	0.847	1.047	1.483	CB	0.006		
	SB → Q	(LH)	0.096	0.148	0.241	0.963	1.266	1.974	SB	0.014		
	Set up time	D	0.234		0.544				EN	0.014		
	Set up time	EN	0.267		0.618				SIN	0.007		
	Set up time	SIN	0.193		0.417				SMC	0.013		
	Set up time	SMC	0.268		0.634							
	Hold time	D	0.000		0.000							
	Hold time	EN	0.000		0.000							
	Hold time	SIN	0.009		0.000							
	Hold time	SMC	0.009		0.000							
	Release time	SB	0.060		0.064							
	Removal time	SB	0.081		0.097							
	Min Pulse	CB	0.201		0.400							
	Min Pulse	SB	0.192		0.403							
SW636EQ	CB → Q	(LH)	0.117	0.166	0.270	0.484	0.636	0.992	D	0.006	Q	0.421
		(LL)	0.138	0.187	0.287	0.427	0.529	0.750	CB	0.006		
	SB → Q	(LH)	0.103	0.156	0.254	0.482	0.635	0.990	SB	0.013		
	Set up time	D	0.234		0.544				EN	0.014		
	Set up time	EN	0.266		0.618				SIN	0.007		
	Set up time	SIN	0.193		0.417				SMC	0.013		
	Set up time	SMC	0.268		0.634							
	Hold time	D	0.000		0.000							
	Hold time	EN	0.000		0.000							
	Hold time	SIN	0.009		0.000							
	Hold time	SMC	0.009		0.000							
	Release time	SB	0.060		0.065							
	Removal time	SB	0.081		0.097							
	Min Pulse	CB	0.212		0.420							
	Min Pulse	SB	0.199		0.416							
SW636EQP	CB → Q	(LH)	0.130	0.183	0.297	0.242	0.319	0.498	D	0.006	Q	0.838
		(LL)	0.157	0.213	0.327	0.215	0.268	0.382	CB	0.006		
	SB → Q	(LH)	0.117	0.175	0.284	0.242	0.318	0.496	SB	0.013		
	Set up time	D	0.234		0.546				EN	0.014		
	Set up time	EN	0.267		0.620				SIN	0.007		
	Set up time	SIN	0.193		0.418				SMC	0.013		
	Set up time	SMC	0.268		0.636							
	Hold time	D	0.000		0.000							
	Hold time	EN	0.000		0.000							
	Hold time	SIN	0.010		0.000							
	Hold time	SMC	0.010		0.000							
	Release time	SB	0.060		0.065							
	Removal time	SB	0.081		0.097							
	Min Pulse	CB	0.231		0.460							
	Min Pulse	SB	0.214		0.447							

Function	MUX Scan D-F/F (CB) with RB, SB											
Block type	Standard type											
	Normal				Q output				QB output			
Drivability	Name	cells	Name	cells	Name	cells	Name	cells	Name	cells	Name	cells
					SWL637NQ	10						
x2					SW637NQ	11						
x4					SW637NQP	12						
x8												

Logic Diagram for "Normal"

Truth Table for "Normal"

Logic Diagram for "Q output"



Truth Table for "Q output"

D	CB	RB	SB	SIN	SMC	Q
0	↘	1	1	X	0	0
1	↘	1	1	X	0	1
X	↘	1	1	SIN	1	SIN
X	↗	1	1	X	X	Hold
X	X	0	1	X	X	0
X	X	1	0	X	X	1
X	X	0	0	X	X	Prohibition

X:Irrelevant

Logic Diagram for "QB output"

Truth Table for "QB output"

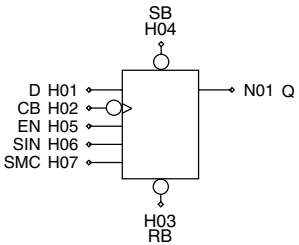
Block type	Switching speed								Input		Output	
	Path		t LD0 [ns]			t 1 (ns/pF)						
	IN → OUT		MIN.	TYP.	MAX.	MIN.	TYP.	MAX.	Symbol	Cin(pF)	Symbol	Cmax(pF)
SWL637NQ	CB → Q	(LH)	0.129	0.184	0.304	0.972	1.279	1.996	D	0.006	Q	0.207
		(LL)	0.109	0.155	0.255	0.848	1.049	1.488	CB	0.007		
	RB → Q	(LL)	0.047	0.068	0.109	0.848	1.053	1.495	RB	0.013		
	SB → Q	(LH)	0.106	0.160	0.267	0.969	1.275	1.988	SB	0.014		
	Set up time	D	0.188		0.393				SIN	0.006		
	Set up time	SIN	0.188		0.393				SMC	0.012		
	Set up time	SMC	0.217		0.454							
	Hold time	D	0.056		0.061							
	Hold time	SIN	0.056		0.061							
	Hold time	SMC	0.057		0.055							
	Release time	RB	0.000		0.000							
	Release time	SB	0.061		0.070							
	Removal time	RB	0.153		0.241							
	Removal time	SB	0.081		0.094							
	Min Pulse	CB	0.204		0.437							
	Min Pulse	RB	0.122		0.247							
	Min Pulse	SB	0.196		0.424							
SW637NQ	CB → Q	(LH)	0.132	0.189	0.311	0.487	0.642	1.002	D	0.006	Q	0.417
		(LL)	0.112	0.160	0.262	0.426	0.528	0.749	CB	0.007		
	RB → Q	(LL)	0.050	0.071	0.115	0.426	0.529	0.752	RB	0.012		
	SB → Q	(LH)	0.107	0.164	0.273	0.486	0.639	0.998	SB	0.014		
	Set up time	D	0.183		0.382				SIN	0.006		
	Set up time	SIN	0.182		0.379				SMC	0.013		
	Set up time	SMC	0.212		0.443							
	Hold time	D	0.057		0.064							
	Hold time	SIN	0.058		0.064							
	Hold time	SMC	0.059		0.059							
	Release time	RB	0.000		0.000							
	Release time	SB	0.060		0.069							
	Removal time	RB	0.153		0.242							
	Removal time	SB	0.082		0.095							
	Min Pulse	CB	0.207		0.445							
	Min Pulse	RB	0.129		0.261							
	Min Pulse	SB	0.198		0.429							
SW637NQP	CB → Q	(LH)	0.150	0.214	0.351	0.245	0.324	0.506	D	0.006	Q	0.827
		(LL)	0.128	0.183	0.299	0.215	0.268	0.381	CB	0.007		
	RB → Q	(LL)	0.065	0.093	0.150	0.214	0.267	0.381	RB	0.012		
	SB → Q	(LH)	0.126	0.190	0.314	0.244	0.322	0.504	SB	0.014		
	Set up time	D	0.183		0.382				SIN	0.006		
	Set up time	SIN	0.182		0.380				SMC	0.013		
	Set up time	SMC	0.212		0.444							
	Hold time	D	0.057		0.065							
	Hold time	SIN	0.058		0.064							
	Hold time	SMC	0.059		0.060							
	Release time	RB	0.000		0.000							
	Release time	SB	0.060		0.070							
	Removal time	RB	0.153		0.242							
	Removal time	SB	0.082		0.095							
	Min Pulse	CB	0.225		0.485							
	Min Pulse	RB	0.156		0.314							
	Min Pulse	SB	0.217		0.471							

Function	MUX Scan D-F/F (CB) with RB, SB,EN											
Block type	Standard type											
	Normal				Q output				QB output			
Drivability	Name	cells	Name	cells	Name	cells	Name	cells	Name	cells	Name	cells
					SWL637EQ	13						
x2					SW637EQ	13						
x4					SW637EQP	14						
x8												

Logic Diagram for "Normal"

Truth Table for "Normal"

Logic Diagram for "Q output"



Truth Table for "Q output"

D	CB	RB	SB	EN	SIN	SMC	Q
0	↘	1	1	1	X	0	0
1	↘	1	1	1	X	0	1
X	↘	1	1	0	X	0	Hold
X	↘	1	1	X	SIN	1	SIN
X	↗	1	1	X	X	X	Hold
X	X	1	0	X	X	X	1
X	X	0	1	X	X	X	0
X	X	0	0	X	X	X	Prohibition

X:Irrelevant

Logic Diagram for "QB output"

Truth Table for "QB output"

Block type	Switching speed								Input		Output	
	Path		t_{LD0} [ns]			t_1 (ns/pF)						
	IN → OUT		MIN.	TYP.	MAX.	MIN.	TYP.	MAX.	Symbol	Cin(pF)	Symbol	Cmax(pF)
SWL637EQ	CB → Q	(LH)	0.124	0.178	0.294	0.971	1.278	1.994	D	0.006	Q	0.208
		(LL)	0.105	0.150	0.246	0.847	1.047	1.484	CB	0.007		
	RB → Q	(LL)	0.045	0.063	0.102	0.848	1.050	1.490	RB	0.013		
	SB → Q	(LH)	0.106	0.159	0.265	0.968	1.273	1.986	SB	0.014		
	Set up time	D	0.241		0.569				EN	0.014		
	Set up time	EN	0.273		0.643				SIN	0.006		
	Set up time	SIN	0.198		0.435				SMC	0.013		
	Set up time	SMC	0.275		0.657							
	Hold time	D	0.000		0.000							
	Hold time	EN	0.000		0.000							
	Hold time	SIN	0.012		0.000							
	Hold time	SMC	0.012		0.000							
	Release time	RB	0.000		0.000							
	Release time	SB	0.060		0.069							
	Removal time	RB	0.152		0.239							
	Removal time	SB	0.082		0.095							
	Min Pulse	CB	0.200		0.428							
	Min Pulse	RB	0.116		0.236							
	Min Pulse	SB	0.196		0.424							
SW637EQ	CB → Q	(LH)	0.132	0.189	0.310	0.487	0.642	1.003	D	0.006	Q	0.418
		(LL)	0.111	0.159	0.261	0.426	0.528	0.749	CB	0.007		
	RB → Q	(LL)	0.050	0.071	0.115	0.426	0.529	0.752	RB	0.013		
	SB → Q	(LH)	0.114	0.170	0.282	0.486	0.640	0.998	SB	0.014		
	Set up time	D	0.241		0.570				EN	0.014		
	Set up time	EN	0.273		0.643				SIN	0.006		
	Set up time	SIN	0.198		0.435				SMC	0.013		
	Set up time	SMC	0.274		0.658							
	Hold time	D	0.000		0.000							
	Hold time	EN	0.000		0.000							
	Hold time	SIN	0.012		0.000							
	Hold time	SMC	0.012		0.000							
	Release time	RB	0.000		0.000							
	Release time	SB	0.060		0.069							
	Removal time	RB	0.152		0.239							
	Removal time	SB	0.082		0.095							
	Min Pulse	CB	0.207		0.445							
	Min Pulse	RB	0.128		0.260							
	Min Pulse	SB	0.204		0.442							
SW637EQP	CB → Q	(LH)	0.150	0.213	0.350	0.245	0.324	0.506	D	0.006	Q	0.828
		(LL)	0.128	0.182	0.298	0.215	0.268	0.381	CB	0.007		
	RB → Q	(LL)	0.065	0.092	0.149	0.214	0.267	0.380	RB	0.013		
	SB → Q	(LH)	0.132	0.195	0.323	0.244	0.322	0.504	SB	0.014		
	Set up time	D	0.241		0.571				EN	0.014		
	Set up time	EN	0.273		0.645				SIN	0.006		
	Set up time	SIN	0.198		0.436				SMC	0.013		
	Set up time	SMC	0.275		0.659							
	Hold time	D	0.000		0.000							
	Hold time	EN	0.000		0.000							
	Hold time	SIN	0.012		0.000							
	Hold time	SMC	0.012		0.000							
	Release time	RB	0.000		0.000							
	Release time	SB	0.060		0.070							
	Removal time	RB	0.152		0.239							
	Removal time	SB	0.082		0.095							
	Min Pulse	CB	0.225		0.484							
	Min Pulse	RB	0.156		0.313							

Block type	Switching speed									Input		Output	
	Path			t_{LD0} [ns]			t_1 (ns/pF)						
	IN	→	OUT	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.	Symbol	Cin(pF)	Symbol	Cmax(pF)
	Min Pulse		SB	0.224		0.483							

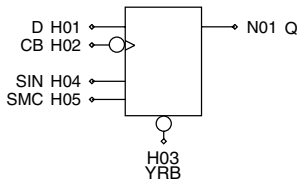
[MEMO]

Function	MUX Scan D-F/F (CB) with RB (Sync)											
Block type	Standard type											
	Normal				Q output				QB output			
Drivability	Name	cells	Name	cells	Name	cells	Name	cells	Name	cells	Name	cells
					SWL6Y5NQ	9						
x2					SW6Y5NQ	10						
x4					SW6Y5NQP	11						
x8												

Logic Diagram for "Normal"

Truth Table for "Normal"

Logic Diagram for "Q output"



Truth Table for "Q output"

D	SIN	SMC	CB	YRB	Q
0	X	0	↘	1	0
1	X	0	↘	1	1
X	X	0	↘	0	0
X	SIN	1	↘	X	SIN
X	X	X	↗	X	Hold

X:Irrelevant

Logic Diagram for "QB output"

Truth Table for "QB output"

Block type	Switching speed									Input		Output	
	Path			t_{LD0} [ns]			t_1 (ns/pF)						
	IN → OUT			MIN.	TYP.	MAX.	MIN.	TYP.	MAX.	Symbol	Cin(pF)	Symbol	Cmax(pF)
SWL6Y5NQ	CB → Q		(LH)	0.107	0.154	0.252	0.966	1.270	1.979	D	0.006	Q	0.210
			(LL)	0.096	0.136	0.222	0.844	1.042	1.474	CB	0.007		
	Set up time	D		0.173		0.356				YRB	0.006		
	Set up time	YRB		0.178		0.377				SIN	0.007		
	Set up time	SIN		0.172		0.364				SMC	0.014		
	Set up time	SMC		0.209		0.443							
	Hold time	D		0.001		0.000							
	Hold time	YRB		0.000		0.000							
	Hold time	SIN		0.019		0.000							
	Hold time	SMC		0.020		0.000							
	Min Pulse	CB		0.181		0.384							
SW6Y5NQ	CB → Q		(LH)	0.114	0.163	0.267	0.483	0.635	0.991	D	0.006	Q	0.419
			(LL)	0.103	0.147	0.239	0.424	0.524	0.743	CB	0.007		
	Set up time	D		0.173		0.357				YRB	0.006		
	Set up time	YRB		0.178		0.378				SIN	0.007		
	Set up time	SIN		0.173		0.364				SMC	0.014		
	Set up time	SMC		0.209		0.444							
	Hold time	D		0.001		0.000							
	Hold time	YRB		0.000		0.000							
	Hold time	SIN		0.019		0.000							
	Hold time	SMC		0.020		0.000							
	Min Pulse	CB		0.188		0.398							
SW6Y5NQP	CB → Q		(LH)	0.118	0.170	0.281	0.241	0.317	0.495	D	0.006	Q	0.843
			(LL)	0.108	0.154	0.251	0.212	0.262	0.371	CB	0.007		
	Set up time	D		0.175		0.359				YRB	0.006		
	Set up time	YRB		0.179		0.380				SIN	0.007		
	Set up time	SIN		0.174		0.367				SMC	0.014		
	Set up time	SMC		0.210		0.446							
	Hold time	D		0.003		0.000							
	Hold time	YRB		0.000		0.000							
	Hold time	SIN		0.021		0.000							
	Hold time	SMC		0.021		0.000							
	Min Pulse	CB		0.193		0.413							

[MEMO]

[MEMO]

3.4 MUX Scan (Pseudo Type)

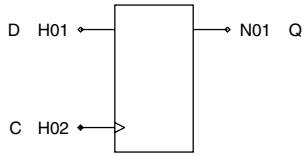
[MEMO]

Function	MUX Scan (Pseudo Type) D-F/F											
Block type	Standard type											
	Normal				Q output				QB output			
Drivability	Name	cells	Name	cells	Name	cells	Name	cells	Name	cells	Name	cells
					SWL611NQU	8						
x2					SW611NQU	9						
x4					SW611NQPU	10						
x8												

Logic Diagram for "Normal"

Truth Table for "Normal"

Logic Diagram for "Q output"



Truth Table for "Q output"

D	C	Q
0	↗	0
1	↗	1
X	↘	Hold

X:Irrelevant

Logic Diagram for "QB output"

Truth Table for "QB output"

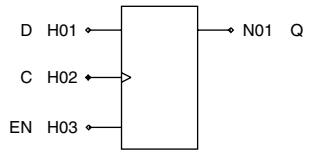
Block type	Switching speed									Input		Output	
	Path			t_{LD0} [ns]			t_1 (ns/pF)						
	IN → OUT			MIN.	TYP.	MAX.	MIN.	TYP.	MAX.	Symbol	Cin(pF)	Symbol	Cmax(pF)
SWL611NQU	C → Q		(HH)	0.089	0.126	0.204	0.965	1.269	1.978	D	0.006	Q	0.209
			(HL)	0.107	0.150	0.242	0.844	1.042	1.473	C	0.007		
	Set up time	D		0.159		0.340							
	Hold time	D		0.010		0.000							
	Min Pulse	C		0.184		0.380							
SW611NQU	C → Q		(HH)	0.095	0.135	0.218	0.483	0.635	0.991	D	0.006	Q	0.418
			(HL)	0.114	0.160	0.259	0.424	0.524	0.743	C	0.007		
	Set up time	D		0.159		0.341							
	Hold time	D		0.010		0.000							
	Min Pulse	C		0.192		0.397							
SW611NQPU	C → Q		(HH)	0.103	0.147	0.240	0.241	0.317	0.495	D	0.006	Q	0.843
			(HL)	0.116	0.163	0.263	0.212	0.262	0.370	C	0.007		
	Set up time	D		0.161		0.345							
	Hold time	D		0.010		0.000							
	Min Pulse	C		0.194		0.402							

Function	MUX Scan (Pseudo Type) D-F/F with EN											
Block type	Standard type											
	Normal				Q output				QB output			
Drivability	Name	cells	Name	cells	Name	cells	Name	cells	Name	cells	Name	cells
					SWL611EQU	11						
x2					SW611EQU	11						
x4					SW611EQPU	12						
x8												

Logic Diagram for "Normal"

Truth Table for "Normal"

Logic Diagram for "Q output"



Truth Table for "Q output"

D	C	EN	Q
0	↗	1	0
1	↗	1	1
X	↗	0	Hold
X	↘	X	Hold

X:Irrelevant

Logic Diagram for "QB output"

Truth Table for "QB output"

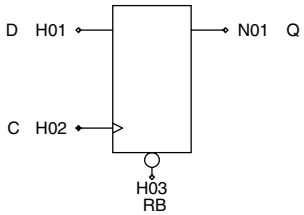
Block type	Switching speed									Input		Output	
	Path			t_{LD0} [ns]			t_1 (ns/pF)						
	IN → OUT			MIN.	TYP.	MAX.	MIN.	TYP.	MAX.	Symbol	Cin(pF)	Symbol	Cmax(pF)
SWL611EQU	C → Q		(HH)	0.094	0.133	0.216	0.965	1.269	1.978	D	0.006	Q	0.209
			(HL)	0.108	0.152	0.245	0.843	1.040	1.470	C	0.007		
	Set up time	D		0.224		0.517				EN	0.014		
	Set up time	EN		0.257		0.591							
	Hold time	D		0.000		0.000							
	Hold time	EN		0.000		0.000							
	Min Pulse	C		0.188		0.387							
SW611EQU	C → Q		(HH)	0.100	0.141	0.228	0.483	0.635	0.991	D	0.006	Q	0.421
			(HL)	0.115	0.162	0.261	0.424	0.524	0.743	C	0.007		
	Set up time	D		0.224		0.517				EN	0.014		
	Set up time	EN		0.256		0.590							
	Hold time	D		0.000		0.000							
	Hold time	EN		0.000		0.000							
	Min Pulse	C		0.195		0.403							
SW611EQPU	C → Q		(HH)	0.114	0.160	0.257	0.242	0.319	0.497	D	0.006	Q	0.839
			(HL)	0.131	0.184	0.296	0.214	0.266	0.378	C	0.007		
	Set up time	D		0.224		0.516				EN	0.014		
	Set up time	EN		0.256		0.590							
	Hold time	D		0.000		0.000							
	Hold time	EN		0.000		0.000							
	Min Pulse	C		0.211		0.439							

Function	MUX Scan (Pseudo Type) D-F/F with RB											
Block type	Standard type											
	Normal				Q output				QB output			
Drivability	Name	cells	Name	cells	Name	cells	Name	cells	Name	cells	Name	cells
					SWL615NQU	9						
x2					SW615NQU	10						
x4					SW615NQPU	12						
x8												

Logic Diagram for "Normal"

Truth Table for "Normal"

Logic Diagram for "Q output"



Truth Table for "Q output"

D	C	RB	Q
0	↗	1	0
1	↗	1	1
X	↘	1	Hold
X	X	0	0

X:Irrelevant

Logic Diagram for "QB output"

Truth Table for "QB output"

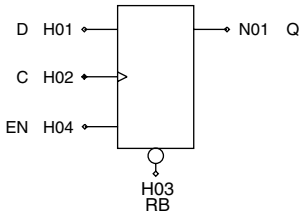
Block type	Switching speed									Input		Output	
	Path		t_{LD0} [ns]			t_1 (ns/pF)							
	IN → OUT		MIN.	TYP.	MAX.	MIN.	TYP.	MAX.		Symbol	Cin(pF)	Symbol	Cmax(pF)
SWL615NQU	C → Q	(HH)	0.102	0.145	0.237	0.971	1.278	1.994		D	0.006	Q	0.209
		(HL)	0.109	0.153	0.248	0.845	1.045	1.479		C	0.007		
	RB → Q	(LL)	0.045	0.064	0.103	0.846	1.048	1.487		RB	0.012		
	Set up time	D	0.160		0.347								
	Hold time	D	0.008		0.000								
	Release time	RB	0.009		0.000								
	Removal time	RB	0.133		0.190								
	Min Pulse	C	0.186		0.386								
	Min Pulse	RB	0.118		0.239								
SW615NQU	C → Q	(HH)	0.111	0.157	0.257	0.488	0.642	1.002		D	0.006	Q	0.416
		(HL)	0.117	0.164	0.265	0.425	0.526	0.746		C	0.007		
	RB → Q	(LL)	0.052	0.074	0.120	0.424	0.527	0.749		RB	0.012		
	Set up time	D	0.160		0.347								
	Hold time	D	0.008		0.000								
	Release time	RB	0.010		0.000								
	Removal time	RB	0.133		0.191								
	Min Pulse	C	0.194		0.403								
	Min Pulse	RB	0.132		0.267								
SW615NQPU	C → Q	(HH)	0.124	0.177	0.290	0.243	0.320	0.499		D	0.006	Q	0.838
		(HL)	0.122	0.171	0.276	0.212	0.262	0.371		C	0.007		
	RB → Q	(LL)	0.046	0.065	0.106	0.212	0.263	0.373		RB	0.019		
	Set up time	D	0.162		0.351								
	Hold time	D	0.009		0.000								
	Release time	RB	0.014		0.000								
	Removal time	RB	0.128		0.182								
	Min Pulse	C	0.203		0.428								
	Min Pulse	RB	0.120		0.244								

Function	MUX Scan (Pseudo Type) D-F/F with RB, EN											
Block type	Standard type											
	Normal				Q output				QB output			
Drivability	Name	cells	Name	cells	Name	cells	Name	cells	Name	cells	Name	cells
					SWL615EQU	12						
x2					SW615EQU	12						
x4					SW615EQPU	14						
x8												

Logic Diagram for "Normal"

Truth Table for "Normal"

Logic Diagram for "Q output"



Truth Table for "Q output"

D	C	EN	RB	Q
0	↗	1	1	0
1	↗	1	1	1
X	↗	0	1	Hold
X	↘	X	1	Hold
X	X	X	0	0

X:Irrelevant

Logic Diagram for "QB output"

Truth Table for "QB output"

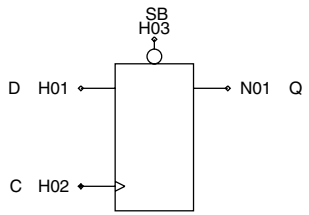
Block type	Switching speed								Input		Output	
	Path		t_{LD0} [ns]			t_1 (ns/pF)						
	IN → OUT		MIN.	TYP.	MAX.	MIN.	TYP.	MAX.	Symbol	Cin(pF)	Symbol	Cmax(pF)
SWL615EQU	C → Q	(HH)	0.113	0.160	0.261	0.972	1.279	1.995	D	0.006	Q	0.209
		(HL)	0.116	0.162	0.261	0.846	1.045	1.480	C	0.007		
	RB → Q	(LL)	0.046	0.066	0.106	0.848	1.052	1.493	RB	0.013		
	Set up time	D	0.219		0.510				EN	0.014		
	Set up time	EN	0.252		0.583							
	Hold time	D	0.000		0.000							
	Hold time	EN	0.000		0.000							
	Release time	RB	0.013		0.000							
	Removal time	RB	0.130		0.184							
	Min Pulse	C	0.194		0.401							
	Min Pulse	RB	0.119		0.242							
SW615EQU	C → Q	(HH)	0.120	0.170	0.277	0.488	0.642	1.003	D	0.006	Q	0.418
		(HL)	0.122	0.170	0.275	0.426	0.527	0.748	C	0.007		
	RB → Q	(LL)	0.052	0.074	0.120	0.426	0.529	0.753	RB	0.013		
	Set up time	D	0.219		0.509				EN	0.014		
	Set up time	EN	0.251		0.583							
	Hold time	D	0.000		0.000							
	Hold time	EN	0.000		0.000							
	Release time	RB	0.013		0.000							
	Removal time	RB	0.130		0.184							
	Min Pulse	C	0.200		0.415							
	Min Pulse	RB	0.132		0.266							
SW615EQPU	C → Q	(HH)	0.126	0.181	0.296	0.243	0.320	0.500	D	0.006	Q	0.838
		(HL)	0.123	0.173	0.279	0.212	0.262	0.372	C	0.007		
	RB → Q	(LL)	0.047	0.067	0.108	0.212	0.263	0.374	RB	0.020		
	Set up time	D	0.221		0.513				EN	0.014		
	Set up time	EN	0.253		0.587							
	Hold time	D	0.000		0.000							
	Hold time	EN	0.000		0.000							
	Release time	RB	0.015		0.000							
	Removal time	RB	0.127		0.179							
	Min Pulse	C	0.206		0.434							
	Min Pulse	RB	0.122		0.247							

Function	MUX Scan (Pseudo Type) D-F/F with SB											
Block type	Standard type											
	Normal				Q output				QB output			
Drivability	Name	cells	Name	cells	Name	cells	Name	cells	Name	cells	Name	cells
					SWL616NQU	9						
x2					SW616NQU	10						
x4					SW616NQPU	11						
x8												

Logic Diagram for "Normal"

Truth Table for "Normal"

Logic Diagram for "Q output"



Truth Table for "Q output"

D	C	SB	Q
0	↗	1	0
1	↗	1	1
X	↘	1	Hold
X	X	0	1

X:Irrelevant

Logic Diagram for "QB output"

Truth Table for "QB output"

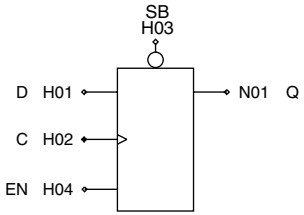
Block type	Switching speed									Input		Output	
	Path		t_{LD0} [ns]			t_1 (ns/pF)							
	IN → OUT		MIN.	TYP.	MAX.	MIN.	TYP.	MAX.		Symbol	Cin(pF)	Symbol	Cmax(pF)
SWL616NQU	C → Q	(HH)	0.090	0.128	0.207	0.965	1.269	1.978		D	0.006	Q	0.209
		(HL)	0.114	0.160	0.260	0.844	1.043	1.475		C	0.007		
	SB → Q	(LH)	0.086	0.136	0.227	0.964	1.268	1.976		SB	0.014		
	Set up time	D	0.178		0.385								
	Hold time	D	0.010		0.000								
	Release time	SB	0.066		0.081								
	Removal time	SB	0.075		0.077								
	Min Pulse	C	0.191		0.397								
	Min Pulse	SB	0.178		0.385								
SW616NQU	C → Q	(HH)	0.097	0.137	0.221	0.483	0.635	0.990		D	0.006	Q	0.419
		(HL)	0.122	0.172	0.280	0.424	0.524	0.743		C	0.007		
	SB → Q	(LH)	0.093	0.146	0.243	0.482	0.634	0.989		SB	0.014		
	Set up time	D	0.178		0.386								
	Hold time	D	0.010		0.000								
	Release time	SB	0.066		0.081								
	Removal time	SB	0.075		0.077								
	Min Pulse	C	0.199		0.417								
	Min Pulse	SB	0.186		0.402								
SW616NQPU	C → Q	(HH)	0.104	0.149	0.242	0.241	0.317	0.495		D	0.006	Q	0.843
		(HL)	0.125	0.177	0.287	0.212	0.262	0.371		C	0.007		
	SB → Q	(LH)	0.097	0.154	0.257	0.241	0.317	0.495		SB	0.014		
	Set up time	D	0.180		0.389								
	Hold time	D	0.010		0.000								
	Release time	SB	0.068		0.084								
	Removal time	SB	0.073		0.073								
	Min Pulse	C	0.203		0.425								
	Min Pulse	SB	0.195		0.421								

Function	MUX Scan (Pseudo Type) D-F/F with SB, EN											
Block type	Standard type											
	Normal				Q output				QB output			
Drivability	Name	cells	Name	cells	Name	cells	Name	cells	Name	cells	Name	cells
					SWL616EQU	12						
x2					SW616EQU	12						
x4					SW616EQPU	13						
x8												

Logic Diagram for "Normal"

Truth Table for "Normal"

Logic Diagram for "Q output"



Truth Table for "Q output"

D	C	EN	SB	Q
0	↗	1	1	0
1	↗	1	1	1
X	↗	0	1	Hold
X	↘	X	1	Hold
X	X	X	0	1

X:Irrelevant

Logic Diagram for "QB output"

Truth Table for "QB output"

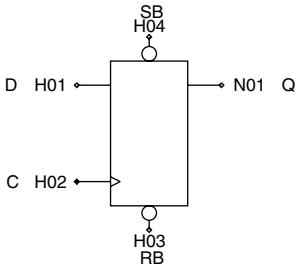
Block type	Switching speed									Input		Output	
	Path			t_{LD0} [ns]			t_1 (ns/pF)						
	IN → OUT			MIN.	TYP.	MAX.	MIN.	TYP.	MAX.	Symbol	Cin(pF)	Symbol	Cmax(pF)
SWL616EQU	C → Q		(HH)	0.086	0.122	0.199	0.965	1.269	1.979	D	0.006	Q	0.209
			(HL)	0.133	0.183	0.283	0.847	1.048	1.483	C	0.007		
	SB → Q		(LH)	0.096	0.148	0.241	0.963	1.266	1.974	SB	0.013		
	Set up time	D		0.240		0.560				EN	0.014		
	Set up time	EN		0.272		0.633							
	Hold time	D		0.000		0.000							
	Hold time	EN		0.000		0.000							
	Release time	SB		0.063		0.075							
	Removal time	SB		0.078		0.083							
	Min Pulse	C		0.212		0.421							
	Min Pulse	SB		0.192		0.403							
SW616EQU	C → Q		(HH)	0.091	0.130	0.211	0.483	0.636	0.992	D	0.006	Q	0.421
			(HL)	0.141	0.194	0.301	0.427	0.528	0.749	C	0.007		
	SB → Q		(LH)	0.102	0.156	0.255	0.482	0.635	0.990	SB	0.013		
	Set up time	D		0.240		0.560				EN	0.014		
	Set up time	EN		0.272		0.634							
	Hold time	D		0.000		0.000							
	Hold time	EN		0.000		0.000							
	Release time	SB		0.063		0.075							
	Removal time	SB		0.078		0.083							
	Min Pulse	C		0.220		0.439							
	Min Pulse	SB		0.200		0.418							
SW616EQPU	C → Q		(HH)	0.104	0.147	0.239	0.242	0.319	0.498	D	0.006	Q	0.838
			(HL)	0.160	0.220	0.341	0.215	0.268	0.381	C	0.007		
	SB → Q		(LH)	0.116	0.175	0.284	0.242	0.318	0.496	SB	0.013		
	Set up time	D		0.240		0.561				EN	0.014		
	Set up time	EN		0.272		0.634							
	Hold time	D		0.000		0.000							
	Hold time	EN		0.000		0.000							
	Release time	SB		0.063		0.076							
	Removal time	SB		0.078		0.083							
	Min Pulse	C		0.239		0.479							
	Min Pulse	SB		0.215		0.449							

Function	MUX Scan (Pseudo Type) D-F/F with RB, SB											
Block type	Standard type											
	Normal				Q output				QB output			
Drivability	Name	cells	Name	cells	Name	cells	Name	cells	Name	cells	Name	cells
					SWL617NQU	10						
x2					SW617NQU	11						
x4					SW617NQPU	12						
x8												

Logic Diagram for "Normal"

Truth Table for "Normal"

Logic Diagram for "Q output"



Truth Table for "Q output"

D	C	RB	SB	Q	
0	↗	1	1	0	
1	↗	1	1	1	
X	↘	1	1	Hold	
X	X	0	1	0	
X	X	1	0	1	
X	X	0	0	0	← Prohibition

X:Irrelevant

Logic Diagram for "QB output"

Truth Table for "QB output"

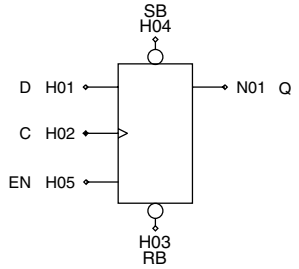
Block type	Switching speed									Input		Output	
	Path			t LD0 [ns]			t 1 (ns/pF)						
	IN → OUT			MIN.	TYP.	MAX.	MIN.	TYP.	MAX.	Symbol	Cin(pF)	Symbol	Cmax(pF)
SWL617NQU	C → Q		(HH)	0.111	0.157	0.256	0.970	1.276	1.992	D	0.006	Q	0.207
			(HL)	0.123	0.173	0.280	0.849	1.050	1.488	C	0.007		
	RB → Q		(LL)	0.047	0.067	0.108	0.848	1.052	1.494	RB	0.013		
	SB → Q		(LH)	0.106	0.159	0.266	0.967	1.273	1.986	SB	0.014		
	Set up time	D		0.177		0.388							
	Hold time	D		0.011		0.000							
	Release time	RB		0.000		0.000							
	Release time	SB		0.058		0.072							
	Removal time	RB		0.145		0.212							
	Removal time	SB		0.083		0.089							
	Min Pulse	C		0.205		0.425							
	Min Pulse	RB		0.122		0.246							
	Min Pulse	SB		0.195		0.422							
SW617NQU	C → Q		(HH)	0.115	0.162	0.263	0.487	0.642	1.002	D	0.006	Q	0.418
			(HL)	0.126	0.177	0.287	0.426	0.528	0.749	C	0.007		
	RB → Q		(LL)	0.050	0.071	0.115	0.426	0.529	0.752	RB	0.012		
	SB → Q		(LH)	0.107	0.164	0.273	0.486	0.639	0.998	SB	0.014		
	Set up time	D		0.171		0.376							
	Hold time	D		0.013		0.000							
	Release time	RB		0.000		0.000							
	Release time	SB		0.058		0.072							
	Removal time	RB		0.145		0.212							
	Removal time	SB		0.084		0.089							
	Min Pulse	C		0.207		0.430							
	Min Pulse	RB		0.129		0.261							
	Min Pulse	SB		0.198		0.429							
SW617NQPU	C → Q		(HH)	0.133	0.187	0.303	0.245	0.324	0.507	D	0.006	Q	0.827
			(HL)	0.142	0.200	0.323	0.215	0.268	0.381	C	0.007		
	RB → Q		(LL)	0.065	0.093	0.150	0.214	0.267	0.380	RB	0.012		
	SB → Q		(LH)	0.126	0.190	0.314	0.245	0.323	0.504	SB	0.014		
	Set up time	D		0.171		0.377							
	Hold time	D		0.013		0.000							
	Release time	RB		0.000		0.000							
	Release time	SB		0.058		0.072							
	Removal time	RB		0.145		0.212							
	Removal time	SB		0.084		0.089							
	Min Pulse	C		0.223		0.467							
	Min Pulse	RB		0.156		0.314							
	Min Pulse	SB		0.217		0.471							

Function	MUX Scan (Pseudo Type) D-F/F with RB, SB, EN											
Block type	Standard type											
	Normal				Q output				QB output			
Drivability	Name	cells	Name	cells	Name	cells	Name	cells	Name	cells	Name	cells
					SWL617EQU	13						
x2					SW617EQU	13						
x4					SW617EQPU	14						
x8												

Logic Diagram for "Normal"

Truth Table for "Normal"

Logic Diagram for "Q output"



Truth Table for "Q output"

D	C	RB	SB	EN	Q	
0	↗	1	1	1	0	
1	↗	1	1	1	1	
X	↗	1	1	0	Hold	
X	↘	1	1	X	Hold	
X	X	0	1	X	0	
X	X	1	0	X	1	
X	X	0	0	X	0	← Prohibition

X:Irrelevant

Logic Diagram for "QB output"

Truth Table for "QB output"

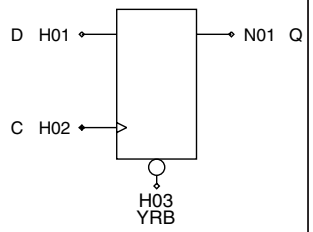
Block type	Switching speed									Input		Output	
	Path			t_{LD0} [ns]			t_1 (ns/pF)						
	IN → OUT			MIN.	TYP.	MAX.	MIN.	TYP.	MAX.	Symbol	Cin(pF)	Symbol	Cmax(pF)
SWL617EQU	C → Q		(HH)	0.107	0.151	0.246	0.971	1.278	1.994	D	0.006	Q	0.208
			(HL)	0.119	0.167	0.271	0.847	1.047	1.484	C	0.007		
	RB → Q		(LL)	0.045	0.063	0.102	0.848	1.050	1.490	RB	0.013		
	SB → Q		(LH)	0.106	0.158	0.263	0.968	1.273	1.986	SB	0.014		
	Set up time	D		0.245		0.574				EN	0.014		
	Set up time	EN		0.277		0.647							
	Hold time	D		0.000		0.000							
	Hold time	EN		0.000		0.000							
	Release time	RB		0.000		0.000							
	Release time	SB		0.058		0.071							
	Removal time	RB		0.145		0.212							
	Removal time	SB		0.084		0.090							
	Min Pulse	C		0.200		0.414							
	Min Pulse	RB		0.116		0.236							
	Min Pulse	SB		0.195		0.422							
SW617EQU	C → Q		(HH)	0.114	0.161	0.262	0.487	0.642	1.003	D	0.006	Q	0.418
			(HL)	0.125	0.176	0.286	0.426	0.528	0.749	C	0.007		
	RB → Q		(LL)	0.050	0.071	0.115	0.426	0.529	0.752	RB	0.013		
	SB → Q		(LH)	0.114	0.169	0.280	0.486	0.640	0.998	SB	0.014		
	Set up time	D		0.245		0.574				EN	0.014		
	Set up time	EN		0.277		0.647							
	Hold time	D		0.000		0.000							
	Hold time	EN		0.000		0.000							
	Release time	RB		0.000		0.000							
	Release time	SB		0.058		0.071							
	Removal time	RB		0.145		0.212							
	Removal time	SB		0.084		0.090							
	Min Pulse	C		0.206		0.429							
	Min Pulse	RB		0.128		0.260							
	Min Pulse	SB		0.203		0.439							
SW617EQPU	C → Q		(HH)	0.132	0.186	0.301	0.245	0.324	0.507	D	0.006	Q	0.828
			(HL)	0.141	0.199	0.322	0.215	0.268	0.381	C	0.007		
	RB → Q		(LL)	0.065	0.092	0.149	0.214	0.267	0.380	RB	0.013		
	SB → Q		(LH)	0.133	0.194	0.321	0.244	0.322	0.504	SB	0.014		
	Set up time	D		0.245		0.575				EN	0.014		
	Set up time	EN		0.277		0.648							
	Hold time	D		0.000		0.000							
	Hold time	EN		0.000		0.000							
	Release time	RB		0.000		0.000							
	Release time	SB		0.058		0.072							
	Removal time	RB		0.145		0.212							
	Removal time	SB		0.084		0.090							
	Min Pulse	C		0.222		0.465							
	Min Pulse	RB		0.156		0.313							
	Min Pulse	SB		0.222		0.481							

Function	MUX Scan (Pseudo Type) D-F/F with RB (Sync)											
Block type	Standard type											
	Normal				Q output				QB output			
Drivability	Name	cells	Name	cells	Name	cells	Name	cells	Name	cells	Name	cells
					SWL6Z5NQU	9						
x2					SW6Z5NQU	10						
x4					SW6Z5NQPU	11						
x8												

Logic Diagram for "Normal"

Truth Table for "Normal"

Logic Diagram for "Q output"



Truth Table for "Q output"

D	C	YRB	Q
0	↗	1	0
1	↗	1	1
X	↗	0	0
X	↘	X	Hold

X:Irrelevant

Logic Diagram for "QB output"

Truth Table for "QB output"

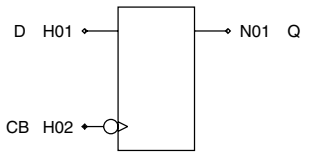
Block type	Switching speed									Input		Output	
	Path			t LD0 [ns]			t 1 (ns/pF)						
	IN → OUT			MIN.	TYP.	MAX.	MIN.	TYP.	MAX.	Symbol	Cin(pF)	Symbol	Cmax(pF)
SWL6Z5NQU	C → Q		(HH)	0.089	0.125	0.203	0.966	1.270	1.979	D	0.006	Q	0.210
			(HL)	0.107	0.150	0.243	0.844	1.042	1.474	C	0.007		
	Set up time	D		0.176		0.354				YRB	0.006		
	Set up time	YRB		0.178		0.375							
	Hold time	D		0.000		0.000							
	Hold time	YRB		0.000		0.000							
	Min Pulse	C		0.186		0.383							
SW6Z5NQU	C → Q		(HH)	0.095	0.134	0.217	0.483	0.635	0.991	D	0.006	Q	0.419
			(HL)	0.115	0.161	0.260	0.424	0.524	0.743	C	0.007		
	Set up time	D		0.176		0.354				YRB	0.006		
	Set up time	YRB		0.178		0.375							
	Hold time	D		0.000		0.000							
	Hold time	YRB		0.000		0.000							
	Min Pulse	C		0.193		0.401							
SW6Z5NQPU	C → Q		(HH)	0.103	0.147	0.240	0.241	0.317	0.495	D	0.006	Q	0.843
			(HL)	0.117	0.165	0.266	0.212	0.262	0.371	C	0.007		
	Set up time	D		0.176		0.358				YRB	0.006		
	Set up time	YRB		0.179		0.379							
	Hold time	D		0.000		0.000							
	Hold time	YRB		0.000		0.000							
	Min Pulse	C		0.196		0.407							

Function	MUX Scan (Pseudo Type) D-F/F (CB)											
Block type	Standard type											
	Normal				Q output				QB output			
Drivability	Name	cells	Name	cells	Name	cells	Name	cells	Name	cells	Name	cells
					SWL631NQU	8						
x2					SW631NQU	9						
x4					SW631NQPU	10						
x8												

Logic Diagram for "Normal"

Truth Table for "Normal"

Logic Diagram for "Q output"



Truth Table for "Q output"

D	CB	Q
0	↘	0
1	↘	1
X	↗	Hold

X:Irrelevant

Logic Diagram for "QB output"

Truth Table for "QB output"

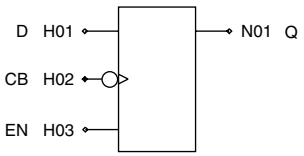
Block type	Switching speed									Input		Output	
	Path			t_{LD0} [ns]			t_1 (ns/pF)						
	IN → OUT			MIN.	TYP.	MAX.	MIN.	TYP.	MAX.	Symbol	Cin(pF)	Symbol	Cmax(pF)
SWL631NQU	CB → Q		(LH)	0.108	0.155	0.254	0.965	1.269	1.978	D	0.006	Q	0.209
			(LL)	0.096	0.136	0.222	0.844	1.041	1.473	CB	0.006		
	Set up time	D		0.174		0.351							
	Hold time	D		0.054		0.057							
	Min Pulse	CB		0.183		0.387							
SW631NQU	CB → Q		(LH)	0.114	0.164	0.268	0.483	0.635	0.991	D	0.006	Q	0.418
			(LL)	0.104	0.147	0.240	0.424	0.524	0.743	CB	0.006		
	Set up time	D		0.174		0.351							
	Hold time	D		0.054		0.057							
	Min Pulse	CB		0.189		0.401							
SW631NQPU	CB → Q		(LH)	0.118	0.170	0.281	0.241	0.317	0.495	D	0.006	Q	0.843
			(LL)	0.108	0.153	0.249	0.212	0.262	0.370	CB	0.006		
	Set up time	D		0.175		0.352							
	Hold time	D		0.055		0.060							
	Min Pulse	CB		0.194		0.415							

Function	MUX Scan (Pseudo Type) D-F/F (CB) with EN											
Block type	Standard type											
	Normal				Q output				QB output			
Drivability	Name	cells	Name	cells	Name	cells	Name	cells	Name	cells	Name	cells
					SWL631EQU	11						
x2					SW631EQU	11						
x4					SW631EQPU	12						
x8												

Logic Diagram for "Normal"

Truth Table for "Normal"

Logic Diagram for "Q output"



Truth Table for "Q output"

D	CB	EN	Q
0	↘	1	0
1	↘	1	1
X	↘	0	Hold
X	↗	X	Hold

X:Irrelevant

Logic Diagram for "QB output"

Truth Table for "QB output"

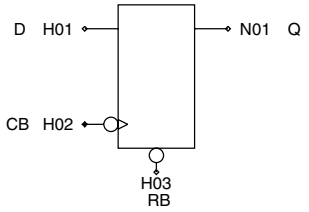
Block type	Switching speed									Input		Output	
	Path		t_{LD0} [ns]			t_1 (ns/pF)							
	IN → OUT		MIN.	TYP.	MAX.	MIN.	TYP.	MAX.		Symbol	Cin(pF)	Symbol	Cmax(pF)
SWL631EQU	CB → Q	(LH)	0.111	0.159	0.261	0.965	1.269	1.978		D	0.006	Q	0.209
		(LL)	0.097	0.138	0.225	0.843	1.040	1.470		CB	0.007		
	Set up time	D	0.217		0.512					EN	0.014		
	Set up time	EN	0.250		0.586								
	Hold time	D	0.000		0.000								
	Hold time	EN	0.000		0.000								
	Min Pulse	CB	0.185		0.393								
SW631EQU	CB → Q	(LH)	0.117	0.167	0.273	0.483	0.635	0.991		D	0.006	Q	0.421
		(LL)	0.104	0.148	0.241	0.424	0.524	0.743		CB	0.007		
	Set up time	D	0.217		0.512					EN	0.014		
	Set up time	EN	0.250		0.586								
	Hold time	D	0.000		0.000								
	Hold time	EN	0.000		0.000								
	Min Pulse	CB	0.191		0.405								
SW631EQPU	CB → Q	(LH)	0.130	0.185	0.302	0.242	0.319	0.497		D	0.006	Q	0.839
		(LL)	0.120	0.170	0.278	0.214	0.266	0.378		CB	0.007		
	Set up time	D	0.217		0.513					EN	0.014		
	Set up time	EN	0.250		0.587								
	Hold time	D	0.000		0.000								
	Hold time	EN	0.000		0.000								
	Min Pulse	CB	0.204		0.433								

Function	MUX Scan (Pseudo Type) D-F/F (CB) with RB											
Block type	Standard type											
	Normal				Q output				QB output			
Drivability	Name	cells	Name	cells	Name	cells	Name	cells	Name	cells	Name	cells
					SWL635NQU	9						
x2					SW635NQU	10						
x4					SW635NQPU	12						
x8												

Logic Diagram for "Normal"

Truth Table for "Normal"

Logic Diagram for "Q output"



Truth Table for "Q output"

D	CB	RB	Q
0	↘	1	0
1	↘	1	1
X	↗	1	Hold
X	X	0	0

X:Irrelevant

Logic Diagram for "QB output"

Truth Table for "QB output"

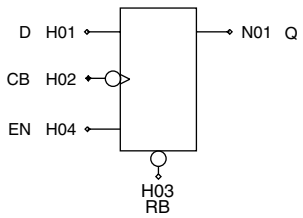
Block type	Switching speed									Input		Output	
	Path		t LD0 [ns]			t 1 (ns/pF)							
	IN → OUT		MIN.	TYP.	MAX.	MIN.	TYP.	MAX.		Symbol	Cin(pF)	Symbol	Cmax(pF)
SWL635NQU	CB → Q	(LH)	0.122	0.175	0.288	0.971	1.278	1.993		D	0.006	Q	0.209
		(LL)	0.100	0.142	0.232	0.845	1.044	1.478		CB	0.006		
	RB → Q	(LL)	0.045	0.064	0.104	0.845	1.048	1.485		RB	0.013		
	Set up time	D	0.177		0.358								
	Hold time	D	0.052		0.057								
	Release time	RB	0.000		0.000								
	Removal time	RB	0.144		0.225								
	Min Pulse	CB	0.196		0.421								
	Min Pulse	RB	0.118		0.239								
SW635NQU	CB → Q	(LH)	0.131	0.187	0.308	0.487	0.642	1.002		D	0.006	Q	0.416
		(LL)	0.108	0.153	0.249	0.424	0.526	0.745		CB	0.006		
	RB → Q	(LL)	0.052	0.074	0.120	0.424	0.526	0.748		RB	0.013		
	Set up time	D	0.176		0.358								
	Hold time	D	0.052		0.057								
	Release time	RB	0.000		0.000								
	Removal time	RB	0.144		0.225								
	Min Pulse	CB	0.205		0.441								
	Min Pulse	RB	0.132		0.267								
SW635NQPU	CB → Q	(LH)	0.139	0.200	0.331	0.243	0.320	0.499		D	0.006	Q	0.838
		(LL)	0.116	0.165	0.268	0.212	0.262	0.371		CB	0.006		
	RB → Q	(LL)	0.046	0.065	0.106	0.212	0.263	0.373		RB	0.019		
	Set up time	D	0.176		0.358								
	Hold time	D	0.055		0.063								
	Release time	RB	0.002		0.000								
	Removal time	RB	0.140		0.220								
	Min Pulse	CB	0.216		0.468								
	Min Pulse	RB	0.120		0.244								

Function	MUX Scan (Pseudo Type) D-F/F (CB) with RB, EN											
Block type	Standard type											
	Normal				Q output				QB output			
Drivability	Name	cells	Name	cells	Name	cells	Name	cells	Name	cells	Name	cells
					SWL635EQU	12						
x2					SW635EQU	12						
x4					SW635EQPU	14						
x8												

Logic Diagram for "Normal"

Truth Table for "Normal"

Logic Diagram for "Q output"



Truth Table for "Q output"

D	CB	RB	EN	Q
0	↘	1	1	0
1	↘	1	1	1
X	↘	1	0	Hold
X	↗	1	X	Hold
X	X	0	X	0

X:Irrelevant

Logic Diagram for "QB output"

Truth Table for "QB output"

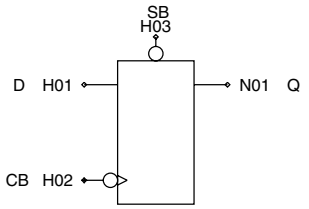
Block type	Switching speed								Input		Output	
	Path		t_{LD0} [ns]			t_1 (ns/pF)						
	IN → OUT		MIN.	TYP.	MAX.	MIN.	TYP.	MAX.	Symbol	Cin(pF)	Symbol	Cmax(pF)
SWL635EQU	CB → Q	(LH)	0.131	0.188	0.309	0.972	1.279	1.995	D	0.006	Q	0.209
		(LL)	0.106	0.150	0.245	0.846	1.045	1.480	CB	0.006		
	RB → Q	(LL)	0.046	0.066	0.106	0.848	1.052	1.493	RB	0.013		
	Set up time	D	0.212		0.500				EN	0.014		
	Set up time	EN	0.245		0.575							
	Hold time	D	0.000		0.000							
	Hold time	EN	0.000		0.000							
	Release time	RB	0.005		0.000							
	Removal time	RB	0.138		0.217							
	Min Pulse	CB	0.207		0.444							
	Min Pulse	RB	0.119		0.242							
SW635EQU	CB → Q	(LH)	0.138	0.198	0.325	0.488	0.642	1.003	D	0.006	Q	0.418
		(LL)	0.112	0.159	0.258	0.426	0.527	0.748	CB	0.006		
	RB → Q	(LL)	0.052	0.074	0.120	0.426	0.529	0.753	RB	0.013		
	Set up time	D	0.212		0.500				EN	0.014		
	Set up time	EN	0.245		0.574							
	Hold time	D	0.000		0.000							
	Hold time	EN	0.000		0.000							
	Release time	RB	0.005		0.000							
	Removal time	RB	0.138		0.217							
	Min Pulse	CB	0.214		0.460							
	Min Pulse	RB	0.132		0.266							
SW635EQPU	CB → Q	(LH)	0.140	0.202	0.334	0.243	0.320	0.500	D	0.006	Q	0.837
		(LL)	0.116	0.164	0.267	0.212	0.262	0.372	CB	0.006		
	RB → Q	(LL)	0.047	0.067	0.108	0.212	0.263	0.374	RB	0.020		
	Set up time	D	0.213		0.503				EN	0.014		
	Set up time	EN	0.246		0.577							
	Hold time	D	0.000		0.000							
	Hold time	EN	0.000		0.000							
	Release time	RB	0.008		0.000							
	Removal time	RB	0.135		0.210							
	Min Pulse	CB	0.217		0.470							
	Min Pulse	RB	0.122		0.247							

Function	MUX Scan (Pseudo Type) D-F/F (CB) with SB											
Block type	Standard type											
	Normal				Q output				QB output			
Drivability	Name	cells	Name	cells	Name	cells	Name	cells	Name	cells	Name	cells
					SWL636NQU	9						
x2					SW636NQU	10						
x4					SW636NQPU	11						
x8												

Logic Diagram for "Normal"

Truth Table for "Normal"

Logic Diagram for "Q output"



Truth Table for "Q output"

D	CB	SB	Q
0	↘	1	0
1	↘	1	1
X	↗	1	Hold
X	X	0	1

X:Irrelevant

Logic Diagram for "QB output"

Truth Table for "QB output"

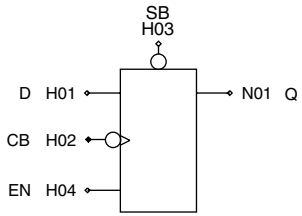
Block type	Switching speed									Input		Output	
	Path		t_{LD0} [ns]			t_1 (ns/pF)							
	IN → OUT		MIN.	TYP.	MAX.	MIN.	TYP.	MAX.		Symbol	Cin(pF)	Symbol	Cmax(pF)
SWL636NQU	CB → Q	(LH)	0.109	0.156	0.257	0.965	1.269	1.978		D	0.006	Q	0.209
		(LL)	0.103	0.148	0.242	0.844	1.042	1.475		CB	0.006		
	SB → Q	(LH)	0.086	0.136	0.227	0.964	1.268	1.976		SB	0.014		
	Set up time	D	0.183		0.380								
	Hold time	D	0.056		0.058								
	Release time	SB	0.061		0.068								
	Removal time	SB	0.080		0.095								
	Min Pulse	CB	0.185		0.391								
	Min Pulse	SB	0.178		0.385								
SW636NQU	CB → Q	(LH)	0.115	0.165	0.271	0.483	0.635	0.991		D	0.006	Q	0.419
		(LL)	0.112	0.159	0.262	0.424	0.524	0.743		CB	0.006		
	SB → Q	(LH)	0.093	0.146	0.243	0.483	0.635	0.989		SB	0.014		
	Set up time	D	0.183		0.380								
	Hold time	D	0.056		0.058								
	Release time	SB	0.061		0.069								
	Removal time	SB	0.080		0.095								
	Min Pulse	CB	0.191		0.406								
	Min Pulse	SB	0.186		0.402								
SW636NQPU	CB → Q	(LH)	0.119	0.172	0.284	0.241	0.317	0.495		D	0.006	Q	0.843
		(LL)	0.117	0.167	0.274	0.212	0.262	0.371		CB	0.006		
	SB → Q	(LH)	0.097	0.154	0.256	0.241	0.317	0.495		SB	0.014		
	Set up time	D	0.183		0.381								
	Hold time	D	0.057		0.060								
	Release time	SB	0.062		0.069								
	Removal time	SB	0.080		0.094								
	Min Pulse	CB	0.197		0.419								
	Min Pulse	SB	0.195		0.421								

Function	MUX Scan (Pseudo Type) D-F/F (CB) with SB, EN											
Block type	Standard type											
	Normal				Q output				QB output			
Drivability	Name	cells	Name	cells	Name	cells	Name	cells	Name	cells	Name	cells
					SWL636EQU	12						
x2					SW636EQU	12						
x4					SW636EQPU	13						
x8												

Logic Diagram for "Normal"

Truth Table for "Normal"

Logic Diagram for "Q output"



Truth Table for "Q output"

D	CB	SB	EN	Q
0	↘	1	1	0
1	↘	1	1	1
X	↘	1	0	Hold
X	↗	1	X	Hold
X	X	0	X	1

X:Irrelevant

Logic Diagram for "QB output"

Truth Table for "QB output"

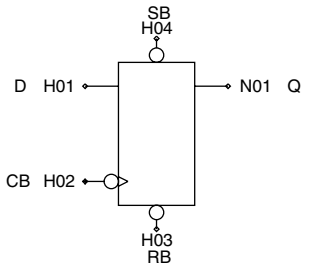
Block type	Switching speed									Input		Output	
	Path			t_{LD0} [ns]			t_1 (ns/pF)						
	IN → OUT			MIN.	TYP.	MAX.	MIN.	TYP.	MAX.	Symbol	Cin(pF)	Symbol	Cmax(pF)
SWL636EQU	CB → Q		(LH)	0.111	0.158	0.257	0.965	1.269	1.979	D	0.006	Q	0.209
			(LL)	0.128	0.173	0.266	0.847	1.047	1.483	CB	0.006		
	SB → Q		(LH)	0.096	0.148	0.241	0.963	1.266	1.974	SB	0.014		
	Set up time	D		0.234		0.544				EN	0.014		
	Set up time	EN		0.267		0.618							
	Hold time	D		0.000		0.000							
	Hold time	EN		0.000		0.000							
	Release time	SB		0.060		0.064							
	Removal time	SB		0.081		0.097							
	Min Pulse	CB		0.201		0.400							
	Min Pulse	SB		0.192		0.403							
SW636EQU	CB → Q		(LH)	0.117	0.166	0.270	0.484	0.636	0.992	D	0.006	Q	0.421
			(LL)	0.138	0.187	0.287	0.427	0.529	0.750	CB	0.006		
	SB → Q		(LH)	0.103	0.156	0.254	0.482	0.635	0.990	SB	0.013		
	Set up time	D		0.234		0.544				EN	0.014		
	Set up time	EN		0.266		0.618							
	Hold time	D		0.000		0.000							
	Hold time	EN		0.000		0.000							
	Release time	SB		0.060		0.065							
	Removal time	SB		0.081		0.097							
	Min Pulse	CB		0.212		0.420							
	Min Pulse	SB		0.199		0.416							
SW636EQPU	CB → Q		(LH)	0.130	0.183	0.297	0.242	0.319	0.498	D	0.006	Q	0.838
			(LL)	0.157	0.213	0.327	0.215	0.268	0.382	CB	0.006		
	SB → Q		(LH)	0.117	0.175	0.284	0.242	0.318	0.496	SB	0.013		
	Set up time	D		0.234		0.546				EN	0.014		
	Set up time	EN		0.267		0.620							
	Hold time	D		0.000		0.000							
	Hold time	EN		0.000		0.000							
	Release time	SB		0.060		0.065							
	Removal time	SB		0.081		0.097							
	Min Pulse	CB		0.231		0.460							
	Min Pulse	SB		0.214		0.447							

Function	MUX Scan (Pseudo Type) D-F/F (CB) with RB, SB											
Block type	Standard type											
	Normal				Q output				QB output			
Drivability	Name	cells	Name	cells	Name	cells	Name	cells	Name	cells	Name	cells
					SWL637NQU	10						
x2					SW637NQU	11						
x4					SW637NQPU	12						
x8												

Logic Diagram for "Normal"

Truth Table for "Normal"

Logic Diagram for "Q output"



Truth Table for "Q output"

D	CB	RB	SB	Q	
0	↘	1	1	0	
1	↘	1	1	1	
X	↗	1	1	Hold	
X	X	0	1	0	
X	X	1	0	1	
X	X	0	0	0	← Prohibition

X:Irrelevant

Logic Diagram for "QB output"

Truth Table for "QB output"

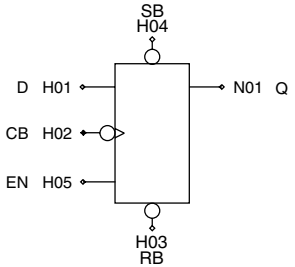
Block type	Switching speed									Input		Output	
	Path			t LD0 [ns]			t 1 (ns/pF)						
	IN → OUT			MIN.	TYP.	MAX.	MIN.	TYP.	MAX.	Symbol	Cin(pF)	Symbol	Cmax(pF)
SWL637NQU	CB → Q		(LH)	0.129	0.184	0.304	0.972	1.279	1.996	D	0.006	Q	0.207
			(LL)	0.109	0.155	0.255	0.848	1.049	1.488	CB	0.007		
	RB → Q		(LL)	0.047	0.068	0.109	0.848	1.053	1.495	RB	0.013		
	SB → Q		(LH)	0.106	0.160	0.267	0.969	1.275	1.988	SB	0.014		
	Set up time		D	0.188		0.393							
	Hold time		D	0.056		0.061							
	Release time		RB	0.000		0.000							
	Release time		SB	0.061		0.070							
	Removal time		RB	0.153		0.241							
	Removal time		SB	0.081		0.094							
	Min Pulse		CB	0.204		0.437							
	Min Pulse		RB	0.122		0.247							
	Min Pulse		SB	0.196		0.424							
SW637NQU	CB → Q		(LH)	0.132	0.189	0.311	0.487	0.642	1.002	D	0.006	Q	0.417
			(LL)	0.112	0.160	0.262	0.426	0.528	0.749	CB	0.007		
	RB → Q		(LL)	0.050	0.071	0.115	0.426	0.529	0.752	RB	0.012		
	SB → Q		(LH)	0.107	0.164	0.273	0.486	0.639	0.998	SB	0.014		
	Set up time		D	0.183		0.382							
	Hold time		D	0.057		0.064							
	Release time		RB	0.000		0.000							
	Release time		SB	0.060		0.069							
	Removal time		RB	0.153		0.242							
	Removal time		SB	0.082		0.095							
	Min Pulse		CB	0.207		0.445							
	Min Pulse		RB	0.129		0.261							
	Min Pulse		SB	0.198		0.429							
SW637NQPU	CB → Q		(LH)	0.150	0.214	0.351	0.245	0.324	0.506	D	0.006	Q	0.827
			(LL)	0.128	0.183	0.299	0.215	0.268	0.381	CB	0.007		
	RB → Q		(LL)	0.065	0.093	0.150	0.214	0.267	0.381	RB	0.012		
	SB → Q		(LH)	0.126	0.190	0.314	0.244	0.322	0.504	SB	0.014		
	Set up time		D	0.183		0.382							
	Hold time		D	0.057		0.065							
	Release time		RB	0.000		0.000							
	Release time		SB	0.060		0.070							
	Removal time		RB	0.153		0.242							
	Removal time		SB	0.082		0.095							
	Min Pulse		CB	0.225		0.485							
	Min Pulse		RB	0.156		0.314							
	Min Pulse		SB	0.217		0.471							

Function	MUX Scan (Pseudo Type) D-F/F (CB) with RB, SB,EN											
Block type	Standard type											
	Normal				Q output				QB output			
Drivability	Name	cells	Name	cells	Name	cells	Name	cells	Name	cells	Name	cells
					SWL637EQU	13						
x2					SW637EQU	13						
x4					SW637EQPU	14						
x8												

Logic Diagram for "Normal"

Truth Table for "Normal"

Logic Diagram for "Q output"



Truth Table for "Q output"

D	CB	RB	SB	EN	Q	
0	↘	1	1	1	0	
1	↘	1	1	1	1	
X	↘	1	1	0	Hold	
X	↗	1	1	X	Hold	
X	X	0	1	X	0	
X	X	1	0	X	1	
X	X	0	0	X	0	← Prohibition

X:Irrelevant

Logic Diagram for "QB output"

Truth Table for "QB output"

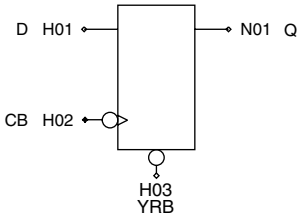
Block type	Switching speed								Input		Output	
	Path		t_{LD0} [ns]			t_1 (ns/pF)						
	IN → OUT		MIN.	TYP.	MAX.	MIN.	TYP.	MAX.	Symbol	Cin(pF)	Symbol	Cmax(pF)
SWL637EQU	CB → Q	(LH)	0.124	0.178	0.294	0.971	1.278	1.994	D	0.006	Q	0.208
		(LL)	0.105	0.150	0.246	0.847	1.047	1.484	CB	0.007		
	RB → Q	(LL)	0.045	0.063	0.102	0.848	1.050	1.490	RB	0.013		
	SB → Q	(LH)	0.106	0.159	0.265	0.968	1.273	1.986	SB	0.014		
	Set up time	D	0.241		0.569				EN	0.014		
	Set up time	EN	0.273		0.643							
	Hold time	D	0.000		0.000							
	Hold time	EN	0.000		0.000							
	Release time	RB	0.000		0.000							
	Release time	SB	0.060		0.069							
	Removal time	RB	0.152		0.239							
	Removal time	SB	0.082		0.095							
	Min Pulse	CB	0.200		0.428							
	Min Pulse	RB	0.116		0.236							
	Min Pulse	SB	0.196		0.424							
SW637EQU	CB → Q	(LH)	0.132	0.189	0.310	0.487	0.642	1.003	D	0.006	Q	0.418
		(LL)	0.111	0.159	0.261	0.426	0.528	0.749	CB	0.007		
	RB → Q	(LL)	0.050	0.071	0.115	0.426	0.529	0.752	RB	0.013		
	SB → Q	(LH)	0.114	0.170	0.282	0.486	0.640	0.998	SB	0.014		
	Set up time	D	0.241		0.570				EN	0.014		
	Set up time	EN	0.273		0.643							
	Hold time	D	0.000		0.000							
	Hold time	EN	0.000		0.000							
	Release time	RB	0.000		0.000							
	Release time	SB	0.060		0.069							
	Removal time	RB	0.152		0.239							
	Removal time	SB	0.082		0.095							
	Min Pulse	CB	0.207		0.445							
	Min Pulse	RB	0.128		0.260							
	Min Pulse	SB	0.204		0.442							
SW637EQPU	CB → Q	(LH)	0.150	0.213	0.350	0.245	0.324	0.506	D	0.006	Q	0.828
		(LL)	0.128	0.182	0.298	0.215	0.268	0.381	CB	0.007		
	RB → Q	(LL)	0.065	0.092	0.149	0.214	0.267	0.380	RB	0.013		
	SB → Q	(LH)	0.132	0.195	0.323	0.244	0.322	0.504	SB	0.014		
	Set up time	D	0.241		0.571				EN	0.014		
	Set up time	EN	0.273		0.645							
	Hold time	D	0.000		0.000							
	Hold time	EN	0.000		0.000							
	Release time	RB	0.000		0.000							
	Release time	SB	0.060		0.070							
	Removal time	RB	0.152		0.239							
	Removal time	SB	0.082		0.095							
	Min Pulse	CB	0.225		0.484							
	Min Pulse	RB	0.156		0.313							
	Min Pulse	SB	0.224		0.483							

Function	MUX Scan (Pseudo Type) D-F/F (CB) with RB (Sync)											
Block type	Standard type											
	Normal				Q output				QB output			
Drivability	Name	cells	Name	cells	Name	cells	Name	cells	Name	cells	Name	cells
					SWL6Y5NQU	9						
x2					SW6Y5NQU	10						
x4					SW6Y5NQPU	11						
x8												

Logic Diagram for "Normal"

Truth Table for "Normal"

Logic Diagram for "Q output"



Truth Table for "Q output"

D	CB	YRB	Q
0	↘	1	0
1	↘	1	1
X	↗	X	Hold
X	↗	0	0

X:Irrelevant

Logic Diagram for "QB output"

Truth Table for "QB output"

Block type	Switching speed									Input		Output	
	Path			t_{LD0} [ns]			t_1 (ns/pF)						
	IN → OUT			MIN.	TYP.	MAX.	MIN.	TYP.	MAX.	Symbol	Cin(pF)	Symbol	Cmax(pF)
SWL6Y5NQU	CB → Q		(LH)	0.107	0.154	0.252	0.966	1.270	1.979	D	0.006	Q	0.210
			(LL)	0.096	0.136	0.222	0.844	1.042	1.474	CB	0.007		
	Set up time	D		0.173		0.356				YRB	0.006		
	Set up time	YRB		0.178		0.377							
	Hold time	D		0.001		0.000							
	Hold time	YRB		0.000		0.000							
	Min Pulse	CB		0.181		0.384							
SW6Y5NQU	CB → Q		(LH)	0.114	0.163	0.267	0.483	0.635	0.991	D	0.006	Q	0.419
			(LL)	0.103	0.147	0.239	0.424	0.524	0.743	CB	0.007		
	Set up time	D		0.173		0.357				YRB	0.006		
	Set up time	YRB		0.178		0.378							
	Hold time	D		0.001		0.000							
	Hold time	YRB		0.000		0.000							
	Min Pulse	CB		0.188		0.398							
SW6Y5NQPU	CB → Q		(LH)	0.118	0.170	0.281	0.241	0.317	0.495	D	0.006	Q	0.843
			(LL)	0.108	0.154	0.251	0.212	0.262	0.371	CB	0.007		
	Set up time	D		0.175		0.359				YRB	0.006		
	Set up time	YRB		0.179		0.380							
	Hold time	D		0.003		0.000							
	Hold time	YRB		0.000		0.000							
	Min Pulse	CB		0.193		0.413							

[MEMO]

[MEMO]

Chapter 4

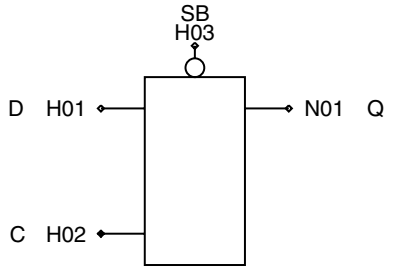
Boundary Scan Block

4.1 D-latch, Selector, Shift Register

[MEMO]

Function	BSCAN D-latch with SB Q Out											
Block type	Standard type											
	-		-									
Drivability	Name	cells	Name	cells								
-	L606	5										
-												

Logic Diagram



Truth Table

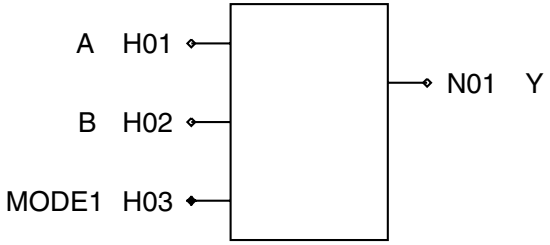
D	C	SB	Q
1	0	1	1
0	0	1	0
X	1	1	Latch
X	X	0	1

X:Irrelevant

Block type	Switching speed									Input		Output	
	Path			t_{LD0} [ns]			t_1 (ns/pF)						
	IN → OUT			MIN.	TYP.	MAX.	MIN.	TYP.	MAX.	Symbol	Cin(pF)	Symbol	Cmax(pF)
L606	D → Q		(HH)	0.061	0.085	0.137	0.973	1.280	1.996	D	0.006	Q	0.207
			(LL)	0.116	0.179	0.306	0.952	1.225	1.804	C	0.006		
	C → Q		(HH)	0.081	0.113	0.181	0.973	1.280	1.996	SB	0.006		
			(HL)	0.102	0.152	0.255	0.950	1.222	1.799				
	SB → Q		(HL)	0.143	0.215	0.362	0.952	1.225	1.804				
			(LH)	0.070	0.099	0.158	0.968	1.286	2.010				
	Set up time		D	0.158		0.300							
	Hold time		D	0.046		0.028							
	Release time		SB	0.186		0.364							
	Removal time		SB	0.000		0.000							
	Min Pulse		C	0.174		0.379							
	Min Pulse		SB	0.191		0.460							

Function	BSCAN Selector											
Block type	Standard type											
	-		-									
Drivability	Name	cells	Name	cells								
-	SBD1	4										
-												

Logic Diagram



Truth Table

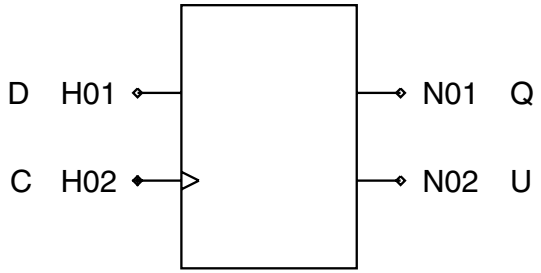
A	B	MODE1	Y
A	X	0	A
X	B	1	B

X : Irrelevant

Block type	Switching speed									Input		Output	
	Path			t_{LD0} [ns]			t_1 (ns/pF)						
	IN	→	OUT	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.	Symbol	Cin(pF)	Symbol	Cmax(pF)
SBD1	A	→ Y	(HH)	0.046	0.064	0.103	0.966	1.270	1.980	A	0.006	Y	0.209
			(LL)	0.056	0.083	0.139	0.854	1.060	1.506	B	0.006		
	B	→ Y	(HH)	0.047	0.066	0.106	0.966	1.271	1.981	MODE1	0.006		
			(LL)	0.058	0.085	0.143	0.855	1.061	1.509				
	MODE1	→ Y	(HH)	0.069	0.096	0.154	0.966	1.271	1.981				
			(HL)	0.068	0.097	0.157	0.853	1.059	1.506				
			(LH)	0.063	0.089	0.146	0.967	1.271	1.981				
			(LL)	0.077	0.112	0.186	0.853	1.059	1.505				

Function	BSCAN Shift Register											
Block type	Standard type											
	-		-									
Drivability	Name	cells	Name	cells								
-	SBR1	10										
-												

Logic Diagram



Truth Table

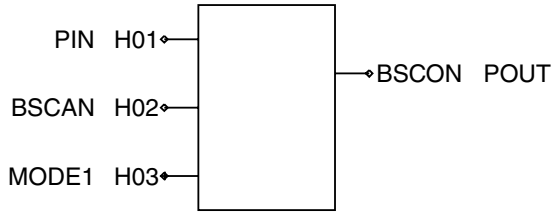
D	C	Q	U
A	↗	A	Hold
B	↘	Hold	B

X : Irrelevant

Block type	Switching speed									Input		Output	
	Path			t LD0 [ns]			t 1 (ns/pF)						
	IN → OUT			MIN.	TYP.	MAX.	MIN.	TYP.	MAX.	Symbol	Cin(pF)	Symbol	Cmax(pF)
SBR1	C → Q		(LH)	0.100	0.141	0.231	0.963	1.266	1.973	D	0.006	Q	0.209
			(LL)	0.117	0.169	0.279	0.841	1.037	1.465	C	0.007	U	0.209
	C → U		(HH)	0.147	0.207	0.333	0.965	1.269	1.978				
			(HL)	0.165	0.231	0.372	0.847	1.047	1.483				
	Set up time	D		0.051		0.044							
	Hold time	D		0.110		0.156							
	Min Pulse	C		0.234		0.499							

Function	BSCAN Data Selector for Output											
Block type	Standard type											
	-		-									
Drivability	Name	cells	Name	cells								
-	SVSNA2	6										
-												

Logic Diagram



Truth Table

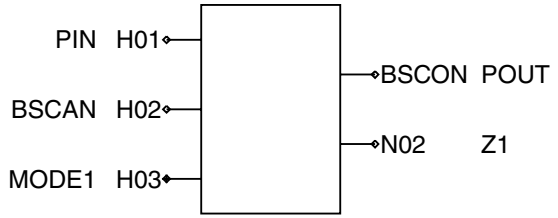
PIN	BSCAN	MODE1	POUT
A	X	0	A
X	B	1	B

X : Irrelevant

Block type	Switching speed									Input		Output	
	Path			t LD0 [ns]			t 1 (ns/pF)						
	IN → OUT			MIN.	TYP.	MAX.	MIN.	TYP.	MAX.	Symbol	Cin(pF)	Symbol	Cmax(pF)
SVSNA2	PIN → POUT		(HH)	0.049	0.069	0.110	0.242	0.319	0.497	PIN	0.018	POUT	0.827
			(LL)	0.058	0.086	0.145	0.216	0.269	0.383	BSCAN	0.007		
	BSCAN → POUT		(HH)	0.068	0.094	0.151	0.244	0.322	0.502	MODE1	0.006		
			(LL)	0.084	0.124	0.209	0.222	0.279	0.402				
	MODE1 → POUT		(HH)	0.090	0.125	0.200	0.244	0.321	0.502				
			(HL)	0.096	0.140	0.233	0.222	0.279	0.402				
			(LH)	0.075	0.106	0.171	0.242	0.319	0.497				
			(LL)	0.086	0.125	0.208	0.216	0.269	0.383				

Function	BSCAN Data Selector for Bi-directional											
Block type	Standard type											
	-		-									
Drivability	Name	cells	Name	cells								
-	SVSNB2	7										
-												

Logic Diagram



Truth Table

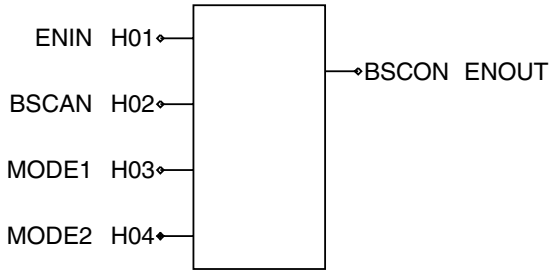
PIN	BSCAN	MODE1	POUT	Z1
A	X	0	A	A
X	B	1	B	B

X : Irrelevant

Block type	Switching speed									Input		Output	
	Path			t LD0 [ns]			t 1 (ns/pF)						
	IN → OUT			MIN.	TYP.	MAX.	MIN.	TYP.	MAX.	Symbol	Cin(pF)	Symbol	Cmax(pF)
SVSNB2	PIN → POUT		(HH)	0.053	0.074	0.118	0.242	0.319	0.498	PIN	0.024	POUT	0.823
			(LL)	0.061	0.090	0.152	0.217	0.270	0.385	BSCAN	0.007	Z1	0.204
	PIN → Z1		(HH)	0.058	0.081	0.129	0.962	1.265	1.971	MODE1	0.006		
			(LL)	0.070	0.106	0.178	0.839	1.035	1.462				
	BSCAN → POUT		(HH)	0.077	0.106	0.170	0.245	0.323	0.505				
			(LL)	0.094	0.139	0.234	0.225	0.284	0.410				
	BSCAN → Z1		(HH)	0.084	0.117	0.189	0.964	1.267	1.975				
			(LL)	0.111	0.166	0.281	0.844	1.044	1.479				
	MODE1 → POUT		(HH)	0.097	0.134	0.215	0.245	0.323	0.505				
			(HL)	0.106	0.155	0.257	0.225	0.284	0.410				
			(LH)	0.081	0.113	0.182	0.242	0.319	0.498				
			(LL)	0.090	0.131	0.216	0.217	0.270	0.385				
	MODE1 → Z1		(HH)	0.105	0.146	0.234	0.964	1.267	1.975				
			(HL)	0.123	0.182	0.305	0.844	1.044	1.479				
			(LH)	0.086	0.120	0.193	0.962	1.265	1.971				
			(LL)	0.100	0.146	0.243	0.839	1.035	1.462				

Function	BSCAN Data Enable Selector for 3-state											
Block type	Standard type											
	-		-									
Drivability	Name	cells	Name	cells								
-	SVSNC2	10										
-												

Logic Diagram



Truth Table

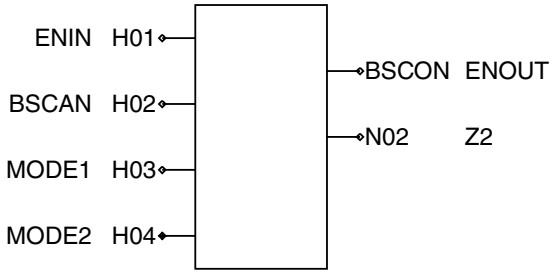
ENIN	BSCAN	MODE1	MODE2	ENOUT
A	X	0	0	A
X	B	1	0	B
X	X	X	1	0

X : Irrelevant

Block type	Switching speed								Input		Output	
	Path		t LD0 [ns]			t 1 (ns/pF)						
	IN → OUT		MIN.	TYP.	MAX.	MIN.	TYP.	MAX.	Symbol	Cin(pF)	Symbol	Cmax(pF)
SVSNC2	ENIN → ENOUT	(HH)	0.061	0.085	0.137	0.360	0.514	0.824	ENIN	0.024	ENOUT	0.485
		(LL)	0.068	0.101	0.169	0.216	0.269	0.383	BSCAN	0.007		
	BSCAN → ENOUT	(HH)	0.084	0.117	0.188	0.361	0.515	0.827	MODE1	0.006		
		(LL)	0.102	0.151	0.254	0.224	0.283	0.407	MODE2	0.033		
	MODE1 → ENOUT	(HH)	0.105	0.146	0.234	0.361	0.515	0.826				
		(HL)	0.115	0.168	0.279	0.224	0.283	0.407				
		(LH)	0.088	0.124	0.201	0.360	0.514	0.824				
		(LL)	0.097	0.141	0.233	0.216	0.269	0.383				
	MODE2 → ENOUT	(HL)	0.016	0.020	0.029	0.210	0.259	0.365				
		(LH)	0.027	0.040	0.067	0.360	0.514	0.824				

Function	BSCAN Data Enable Selector for Bi-directional											
Block type	Standard type											
	-		-									
Drivability	Name	cells	Name	cells								
-	SVSNE2	10										
-												

Logic Diagram



Truth Table

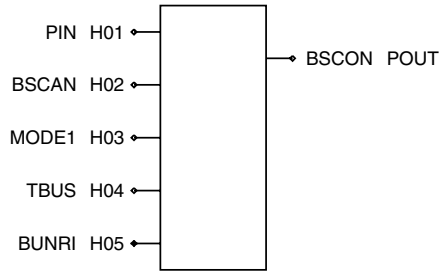
ENIN	BSCAN	MODE1	MODE2	ENOUT	Z2
A	X	0	0	A	A
X	B	1	0	B	B
A	X	0	1	0	A
X	B	1	1	0	B

X : Irrelevant

Block type	Switching speed									Input		Output	
	Path			t_{LD0} [ns]			t_1 (ns/pF)						
	IN → OUT			MIN.	TYP.	MAX.	MIN.	TYP.	MAX.	Symbol	Cin(pF)	Symbol	Cmax(pF)
SVSNE2	ENIN → ENOUT		(HH)	0.066	0.093	0.148	0.360	0.514	0.824	ENIN	0.024	ENOUT	0.482
			(LL)	0.074	0.110	0.184	0.218	0.271	0.387	BSCAN	0.007	Z2	0.201
	ENIN → Z2		(HH)	0.057	0.087	0.139	0.962	1.266	1.974	MODE1	0.006		
			(LL)	0.066	0.118	0.199	0.840	1.038	1.468	MODE2	0.033		
	BSCAN → ENOUT		(HH)	0.092	0.128	0.205	0.361	0.516	0.827				
			(LL)	0.112	0.165	0.277	0.227	0.287	0.415				
	BSCAN → Z2		(HH)	0.082	0.126	0.203	0.963	1.270	1.980				
			(LL)	0.103	0.185	0.313	0.846	1.050	1.490				
	MODE1 → ENOUT		(HH)	0.112	0.156	0.250	0.361	0.516	0.827				
			(HL)	0.124	0.182	0.302	0.227	0.287	0.415				
			(LH)	0.094	0.132	0.213	0.360	0.514	0.824				
			(LL)	0.103	0.150	0.248	0.218	0.271	0.387				
	MODE1 → Z2		(HH)	0.102	0.154	0.247	0.963	1.270	1.980				
			(HL)	0.115	0.202	0.338	0.846	1.050	1.490				
			(LH)	0.085	0.126	0.204	0.962	1.266	1.974				
			(LL)	0.095	0.158	0.263	0.840	1.038	1.468				
	MODE2 → ENOUT		(HL)	0.016	0.020	0.029	0.210	0.259	0.365				
			(LH)	0.026	0.040	0.066	0.360	0.514	0.824				

Function	BSCAN Data Selector with Testbus out for Output											
Block type	Standard type											
	-		-									
Drivability	Name	cells	Name	cells								
-	SVSTA2	10										
-												

Logic Diagram



Truth Table

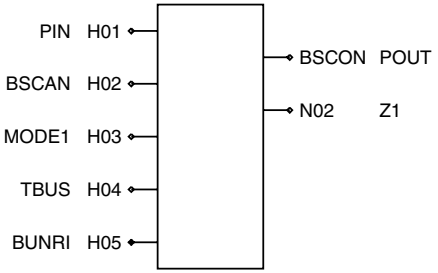
PIN	BSCAN	MODE1	TBUS	BUNRI	POUT
A	X	0	X	0	A
X	B	1	X	0	B
X	X	X	C	1	C

X:Irrelevant

Block type	Switching speed									Input		Output	
	Path			t LD0 [ns]			t 1 (ns/pF)						
	IN → OUT			MIN.	TYP.	MAX.	MIN.	TYP.	MAX.	Symbol	Cin(pF)	Symbol	Cmax(pF)
SVSTA2	PIN → POUT		(HH)	0.049	0.068	0.110	0.242	0.319	0.497	PIN	0.024	POUT	0.804
			(LL)	0.055	0.081	0.136	0.215	0.268	0.382	BSCAN	0.007		
	BSCAN → POUT		(HH)	0.108	0.152	0.250	0.249	0.329	0.516	MODE1	0.007		
			(LL)	0.130	0.198	0.343	0.238	0.306	0.447	TBUS	0.006		
	MODE1 → POUT		(HH)	0.105	0.147	0.238	0.249	0.329	0.516	BUNRI	0.007		
			(HL)	0.113	0.169	0.286	0.238	0.305	0.447				
			(LH)	0.106	0.155	0.258	0.242	0.319	0.498				
			(LL)	0.112	0.168	0.281	0.215	0.268	0.381				
	TBUS → POUT		(HH)	0.106	0.151	0.248	0.249	0.329	0.516				
			(LL)	0.128	0.195	0.338	0.238	0.305	0.447				
	BUNRI → POUT		(HH)	0.134	0.225	0.365	0.249	0.329	0.516				
			(HL)	0.146	0.256	0.429	0.238	0.305	0.447				
			(LH)	0.120	0.241	0.396	0.242	0.329	0.516				
			(LL)	0.139	0.261	0.430	0.213	0.306	0.447				

Function	BSCAN Data Selector with Testbus out for Bi-directional											
Block type	Standard type											
	-		-									
Drivability	Name	cells	Name	cells								
-	SVSTB2	10										
-												

Logic Diagram



Truth Table

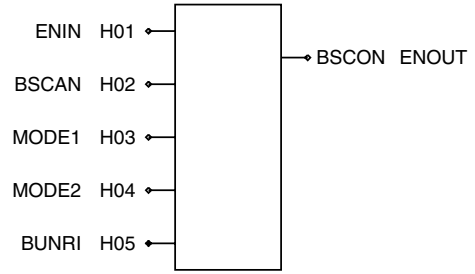
PIN	BSCAN	MODE1	TBUS	BUNRI	POUT	Z1
A	X	0	X	0	A	A
X	B	1	X	0	B	B
X	X	X	C	1	C	C

X:Irrelevant

Block type	Switching speed									Input		Output	
	Path		t LD0 [ns]			t 1 (ns/pF)							
	IN → OUT		MIN.	TYP.	MAX.	MIN.	TYP.	MAX.		Symbol	Cin(pF)	Symbol	Cmax(pF)
SVSTB2	PIN → POUT	(HH)	0.054	0.075	0.121	0.242	0.319	0.498		PIN	0.024	POUT	0.799
		(LL)	0.060	0.089	0.149	0.217	0.270	0.386		BSCAN	0.007	Z1	0.199
	PIN → Z1	(HH)	0.059	0.083	0.134	0.962	1.265	1.971		MODE1	0.007		
		(LL)	0.071	0.106	0.178	0.839	1.035	1.462		TBUS	0.006		
	BSCAN → POUT	(HH)	0.117	0.165	0.271	0.250	0.331	0.520		BUNRI	0.007		
		(LL)	0.141	0.214	0.371	0.242	0.312	0.459					
	BSCAN → Z1	(HH)	0.130	0.184	0.304	0.967	1.272	1.985					
		(LL)	0.172	0.264	0.455	0.857	1.065	1.518					
	MODE1 → POUT	(HH)	0.114	0.159	0.258	0.250	0.331	0.520					
		(HL)	0.125	0.188	0.318	0.242	0.312	0.459					
		(LH)	0.112	0.164	0.271	0.242	0.319	0.499					
		(LL)	0.118	0.176	0.295	0.217	0.270	0.385					
	MODE1 → Z1	(HH)	0.127	0.178	0.291	0.967	1.272	1.985					
		(HL)	0.157	0.238	0.403	0.857	1.065	1.518					
		(LH)	0.117	0.172	0.285	0.962	1.264	1.971					
		(LL)	0.129	0.193	0.324	0.839	1.035	1.462					
	TBUS → POUT	(HH)	0.115	0.163	0.268	0.250	0.331	0.520					
		(LL)	0.139	0.211	0.366	0.242	0.312	0.458					
	TBUS → Z1	(HH)	0.129	0.182	0.301	0.967	1.272	1.985					
		(LL)	0.170	0.261	0.450	0.856	1.065	1.517					
	BUNRI → POUT	(HH)	0.143	0.237	0.384	0.250	0.331	0.520					
		(HL)	0.156	0.275	0.462	0.242	0.312	0.458					
		(LH)	0.128	0.249	0.411	0.242	0.331	0.520					
		(LL)	0.150	0.269	0.444	0.215	0.312	0.459					
	BUNRI → Z1	(HH)	0.156	0.256	0.417	0.967	1.272	1.985					
		(HL)	0.188	0.324	0.546	0.856	1.065	1.517					
		(LH)	0.135	0.265	0.437	0.962	1.272	1.985					
		(LL)	0.161	0.309	0.511	0.838	1.065	1.518					

Function	BSCAN Data Enable Selector with Testbus in for 3-state											
Block type	Standard type											
	-		-									
Drivability	Name	cells	Name	cells								
-	SVSTC2	11										
-												

Logic Diagram



Truth Table

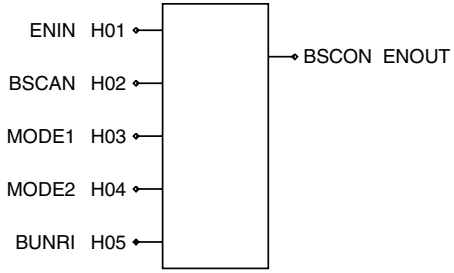
ENIN	BSCAN	MODE1	MODE2	BUNRI	ENOUT
A	X	0	0	0	A
X	B	1	0	0	B
X	X	X	1	0	0
X	X	X	X	1	0

X:Irrelevant

Block type	Switching speed								Input		Output	
	Path		t LD0 [ns]			t 1 (ns/pF)						
	IN → OUT		MIN.	TYP.	MAX.	MIN.	TYP.	MAX.	Symbol	Cin(pF)	Symbol	Cmax(pF)
SVSTC2	ENIN → ENOUT	(HH)	0.061	0.086	0.138	0.360	0.514	0.825	ENIN	0.024	ENOUT	0.485
		(LL)	0.069	0.102	0.171	0.216	0.269	0.384	BSCAN	0.007		
	BSCAN → ENOUT	(HH)	0.085	0.118	0.190	0.361	0.515	0.827	MODE1	0.006		
		(LL)	0.103	0.152	0.256	0.225	0.283	0.408	MODE2	0.007		
	MODE1 → ENOUT	(HH)	0.106	0.147	0.236	0.361	0.515	0.827	BUNRI	0.006		
		(HL)	0.115	0.169	0.281	0.225	0.283	0.408				
		(LH)	0.089	0.125	0.202	0.360	0.514	0.824				
		(LL)	0.098	0.142	0.235	0.216	0.269	0.384				
	MODE2 → ENOUT	(HL)	0.088	0.122	0.195	0.213	0.264	0.374				
		(LH)	0.104	0.154	0.254	0.361	0.515	0.826				
	BUNRI → ENOUT	(HL)	0.091	0.126	0.202	0.213	0.264	0.374				
		(LH)	0.111	0.164	0.269	0.361	0.515	0.826				

Function	BSCAN Data Enable Selector with Testbus out for 3-state											
Block type	Standard type											
	-		-									
Drivability	Name	cells	Name	cells								
-	SVSTD2	12										
-												

Logic Diagram



Truth Table

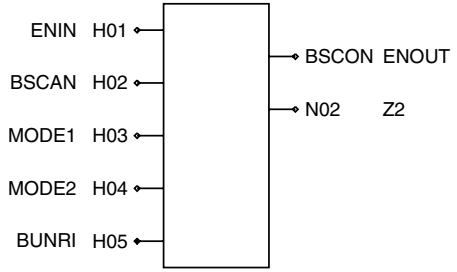
ENIN	BSCAN	MODE1	MODE2	BUNRI	ENOUT
A	X	0	0	0	A
X	B	1	0	0	B
X	X	X	1	0	0
X	X	X	C	1	CB

X:Irrelevant

Block type	Switching speed									Input		Output	
	Path			t LD0 [ns]			t 1 (ns/pF)						
	IN	→	OUT	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.	Symbol	Cin(pF)	Symbol	Cmax(pF)
SVSTD2	ENIN	→	ENOUT (HH)	0.062	0.087	0.139	0.360	0.514	0.824	ENIN	0.024	ENOUT	0.473
			(LL)	0.068	0.100	0.167	0.216	0.269	0.383	BSCAN	0.006		
	BSCAN	→	ENOUT (HH)	0.129	0.181	0.297	0.364	0.519	0.833	MODE1	0.007		
			(LL)	0.152	0.232	0.401	0.242	0.312	0.457	MODE2	0.033		
	MODE1	→	ENOUT (HH)	0.124	0.173	0.280	0.364	0.520	0.834	BUNRI	0.006		
			(HL)	0.133	0.199	0.338	0.242	0.311	0.456				
			(LH)	0.120	0.176	0.291	0.360	0.514	0.824				
			(LL)	0.127	0.189	0.316	0.216	0.269	0.383				
	MODE2	→	ENOUT (HL)	0.016	0.020	0.029	0.210	0.259	0.365				
			(LH)	0.027	0.041	0.068	0.360	0.516	0.827				
	BUNRI	→	ENOUT (HH)	0.143	0.226	0.364	0.361	0.515	0.827				
			(LL)	0.159	0.280	0.461	0.215	0.312	0.457				

Function	BSCAN Data Enable Selector with Testbus in for Bi-directional											
Block type	Standard type											
	-		-									
Drivability	Name	cells	Name	cells								
-	SVSTE2	12										
-												

Logic Diagram



Truth Table

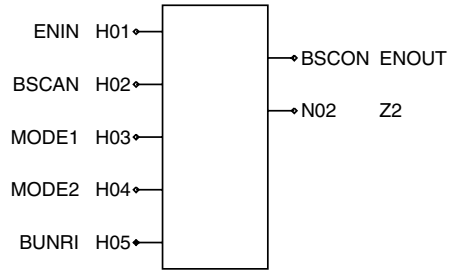
ENIN	BSCAN	MODE1	MODE2	BUNRI	ENOUT	Z2
A	X	0	0	0	A	A
X	B	1	0	0	B	B
A	X	0	1	0	0	A
X	B	1	1	0	0	B
A	X	0	X	1	0	A
X	B	1	X	1	0	B

X:Irrelevant

Block type	Switching speed								Input		Output	
	Path		t LD0 [ns]			t 1 (ns/pF)						
	IN → OUT		MIN.	TYP.	MAX.	MIN.	TYP.	MAX.	Symbol	Cin(pF)	Symbol	Cmax(pF)
SVSTE2	ENIN → ENOUT	(HH)	0.067	0.093	0.149	0.360	0.514	0.825	ENIN	0.024	ENOUT	0.482
		(LL)	0.075	0.111	0.185	0.218	0.272	0.388	BSCAN	0.007	Z2	0.201
	ENIN → Z2	(HH)	0.057	0.087	0.140	0.962	1.266	1.974	MODE1	0.006		
		(LL)	0.066	0.119	0.200	0.841	1.038	1.468	MODE2	0.007		
	BSCAN → ENOUT	(HH)	0.093	0.129	0.207	0.362	0.516	0.828	BUNRI	0.006		
		(LL)	0.113	0.166	0.279	0.228	0.288	0.416				
	BSCAN → Z2	(HH)	0.083	0.127	0.204	0.963	1.270	1.980				
		(LL)	0.104	0.187	0.315	0.846	1.050	1.490				
	MODE1 → ENOUT	(HH)	0.113	0.157	0.251	0.361	0.516	0.827				
		(HL)	0.124	0.183	0.304	0.228	0.288	0.416				
		(LH)	0.094	0.132	0.213	0.360	0.514	0.825				
		(LL)	0.103	0.150	0.249	0.218	0.272	0.388				
	MODE1 → Z2	(HH)	0.103	0.155	0.249	0.963	1.270	1.980				
		(HL)	0.116	0.203	0.340	0.846	1.050	1.490				
		(LH)	0.085	0.127	0.204	0.962	1.266	1.974				
		(LL)	0.095	0.159	0.264	0.841	1.038	1.468				
	MODE2 → ENOUT	(HL)	0.087	0.120	0.192	0.213	0.264	0.374				
		(LH)	0.102	0.152	0.250	0.361	0.515	0.826				
	BUNRI → ENOUT	(HL)	0.089	0.124	0.198	0.213	0.264	0.374				
		(LH)	0.109	0.160	0.264	0.361	0.515	0.826				

Function	BSCAN Data Enable Selector with Testbus out for Bi-directional											
Block type	Standard type											
	-		-									
Drivability	Name	cells	Name	cells								
-	SVSTF2	12										
-												

Logic Diagram



Truth Table

ENIN	BSCAN	MODE1	MODE2	BUNRI	ENOUT	Z2
A	X	0	0	0	A	A
X	B	1	0	0	B	B
A	X	0	1	0	0	A
X	B	1	1	0	0	B
X	X	X	C	1	CB	1

X:Irrelevant

Block type	Switching speed									Input		Output	
	Path			t LD0 [ns]			t 1 (ns/pF)						
	IN → OUT			MIN.	TYP.	MAX.	MIN.	TYP.	MAX.	Symbol	Cin(pF)	Symbol	Cmax(pF)
SVSTF2	ENIN → ENOUT	(HH)		0.070	0.097	0.157	0.360	0.514	0.825	ENIN	0.019	ENOUT	0.469
		(LL)		0.077	0.114	0.192	0.219	0.273	0.390	BSCAN	0.006	Z2	0.195
	ENIN → Z2	(HH)		0.060	0.092	0.149	0.962	1.267	1.975	MODE1	0.007		
		(LL)		0.070	0.125	0.210	0.841	1.039	1.470	MODE2	0.033		
	BSCAN → ENOUT	(HH)		0.139	0.195	0.320	0.365	0.520	0.835	BUNRI	0.006		
		(LL)		0.163	0.249	0.431	0.247	0.319	0.468				
	BSCAN → Z2	(HH)		0.128	0.199	0.328	0.965	1.276	1.992				
		(LL)		0.159	0.291	0.502	0.861	1.076	1.538				
	MODE1 → ENOUT	(HH)		0.134	0.187	0.303	0.365	0.521	0.836				
		(HL)		0.145	0.218	0.371	0.247	0.318	0.468				
		(LH)		0.128	0.187	0.308	0.360	0.514	0.824				
		(LL)		0.136	0.203	0.340	0.218	0.273	0.390				
	MODE1 → Z2	(HH)		0.124	0.191	0.311	0.965	1.276	1.992				
		(HL)		0.140	0.260	0.442	0.860	1.076	1.538				
		(LH)		0.118	0.182	0.301	0.962	1.267	1.975				
		(LL)		0.128	0.214	0.359	0.841	1.039	1.469				
	MODE2 → ENOUT	(HL)		0.016	0.020	0.029	0.210	0.259	0.365				
		(LH)		0.027	0.041	0.068	0.360	0.516	0.827				
	BUNRI → ENOUT	(HH)		0.150	0.237	0.381	0.362	0.516	0.828				
		(LL)		0.168	0.293	0.484	0.217	0.319	0.468				
	BUNRI → Z2	(HH)		0.140	0.235	0.379	0.963	1.270	1.980				
		(LL)		0.155	0.331	0.549	0.840	1.076	1.538				

[MEMO]

[MEMO]

INDEX

Block	Function	Cells	Page
B00111	I/O Buffer 12mA	1	1-24
B00111PD100	I/O Buffer 12mA 100KΩ Pull-down	1	1-24
B00111PU100	I/O Buffer 12mA 100KΩ Pull-up	1	1-24
B00112	I/O Buffer 12mA	1	1-64
B00112PD100	I/O Buffer 12mA 100KΩ Pull-down	1	1-64
B00112PU100	I/O Buffer 12mA 100KΩ Pull-up	1	1-64
B00113	I/O Buffer 12mA	1	1-108
B00113PD100	I/O Buffer 12mA 100KΩ Pull-down	1	1-108
B00113PU100	I/O Buffer 12mA 100KΩ Pull-up	1	1-108
B00311	I/O Buffer 9mA	1	1-24
B00311PD100	I/O Buffer 9mA 100KΩ Pull-down	1	1-24
B00311PU100	I/O Buffer 9mA 100KΩ Pull-up	1	1-24
B00312	I/O Buffer 9mA	1	1-64
B00312PD100	I/O Buffer 9mA 100KΩ Pull-down	1	1-64
B00312PU100	I/O Buffer 9mA 100KΩ Pull-up	1	1-64
B00313	I/O Buffer 9mA	1	1-108
B00313PD100	I/O Buffer 9mA 100KΩ Pull-down	1	1-108
B00313PU100	I/O Buffer 9mA 100KΩ Pull-up	1	1-108
B00512	I/O Buffer 18mA	1	1-64
B00512PD100	I/O Buffer 18mA 100KΩ Pull-down	1	1-64
B00512PU100	I/O Buffer 18mA 100KΩ Pull-up	1	1-64
B00513	I/O Buffer 18mA	1	1-108
B00513PD100	I/O Buffer 18mA 100KΩ Pull-down	1	1-108
B00513PU100	I/O Buffer 18mA 100KΩ Pull-up	1	1-108
B00711	3-state Buffer 12mA	1	1-12
B00711PD100	3-state Buffer 12mA 100KΩ Pull-down	1	1-12
B00711PU100	3-state Buffer 12mA 100KΩ Pull-up	1	1-12
B00712	3-state Buffer 12mA	1	1-52
B00712PD100	3-state Buffer 12mA 100KΩ Pull-down	1	1-52
B00712PU100	3-state Buffer 12mA 100KΩ Pull-up	1	1-52
B00713	3-state Buffer 12mA	1	1-96
B00713PD100	3-state Buffer 12mA 100KΩ Pull-down	1	1-96
B00713PU100	3-state Buffer 12mA 100KΩ Pull-up	1	1-96
B00811	3-state Buffer 9mA	1	1-12
B00811PD100	3-state Buffer 9mA 100KΩ Pull-down	1	1-12
B00811PU100	3-state Buffer 9mA 100KΩ Pull-up	1	1-12
B00812	3-state Buffer 9mA	1	1-52
B00812PD100	3-state Buffer 9mA 100KΩ Pull-down	1	1-52
B00812PU100	3-state Buffer 9mA 100KΩ Pull-up	1	1-52

Block	Function	Cells	Page
B00813	3-state Buffer 9mA	1	1-96
B00813PD100	3-state Buffer 9mA 100KΩ Pull-down	1	1-96
B00813PU100	3-state Buffer 9mA 100KΩ Pull-up	1	1-96
B00912	3-state Buffer 18mA	1	1-52
B00912PD100	3-state Buffer 18mA 100KΩ Pull-down	1	1-52
B00912PU100	3-state Buffer 18mA 100KΩ Pull-up	1	1-52
B00913	3-state Buffer 18mA	1	1-96
B00913PD100	3-state Buffer 18mA 100KΩ Pull-down	1	1-96
B00913PU100	3-state Buffer 18mA 100KΩ Pull-up	1	1-96
B00C11	I/O Buffer 6mA	1	1-24
B00C11PD100	I/O Buffer 6mA 100KΩ Pull-down	1	1-24
B00C11PU100	I/O Buffer 6mA 100KΩ Pull-up	1	1-24
B00C12	I/O Buffer 6mA	1	1-64
B00C12PD100	I/O Buffer 6mA 100KΩ Pull-down	1	1-64
B00C12PU100	I/O Buffer 6mA 100KΩ Pull-up	1	1-64
B00C13	I/O Buffer 6mA	1	1-108
B00C13PD100	I/O Buffer 6mA 100KΩ Pull-down	1	1-108
B00C13PU100	I/O Buffer 6mA 100KΩ Pull-up	1	1-108
B00E11	3-state Buffer 6mA	1	1-12
B00E11PD100	3-state Buffer 6mA 100KΩ Pull-down	1	1-12
B00E11PU100	3-state Buffer 6mA 100KΩ Pull-up	1	1-12
B00E12	3-state Buffer 6mA	1	1-52
B00E12PD100	3-state Buffer 6mA 100KΩ Pull-down	1	1-52
B00E12PU100	3-state Buffer 6mA 100KΩ Pull-up	1	1-52
B00E13	3-state Buffer 6mA	1	1-96
B00E13PD100	3-state Buffer 6mA 100KΩ Pull-down	1	1-96
B00E13PU100	3-state Buffer 6mA 100KΩ Pull-up	1	1-96
B00F12	I/O Buffer 24mA	1	1-64
B00F12PD100	I/O Buffer 24mA 100KΩ Pull-down	1	1-64
B00F12PU100	I/O Buffer 24mA 100KΩ Pull-up	1	1-64
B00F13	I/O Buffer 24mA	1	1-108
B00F13PD100	I/O Buffer 24mA 100KΩ Pull-down	1	1-108
B00F13PU100	I/O Buffer 24mA 100KΩ Pull-up	1	1-108
B00H12	3-state Buffer 24mA	1	1-52
B00H12PD100	3-state Buffer 24mA 100KΩ Pull-down	1	1-52
B00H12PU100	3-state Buffer 24mA 100KΩ Pull-up	1	1-52
B00H13	3-state Buffer 24mA	1	1-96
B00H13PD100	3-state Buffer 24mA 100KΩ Pull-down	1	1-96
B00H13PU100	3-state Buffer 24mA 100KΩ Pull-up	1	1-96
B00T11	3-state Buffer 3mA	1	1-12
B00T11PD100	3-state Buffer 3mA 100KΩ Pull-down	1	1-12

Block	Function	Cells	Page
B00T11PU100	3-state Buffer 3mA 100KΩ Pull-up	1	1-12
B00T12	3-state Buffer 3mA	1	1-52
B00T12PD100	3-state Buffer 3mA 100KΩ Pull-down	1	1-52
B00T12PU100	3-state Buffer 3mA 100KΩ Pull-up	1	1-52
B00T13	3-state Buffer 3mA	1	1-96
B00T13PD100	3-state Buffer 3mA 100KΩ Pull-down	1	1-96
B00T13PU100	3-state Buffer 3mA 100KΩ Pull-up	1	1-96
B00U11	I/O Buffer 3mA	1	1-24
B00U11PD100	I/O Buffer 3mA 100KΩ Pull-down	1	1-24
B00U11PU100	I/O Buffer 3mA 100KΩ Pull-up	1	1-24
B00U12	I/O Buffer 3mA	1	1-64
B00U12PD100	I/O Buffer 3mA 100KΩ Pull-down	1	1-64
B00U12PU100	I/O Buffer 3mA 100KΩ Pull-up	1	1-64
B00U13	I/O Buffer 3mA	1	1-108
B00U13PD100	I/O Buffer 3mA 100KΩ Pull-down	1	1-108
B00U13PU100	I/O Buffer 3mA 100KΩ Pull-up	1	1-108
B0W111	I/O Buffer 12mA 5KΩ Pull-up	1	1-24
B0W112	I/O Buffer 12mA 5KΩ Pull-up	1	1-64
B0W113	I/O Buffer 12mA 5KΩ Pull-up	1	1-108
B0W311	I/O Buffer 9mA 5KΩ Pull-up	1	1-24
B0W312	I/O Buffer 9mA 5KΩ Pull-up	1	1-64
B0W313	I/O Buffer 9mA 5KΩ Pull-up	1	1-108
B0W512	I/O Buffer 18mA 5KΩ Pull-up	1	1-64
B0W513	I/O Buffer 18mA 5KΩ Pull-up	1	1-108
B0W711	3-state Buffer 12mA 5KΩ Pull-up	1	1-12
B0W712	3-state Buffer 12mA 5KΩ Pull-up	1	1-52
B0W713	3-state Buffer 12mA 5KΩ Pull-up	1	1-96
B0W811	3-state Buffer 9mA 5KΩ Pull-up	1	1-12
B0W812	3-state Buffer 9mA 5KΩ Pull-up	1	1-52
B0W813	3-state Buffer 9mA 5KΩ Pull-up	1	1-96
B0W912	3-state Buffer 18mA 5KΩ Pull-up	1	1-52
B0W913	3-state Buffer 18mA 5KΩ Pull-up	1	1-96
B0WC11	I/O Buffer 6mA 5KΩ Pull-up	1	1-24
B0WC12	I/O Buffer 6mA 5KΩ Pull-up	1	1-64
B0WC13	I/O Buffer 6mA 5KΩ Pull-up	1	1-108
B0WE11	3-state Buffer 6mA 5KΩ Pull-up	1	1-12
B0WE12	3-state Buffer 6mA 5KΩ Pull-up	1	1-52
B0WE13	3-state Buffer 6mA 5KΩ Pull-up	1	1-96
B0WF12	I/O Buffer 24mA 5KΩ Pull-up	1	1-64
B0WF13	I/O Buffer 24mA 5KΩ Pull-up	1	1-108
B0WH12	3-state Buffer 24mA 5KΩ Pull-up	1	1-52

Block	Function	Cells	Page
B0WH13	3-state Buffer 24mA 5KΩ Pull-up	1	1-96
B0WT11	3-state Buffer 3mA 5KΩ Pull-up	1	1-12
B0WT12	3-state Buffer 3mA 5KΩ Pull-up	1	1-52
B0WT13	3-state Buffer 3mA 5KΩ Pull-up	1	1-96
B0WU11	I/O Buffer 3mA 5KΩ Pull-up	1	1-24
B0WU12	I/O Buffer 3mA 5KΩ Pull-up	1	1-64
B0WU13	I/O Buffer 3mA 5KΩ Pull-up	1	1-108
BE0111	Low-noise I/O Buffer 12mA	1	1-28
BE0111PD100	Low-noise I/O Buffer 12mA 100KΩ Pull-down	1	1-28
BE0111PU100	Low-noise I/O Buffer 12mA 100KΩ Pull-up	1	1-28
BE0112	Low-noise I/O Buffer 12mA	1	1-70
BE0112PD100	Low-noise I/O Buffer 12mA 100KΩ Pull-down	1	1-70
BE0112PU100	Low-noise I/O Buffer 12mA 100KΩ Pull-up	1	1-70
BE0113	Low-noise I/O Buffer 12mA	1	1-114
BE0113PD100	Low-noise I/O Buffer 12mA 100KΩ Pull-down	1	1-114
BE0113PU100	Low-noise I/O Buffer 12mA 100KΩ Pull-up	1	1-114
BE0311	Low-noise I/O Buffer 9mA	1	1-28
BE0311PD100	Low-noise I/O Buffer 9mA 100KΩ Pull-down	1	1-28
BE0311PU100	Low-noise I/O Buffer 9mA 100KΩ Pull-up	1	1-28
BE0312	Low-noise I/O Buffer 9mA	1	1-70
BE0312PD100	Low-noise I/O Buffer 9mA 100KΩ Pull-down	1	1-70
BE0312PU100	Low-noise I/O Buffer 9mA 100KΩ Pull-up	1	1-70
BE0313	Low-noise I/O Buffer 9mA	1	1-114
BE0313PD100	Low-noise I/O Buffer 9mA 100KΩ Pull-down	1	1-114
BE0313PU100	Low-noise I/O Buffer 9mA 100KΩ Pull-up	1	1-114
BE0512	Low-noise I/O Buffer 18mA	1	1-70
BE0512PD100	Low-noise I/O Buffer 18mA 100KΩ Pull-down	1	1-70
BE0512PU100	Low-noise I/O Buffer 18mA 100KΩ Pull-up	1	1-70
BE0513	Low-noise I/O Buffer 18mA	1	1-114
BE0513PD100	Low-noise I/O Buffer 18mA 100KΩ Pull-down	1	1-114
BE0513PU100	Low-noise I/O Buffer 18mA 100KΩ Pull-up	1	1-114
BE0711	Low-noise 3-state Buffer 12mA	1	1-16
BE0711PD100	Low-noise 3-state Buffer 12mA 100KΩ Pull-down	1	1-16
BE0711PU100	Low-noise 3-state Buffer 12mA 100KΩ Pull-up	1	1-16
BE0712	Low-noise 3-state Buffer 12mA	1	1-56
BE0712PD100	Low-noise 3-state Buffer 12mA 100KΩ Pull-down	1	1-56
BE0712PU100	Low-noise 3-state Buffer 12mA 100KΩ Pull-up	1	1-56
BE0713	Low-noise 3-state Buffer 12mA	1	1-100
BE0713PD100	Low-noise 3-state Buffer 12mA 100KΩ Pull-down	1	1-100
BE0713PU100	Low-noise 3-state Buffer 12mA 100KΩ Pull-up	1	1-100
BE0811	Low-noise 3-state Buffer 9mA	1	1-16

Block	Function	Cells	Page
BE0811PD100	Low-noise 3-state Buffer 9mA 100KΩ Pull-down	1	1-16
BE0811PU100	Low-noise 3-state Buffer 9mA 100KΩ Pull-up	1	1-16
BE0812	Low-noise 3-state Buffer 9mA	1	1-56
BE0812PD100	Low-noise 3-state Buffer 9mA 100KΩ Pull-down	1	1-56
BE0812PU100	Low-noise 3-state Buffer 9mA 100KΩ Pull-up	1	1-56
BE0813	Low-noise 3-state Buffer 9mA	1	1-100
BE0813PD100	Low-noise 3-state Buffer 9mA 100KΩ Pull-down	1	1-100
BE0813PU100	Low-noise 3-state Buffer 9mA 100KΩ Pull-up	1	1-100
BE0912	Low-noise 3-state Buffer 18mA	1	1-56
BE0912PD100	Low-noise 3-state Buffer 18mA 100KΩ Pull-down	1	1-56
BE0912PU100	Low-noise 3-state Buffer 18mA 100KΩ Pull-up	1	1-56
BE0913	Low-noise 3-state Buffer 18mA	1	1-100
BE0913PD100	Low-noise 3-state Buffer 18mA 100KΩ Pull-down	1	1-100
BE0913PU100	Low-noise 3-state Buffer 18mA 100KΩ Pull-up	1	1-100
BE0C11	Low-noise I/O Buffer 6mA	1	1-28
BE0C11PD100	Low-noise I/O Buffer 6mA 100KΩ Pull-down	1	1-28
BE0C11PU100	Low-noise I/O Buffer 6mA 100KΩ Pull-up	1	1-28
BE0C12	Low-noise I/O Buffer 6mA	1	1-70
BE0C12PD100	Low-noise I/O Buffer 6mA 100KΩ Pull-down	1	1-70
BE0C12PU100	Low-noise I/O Buffer 6mA 100KΩ Pull-up	1	1-70
BE0C13	Low-noise I/O Buffer 6mA	1	1-114
BE0C13PD100	Low-noise I/O Buffer 6mA 100KΩ Pull-down	1	1-114
BE0C13PU100	Low-noise I/O Buffer 6mA 100KΩ Pull-up	1	1-114
BE0E11	Low-noise 3-state Buffer 6mA	1	1-16
BE0E11PD100	Low-noise 3-state Buffer 6mA 100KΩ Pull-down	1	1-16
BE0E11PU100	Low-noise 3-state Buffer 6mA 100KΩ Pull-up	1	1-16
BE0E12	Low-noise 3-state Buffer 6mA	1	1-56
BE0E12PD100	Low-noise 3-state Buffer 6mA 100KΩ Pull-down	1	1-56
BE0E12PU100	Low-noise 3-state Buffer 6mA 100KΩ Pull-up	1	1-56
BE0E13	Low-noise 3-state Buffer 6mA	1	1-100
BE0E13PD100	Low-noise 3-state Buffer 6mA 100KΩ Pull-down	1	1-100
BE0E13PU100	Low-noise 3-state Buffer 6mA 100KΩ Pull-up	1	1-100
BE0F12	Low-noise I/O Buffer 24mA	1	1-70
BE0F12PD100	Low-noise I/O Buffer 24mA 100KΩ Pull-down	1	1-70
BE0F12PU100	Low-noise I/O Buffer 24mA 100KΩ Pull-up	1	1-70
BE0F13	Low-noise I/O Buffer 24mA	1	1-114
BE0F13PD100	Low-noise I/O Buffer 24mA 100KΩ Pull-down	1	1-114
BE0F13PU100	Low-noise I/O Buffer 24mA 100KΩ Pull-up	1	1-114
BE0H12	Low-noise 3-state Buffer 24mA	1	1-56
BE0H12PD100	Low-noise 3-state Buffer 24mA 100KΩ Pull-down	1	1-56
BE0H12PU100	Low-noise 3-state Buffer 24mA 100KΩ Pull-up	1	1-56

Block	Function	Cells	Page
BE0H13	Low-noise 3-state Buffer 24mA	1	1-100
BE0H13PD100	Low-noise 3-state Buffer 24mA 100KΩ Pull-down	1	1-100
BE0H13PU100	Low-noise 3-state Buffer 24mA 100KΩ Pull-up	1	1-100
BEW111	Low-noise I/O Buffer 12mA 5KΩ Pull-up	1	1-28
BEW112	Low-noise I/O Buffer 12mA 5KΩ Pull-up	1	1-70
BEW113	Low-noise I/O Buffer 12mA 5KΩ Pull-up	1	1-114
BEW311	Low-noise I/O Buffer 9mA 5KΩ Pull-up	1	1-28
BEW312	Low-noise I/O Buffer 9mA 5KΩ Pull-up	1	1-70
BEW313	Low-noise I/O Buffer 9mA 5KΩ Pull-up	1	1-114
BEW512	Low-noise I/O Buffer 18mA 5KΩ Pull-up	1	1-70
BEW513	Low-noise I/O Buffer 18mA 5KΩ Pull-up	1	1-114
BEW711	Low-noise 3-state Buffer 12mA 5KΩ Pull-up	1	1-16
BEW712	Low-noise 3-state Buffer 12mA 5KΩ Pull-up	1	1-56
BEW713	Low-noise 3-state Buffer 12mA 5KΩ Pull-up	1	1-100
BEW811	Low-noise 3-state Buffer 9mA 5KΩ Pull-up	1	1-16
BEW812	Low-noise 3-state Buffer 9mA 5KΩ Pull-up	1	1-56
BEW813	Low-noise 3-state Buffer 9mA 5KΩ Pull-up	1	1-100
BEW912	Low-noise 3-state Buffer 18mA 5KΩ Pull-up	1	1-56
BEW913	Low-noise 3-state Buffer 18mA 5KΩ Pull-up	1	1-100
BEWC11	Low-noise I/O Buffer 6mA 5KΩ Pull-up	1	1-28
BEWC12	Low-noise I/O Buffer 6mA 5KΩ Pull-up	1	1-70
BEWC13	Low-noise I/O Buffer 6mA 5KΩ Pull-up	1	1-114
BEWE11	Low-noise 3-state Buffer 6mA 5KΩ Pull-up	1	1-16
BEWE12	Low-noise 3-state Buffer 6mA 5KΩ Pull-up	1	1-56
BEWE13	Low-noise 3-state Buffer 6mA 5KΩ Pull-up	1	1-100
BEWF12	Low-noise I/O Buffer 24mA 5KΩ Pull-up	1	1-70
BEWF13	Low-noise I/O Buffer 24mA 5KΩ Pull-up	1	1-114
BEWH12	Low-noise 3-state Buffer 24mA 5KΩ Pull-up	1	1-56
BEWH13	Low-noise 3-state Buffer 24mA 5KΩ Pull-up	1	1-100
BFI111	Low-noise Schmitt I/O Buffer 12mA	1	1-36
BFI111PD100	Low-noise Schmitt I/O Buffer 12mA 100KΩ Pull-down	1	1-36
BFI111PU100	Low-noise Schmitt I/O Buffer 12mA 100KΩ Pull-up	1	1-36
BFI112	Low-noise Schmitt I/O Buffer 12mA	1	1-80
BFI112PD100	Low-noise Schmitt I/O Buffer 12mA 100KΩ Pull-down	1	1-80
BFI112PU100	Low-noise Schmitt I/O Buffer 12mA 100KΩ Pull-up	1	1-80
BFI113	Low-noise Schmitt I/O Buffer 12mA	1	1-124
BFI113PD100	Low-noise Schmitt I/O Buffer 12mA 100KΩ Pull-down	1	1-124
BFI113PU100	Low-noise Schmitt I/O Buffer 12mA 100KΩ Pull-up	1	1-124
BFI311	Low-noise Schmitt I/O Buffer 9mA	1	1-36
BFI311PD100	Low-noise Schmitt I/O Buffer 9mA 100KΩ Pull-down	1	1-36
BFI311PU100	Low-noise Schmitt I/O Buffer 9mA 100KΩ Pull-up	1	1-36

Block	Function	Cells	Page
BFI312	Low-noise Schmitt I/O Buffer 9mA	1	1-80
BFI312PD100	Low-noise Schmitt I/O Buffer 9mA 100KΩ Pull-down	1	1-80
BFI312PU100	Low-noise Schmitt I/O Buffer 9mA 100KΩ Pull-up	1	1-80
BFI313	Low-noise Schmitt I/O Buffer 9mA	1	1-124
BFI313PD100	Low-noise Schmitt I/O Buffer 9mA 100KΩ Pull-down	1	1-124
BFI313PU100	Low-noise Schmitt I/O Buffer 9mA 100KΩ Pull-up	1	1-124
BFI512	Low-noise Schmitt I/O Buffer 18mA	1	1-80
BFI512PD100	Low-noise Schmitt I/O Buffer 18mA 100KΩ Pull-down	1	1-80
BFI512PU100	Low-noise Schmitt I/O Buffer 18mA 100KΩ Pull-up	1	1-80
BFI513	Low-noise Schmitt I/O Buffer 18mA	1	1-124
BFI513PD100	Low-noise Schmitt I/O Buffer 18mA 100KΩ Pull-down	1	1-124
BFI513PU100	Low-noise Schmitt I/O Buffer 18mA 100KΩ Pull-up	1	1-124
BFIC11	Low-noise Schmitt I/O Buffer 6mA	1	1-36
BFIC11PD100	Low-noise Schmitt I/O Buffer 6mA 100KΩ Pull-down	1	1-36
BFIC11PU100	Low-noise Schmitt I/O Buffer 6mA 100KΩ Pull-up	1	1-36
BFIC12	Low-noise Schmitt I/O Buffer 6mA	1	1-80
BFIC12PD100	Low-noise Schmitt I/O Buffer 6mA 100KΩ Pull-down	1	1-80
BFIC12PU100	Low-noise Schmitt I/O Buffer 6mA 100KΩ Pull-up	1	1-80
BFIC13	Low-noise Schmitt I/O Buffer 6mA	1	1-124
BFIC13PD100	Low-noise Schmitt I/O Buffer 6mA 100KΩ Pull-down	1	1-124
BFIC13PU100	Low-noise Schmitt I/O Buffer 6mA 100KΩ Pull-up	1	1-124
BFIF12	Low-noise Schmitt I/O Buffer 24mA	1	1-80
BFIF12PD100	Low-noise Schmitt I/O Buffer 24mA 100KΩ Pull-down	1	1-80
BFIF12PU100	Low-noise Schmitt I/O Buffer 24mA 100KΩ Pull-up	1	1-80
BFIF13	Low-noise Schmitt I/O Buffer 24mA	1	1-124
BFIF13PD100	Low-noise Schmitt I/O Buffer 24mA 100KΩ Pull-down	1	1-124
BFIF13PU100	Low-noise Schmitt I/O Buffer 24mA 100KΩ Pull-up	1	1-124
BFW111	Low-noise Schmitt I/O Buffer 12mA 5KΩ Pull-up	1	1-36
BFW112	Low-noise Schmitt I/O Buffer 12mA 5KΩ Pull-up	1	1-80
BFW113	Low-noise Schmitt I/O Buffer 12mA 5KΩ Pull-up	1	1-124
BFW311	Low-noise Schmitt I/O Buffer 9mA 5KΩ Pull-up	1	1-36
BFW312	Low-noise Schmitt I/O Buffer 9mA 5KΩ Pull-up	1	1-80
BFW313	Low-noise Schmitt I/O Buffer 9mA 5KΩ Pull-up	1	1-124
BFW512	Low-noise Schmitt I/O Buffer 18mA 5KΩ Pull-up	1	1-80
BFW513	Low-noise Schmitt I/O Buffer 18mA 5KΩ Pull-up	1	1-124
BFWC11	Low-noise Schmitt I/O Buffer 6mA 5KΩ Pull-up	1	1-36
BFWC12	Low-noise Schmitt I/O Buffer 6mA 5KΩ Pull-up	1	1-80
BFWC13	Low-noise Schmitt I/O Buffer 6mA 5KΩ Pull-up	1	1-124
BFWF12	Low-noise Schmitt I/O Buffer 24mA 5KΩ Pull-up	1	1-80
BFWF13	Low-noise Schmitt I/O Buffer 24mA 5KΩ Pull-up	1	1-124
BH0N1H	1.5V HSTL I/O Buffer Class 1	1	1-252

Block	Function	Cells	Page
BH0N1H18	1.8V HSTL I/O Buffer Class 1	1	1-266
BH0V1H	1.5V HSTL I/O Buffer Class 3	1	1-252
BH0V1H18	1.8V HSTL I/O Buffer Class 3	1	1-266
BN0N1H	1.5V HSTL 3-state Buffer Class 1	1	1-254
BN0N1H18	1.8V HSTL 3-state Buffer Class 1	1	1-268
BN0V1H	1.5V HSTL 3-state Buffer Class 3	1	1-254
BN0V1H18	1.8V HSTL 3-state Buffer Class 3	1	1-268
BP3B13	3V PCI I/O Buffer mode1	1	1-150
BP3BX13	PCI-X I/O Buffer mode1	1	1-162
BP3I13	3V PCI Input Buffer	1	1-144
BP3IX13	PCI-X Input Buffer mode1	1	1-156
BP3O13	3V PCI Output Buffer	1	1-146
BP3OX13	PCI-X Output Buffer mode1	1	1-158
BP3T13	3V PCI 3-state Buffer	1	1-148
BP3TX13	PCI-X 3-state Buffer mode1	1	1-160
BS0H1S18	SSTL18 3-state Buffer	1	1-232
BS0H1S2	SSTL2 3-state Buffer Class2	1	1-200
BS0H1S3	SSTL3 3-state Buffer Class2	1	1-218
BS0HD1S18	SSTL18 3-state Buffer Differential Type2	2	1-240
BS0HD1S2	SSTL2 3-state Buffer Differential Type Class 2	2	1-206
BS0N1S2	SSTL2 3-state Buffer Class1	1	1-200
BS0N1S3	SSTL3 3-state Buffer Class1	1	1-218
BS0ND1S2	SSTL2 3-state Buffer Differential Type Class 1	2	1-206
BS1H1S18	SSTL18 I/O Buffer	1	1-234
BS1H1S2	SSTL2 I/O Buffer Class2	1	1-198
BS1H1S3	SSTL3 I/O Buffer Class2	1	1-216
BS1HD1S18	SSTL18 I/O Buffer Differential Type	2	1-242
BS1N1S2	SSTL2 I/O Buffer Class1	1	1-198
BS1N1S3	SSTL3 I/O Buffer Class1	1	1-216
BSI111	Schmitt I/O Buffer 12mA	1	1-32
BSI111PD100	Schmitt I/O Buffer 12mA 100KΩ Pull-down	1	1-32
BSI111PU100	Schmitt I/O Buffer 12mA 100KΩ Pull-up	1	1-32
BSI112	Schmitt I/O Buffer 12mA	1	1-74
BSI112PD100	Schmitt I/O Buffer 12mA 100KΩ Pull-down	1	1-74
BSI112PU100	Schmitt I/O Buffer 12mA 100KΩ Pull-up	1	1-74
BSI113	Schmitt I/O Buffer 12mA	1	1-118
BSI113PD100	Schmitt I/O Buffer 12mA 100KΩ Pull-down	1	1-118
BSI113PU100	Schmitt I/O Buffer 12mA 100KΩ Pull-up	1	1-118
BSI311	Schmitt I/O Buffer 9mA	1	1-32
BSI311PD100	Schmitt I/O Buffer 9mA 100KΩ Pull-down	1	1-32
BSI311PU100	Schmitt I/O Buffer 9mA 100KΩ Pull-up	1	1-32

Block	Function	Cells	Page
BSI312	Schmitt I/O Buffer 9mA	1	1-74
BSI312PD100	Schmitt I/O Buffer 9mA 100KΩ Pull-down	1	1-74
BSI312PU100	Schmitt I/O Buffer 9mA 100KΩ Pull-up	1	1-74
BSI313	Schmitt I/O Buffer 9mA	1	1-118
BSI313PD100	Schmitt I/O Buffer 9mA 100KΩ Pull-down	1	1-118
BSI313PU100	Schmitt I/O Buffer 9mA 100KΩ Pull-up	1	1-118
BSI512	Schmitt I/O Buffer 18mA	1	1-74
BSI512PD100	Schmitt I/O Buffer 18mA 100KΩ Pull-down	1	1-74
BSI512PU100	Schmitt I/O Buffer 18mA 100KΩ Pull-up	1	1-74
BSI513	Schmitt I/O Buffer 18mA	1	1-118
BSI513PD100	Schmitt I/O Buffer 18mA 100KΩ Pull-down	1	1-118
BSI513PU100	Schmitt I/O Buffer 18mA 100KΩ Pull-up	1	1-118
BSIC11	Schmitt I/O Buffer 6mA	1	1-32
BSIC11PD100	Schmitt I/O Buffer 6mA 100KΩ Pull-down	1	1-32
BSIC11PU100	Schmitt I/O Buffer 6mA 100KΩ Pull-up	1	1-32
BSIC12	Schmitt I/O Buffer 6mA	1	1-74
BSIC12PD100	Schmitt I/O Buffer 6mA 100KΩ Pull-down	1	1-74
BSIC12PU100	Schmitt I/O Buffer 6mA 100KΩ Pull-up	1	1-74
BSIC13	Schmitt I/O Buffer 6mA	1	1-118
BSIC13PD100	Schmitt I/O Buffer 6mA 100KΩ Pull-down	1	1-118
BSIC13PU100	Schmitt I/O Buffer 6mA 100KΩ Pull-up	1	1-118
BSIF12	Schmitt I/O Buffer 24mA	1	1-74
BSIF12PD100	Schmitt I/O Buffer 24mA 100KΩ Pull-down	1	1-74
BSIF12PU100	Schmitt I/O Buffer 24mA 100KΩ Pull-up	1	1-74
BSIF13	Schmitt I/O Buffer 24mA	1	1-118
BSIF13PD100	Schmitt I/O Buffer 24mA 100KΩ Pull-down	1	1-118
BSIF13PU100	Schmitt I/O Buffer 24mA 100KΩ Pull-up	1	1-118
BSIU11	Schmitt I/O Buffer 3mA	1	1-32
BSIU11PD100	Schmitt I/O Buffer 3mA 100KΩ Pull-down	1	1-32
BSIU11PU100	Schmitt I/O Buffer 3mA 100KΩ Pull-up	1	1-32
BSIU12	Schmitt I/O Buffer 3mA	1	1-74
BSIU12PD100	Schmitt I/O Buffer 3mA 100KΩ Pull-down	1	1-74
BSIU12PU100	Schmitt I/O Buffer 3mA 100KΩ Pull-up	1	1-74
BSIU13	Schmitt I/O Buffer 3mA	1	1-118
BSIU13PD100	Schmitt I/O Buffer 3mA 100KΩ Pull-down	1	1-118
BSIU13PU100	Schmitt I/O Buffer 3mA 100KΩ Pull-up	1	1-118
BSW111	Schmitt I/O Buffer 12mA 5KΩ Pull-up	1	1-32
BSW112	Schmitt I/O Buffer 12mA 5KΩ Pull-up	1	1-74
BSW113	Schmitt I/O Buffer 12mA 5KΩ Pull-up	1	1-118
BSW311	Schmitt I/O Buffer 9mA 5KΩ Pull-up	1	1-32
BSW312	Schmitt I/O Buffer 9mA 5KΩ Pull-up	1	1-74

Block	Function	Cells	Page
BSW313	Schmitt I/O Buffer 9mA 5KΩ Pull-up	1	1-118
BSW512	Schmitt I/O Buffer 18mA 5KΩ Pull-up	1	1-74
BSW513	Schmitt I/O Buffer 18mA 5KΩ Pull-up	1	1-118
BSWC11	Schmitt I/O Buffer 6mA 5KΩ Pull-up	1	1-32
BSWC12	Schmitt I/O Buffer 6mA 5KΩ Pull-up	1	1-74
BSWC13	Schmitt I/O Buffer 6mA 5KΩ Pull-up	1	1-118
BSWF12	Schmitt I/O Buffer 24mA 5KΩ Pull-up	1	1-74
BSWF13	Schmitt I/O Buffer 24mA 5KΩ Pull-up	1	1-118
BSWU11	Schmitt I/O Buffer 3mA 5KΩ Pull-up	1	1-32
BSWU12	Schmitt I/O Buffer 3mA 5KΩ Pull-up	1	1-74
BSWU13	Schmitt I/O Buffer 3mA 5KΩ Pull-up	1	1-118
EET111	Low-noise N-ch Open Drain Buffer 9mA	1	1-22
EET112	Low-noise N-ch Open Drain Buffer 9mA	1	1-62
EET113	Low-noise N-ch Open Drain Buffer 9mA	1	1-106
EET512	Low-noise N-ch Open Drain Buffer 18mA	1	1-62
EET513	Low-noise N-ch Open Drain Buffer 18mA	1	1-106
EET911	Low-noise N-ch Open Drain Buffer 12mA	1	1-22
EET912	Low-noise N-ch Open Drain Buffer 12mA	1	1-62
EET913	Low-noise N-ch Open Drain Buffer 12mA	1	1-106
EETD12	Low-noise N-ch Open Drain Buffer 24mA	1	1-62
EETD13	Low-noise N-ch Open Drain Buffer 24mA	1	1-106
EETJ11	Low-noise N-ch Open Drain Buffer 6mA	1	1-22
EETJ12	Low-noise N-ch Open Drain Buffer 6mA	1	1-62
EETJ13	Low-noise N-ch Open Drain Buffer 6mA	1	1-106
EXT111	N-ch Open Drain Buffer 9mA	1	1-20
EXT112	N-ch Open Drain Buffer 9mA	1	1-60
EXT113	N-ch Open Drain Buffer 9mA	1	1-104
EXT512	N-ch Open Drain Buffer 18mA	1	1-60
EXT513	N-ch Open Drain Buffer 18mA	1	1-104
EXT911	N-ch Open Drain Buffer 12mA	1	1-20
EXT912	N-ch Open Drain Buffer 12mA	1	1-60
EXT913	N-ch Open Drain Buffer 12mA	1	1-104
EXTD12	N-ch Open Drain Buffer 24mA	1	1-60
EXTD13	N-ch Open Drain Buffer 24mA	1	1-104
EXTH11	N-ch Open Drain Buffer 3mA	1	1-20
EXTH12	N-ch Open Drain Buffer 3mA	1	1-60
EXTH13	N-ch Open Drain Buffer 3mA	1	1-104
EXTJ11	N-ch Open Drain Buffer 6mA	1	1-20
EXTJ12	N-ch Open Drain Buffer 6mA	1	1-60
EXTJ13	N-ch Open Drain Buffer 6mA	1	1-104
F091	H, L Level Generator	1	2-4

Block	Function	Cells	Page
F101	Inverter Single out, x2-drive	1	2-10
F102	Inverter Single out, x4-drive	2	2-10
F111	Buffer Single out,x2-drive	2	2-12
F112	Buffer Single out, x4-drive	3	2-12
F131	Delay Gate	4	2-20
F132	Delay Gate	6	2-20
F137	Delay Gate	10	2-20
F143	Inverter Single out, x6-drive	3	2-10
F144	Inverter Single out, x8-drive	4	2-10
F145	Inverter Single out, x10-drive	5	2-10
F146	Inverter Single out, x12-drive	6	2-10
F148	Inverter Single out, x16-drive	8	2-10
F153	Buffer Single out, x6-drive	4	2-12
F153BR	Balanced Buffer Single out, x6-drive	4	2-18
F154	Buffer Single out, x8-drive	6	2-12
F154BR	Balanced Buffer Single out, x8-drive	6	2-18
F155	Buffer Single out, x10-drive	8	2-12
F155BR	Balanced Buffer Single out, x10-drive	8	2-18
F156	Buffer Single out, x12-drive	9	2-12
F156BR	Balanced Buffer Single out, x12-drive	9	2-18
F158	Buffer Single out, x16-drive	12	2-12
F158BR	Balanced Buffer Single out, x16-drive	12	2-18
F202	2-input NOR x2-drive	4	2-26
F202N1	2-input NOR with 1 inverter, x2-drive	4	2-26
F203	3-input NOR x2-drive	6	2-28
F203N1	3-input NOR with 1 inverter, x2-drive	6	2-28
F203N2	3-input NOR with 2 inverter, x2-drive	4	2-28
F204	4-input NOR x2-drive	4	2-32
F204N1	4-input NOR with 1 inverter, x2-drive	5	2-32
F212	2-input OR x2-drive	2	2-34
F213	3-input OR x2-drive	3	2-36
F214	4-input OR x2-drive	5	2-38
F222	2-input NOR x4-drive	6	2-26
F222N1	2-input NOR with 1 inverter, x4-drive	6	2-26
F223	3-input NOR x4-drive	6	2-28
F223N1	3-input NOR with 1 inverter, x4-drive	6	2-28
F223N2	3-input NOR with 2 inverter, x4-drive	6	2-28
F224	4-input NOR x4-drive	6	2-32
F224N1	4-input NOR with 1 inverter, x4-drive	6	2-32
F232	2-input OR x4-drive	4	2-34
F233	3-input OR x4-drive	5	2-36

Block	Function	Cells	Page
F234	4-input OR x4-drive	10	2-38
F2C2	2-input NOR x8-drive	10	2-26
F2C3	3-input NOR x8-drive	10	2-28
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