To our customers,

Old Company Name in Catalogs and Other Documents

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Renesas Electronics website: http://www.renesas.com

April 1st, 2010
Renesas Electronics Corporation

Issued by: Renesas Electronics Corporation (http://www.renesas.com)

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HD74LS243

Quadruple Bus Transceivers (with three-state outputs)

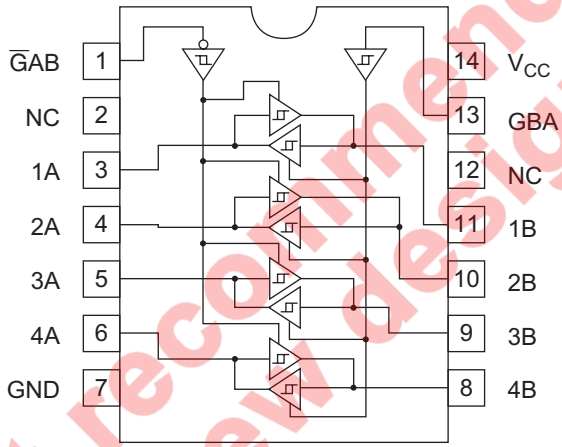
REJ03D0462–0300
Rev.3.00
Jul.15.2005

Features

- Ordering Information

Part Name	Package Type	Package Code (Previous Code)	Package Abbreviation	Taping Abbreviation (Quantity)
HD74LS243FPEL	SOP-14 pin (JEITA)	PRSP0014DF-B (FP-14DAV)	FP	EL (2,000 pcs/reel)

Pin Arrangement



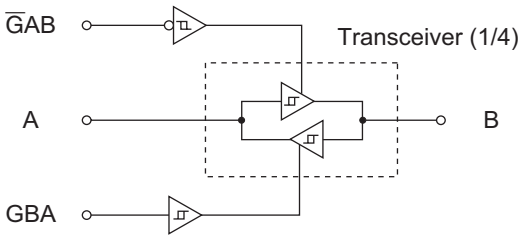
(Top view)

Function Table

Control input		Data port status	
$\overline{G}$AB	GBA	A	B
H	H	Output	Input
L	H	*	
H	L	Isolated	Isolated
L	L	Input	Output

Notes: 1. H; high level, L; low level
2. *; Possibly destructive oscillation may occur if the transceivers are enabled in both directions at once.

Block Diagram



Absolute Maximum Ratings

Item		Symbol	Ratings	Unit
Supply voltage		V_{CC}	7	V
Input voltage	$\overline{G}$AB, GBA	V_{IN}	7	V
	A, B	V_{IN}	5.5	V
Power dissipation		P_T	400	mW
Storage temperature		Tstg	–65 to +150	°C

Note: Voltage value, unless otherwise noted, are with respect to network ground terminal.

Recommended Operating Conditions

Item	Symbol	Min	Typ	Max	Unit
Supply voltage	V_{CC}	4.75	5.00	5.25	V
Output current	I_{OH}	—	—	–15	mA
	I_{OL}	—	—	24	mA
Operating temperature	Topr	–20	25	75	°C

Electrical Characteristics

(Ta = –20 to +75 °C)

Item		Symbol	min.	typ.*	max.	Unit	Condition	
Input voltage		V_{IH}	2.0	—	—	V		
		V_{IL}	—	—	0.8	V		
Hysteresis		$V_T^+ - V_T^-$	0.2	0.4	—	V	V_{CC} = 4.75 V	
Output voltage		V_{OH}	2.4	—	—	V	V_{IL} = 0.8 V, I_{OH} = – 3 mA	V_{CC} = 4.75 V, V_{IH} = 2 V
			2	—	—		V_{IL} = 0.5 V, I_{OH} = – 15 mA	
		V_{OL}	—	—	0.4	V	I_{OL} = 12 mA	V_{CC} = 4.75 V, V_{IH} = 2 V, V_{IL} = 0.8 V
			—	—	0.5		I_{OL} = 24 mA	
Off-state output current		I_{OZH}	—	—	40	µA	V_O = 2.7 V	V_{CC} = 5.25 V, V_{IH} = 2 V, V_{IL} = 0.8 V
		I_{OZL}	—	—	–200	µA	V_O = 0.4 V	
Input current		I_{IH}	—	—	20	µA	V_{CC} = 5.25 V, V_I = 2.7 V	
	A Input	I_{IL}	—	—	–0.2	mA	V_{CC} = 5.25 V, V_I = 0.4 V, $\overline{G}$AB or GBA at GND	
	B Input		—	—	–0.2		V_{CC} = 5.25 V, V_I = 0.4 V, $\overline{G}$AB or GBA at 4.5 V	
	$\overline{G}$AB or GBA		—	—	–0.2		V_{CC} = 5.25 V, V_I = 0.4 V	
	A or B	I_I	—	—	0.1	mA	V_{CC} = 5.25 V, V_I = 5.5 V	
	$\overline{G}$AB or GBA		—	—	0.1		V_{CC} = 5.25 V, V_I = 7 V	
Short-circuit output current		I_{OS}	–40	—	–225	mA	V_{CC} = 5.25 V	
Supply current**		I_{CCH}	—	22	38	mA	V_{CC} = 5.25 V	
		I_{CCL}	—	29	50			
		I_{CCZ}	—	32	54			
Input clamp voltage		V_{IK}	—	—	–1.5	V	V_{CC} = 4.75 V, I_{IN} = –18 mA	

Notes: * V_{CC} = 5 V, Ta = 25°C

** With all outputs open, I_{CC} is measured with transceivers enabled in one direction only, or with all transceivers disabled.

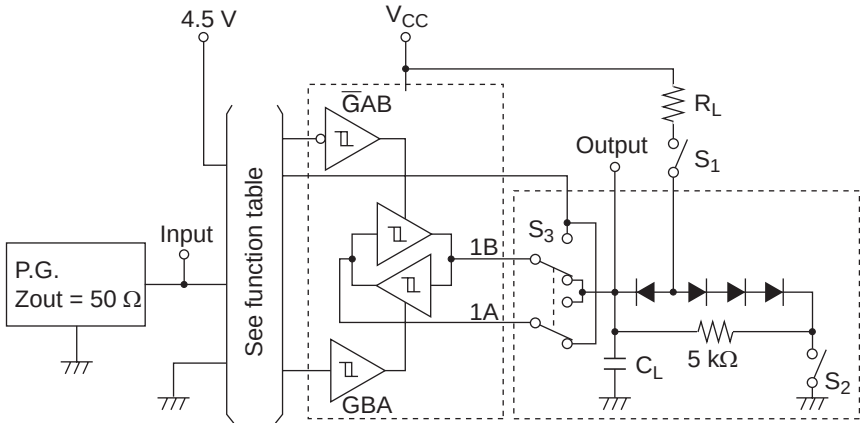
Switching Characteristics

(V_{CC} = 5 V, Ta = 25°C)

Item	Symbol	min.	typ.	max.	Unit	Condition
Propagation delay time	t_{PLH}	—	12	18	ns	C_L = 45 pF, R_L = 667 Ω
	t_{PHL}	—	12	18		
Output enable time	t_{ZL}	—	20	30		
	t_{ZH}	—	15	23		
Output disable time	t_{LZ}	—	15	25		C_L = 5 pF, R_L = 667 Ω
	t_{HZ}	—	10	18		

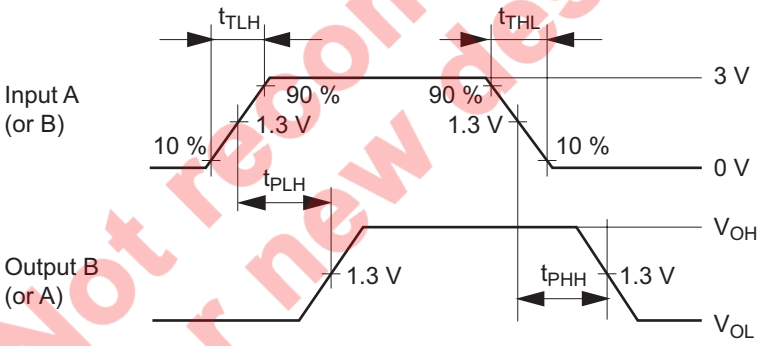
Testing Method

Test Circuit



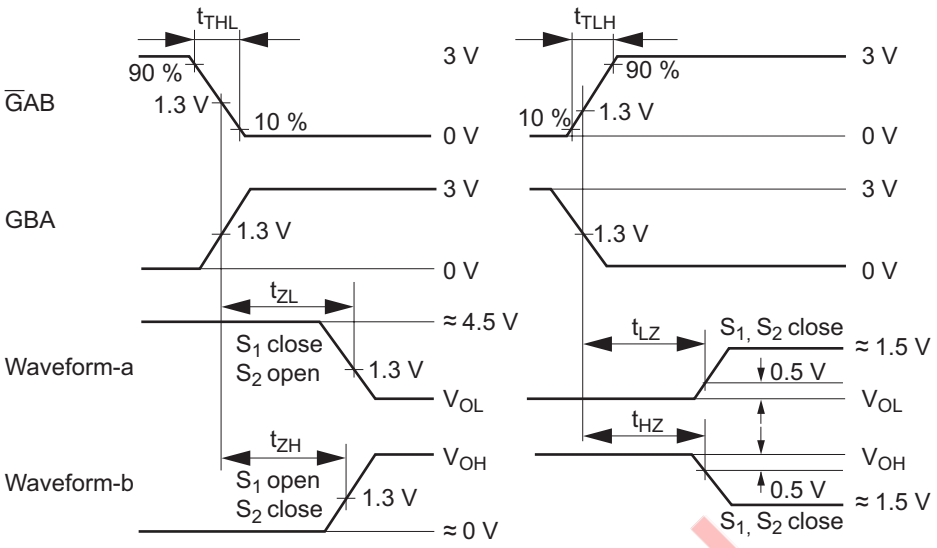
Notes:
1. 2A-2B, 3A-3B, 4A-4B are identical to abobe load circuit.
2. C_L includes probe and jig capacitance.
3. S_3 is a input-output switch.
4. All diodes are 1S2074(H).

Waveforms 1



Note: Input pulse: $t_{TLH} \leq 15$ ns, $t_{THL} \leq 6$ ns, PRR = 1 MHz, duty cycle 50%

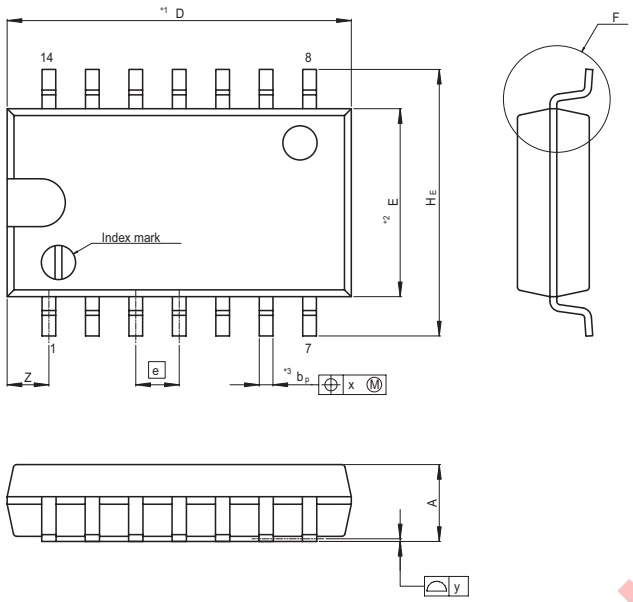
Waveforms 2



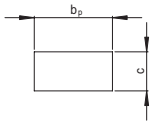
Notes:
1. Input pulse: $t_{TLH} \leq 15$ ns, $t_{THL} \leq 6$ ns, PRR = 1 MHz, duty cycle 50%
2. Waveform a is an output by internal conditions like "L" except for the case where an output is disabled by output control.
3. Waveform b is an output by internal conditions like "H" except for the case where an output is disabled by output control.

Package Dimensions

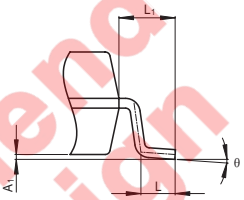
JEITA Package Code	RENESAS Code	Previous Code	MASS[Typ.]
P-SOP14-5.5x10.06-1.27	PRSP0014DF-B	FP-14DAV	0.23g



NOTE)
1. DIMENSIONS"*1 (Nom)"AND"*2" DO NOT INCLUDE MOLD FLASH.
2. DIMENSION"*3"DOES NOT INCLUDE TRIM OFFSET.



Terminal cross section
(Ni/Pd/Au plating)



Detail F

Reference Symbol	Dimension in Millimeters		
	Min	Nom	Max
D	——	10.06	10.5
E	——	5.50	——
A_2	——	——	——
A_1	0.00	0.10	0.20
A	——	——	2.20
b_p	0.34	0.40	0.46
b_1	——	——	——
c	0.15	0.20	0.25
c_1	——	——	——
θ	0°	——	8°
H_E	7.50	7.80	8.00
e	——	1.27	——
x	——	——	0.12
y	——	——	0.15
Z	——	——	1.42
L	0.50	0.70	0.90
L_1	——	1.15	——

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