To our customers,

Old Company Name in Catalogs and Other Documents

On April 1st, 2010, NEC Electronics Corporation merged with Renesas Technology Corporation, and Renesas Electronics Corporation took over all the business of both companies. Therefore, although the old company name remains in this document, it is a valid Renesas Electronics document. We appreciate your understanding.

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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HD74LS240

Octal Buffers / Line Drivers / Line Receivers (inverted three-state outputs)

REJ03D0459–0200
Rev.2.00
Feb.18.2005

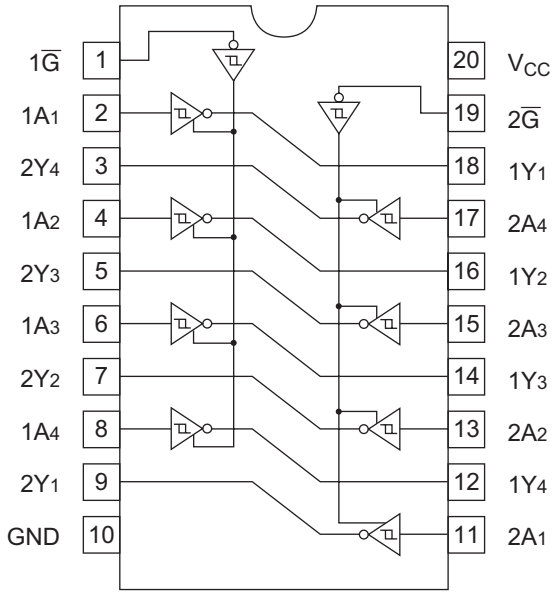
Features

- Ordering Information

Part Name	Package Type	Package Code (Previous Code)	Package Abbreviation	Taping Abbreviation (Quantity)
HD74LS240P	DILP-20 pin	PRDP0020AC-B (DP-20NEV)	P	—
HD74LS240FPEL	SOP-20 pin (JEITA)	PRSP0020DD-B (FP-20DAV)	FP	EL (2,000 pcs/reel)
HD74LS240RPEL	SOP-20 pin (JEDEC)	PRSP0020DC-A (FP-20DBV)	RP	EL (1,000 pcs/reel)

Note: Please consult the sales office for the above package availability.

Pin Arrangement



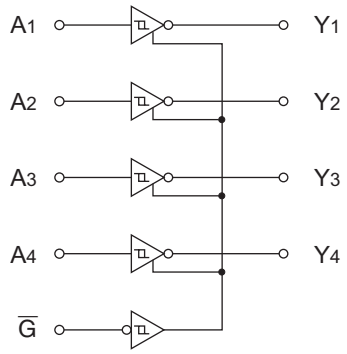
(Top view)

Function Table

Inputs		Output
$\overline{G}$	A	Y
H	X	Z
L	H	L
L	L	H

Note: H; high level, L; low level, X; irrelevant, Z; off (high-impedance) state of a 3-state output

Block Diagram (1/2)



Absolute Maximum Ratings

Item	Symbol	Ratings	Unit
Supply voltage	V_{CC}	7	V
Input voltage	V_{IN}	7	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
			2.0	—	—		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}	—	—	20	µA	V_O = 2.7 V	V_{CC} = 5.25 V, V_{IH} = 2 V, V_{IL} = 0.8 V
		I_{OZL}	—	—	–20	µA	V_O = 0.4 V	
Input current		I_{IH}	—	—	20	µA	V_{CC} = 5.25 V, V_I = 2.7 V	
		I_{IL}	—	—	–0.2	mA	V_{CC} = 5.25 V, V_I = 0.4 V	
		I_I	—	—	0.1	mA	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**	Outputs high	I_{CC}	—	13	23	mA	V_{CC} = 5.25 V	
	Outputs low		—	26	44			
	All outputs disabled		—	29	50			
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

** I_{CC} is measured with all outputs open.

Switching Characteristics

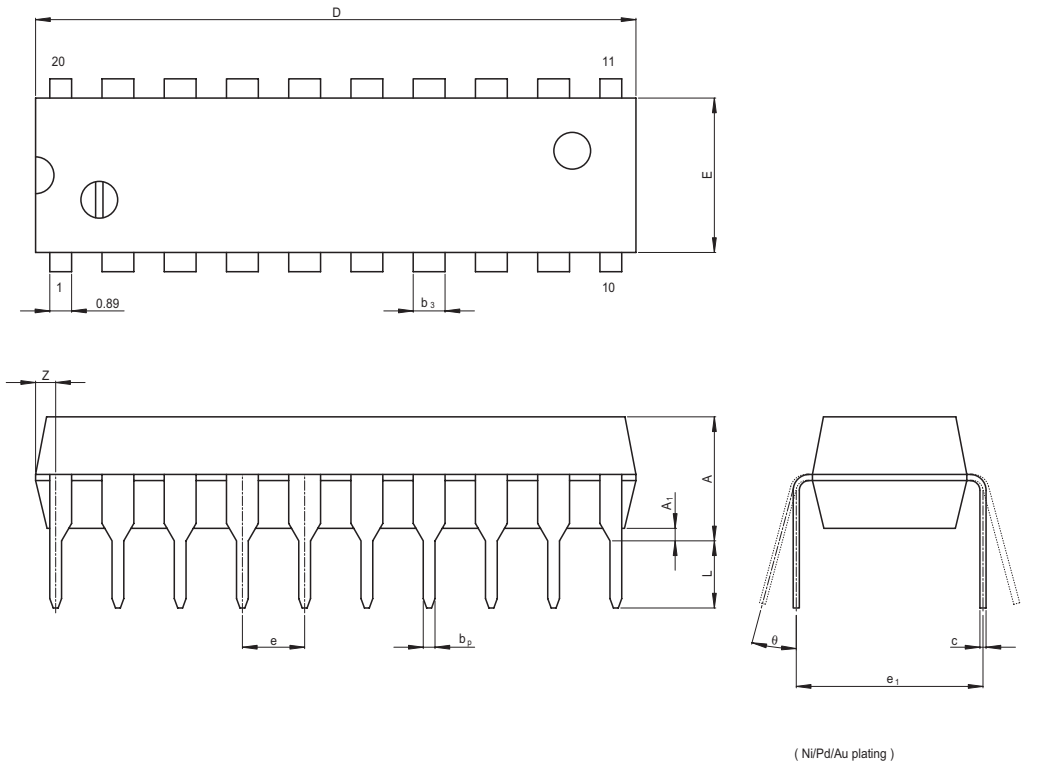
(V_{CC} = 5 V, Ta = 25°C)

Item	Symbol	min.	typ.	max.	Unit	Condition
Propagation delay time	t_{PLH}	—	9	14	ns	C_L = 45 pF, R_L = 667 Ω
	t_{PHL}	—	12	18		
Output enable time	t_{ZL}	—	20	30	ns	
	t_{ZH}	—	15	23	ns	
Output disable time	t_{LZ}	—	15	25	ns	C_L = 5 pF, R_L = 667 Ω
	t_{HZ}	—	10	18	ns	

Note: Refer to Test Circuit and Waveform of the Common Item "TTL Common Matter (Document No.: REJ27D0005-0100)".

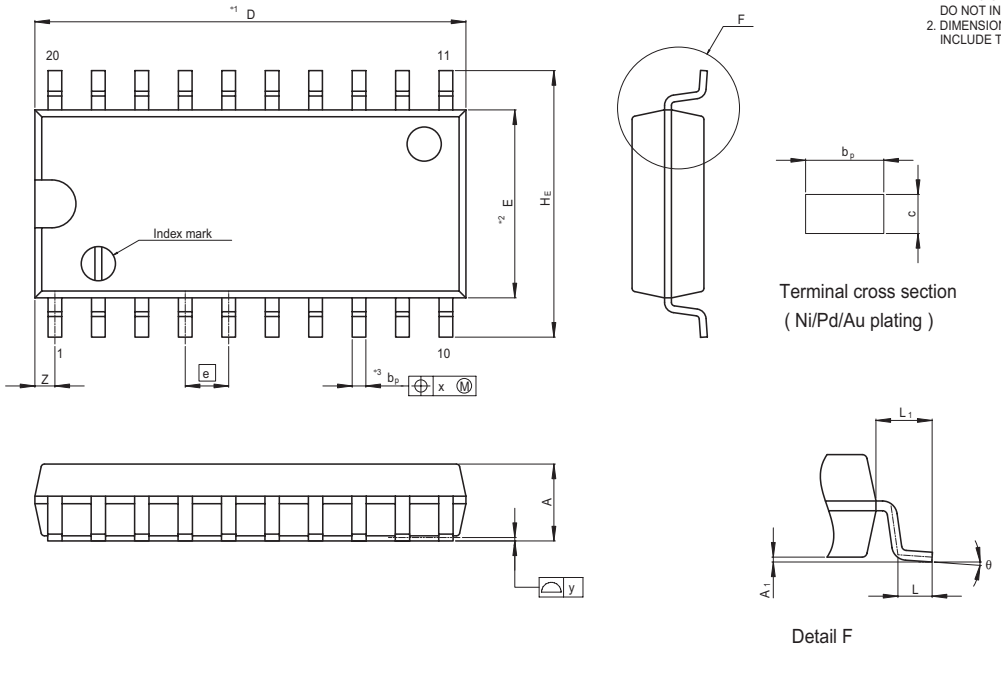
Package Dimensions

JEITA Package Code	RENESAS Code	Previous Code	MASS[Typ.]
P-DIP20-6.3x24.5-2.54	PRDP0020AC-B	DP-20NEV	1.26g



Reference Symbol	Dimension in Millimeters		
	Min	Nom	Max
e 1	——	7.62	——
D	——	24.50	25.40
E	——	6.30	7.00
A	——	——	5.08
A 1	0.51	——	——
b p	0.40	0.48	0.56
b 3	——	1.30	——
c	0.19	0.25	0.31
θ	0°	——	15°
e	2.29	2.54	2.79
Z	——	——	1.27
L	2.54	——	——

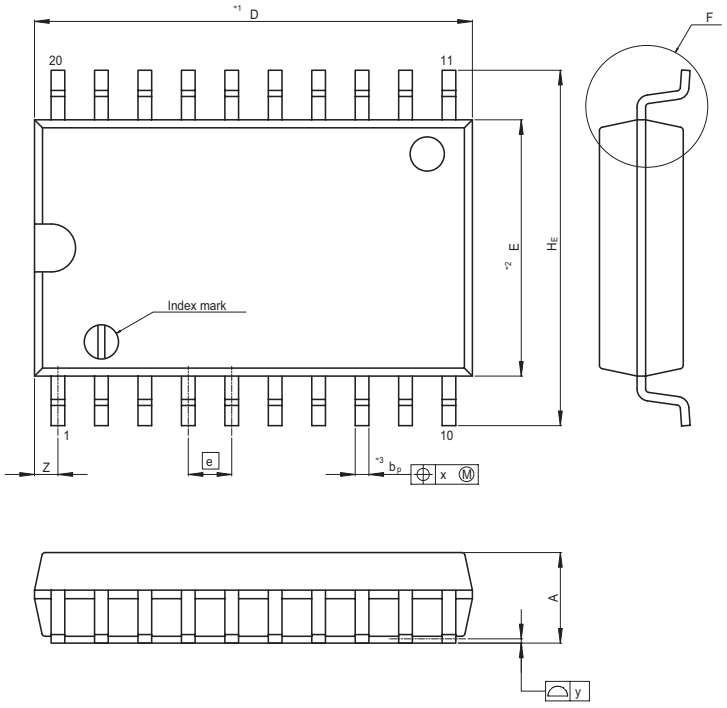
JEITA Package Code	RENESAS Code	Previous Code	MASS[Typ.]
P-SOP20-5.5x12.6-1.27	PRSP0020DD-B	FP-20DAV	0.31g



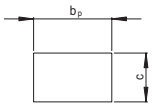
NOTE)
1. DIMENSIONS"*1 (Nom)"AND"*2" DO NOT INCLUDE MOLD FLASH.
2. DIMENSION"*3"DOES NOT INCLUDE TRIM OFFSET.

Reference Symbol	Dimension in Millimeters		
	Min	Nom	Max
D	——	12.60	13.0
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	——	——	0.80
L	0.50	0.70	0.90
L 1	——	1.15	——

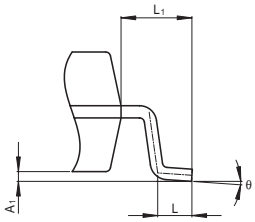
JEITA Package Code	RENESAS Code	Previous Code	MASS[Typ.]
P-SOP20-7.5x12.8-1.27	PRSP0020DC-A	FP-20DBV	0.52g



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	——	12.80	13.2
E	——	7.50	——
A_2	——	——	——
A_1	0.10	0.20	0.30
A	——	——	2.65
b_p	0.34	0.40	0.46
b_1	——	——	——
c	0.20	0.25	0.30
c_1	——	——	——
θ	0°	——	8°
H_E	10.00	10.40	10.65
e	——	1.27	——
x	——	——	0.12
y	——	——	0.15
Z	——	——	0.935
L	0.40	0.70	1.27
L_1	——	1.45	——

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http://www.renesas.com

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