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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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HD74LS245

Octal Bus Transceivers (with three-state outputs)

REJ03D0464-0300

Rev.3.00

Jul.15.2005

This octal bus transceiver is designed for synchronous two-way communication between data buses. The control function implementation minimizes external timing requirements. The device allows data transmission from the A bus to the B bus or from the B bus to the A bus depending upon the logic level at the direction control (DIR) input. The enable input (\bar{G}) can be used to disable the device so that the buses are effectively isolated.

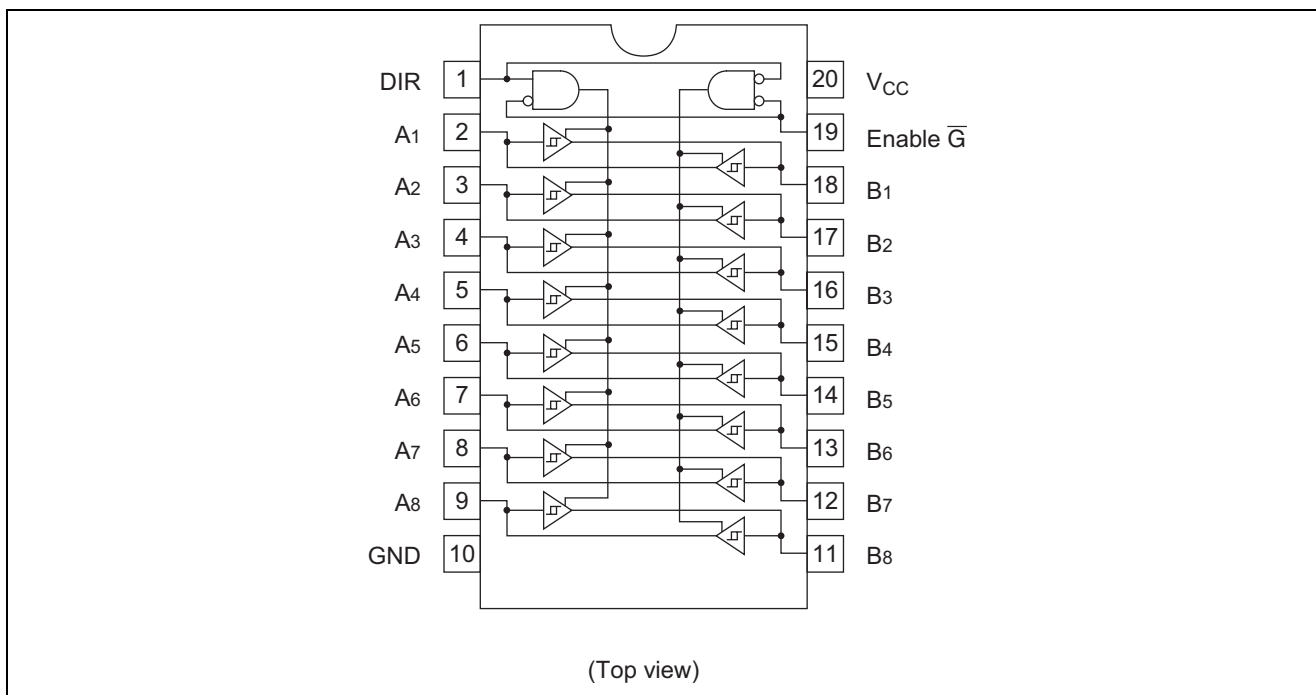
Features

- Ordering Information

Part Name	Package Type	Package Code (Previous Code)	Package Abbreviation	Taping Abbreviation (Quantity)
HD74LS245P	DILP-20 pin	PRDP0020AC-B (DP-20NEV)	P	—
HD74LS245FPEL	SOP-20 pin (JEITA)	PRSP0020DD-B (FP-20DAV)	FP	EL (2,000 pcs/reel)
HD74LS245RPEL	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

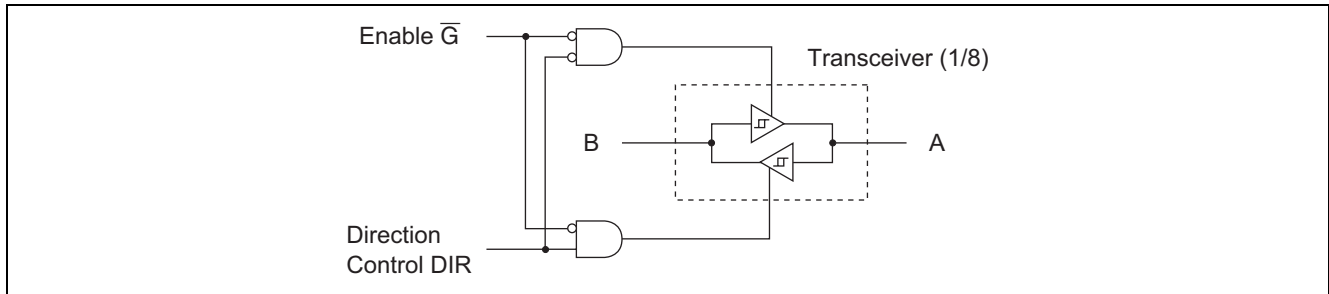


Function Table

Enable \overline{G}	Direction Control DIR	Operation
L	L	B data to A bus
L	H	A data to B bus
H	X	Isolation

Note: H; high level, L; low level, X; irrelevant

Block Diagram



Absolute Maximum Ratings

Item	Symbol	Ratings	Unit
Supply voltage	V_{CC}	7	V
Input voltage	DIR, \overline{G}	7	V
	A, B	5.5	V
Power dissipation	P_T	400	mW
Storage temperature	T_{stg}	-65 to +150	°C
Operating temperature	T_{opr}	-20 to +75	°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	T_{opr}	-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		
Hysteresis	V _T ⁺ - V _T ⁻	0.2	0.4	—	V	V _{CC} = 4.75 V
Output voltage	V _{OH}	2.4	—	—	V	V _{CC} = 4.75 V, V _{IH} = 2 V, V _{IL} = 0.8 V
		2	—	—		
	V _{OL}	—	—	0.4	V	V _{CC} = 4.75 V, V _{IH} = 2 V, V _{IL} = 0.8 V
		—	—	0.5		
Off-state output current	I _{OZH}	—	—	20	μA	V _O = 2.7 V V _O = 0.4 V
	I _{OZL}	—	—	-200		
Input current	I _{IH}	—	—	20	μA	V _{CC} = 5.25 V, V _I = 2.7 V
		—	—	-0.2		
	I _{IL}	—	—	-0.2	mA	V _{CC} = 5.25 V, V _I = 0.4 V
		—	—	-0.2		
A or B	I _I	—	—	0.1	mA	V _{CC} = 5.25 V, V _I = 5.5 V
		—	—	0.1		
DIR or \overline{G}	I _I	—	—	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}	—	48	70	mA	V _{CC} = 5.25 V
	I _{CCL}	—	62	90		
	I _{CCZ}	—	64	95		
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.

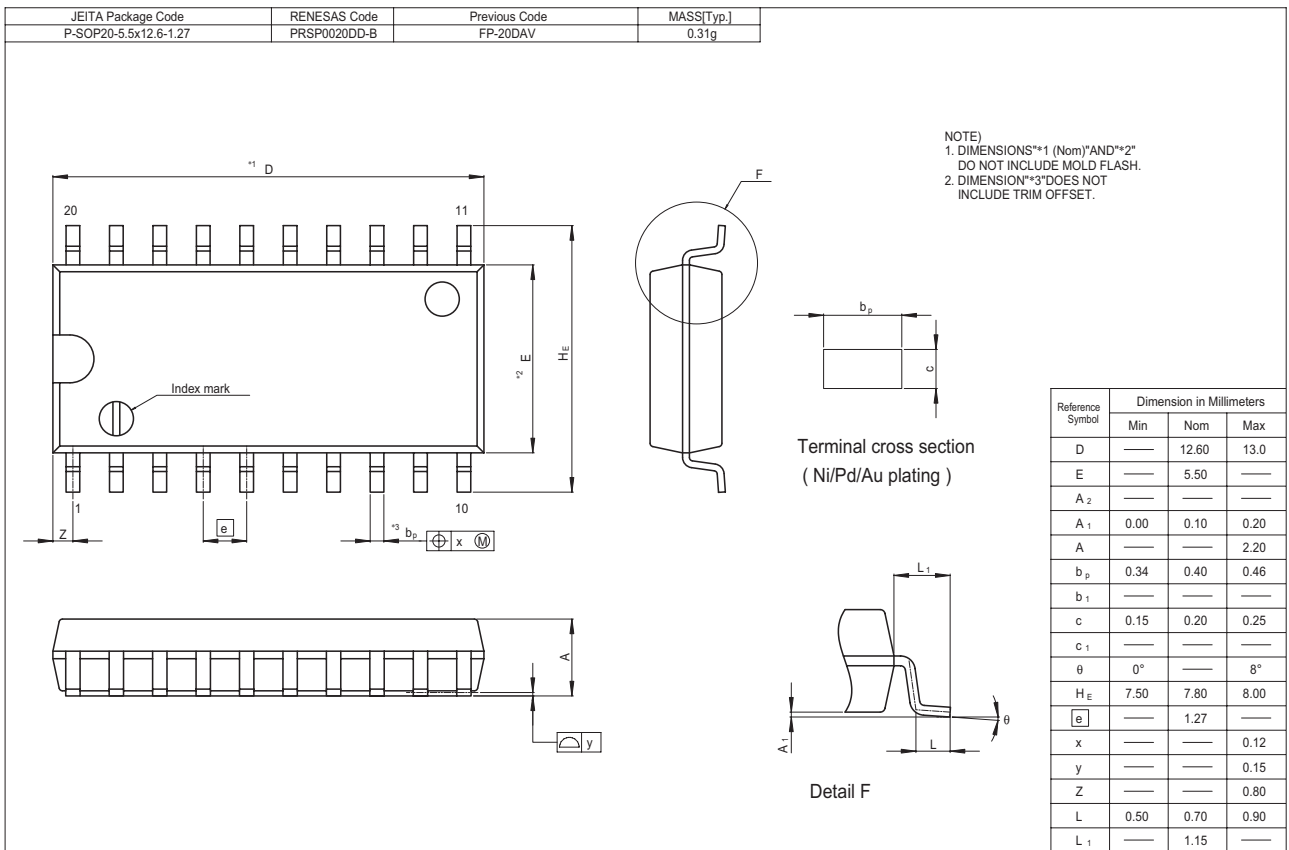
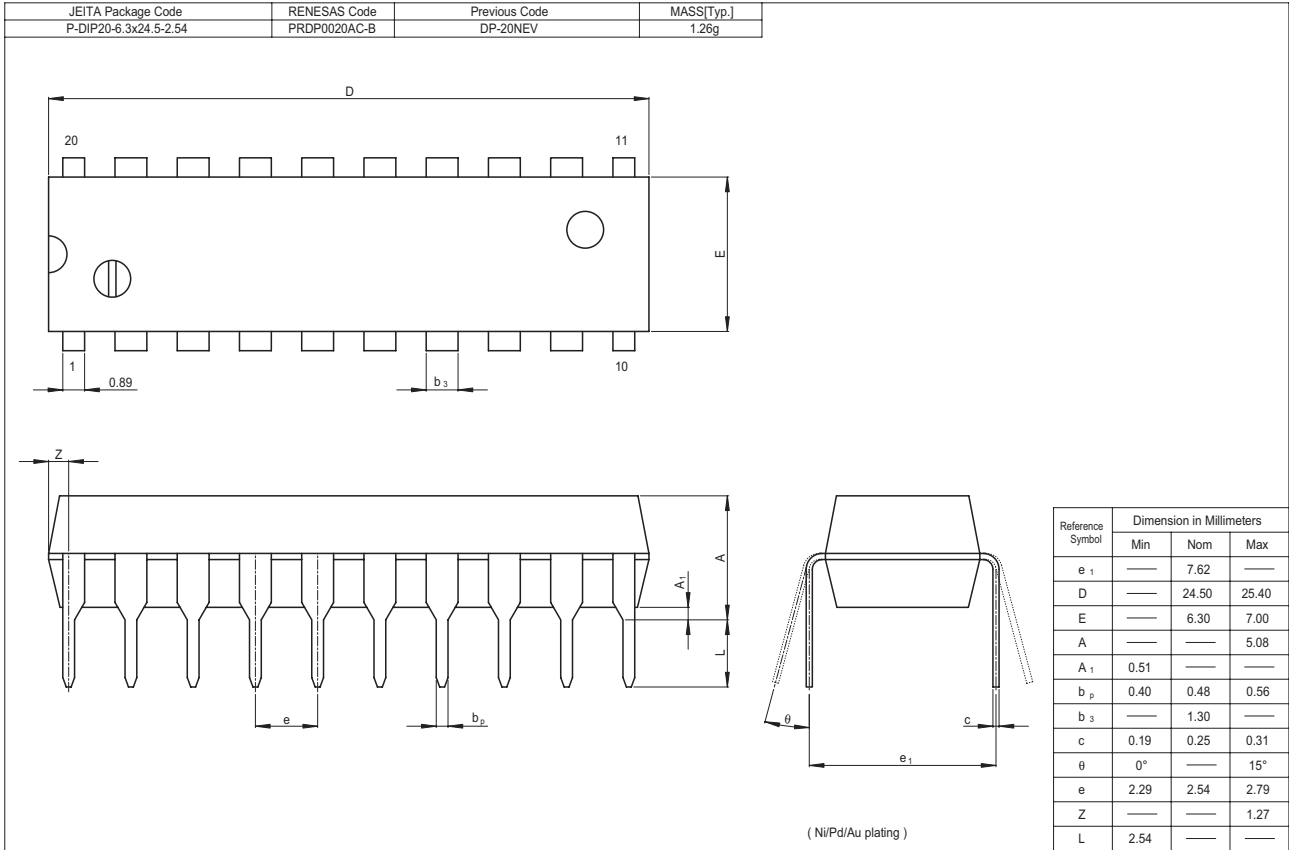
Switching Characteristics

(V_{CC} = 5 V, Ta = 25°C)

Item	Symbol	min.	typ.	max.	Unit	Condition	
Propagation delay time	t _{PLH}	—	8	15	ns	C _L = 45 pF, R _L = 667 Ω	
	t _{PHL}	—	11	15			
Output enable time	t _{ZL}	—	27	40			
	t _{ZH}	—	25	40			
Output disable time	t _{LZ}	—	15	25			C _L = 5 pF, R _L = 667 Ω
	t _{HZ}	—	15	25			

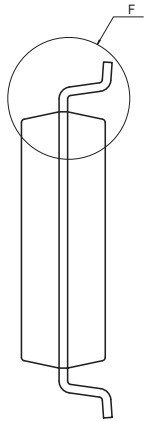
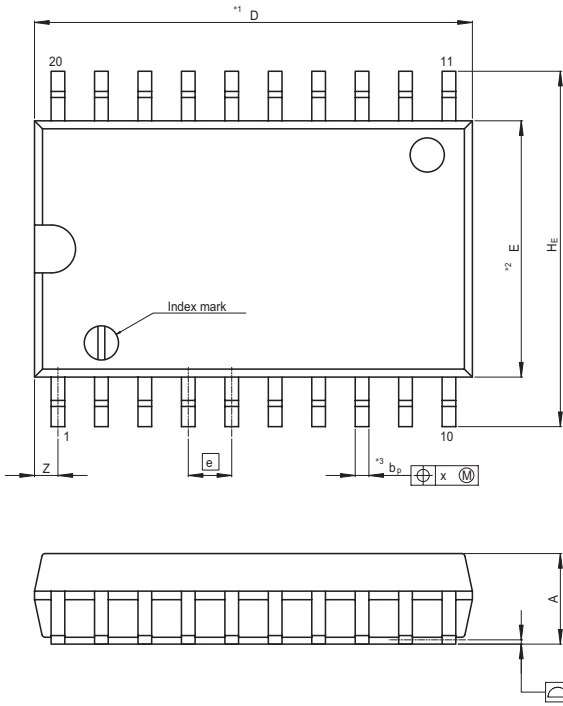
Note: Refer to Test Circuit and Waveform of the Common Item "TTL Common Matter (Document No.: REJ27D0005-0100)".

Package Dimensions

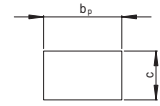


HD74LS245

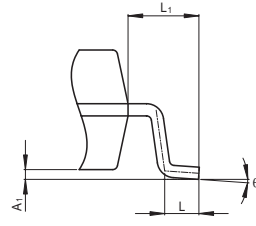
JEITA Package Code P-SOP20-7.5x12.8-1.27	RENESAS Code PRSP0020DC-A	Previous Code FP-20DBV	MASS[Typ.] 0.52g
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NOTE)
 1. DIMENSIONS**1 (Nom)**AND**2*
 @ DO NOT INCLUDE MOLD FLASH.
 2. DIMENSION**3*DOES NOT
 @ INCLUDE TRIM OFFSET.



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°
HE	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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