

# 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.

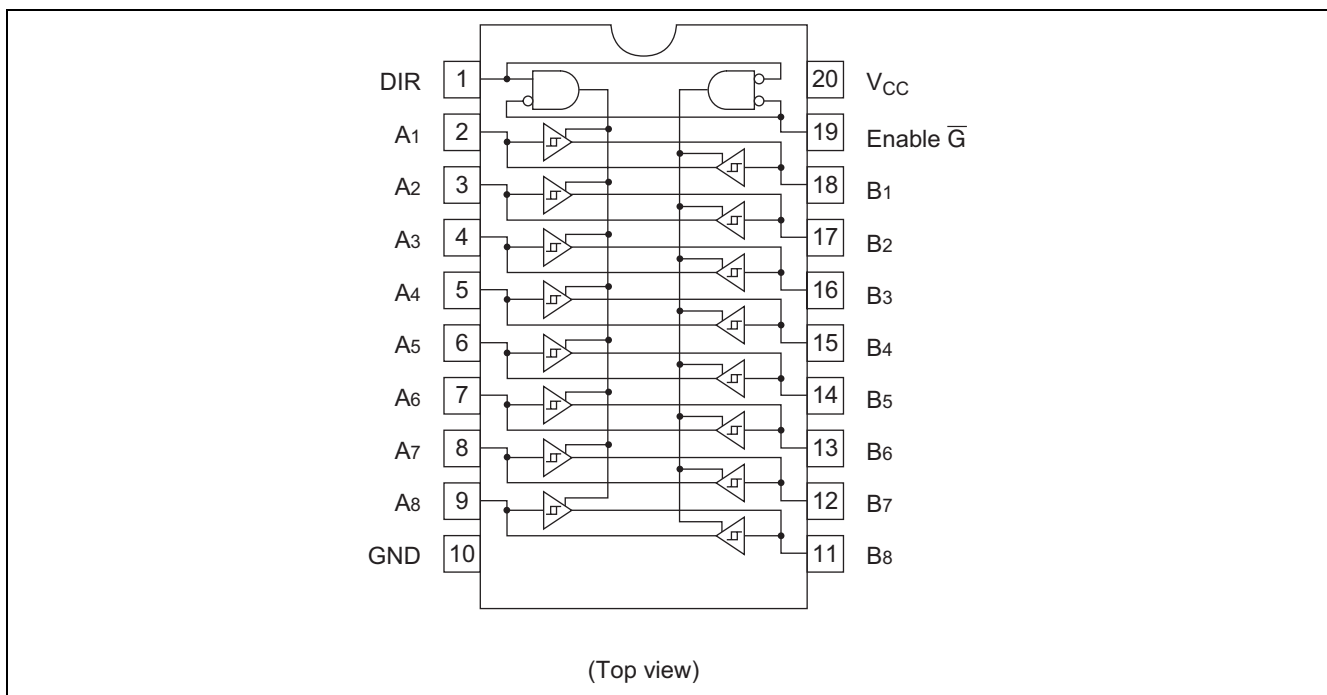
### Features

- 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

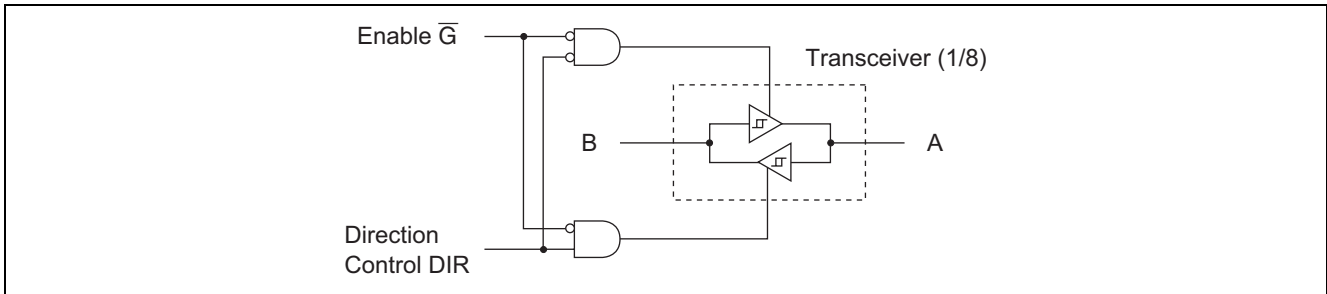


### Function Table

Enable $\bar{G}$	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, $\bar{G}$	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 <sub>IH</sub>	2.0	—	—	V	
	V <sub>IL</sub>	—	—	0.8		
Hysteresis	V <sub>T+</sub> - V <sub>T-</sub>	0.2	0.4	—	V	V <sub>CC</sub> = 4.75 V
Output voltage	V <sub>OH</sub>	2.4	—	—	V	V <sub>CC</sub> = 4.75 V, V <sub>IH</sub> = 2 V, V <sub>IL</sub> = 0.8 V
		2	—	—		
	V <sub>OL</sub>	—	—	0.4	V	V <sub>CC</sub> = 4.75 V, V <sub>IH</sub> = 2 V, V <sub>IL</sub> = 0.8 V
		—	—	0.5		
Off-state output current	I <sub>ozH</sub>	—	—	20	μA	V <sub>O</sub> = 2.7 V V <sub>O</sub> = 0.4 V
	I <sub>ozL</sub>	—	—	-200		
Input current	I <sub>IH</sub>	—	—	20	μA	V <sub>CC</sub> = 5.25 V, V <sub>I</sub> = 2.7 V
		—	—	-0.2		
	I <sub>IL</sub>	—	—	-0.2	mA	V <sub>CC</sub> = 5.25 V, V <sub>I</sub> = 0.4 V
		—	—	-0.2		
A or B	I <sub>I</sub>	—	—	0.1	mA	V <sub>CC</sub> = 5.25 V, V <sub>I</sub> = 5.5 V
		—	—	0.1		
DIR or $\overline{G}$	I <sub>I</sub>	—	—	0.1		V <sub>CC</sub> = 5.25 V, V <sub>I</sub> = 7 V
Short-circuit output current	I <sub>OS</sub>	-40	—	-225	mA	V <sub>CC</sub> = 5.25 V
Supply current**	I <sub>CCH</sub>	—	48	70	mA	V <sub>CC</sub> = 5.25 V
	I <sub>CCL</sub>	—	62	90		
	I <sub>CCZ</sub>	—	64	95		
Input clamp voltage	V <sub>IK</sub>	—	—	-1.5	V	V <sub>CC</sub> = 4.75 V, I <sub>IN</sub> = -18 mA

Notes: \* V<sub>CC</sub> = 5 V, Ta = 25°C

\*\* With all outputs open, I<sub>CC</sub> is measured with transceivers enabled in one direction only, or with all transceivers disabled.

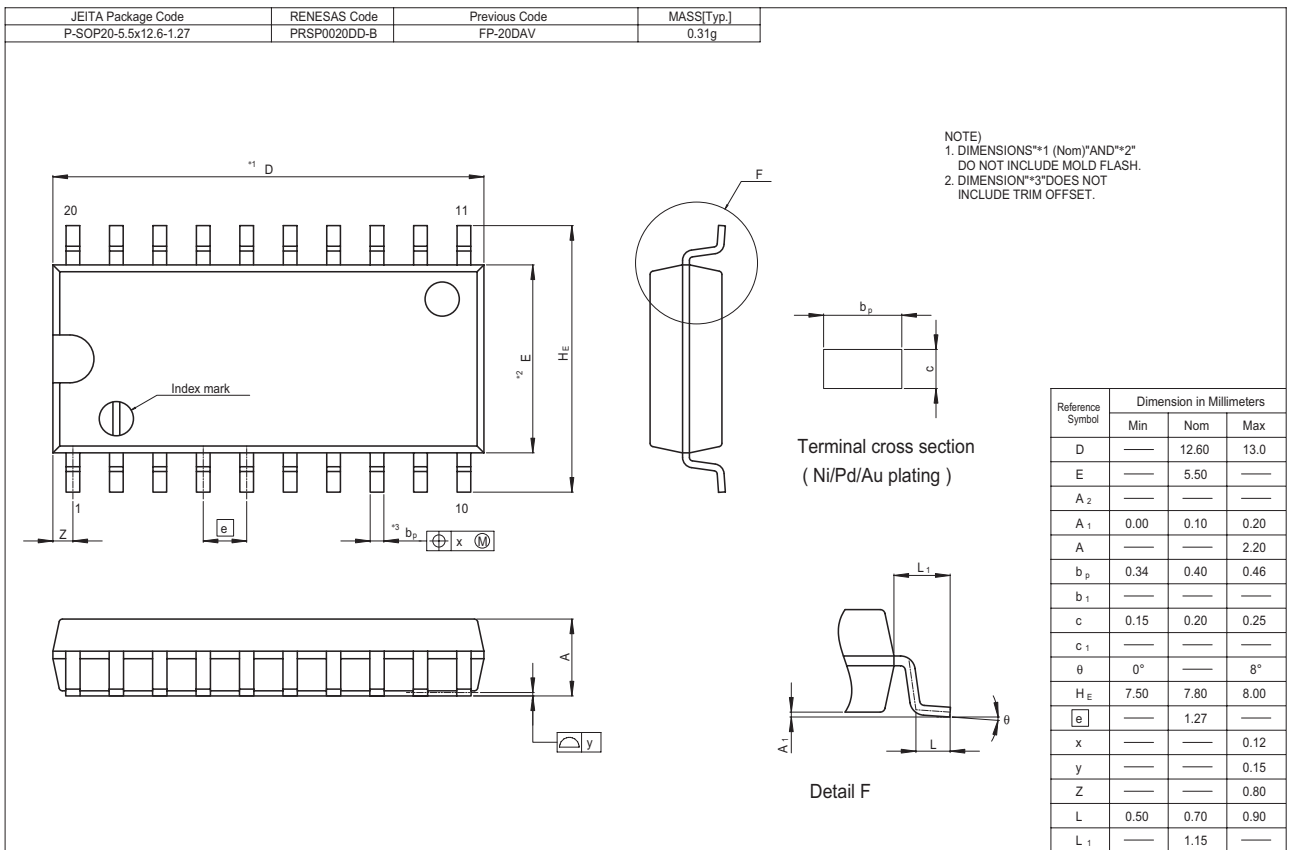
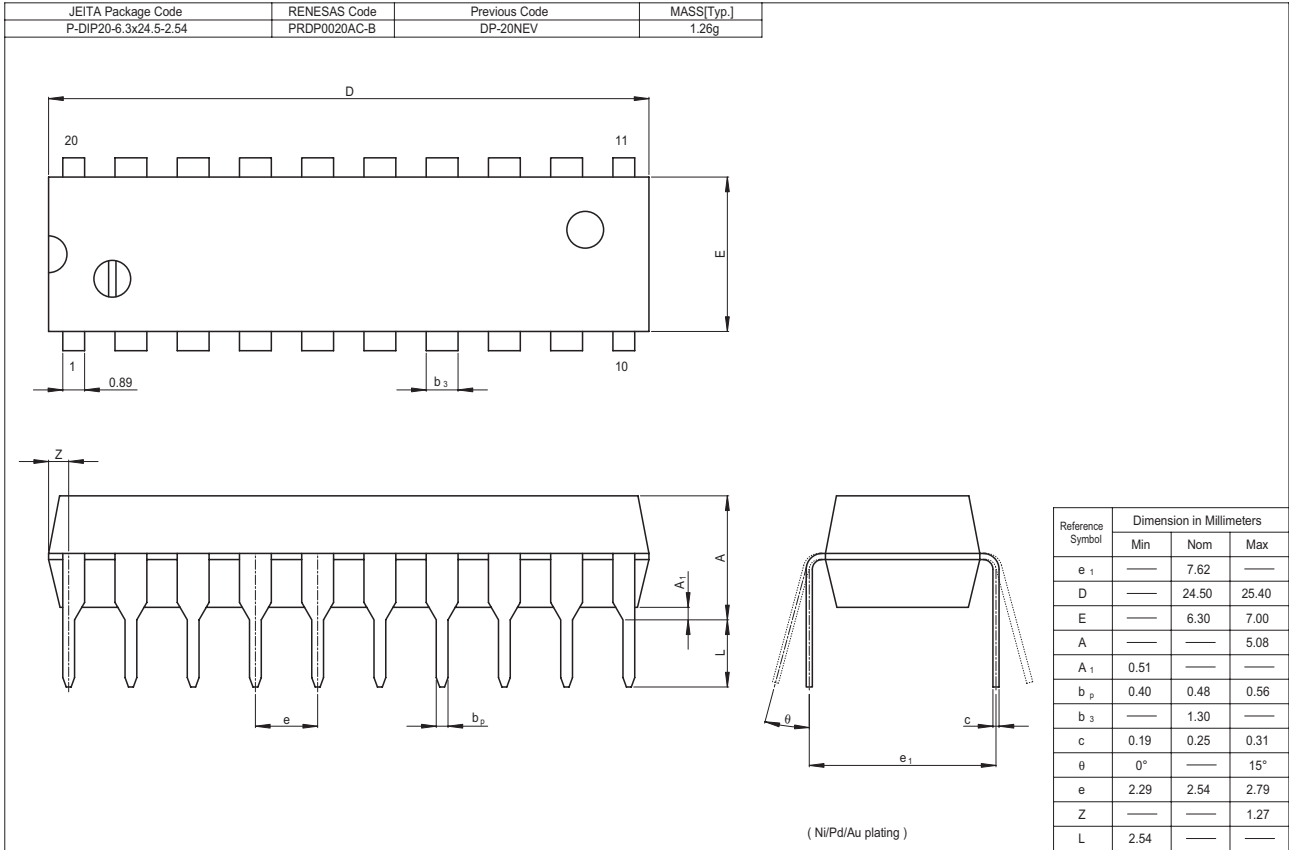
**Switching Characteristics**

(V<sub>CC</sub> = 5 V, Ta = 25°C)

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

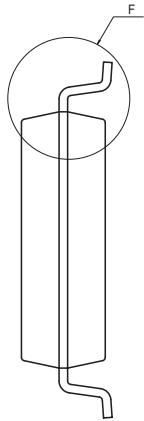
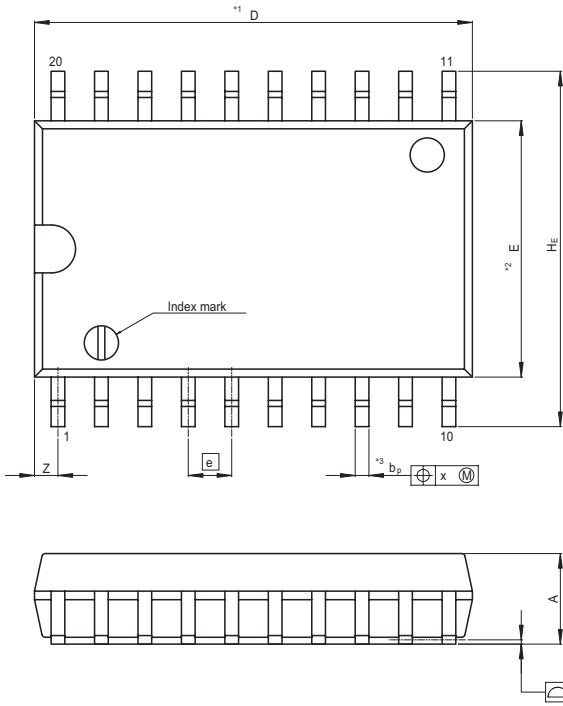
Note: Refer to Test Circuit and Waveform of the Common Item "TTL Common Matter (Document No.: REJ27D0005-0100)".

Package Dimensions

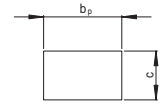


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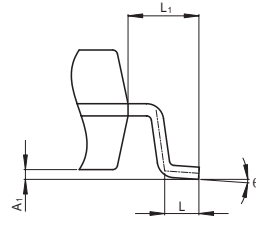
JEITA Package Code P-SOP20-7.5x12.8-1.27	RENESAS Code PRSP0020DC-A	Previous Code FP-20DBV	MASS[Typ.] 0.52g
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NOTE)  
 1. DIMENSIONS\*\*1 (Nom)\*\*AND\*\*2\*  
 @ DO NOT INCLUDE MOLD FLASH.  
 2. DIMENSION\*\*3\*DOES NOT  
 @ INCLUDE TRIM OFFSET.



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 <sub>2</sub>	—	—	—
A <sub>1</sub>	0.10	0.20	0.30
A	—	—	2.65
b <sub>p</sub>	0.34	0.40	0.46
b <sub>1</sub>	—	—	—
c	0.20	0.25	0.30
c <sub>1</sub>	—	—	—
θ	0°	—	8°
H <sub>E</sub>	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 <sub>1</sub>	—	1.45	—

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