

HD74LS642

Octal Bus Transceivers (inverted open-collector outputs)

REJ03D0490-0200

Rev.2.00

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This octal bus transceivers is designed for asynchronous two-way communication between data buses. The devices transmit data from the A bus to the B bus or from the B bus to the A bus depending upon the 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.

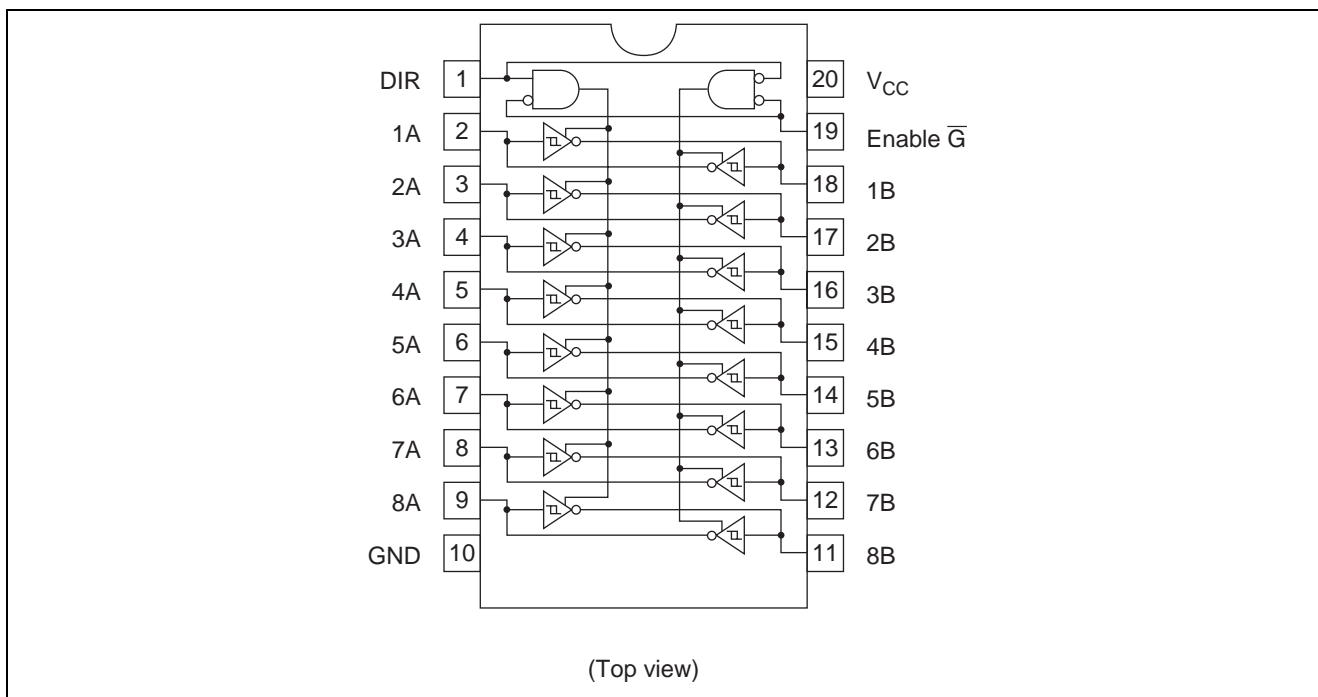
Features

- Ordering Information

Part Name	Package Type	Package Code (Previous Code)	Package Abbreviation	Taping Abbreviation (Quantity)
HD74LS642P	DILP-20 pin	PRDP0020AC-B (DP-20NEV)	P	—
HD74LS642FPEL	SOP-20 pin (JEITA)	PRSP0020DD-B (FP-20DAV)	FP	EL (2,000 pcs/reel)

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

Pin Arrangement

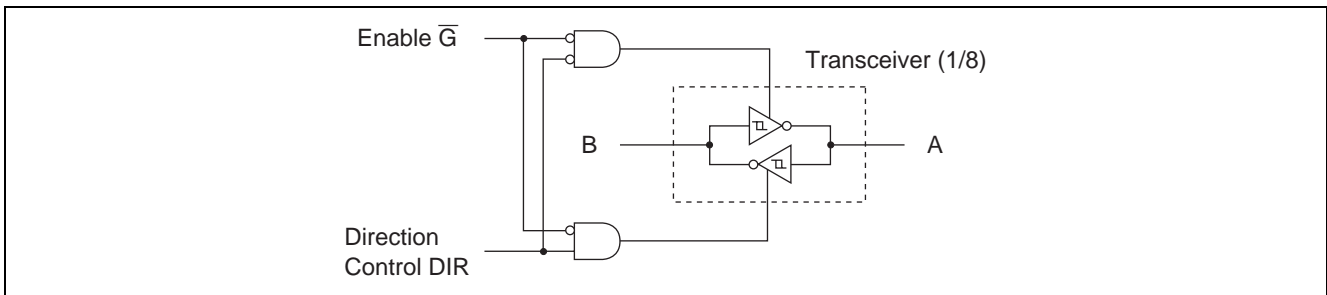


Function Table

Enable	Direction Control	Operation
\bar{G}	DIR	
L	L	\bar{B} data to A bus
L	H	\bar{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	V_{IN}	7	V
Power dissipation	P_T	400	mW
Storage temperature	T_{stg}	-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 voltage	V_{OH}	—	—	5.5	V
Output current	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	V			
Hysteresis	V _{T+} - V _{T-}	0.2	—	—	V	V _{CC} = 4.75 V		
Output current	I _{OH}	—	—	100	μA	V _{CC} = 4.75 V, V _{IH} = 2 V, V _{IL} = 0.8 V, V _{OH} = 5.5 V		
Output voltage	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		
Input current	A or B	I _{IH}	—	—	20	μA	V _{CC} = 5.25 V, V _I = 2.7 V	
		I _{IL}	—	—	-400	μA	V _{CC} = 5.25 V, V _I = 0.4 V	
	DIR or \overline{G}	I _I	—	—	0.1	mA	V _I = 5.5 V	V _{CC} = 5.25 V
			—	—	0.1	mA	V _I = 7 V	
Supply current**	I _{CCH}	—	48	70	mA	V _{CC} = 5.25 V		
	I _{CCL}	—	62	90	mA			
	I _{CCZ}	—	64	95	mA			
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.

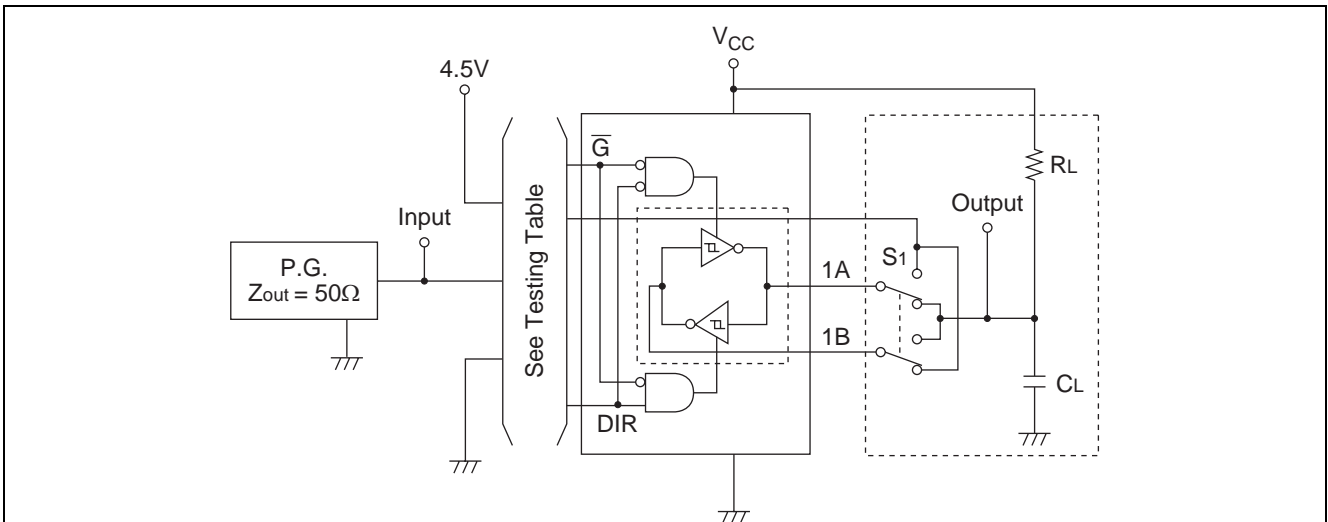
Switching Characteristics

(V_{CC} = 5 V, Ta = 25°C)

Item	Symbol	Inputs	Outputs	min.	typ.	max.	Unit	Condition
Propagation delay time	t _{PLH}	A	B	—	19	25	ns	C _L = 45 pF, R _L = 667 Ω
		B	A	—	19	25	ns	
	t _{PHL}	A	B	—	14	25	ns	
		B	A	—	14	25	ns	
Output enable time	t _{PLH}	\overline{G}	A	—	26	40	ns	
		\overline{G}	B	—	28	40	ns	
	t _{PHL}	\overline{G}	A	—	43	60	ns	
		\overline{G}	B	—	39	60	ns	

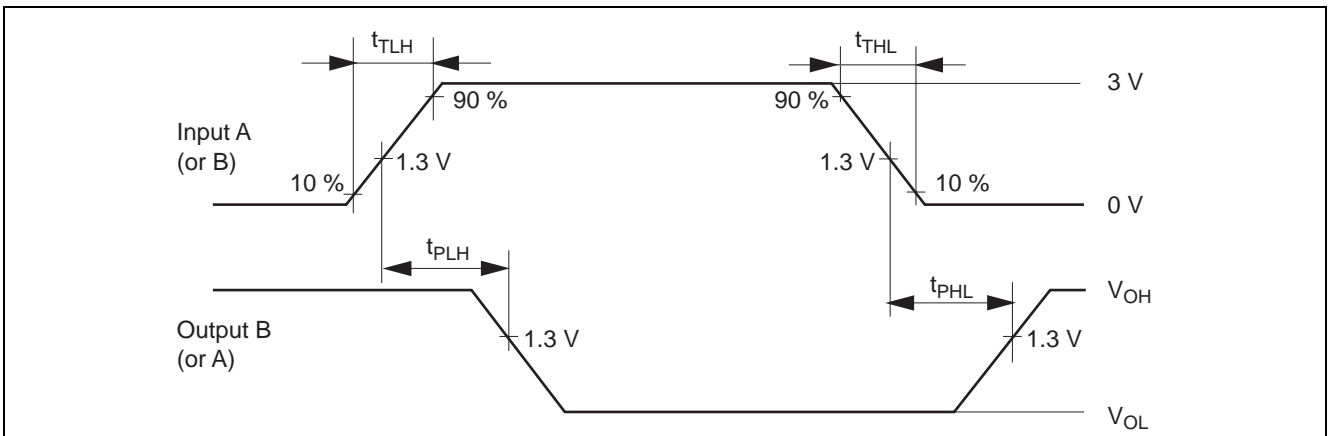
Testing Method

Test Circuit



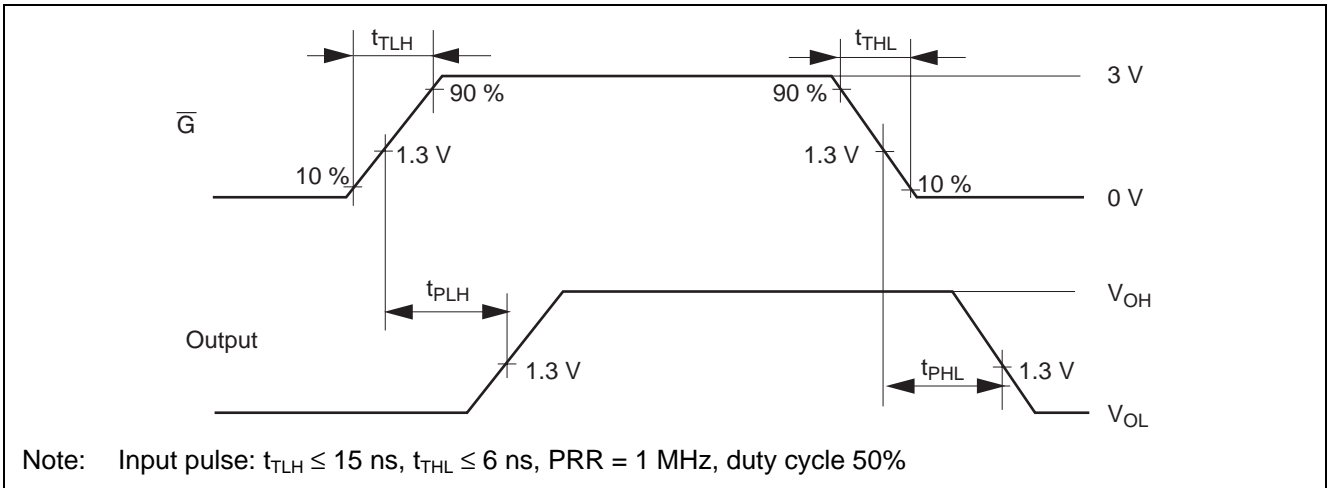
- Notes:
1. 2A-2B, 3A-3B, 4A-4B, 5A-5B, 6A-6B, 7A-7B, 8A-8B, are identical to above load circuit.
 2. C_L includes probe and jig capacitance.
 3. S_1 is a input-output switch.

Waveforms 1

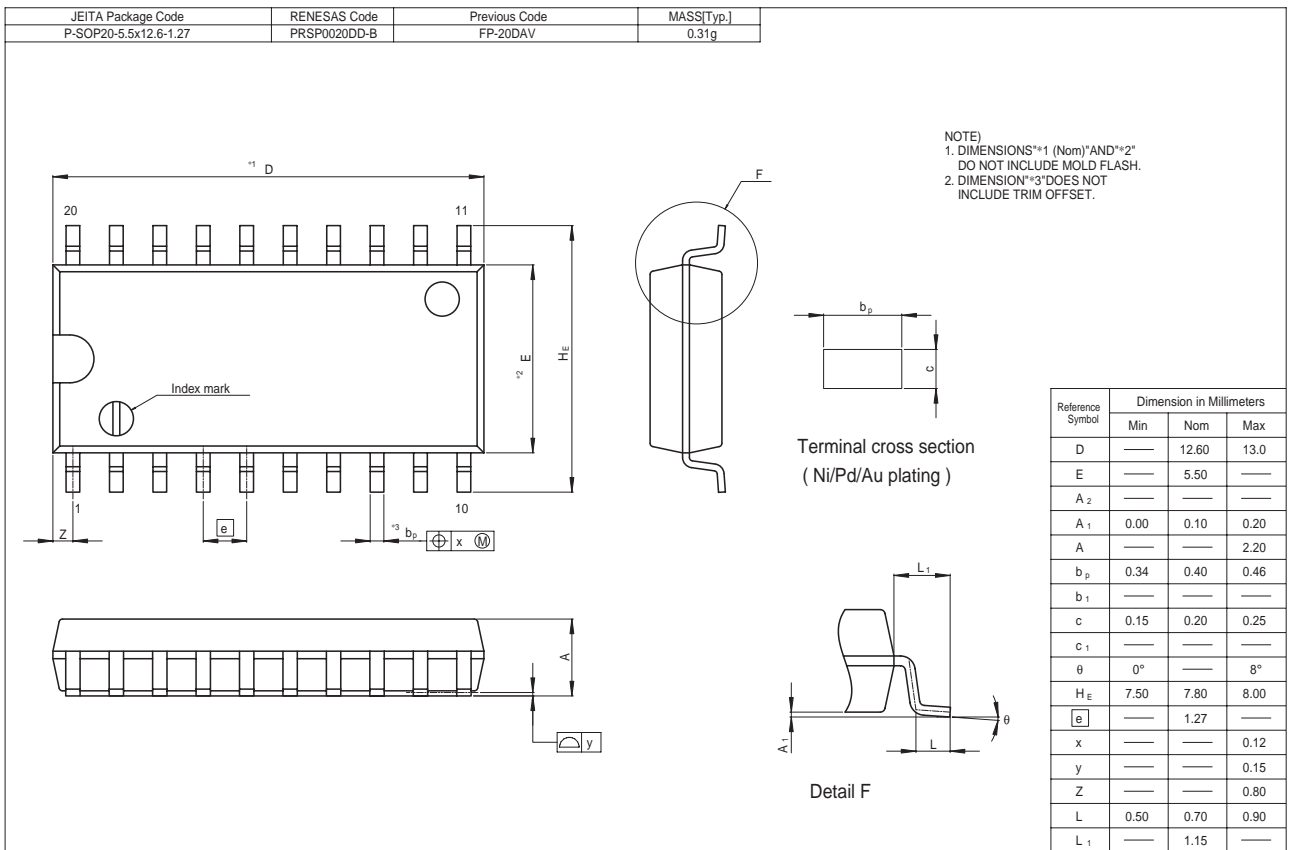
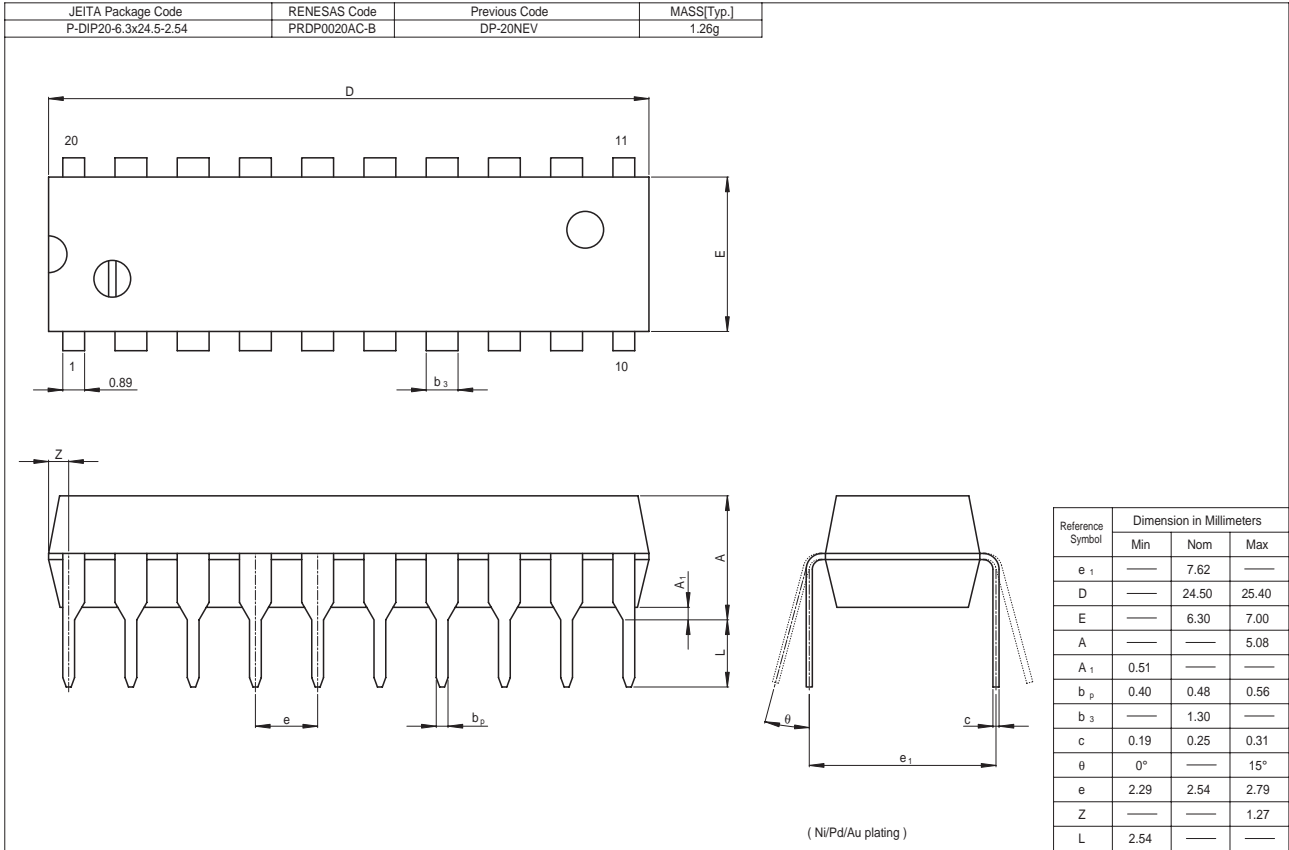


Note: Input pulse: $t_{TLH} \leq 15$ ns, $t_{THL} \leq 6$ ns, PRR = 1 MHz, duty cycle 50%

Waveforms 2



Package Dimensions



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450 Holger Way, San Jose, CA 95134-1368, U.S.A
Tel: <1> (408) 382-7500, Fax: <1> (408) 382-7501

Renesas Technology Europe Limited

Dukes Meadow, Millboard Road, Bourne End, Buckinghamshire, SL8 5FH, U.K.
Tel: <44> (1628) 585-100, Fax: <44> (1628) 585-900

Renesas Technology Hong Kong Ltd.

7th Floor, North Tower, World Finance Centre, Harbour City, 1 Canton Road, Tsimshatsui, Kowloon, Hong Kong
Tel: <852> 2265-6688, Fax: <852> 2730-6071

Renesas Technology Taiwan Co., Ltd.

10th Floor, No.99, Fushing North Road, Taipei, Taiwan
Tel: <886> (2) 2715-2888, Fax: <886> (2) 2713-2999

Renesas Technology (Shanghai) Co., Ltd.

Unit2607 Ruijing Building, No.205 Maoming Road (S), Shanghai 200020, China
Tel: <86> (21) 6472-1001, Fax: <86> (21) 6415-2952

Renesas Technology Singapore Pte. Ltd.

1 Harbour Front Avenue, #06-10, Keppel Bay Tower, Singapore 098632
Tel: <65> 6213-0200, Fax: <65> 6278-8001