

HD74LS242

Quadruple Bus Transceivers (with three-state outputs)

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Rev.3.00
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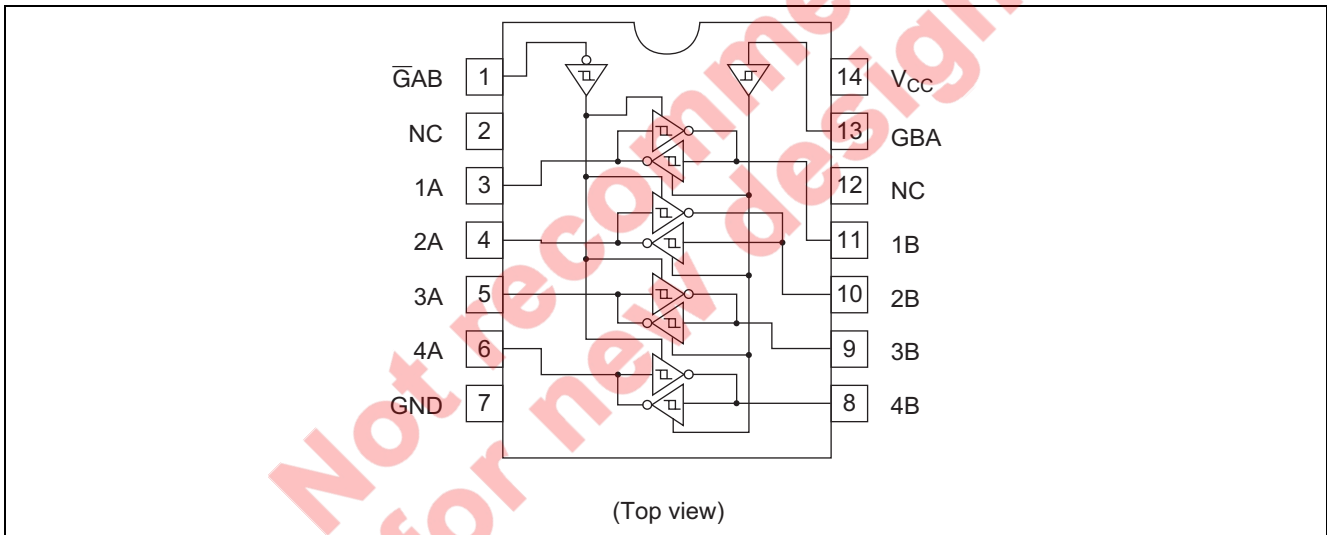
Features

- Ordering Information

Part Name	Package Type	Package Code (Previous Code)	Package Abbreviation	Taping Abbreviation (Quantity)
HD74LS242P	DILP-14 pin	PRDP0014AB-B (DP-14AV)	P	—
HD74LS242FPEL	SOP-14 pin (JEITA)	PRSP0014DF-B (FP-14DAV)	FP	EL (2,000 pcs/reel)

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

Pin Arrangement



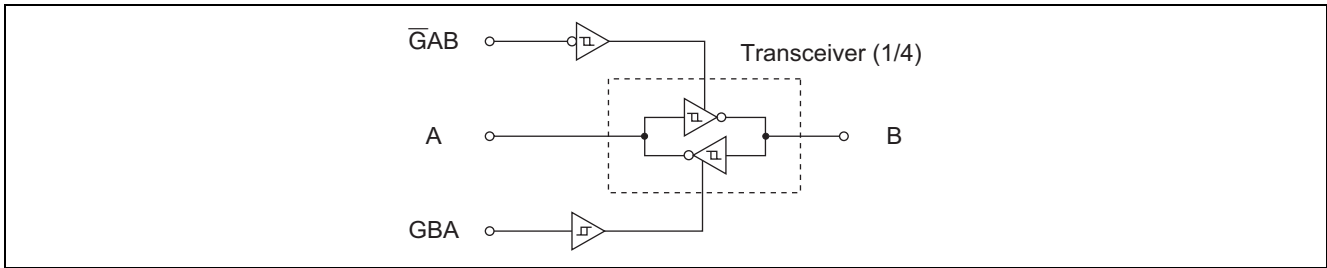
Function Table

Control input		Data port status	
$\overline{\text{GAB}}$	GBA	A	B
H	H	Inverting output	Input
L	H	*	
H	L	Isolated	Isolated
L	L	Input	Inverting 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{GAB} , GBA	V_{IN}	7
	A, B	V_{IN}	5.5
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 current	I_{OH}	—	—	-15	mA
	I_{OL}	—	—	24	mA
Operating temperature	T_{opr}	-20	25	75	°C

Not recommended for new design

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 _{CC} = 4.75 V, V _{IH} = 2 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}	—	—	40	μA	V _O = 2.7 V V _{CC} = 5.25 V, V _{IH} = 2 V, V _{IL} = 0.8 V	
	I _{OZL}	—	—	-200			
Input current	I _{IH}	—	—	20	μA	V _{CC} = 5.25 V, V _I = 2.7 V	
	A Input	I _{IL}	—	—	mA	V _{CC} = 5.25 V, V _I = 0.4 V, GAB or GBA at GND	
	B Input		—	—			V _{CC} = 5.25 V, V _I = 0.4 V, GAB or GBA at 4.5 V
	GAB or GBA		—	—			
	A or B	I _I	—	—	mA	V _{CC} = 5.25 V, V _I = 5.5 V	
	GAB or GBA		—	—		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}	—	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** With all outputs open, I_{CC} is measured with transceivers enabled in one direction only, or with all transceivers disabled.

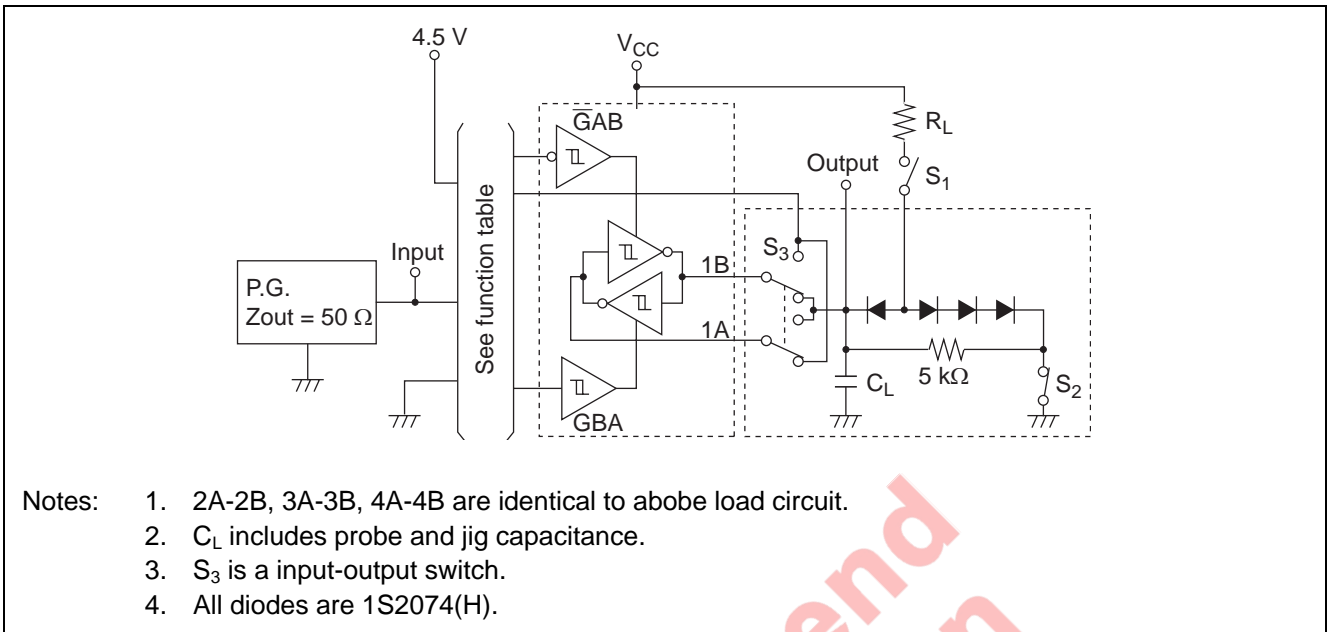
Switching Characteristics

(V_{CC} = 5 V, Ta = 25°C)

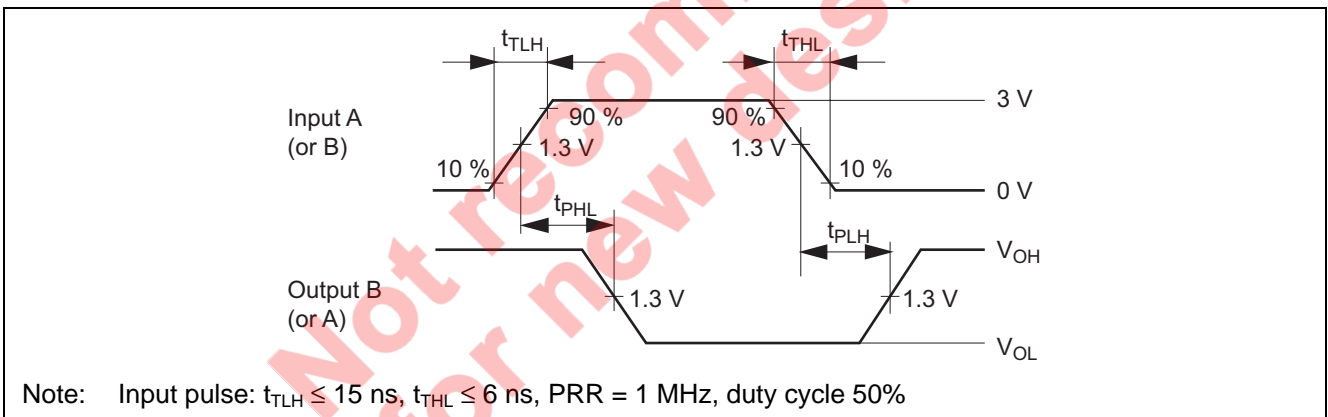
Item	Symbol	min.	typ.	max.	Unit	Condition
Propagation delay time	t _{PLH}	—	9	14	ns	C _L = 45 pF, R _L = 667 Ω
	t _{PHL}	—	12	18		
Output enable time	t _{ZL}	—	20	30		
	t _{ZH}	—	15	23		
Output disable time	t _{LZ}	—	15	25		C _L = 5 pF, R _L = 667 Ω
	t _{HZ}	—	10	18		

Testing Method

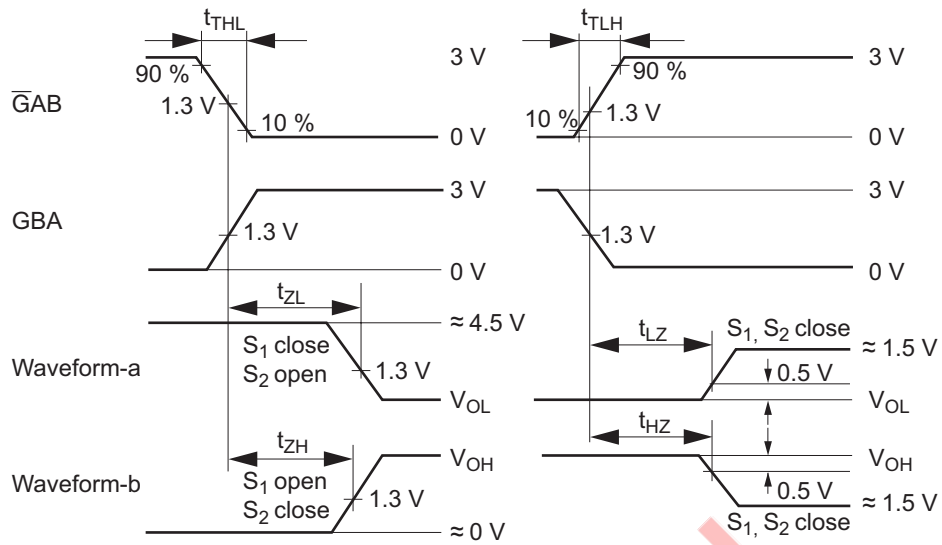
Test Circuit



Waveforms 1



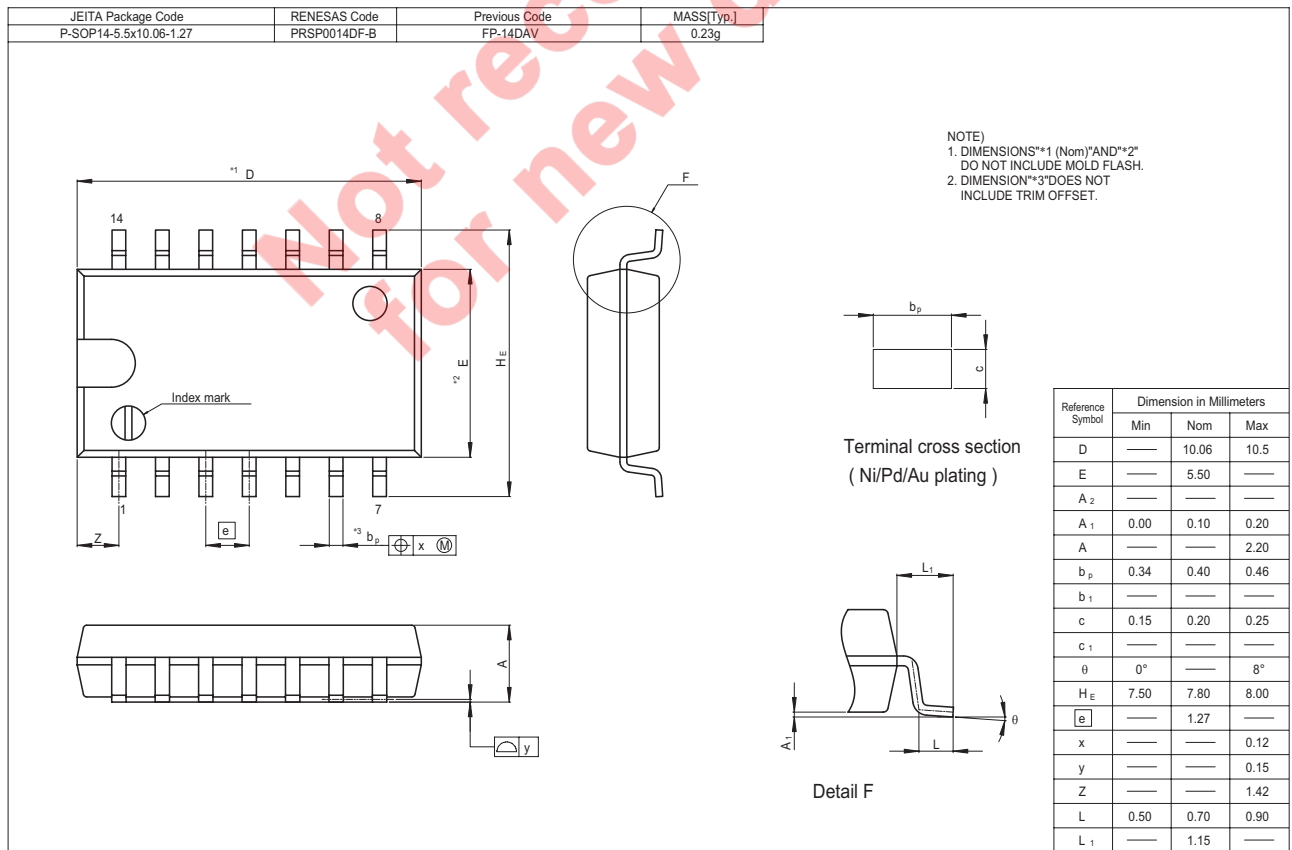
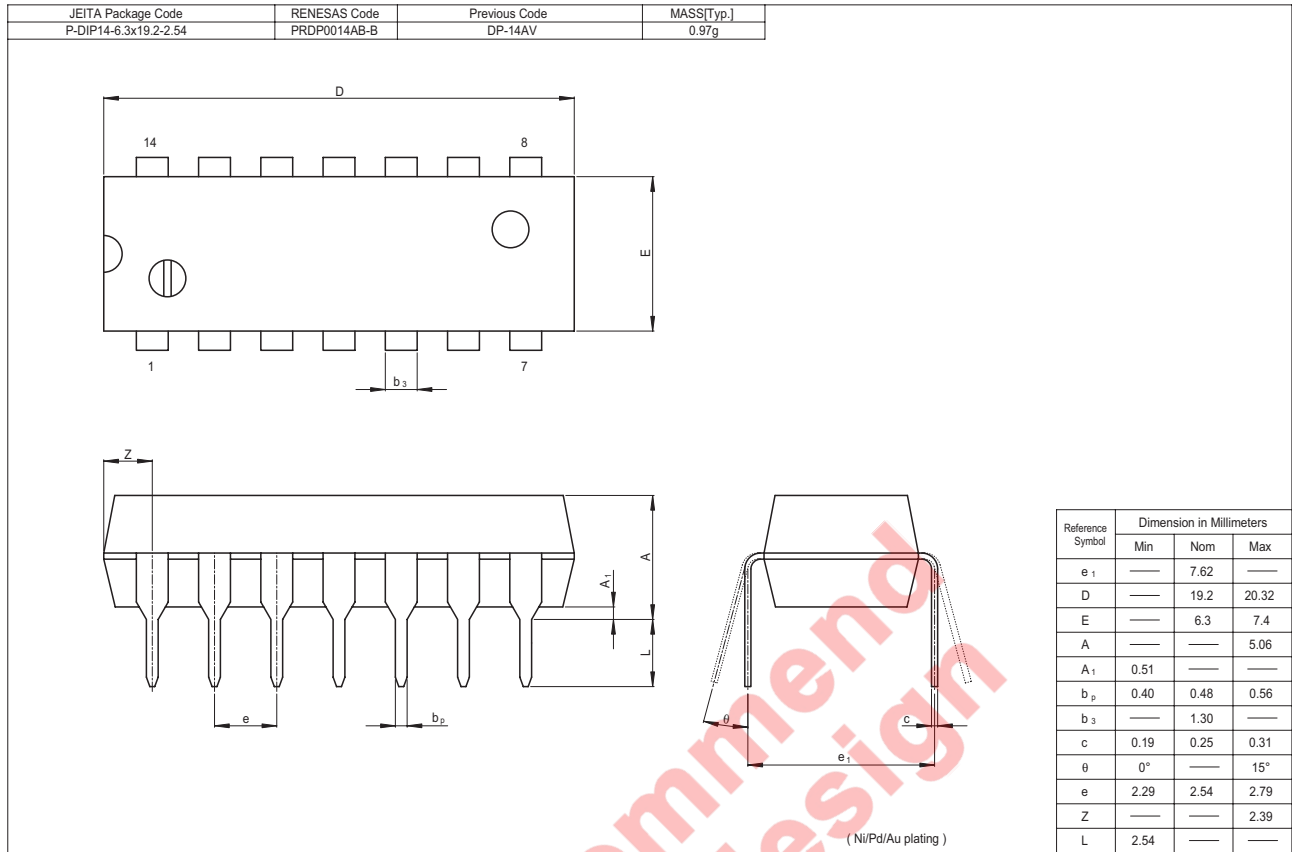
Waveforms 2



- Notes:
1. Input pulse: $t_{TLH} \leq 15 \text{ ns}$, $t_{THL} \leq 6 \text{ ns}$, 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.

Not recommended for new design

Package Dimensions



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