

HD74LS375

Quadruple Bistable Latches

REJ03D0484-0200

Rev.2.00

Feb.18.2005

The HD74LS375 bistable latch is electrically and functionally identical to the HD74LS75, respectively. Only the arrangement of the terminals has been changed in the HD74LS375. This latch is ideally suited for use as temporary storage for binary information between processing units and input / output or indicator units. Information present at a data (D) input is transferred to the Q output when the enable (G) is high and the Q output will follow the data input as long as the enable remains high. When the enable goes low, the information (that was present at the data input at the time the transition occurred) is retained at the Q output until the enable goes high.

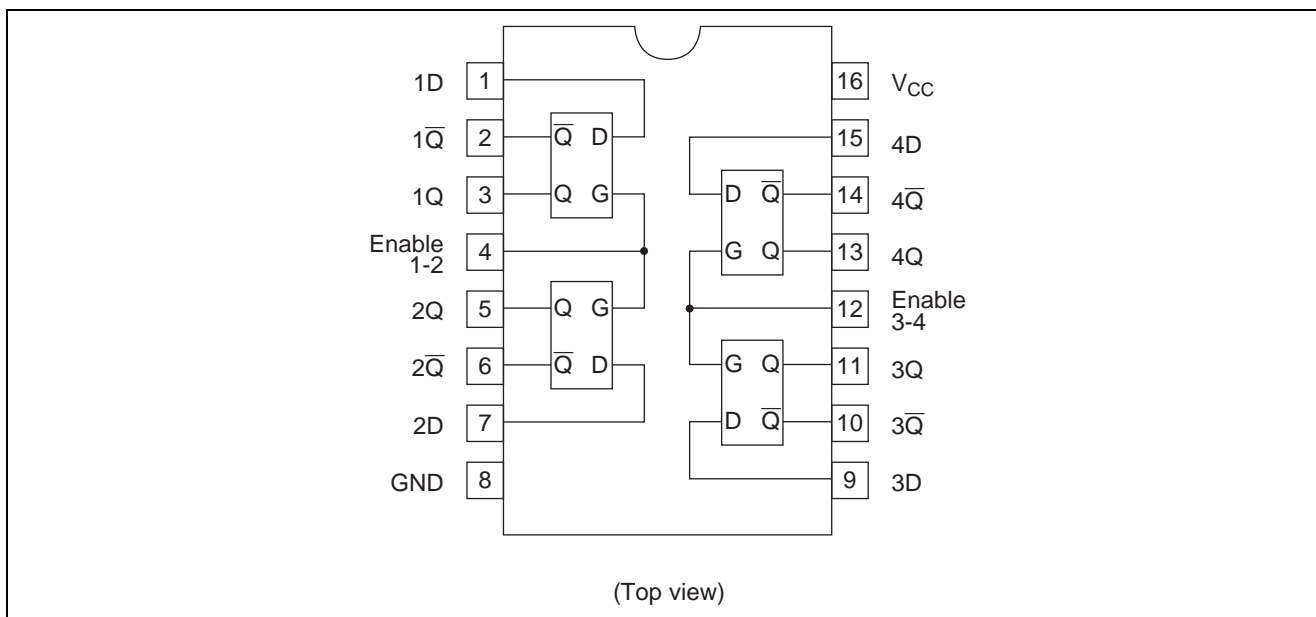
Features

- Ordering Information

Part Name	Package Type	Package Code (Previous Code)	Package Abbreviation	Taping Abbreviation (Quantity)
HD74LS375P	DILP-16 pin	PRDP0016AE-B (DP-16FV)	P	—
HD74LS375FPEL	SOP-16 pin (JEITA)	PRSP0016DH-B (FP-16DAV)	FP	EL (2,000 pcs/reel)

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

Pin Arrangement



Function Table

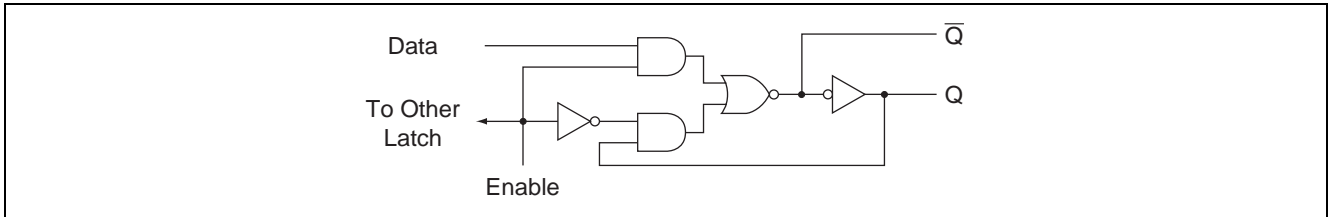
Inputs		Outputs	
D	G	Q	\bar{Q}
L	H	L	H
H	H	H	L
X	L	Q ₀	\bar{Q}_0

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

Q₀; level of Q before the indicated steady state input conditions were established

\bar{Q}_0 ; complement of Q₀ or level of \bar{Q} before the indicated steady state input conditions were established

Block Diagram (1/4)



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 current	I _{OH}	—	—	-400	μA
	I _{OL}	—	—	8	mA
Operating temperature	T _{opr}	-20	25	75	°C
Enable input pulse width	t _w	20	—	—	ns
Setup time	t _{su}	20	—	—	ns
Hold time	t _h	5	—	—	ns

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		
Output voltage	V _{OH}	2.7	—	—	V	V _{CC} = 4.75 V, V _{IH} = 2 V, V _{IL} = 0.8 V, I _{OH} = -400 μA	
	V _{OL}	—	—	0.4	V	V _{CC} = 4.75 V, V _{IH} = 2 V, V _{IL} = 0.8 V	
—		—	0.5				
Input current	I _{IH}	—	—	20	μA	D G	V _{CC} = 5.25 V, V _I = 2.7 V
		—	—	80			
	I _{IL}	—	—	-0.4	mA	D G	V _{CC} = 5.25 V, V _I = 0.4 V
		—	—	-1.6			
	I _I	—	—	0.1	mA	D G	V _{CC} = 5.25 V, V _I = 7 V
		—	—	0.4			
Short-circuit output current	I _{OS}	-20	—	-100	mA	V _{CC} = 5.25 V	
Supply current**	I _{CC}	—	6.3	12	mA	V _{CC} = 5.25 V	
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 and all inputs grounded.

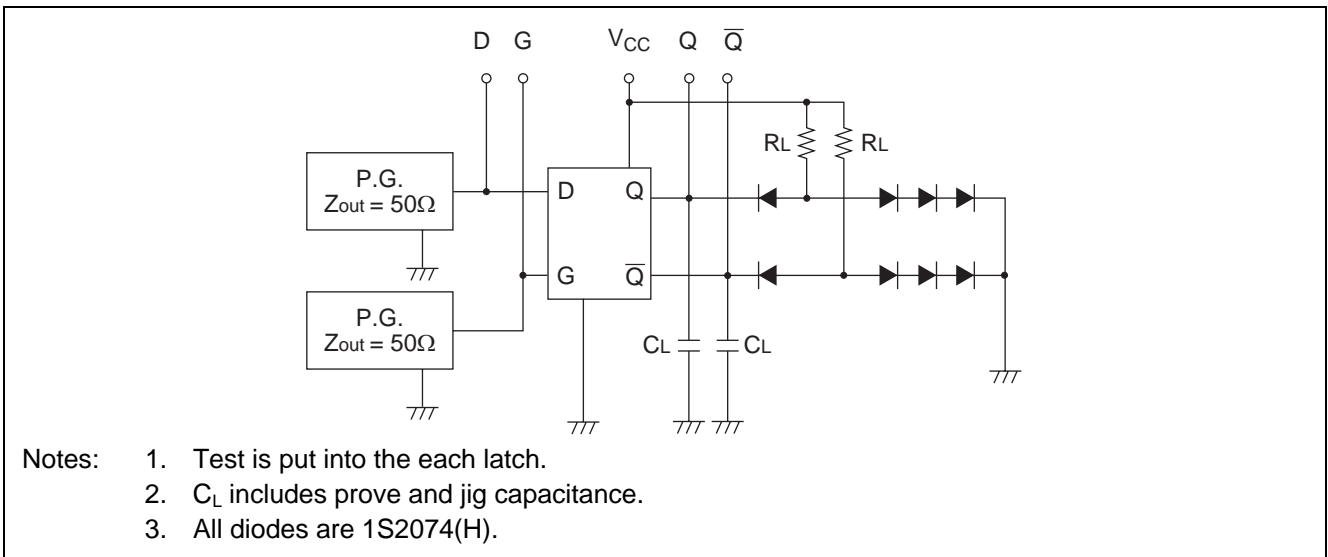
Switching Characteristics

(V_{CC} = 5 V, Ta = 25°C)

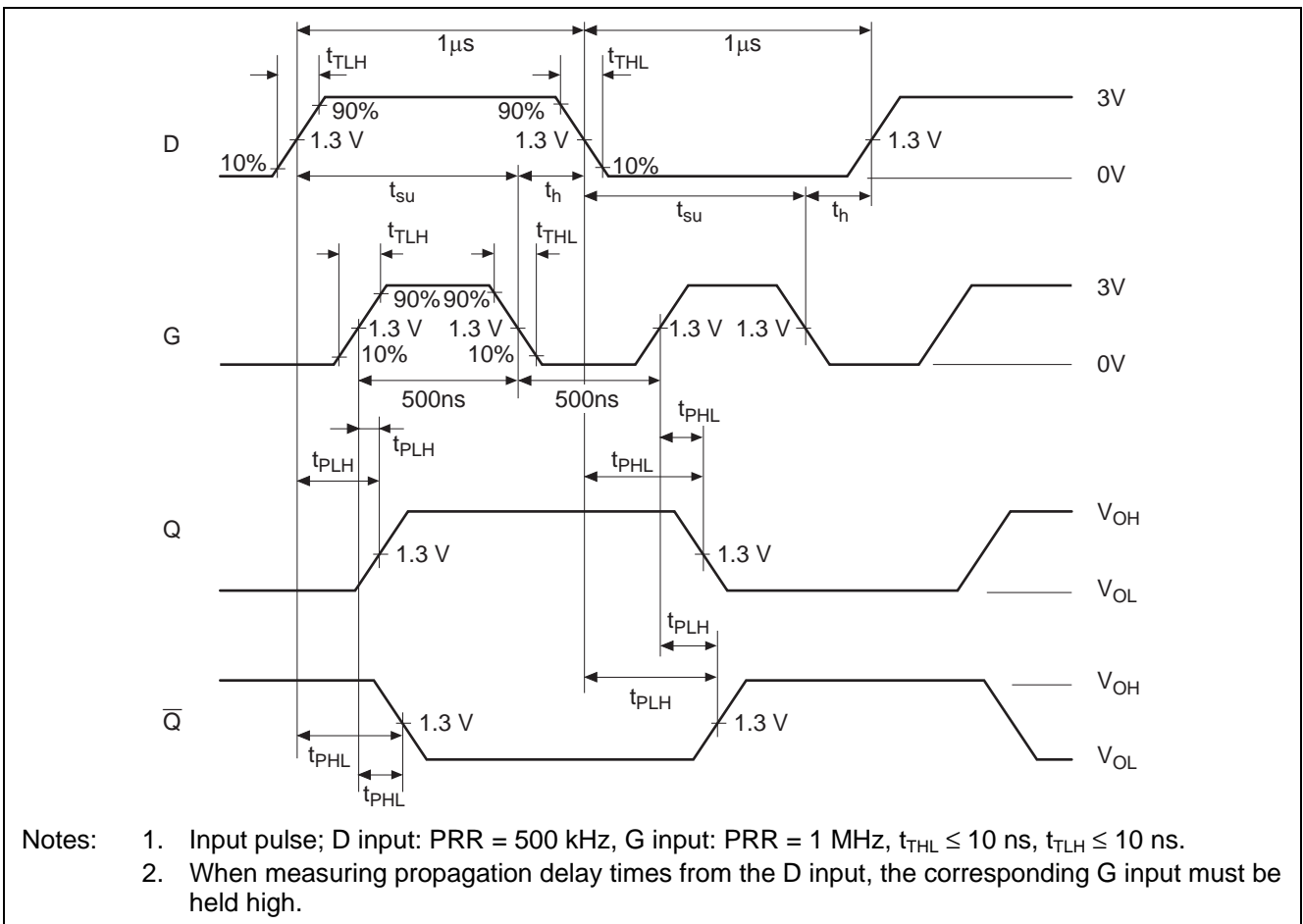
Item	Symbol	Inputs	Output	min.	typ.	max.	Unit	Condition
Propagation delay time	t _{PLH}	D	Q	—	15	27	ns	C _L = 15 pF, R _L = 2 kΩ
	t _{PHL}			—	9	17		
	t _{PLH}	D	Q̄	—	12	20		
	t _{PHL}			—	7	15		
	t _{PLH}	G	Q	—	15	27		
	t _{PHL}			—	14	25		
	t _{PLH}	G	Q̄	—	16	30		
	t _{PHL}			—	7	15		

Testing Method

Test Circuit

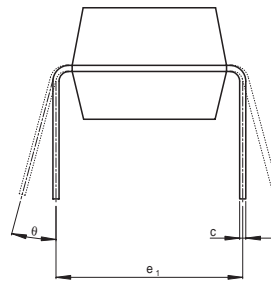
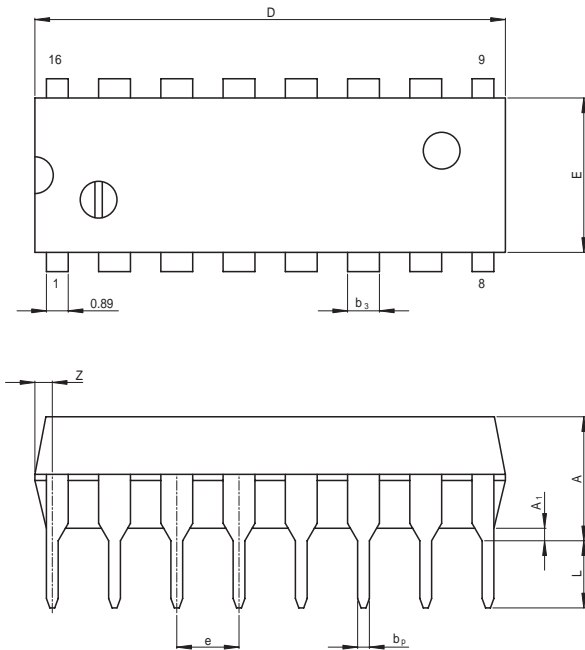


Waveform



Package Dimensions

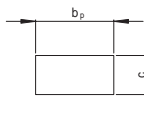
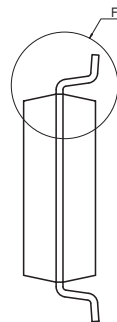
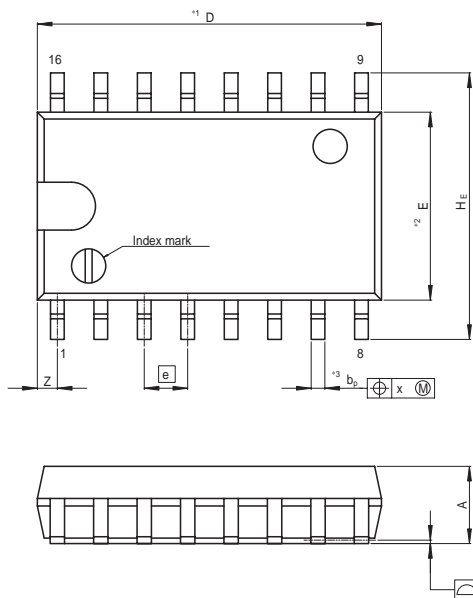
JEITA Package Code	RENESAS Code	Previous Code	MASS[Typ.]
P-DIP16-6.3x19.2-2.54	PRDP0016AE-B	DP-16FV	1.05g



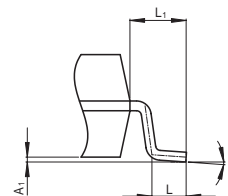
(Ni/Pd/Au plating)

Reference Symbol	Dimension in Millimeters		
	Min	Nom	Max
e ₁	—	7.62	—
D	—	19.2	20.32
E	—	6.3	7.4
A	—	—	5.06
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	—	—	1.12
L	2.54	—	—

JEITA Package Code	RENESAS Code	Previous Code	MASS[Typ.]
P-SOP16-5.5x10.06-1.27	PRSP0016DH-B	FP-16DAV	0.24g



Terminal cross section
(Ni/Pd/Au plating)



Detail F

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	—	10.06	10.5
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
a	—	1.27	—
x	—	—	0.12
y	—	—	0.15
Z	—	—	0.80
L	0.50	0.70	0.90
L ₁	—	1.15	—

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