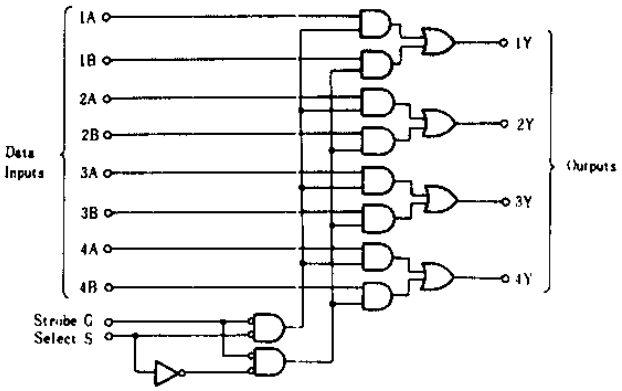
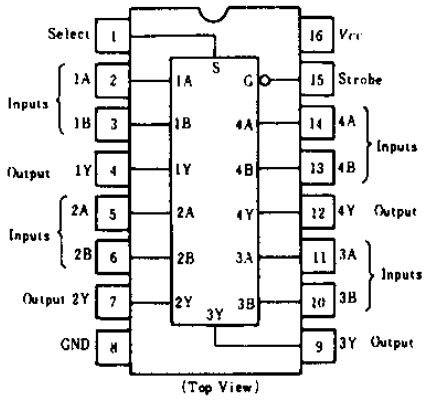
HD74LS157 ●Quadruple 2-line-to-1-line Data Selectors/Multiplexers (noninverted outputs)

This data selector/multiplexer contains inverters and drivers to supply full on-chip data selection to the four output gates. A separate strobe input is provided. A 4-bit word is selected from one of two sources and is routed to the four outputs. Then, outputs present true data to minimize propagation delay time.

■BLOCK DIAGRAM



■PIN ARRANGEMENT



■FUNCTION TABLE

Inputs				Output
Strobe	Select	A	B	Y
H	×	×	×	L
L	L	L	×	L
L	L	H	×	H
L	H	×	L	L
L	H	×	H	H

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

■ELECTRICAL CHARACTERISTICS ($Ta=-20\sim+75°C$)

Item		Symbol	Test Conditions		min	typ*	max	Unit
Input voltage		V_{IH}			2.0	–	–	V
		V_{IL}			–	–	0.8	V
Output voltage		V_{OH}	$V_{CC}=4.75V$, $V_{IH}=2V$, $V_{IL}=0.8V$, $I_{OH}=-400\mu A$		2.7	–	–	V
		V_{OL}	$V_{CC}=4.75V$, $V_{IH}=2V$, $V_{IL}=0.8V$	$I_{OL}=4mA$	–	–	0.4	V
				$I_{OL}=8mA$	–	–	0.5	
Input current	S, G	I_{IH}	$V_{CC}=5.25V$, $V_I=2.7V$		–	–	40	μA
	A, B				–	–	20	
	S, G	I_{IL}	$V_{CC}=5.25V$, $V_I=0.4V$		–	–	−0.8	mA
	A, B				–	–	−0.4	
	S, G	I_I	$V_{CC}=5.25V$, $V_I=7V$		–	–	0.2	mA
	A, B				–	–	0.1	
Short-circuit output current		I_{OS}	$V_{CC}=5.25V$		−20	–	−100	mA
Supply current**		I_{CC}	$V_{CC}=5.25V$		–	9.7	16	mA
Input clamp voltage		V_{IK}	$V_{CC}=4.75V$, $I_{IN}=-18mA$		–	–	−1.5	V

* $V_{CC}=5V$, $Ta=25°C$

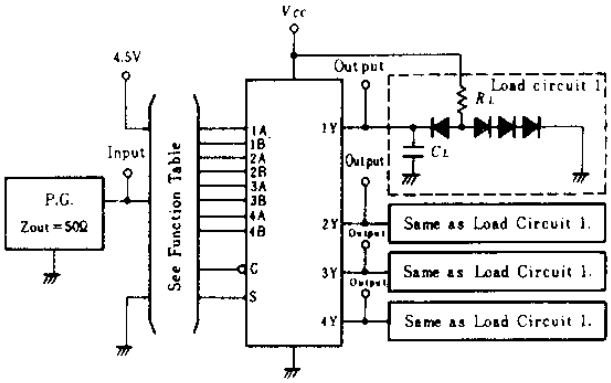
** I_{CC} is measured with all outputs open and all inputs at 4.5V.

■SWITCHING CHARACTERISTICS ($V_{CC}=5V$, $Ta=25°C$)

Item	Symbol	Inputs	Output	Test Conditions	min	typ	max	Unit
Propagation delay time	t_{PLH}	Data	Y	$C_L=15pF$, $R_L=2k\Omega$	–	9	14	ns
	t_{PHL}				–	9	14	ns
	t_{PLH}	Strobe	Y		–	13	20	ns
	t_{PHL}				–	14	21	ns
	t_{PLH}	Select	Y		–	15	23	ns
	t_{PHL}				–	18	27	ns

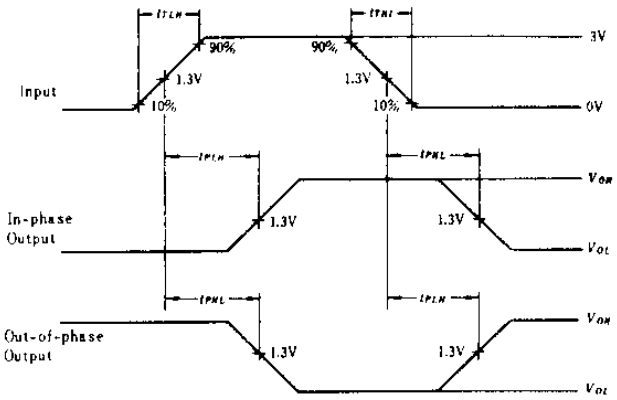
■TESTING METHOD

1) Test Circuit



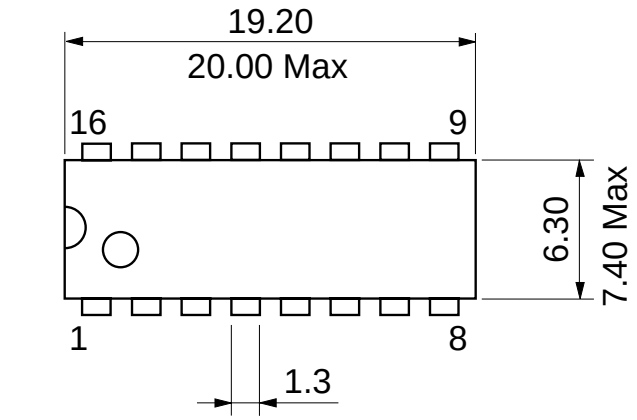
Notes) 1. C_L includes probe and jig capacitance.
2. All diodes are 1S2074 Ⓗ.

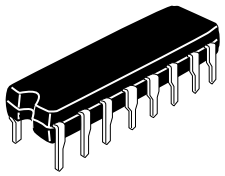
Waveform

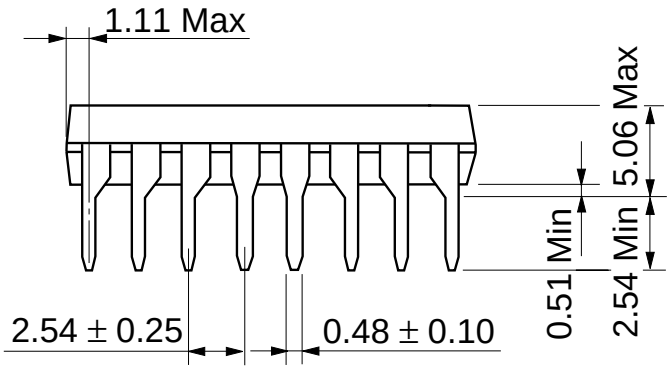


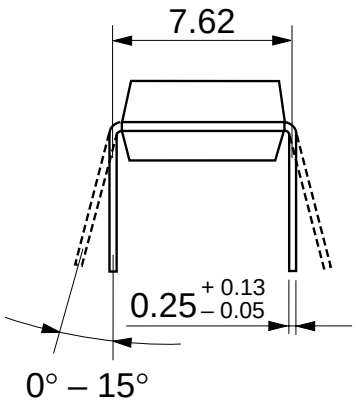
Input pulse; $t_{TLH} \leqq 15$ns, $t_{THL} \leqq 6$ns,
PRR=1MHz, duty cycle 50%.

Unit: mm



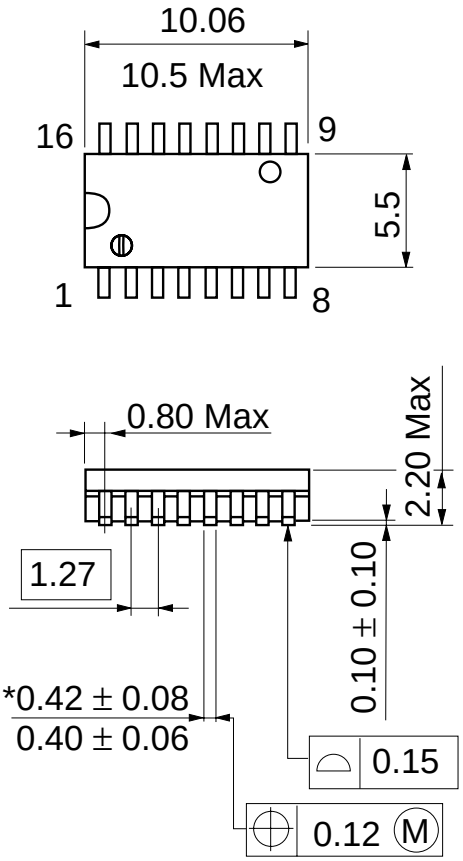


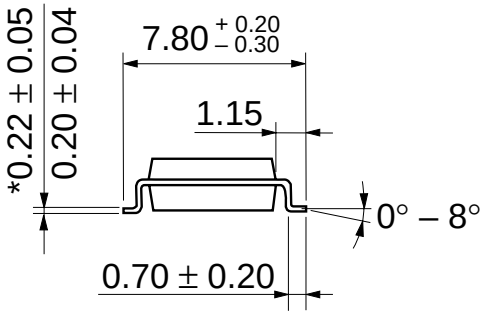


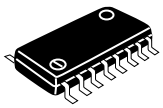


Hitachi Code	DP-16
JEDEC	Conforms
EIAJ	Conforms
Weight (reference value)	1.07 g

Unit: mm



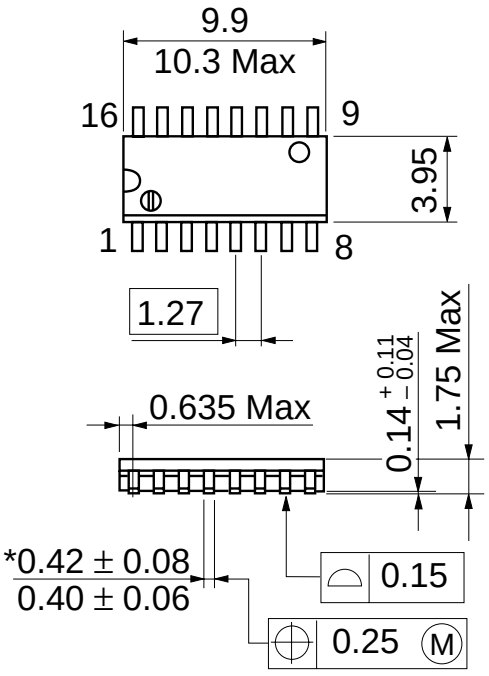


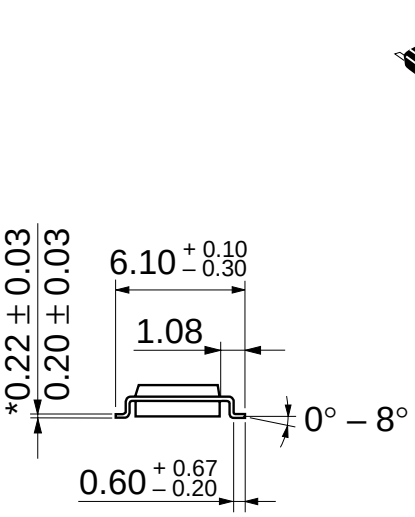


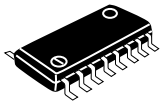
*Dimension including the plating thickness
Base material dimension

Hitachi Code	FP-16DA
JEDEC	—
EIAJ	Conforms
Weight (reference value)	0.24 g

Unit: mm







*Dimension including the plating thickness
Base material dimension

Hitachi Code	FP-16DN
JEDEC	Conforms
EIAJ	Conforms
Weight (reference value)	0.15 g

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