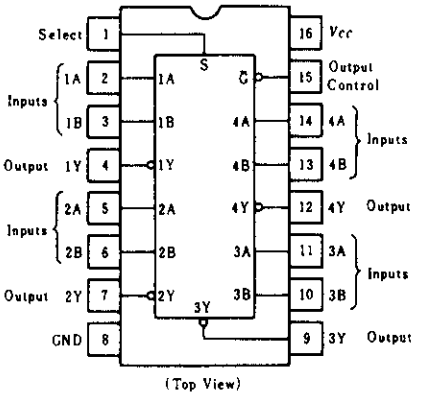
HD74LS258 ●Quadruple 2-line-to-1-line Data Selectors/Multiplexers (with three-state outputs)

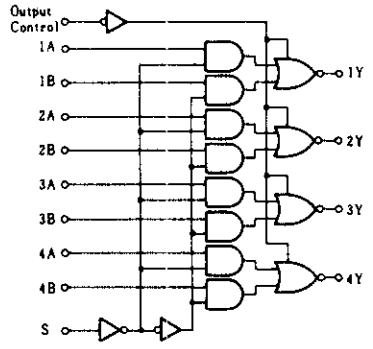
This multiplexer features three-state outputs that can interface directly with and drive data lines of bus-organized systems. With all but one of the common outputs disabled (at a high-impedance state) the low impedance of the single enabled output will drive the bus line to a high or low logic level.
To minimize the possibility that two outputs will attempt to take a common bus to opposite logic levels, the output-enable circuitry is designed such that the output disable times are shorter than the output enable times.

■PIN ARRANGEMENT



(Top View)

■BLOCK DIAGRAM



■FUNCTION TABLE

Input				Output
OC	S	A	B	Y
H	X	X	X	Z
L	L	L	X	H
L	L	H	X	L
L	H	X	L	H
L	H	X	H	L

Note) H; high level, L; low level, X; irrelevant
Z; off (high-impedance) state of a 3-state output

■RECOMMENDED OPERATING CONDITIONS

Item	Symbol	min	typ	max	Unit
Output current	I_{OH}	—	—	−2.6	mA
	I_{OL}	—	—	8	mA

■ELECTRICAL CHARACTERISTICS (Ta = −20 ~ +75℃)

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} = −2.6mA		2.4	—	—	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	V
Output current		I_{OZH}	V_{CC} = 5.25V, V_{IH} = 2V, V_O = 2.4V		—	—	20	μA
		I_{OZL}	V_{CC} = 5.25V, V_{IH} = 2V, V_O = 0.4V		—	—	−20	μA
Input current	S	I_{IH}	V_{CC} = 5.25V, V_I = 2.7V		—	—	40	μA
	except S				—	—	20	μA
	S	I_{IL}	V_{CC} = 5.25V, V_I = 0.4V		—	—	−0.8	mA
	except S				—	—	−0.4	mA
	S	I_I	V_{CC} = 5.25V, V_I = 7V		—	—	0.2	mA
	except S				—	—	0.1	mA
Short-circuit output current		I_{OS}	V_{CC} = 5.25V		−30	—	−130	mA
** Supply current	All outputs high	I_{CC}	V_{CC} = 5.25V		—	—	7	mA
	All outputs low				—	—	11	mA
	All outputs off				—	—	12	mA
Input clamp voltage		V_{IK}	V_{CC} = 4.75V, I_{IN} = −18mA		—	—	−1.5	V

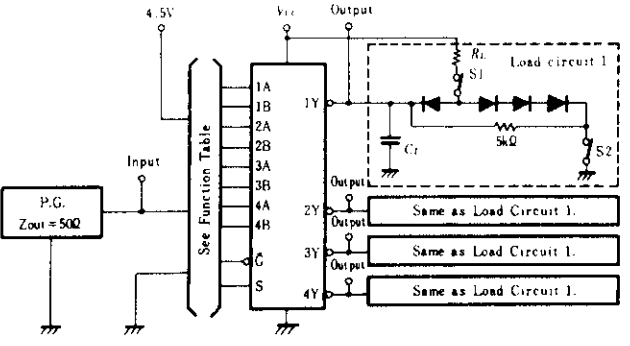
* V_{CC}=5V, Ta=25°C
** I_{CC} is measured with all outputs open and all possible inputs grounded while achieving the stated output conditions.

■SWITCHING CHARACTERISTICS (V_{CC}=5V, Ta=25℃)

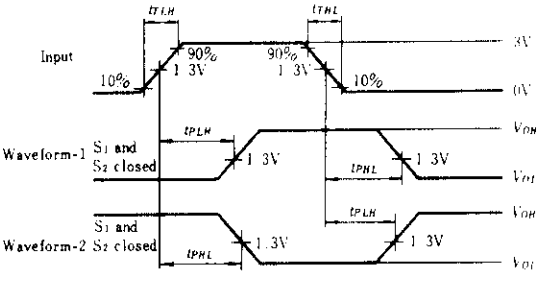
Item	Symbol	Input	Output	Test Conditions	min	typ	max	Unit
Propagation delay time	t_{PLH}	A, B	Y	R_L=2kΩ C_L=15pF	—	12	18	ns
	t_{PHL}				—	12	18	ns
	t_{PLH}	S	Y		—	14	21	ns
	t_{PHL}				—	14	21	ns
Output enable time	t_{ZH}	OUTPUT CONTROL	Y		—	20	30	ns
	t_{ZL}				—	20	30	ns
Output disable time	t_{HZ}	OUTPUT CONTROL	Y	R_L=2kΩ C_L=5pF	—	18	30	ns
	t_{LZ}				—	16	25	ns

■TESTING METHOD

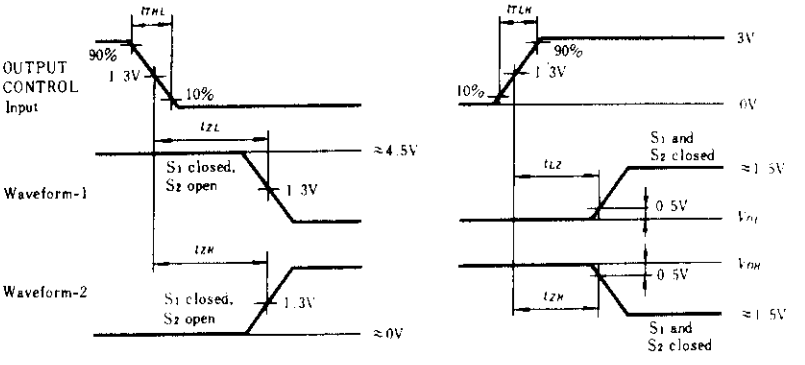
1) Test Circuit



Waveform

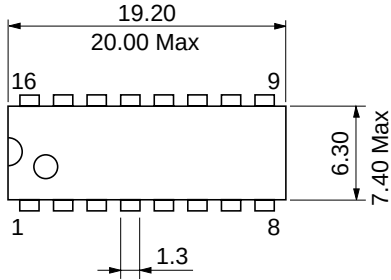


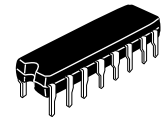
Notes) 1. C_L includes probe and jig capacitance.
2. All diodes are 1S2074 Ⓗ.

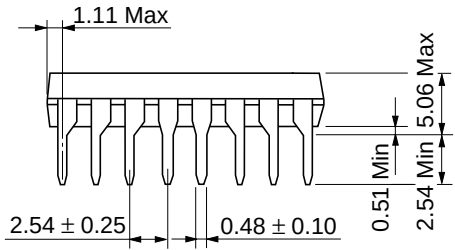


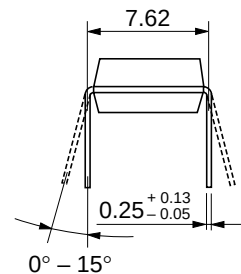
Notes) 1. Input pulse: t_{TLH}≦15ns, t_{THL}≦6ns, PRR=1MHz, duty cycle=50%
2. Waveform-1 is for an output with internal conditions such that the output is low except when disabled by the output control.
3. Waveform-2 is for an output with internal conditions such that the output is high except when disabled by the output control.

Unit: mm



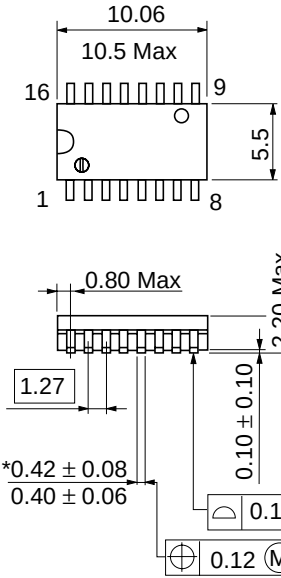


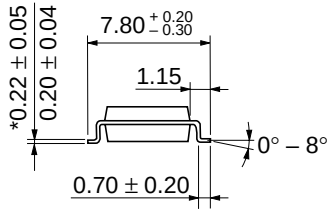


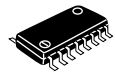


Hitachi Code	DP-16
JEDEC	Conforms
EIAJ	Conforms
Weight (reference value)	1.07 g

Unit: mm



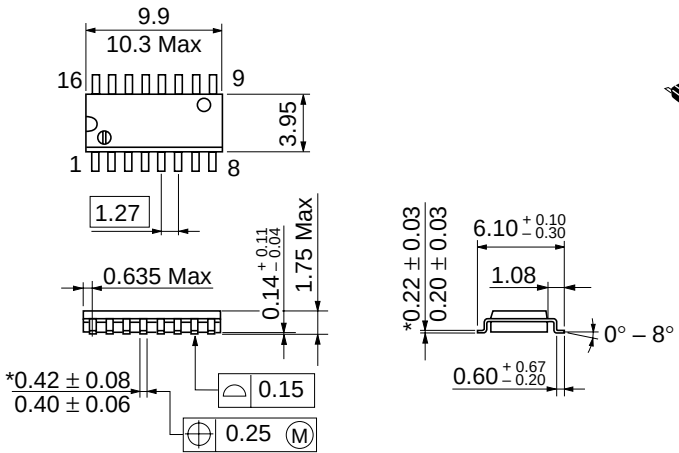




*Dimension including the plating thickness
Base material dimension

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

Unit: mm



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

*Dimension including the plating thickness
Base material dimension

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