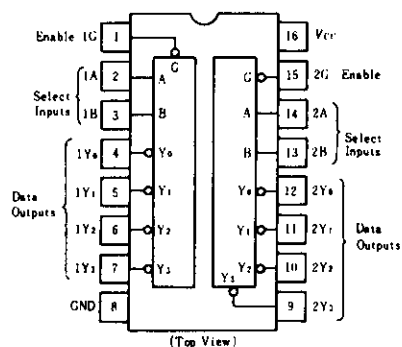
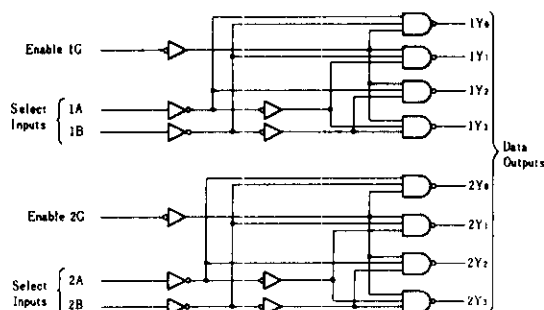


HD74LS139 • Dual 2-line-to-4-line Decoders/Demultiplexers

The HD74LS139 comprises two individual two-line-to-four-line decoder in a single package. The active-low enable input can be used as a data line in demultiplexing applications.

PIN ARRANGEMENT

BLOCK DIAGRAM



FUNCTION TABLE

Inputs			Outputs			
Enable	Select		Y ₀	Y ₁	Y ₂	Y ₃
G	B	A	Y ₀	Y ₁	Y ₂	Y ₃
H	X	X	H	H	H	H
L	L	L	L	H	H	H
L	L	H	H	L	H	H
L	H	L	H	H	L	H
L	H	H	H	H	H	L

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

ELECTRICAL CHARACTERISTICS (T_a = -20 ~ +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} =-400μA	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	I _I	V _{CC} =5.25V, V _I =7V	—	—	0.1	mA
	I _{IH}	V _{CC} =5.25V, V _I =2.7V	—	—	20	μA
	I _{IL}	V _{CC} =5.25V, V _I =0.4V	—	—	-0.4	mA
Short-circuit output current	I _{OS}	V _{CC} =5.25V	-5	—	-42	mA
Supply current	I _{CC}	V _{CC} =5.25V, Outputs enabled and open	—	6.8	11	mA
Input clamp voltage	V _{IK}	V _{CC} =4.75V, I _{IN} =-18mA	—	—	-1.5	V

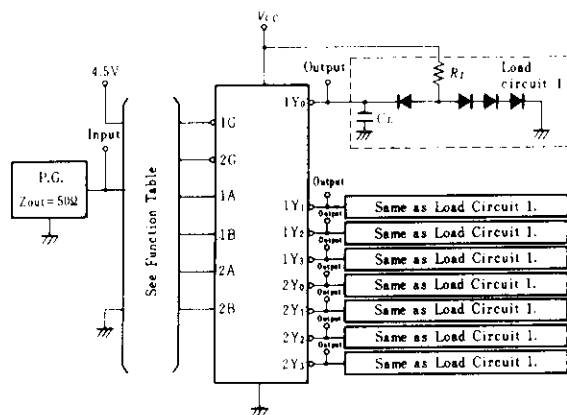
* V_{CC}=5V, T_a=25°C

SWITCHING CHARACTERISTICS (V_{CC}=5V, T_a=25°C)

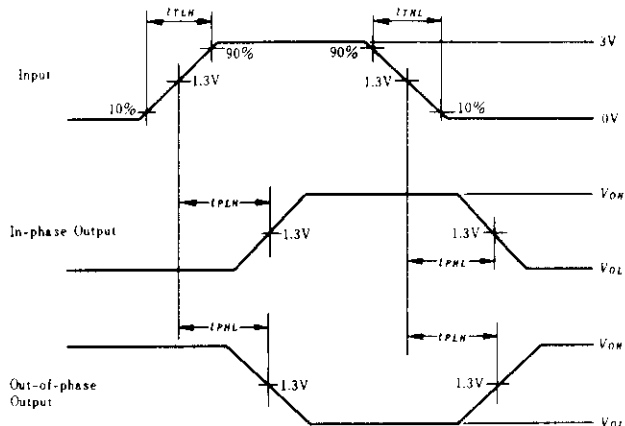
Item	Symbol	Inputs	Outputs	Levels of delay	Test Conditions	min	typ	max	Unit
Propagation delay time	t_{PLH}	Binary	$1Y_0 \sim 1Y_3$	2	$C_L = 15\text{pF}$ $R_L = 2\text{k}\Omega$	—	13	20	ns
	t_{PHL}	Select				—	22	33	ns
	t_{PLH}	1A, 1B	$2Y_0 \sim 2Y_3$	3		—	18	29	ns
	t_{PHL}	2A, 2B				—	25	38	ns
	t_{PLH}	Enable	$1Y_0 \sim 1Y_3$	2		—	16	24	ns
	t_{PHL}	1G, 2G	$2Y_0 \sim 2Y_3$			—	21	32	ns

■ TESTING METHOD

1) Test Circuit

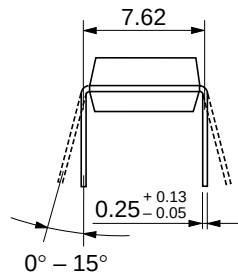
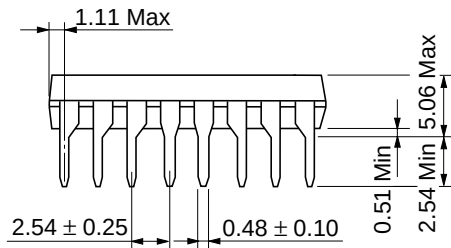
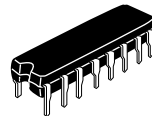
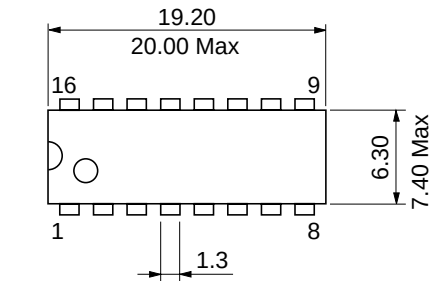


Waveform

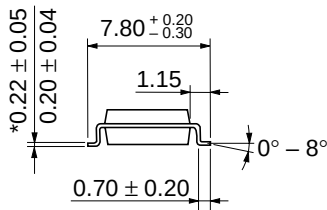
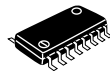
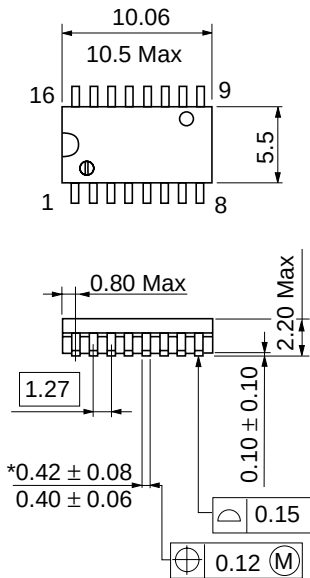


- Notes)
1. Input pulse; $t_{TLH} \leq 15\text{ns}$, $t_{THL} \leq 6\text{ns}$, $PRR = 1\text{MHz}$, duty cycle = 50%
 2. C_L includes probe and jig capacitance.
 3. All diodes are 1S2074 (H).

Unit: mm

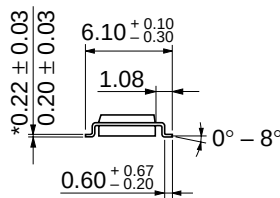
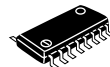
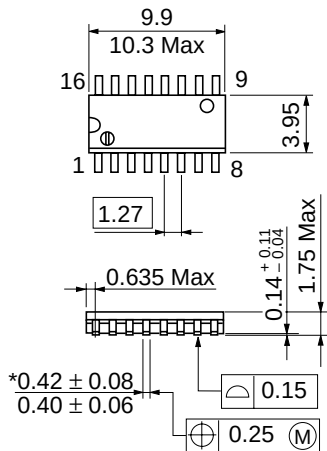


Hitachi Code	DP-16
JEDEC	Conforms
EIAJ	Conforms
Weight (reference value)	1.07 g



*Dimension including the plating thickness
Base material dimension

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



*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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