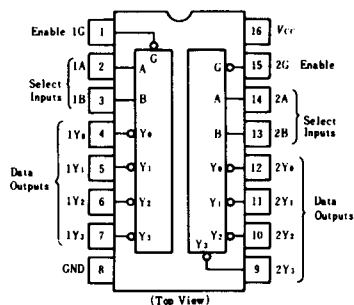


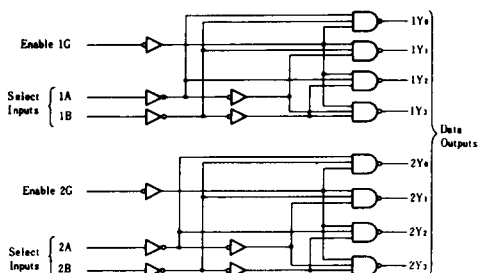
HD74LS139 • Dual 2-line-to-4-line Decoders/Demultiplexers

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 ($T_a = -20 \sim +75^\circ\text{C}$)

Item	Symbol	Test Conditions	min	typ*	max	Unit	
Input voltage	V_{IH}		2.0	—	—	V	
	V_{IL}		—	—	0.8	V	
Output voltage	V_{OH}	$V_{CC}=4.75\text{V}$, $V_{IH}=2\text{V}$, $V_{IL}=0.8\text{V}$, $I_{OH}=-400\mu\text{A}$	2.7	—	—	V	
	V_{OL}	$V_{CC}=4.75\text{V}$, $V_{IH}=2\text{V}$, $V_{IL}=0.8\text{V}$	$I_{OL}=4\text{mA}$	—	—	0.4	V
			$I_{OL}=8\text{mA}$	—	—	0.5	
Input current	I_I	$V_{CC}=5.25\text{V}$, $V_I=7\text{V}$	—	—	0.1	mA	
	I_{IH}	$V_{CC}=5.25\text{V}$, $V_I=2.7\text{V}$	—	—	20	μA	
	I_{IL}	$V_{CC}=5.25\text{V}$, $V_I=0.4\text{V}$	—	—	-0.4	mA	
Short-circuit output current	I_{OS}	$V_{CC}=5.25\text{V}$	-5	—	-42	mA	
Supply current	I_{CC}	$V_{CC}=5.25\text{V}$, Outputs enabled and open	—	6.8	11	mA	
Input clamp voltage	V_{IK}	$V_{CC}=4.75\text{V}$, $I_{IN}=-18\text{mA}$	—	—	-1.5	V	

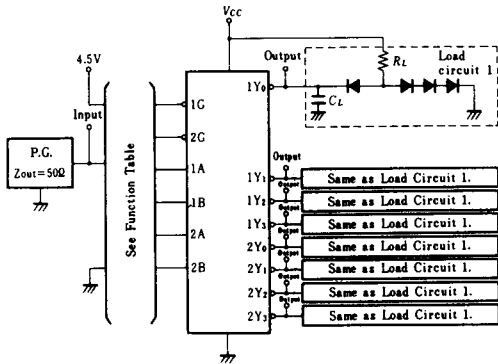
* $V_{CC}=5\text{V}$, $T_a=25^\circ\text{C}$

■ SWITCHING CHARACTERISTICS ($V_{CC}=5\text{V}$, $T_a=25^\circ\text{C}$)

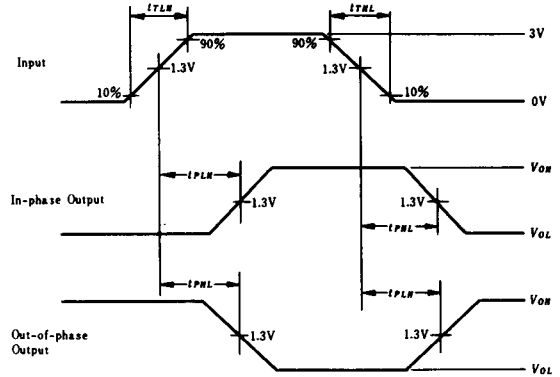
Item	Symbol	Inputs	Outputs	Levels of delay	Test Conditions	min	typ	max	Unit
Propagation delay time	t_{PLH}	Binary	$1Y_0 \sim 1Y_3$	2	$C_L=15\text{pF}$ $R_L=2\text{k}\Omega$	—	13	20	ns
	t_{PHL}	Select				—	22	33	ns
	t_{PLH}	1A, 1B	$2Y_0 \sim 2Y_3$	3		—	18	29	ns
	t_{PHL}	2A, 2B				—	25	38	ns
	t_{PLH}	Enable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

TESTING METHOD

1) Test Circuit



Waveform



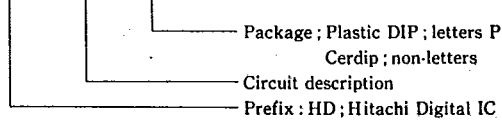
- Notes)
1. Input pulse; $t_{TLH} \leq 15\text{ns}$, $t_{THL} \leq 6\text{ns}$, $PRR=1\text{MHz}$, duty cycle=50%
 2. C_L includes probe and jig capacitance.
 3. All diodes are 1S2074 (B).

PACKAGING INFORMATIONS

T-90-20

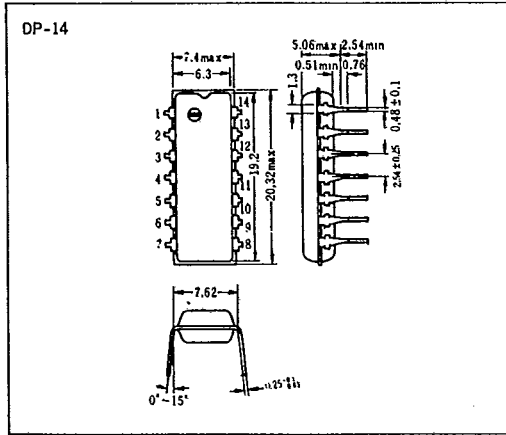
Factory orders for circuits described in this databook should include a three-part type number as explained in the following example.

HD 74LS00 P

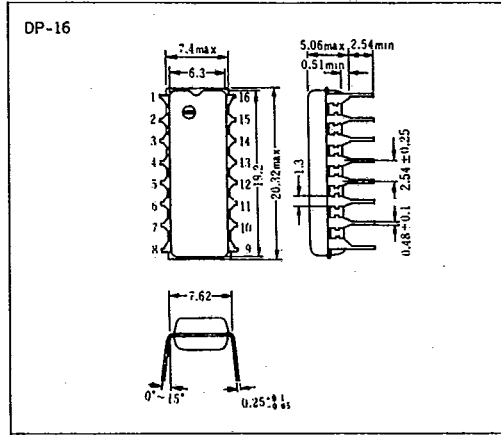


■ Plastic DIP

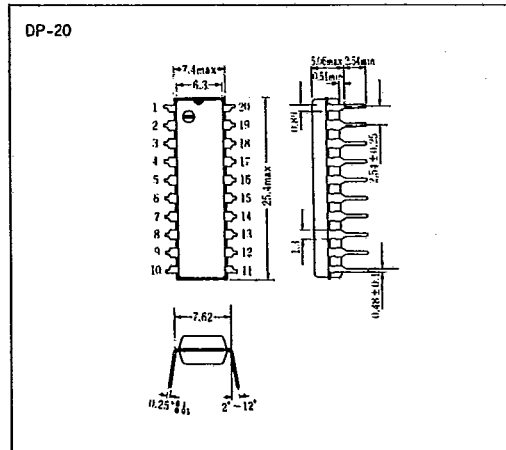
● 14 Pin



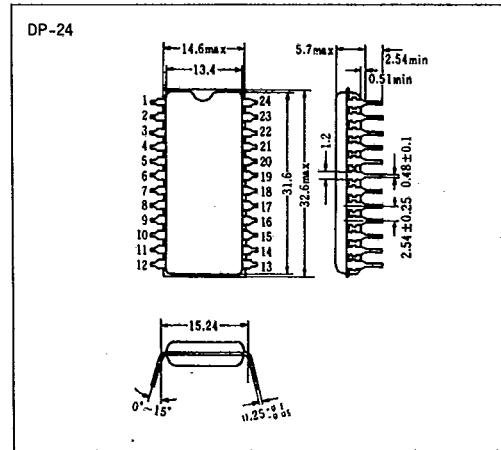
● 16 Pin



● 20 Pin



● 24 Pin

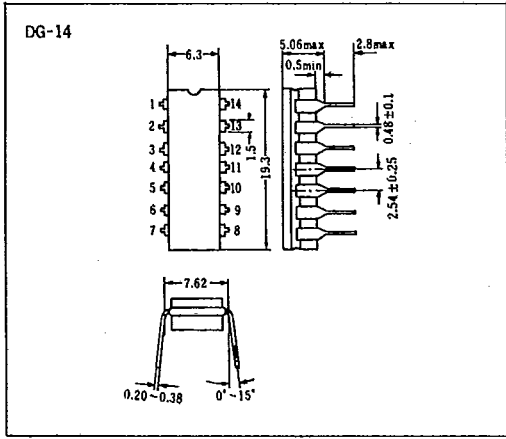


T-90-20

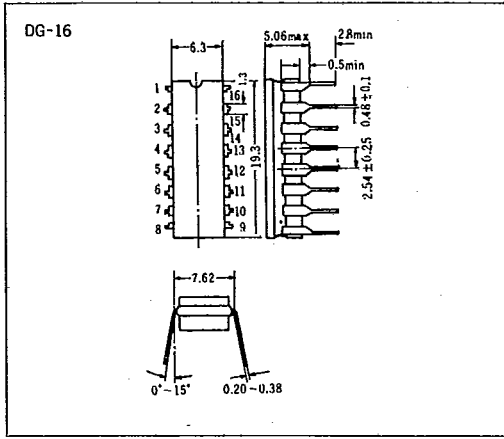
PACKAGING INFORMATION

■ Cerdip

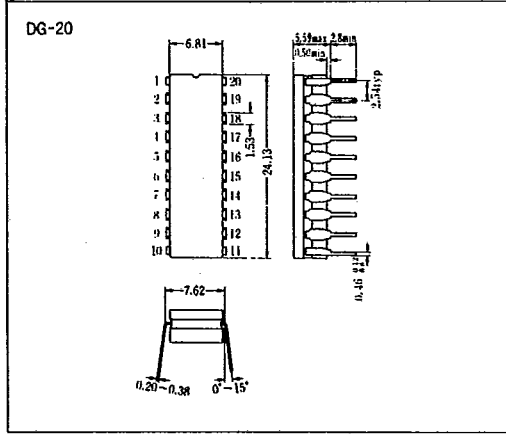
● 14 Pin



● 16 Pin



● 20 Pin



● 24 Pin

