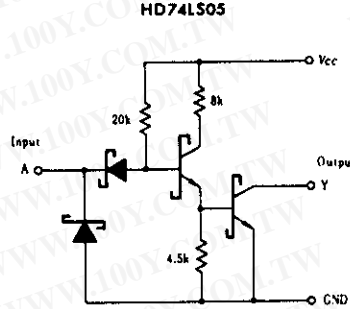
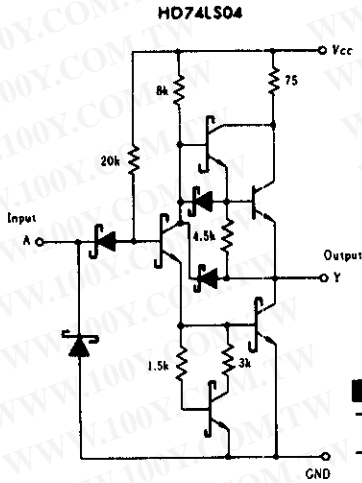


HD74LS04/HD74LS05

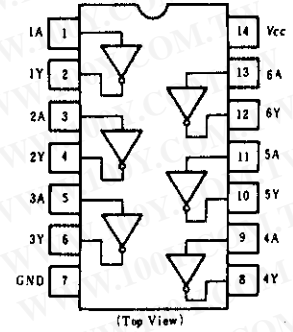
Hex Inverters

Hex Inverters (with Open Collector Outputs)

CIRCUIT SCHEMATIC (1/6)



PIN ARRANGEMENT



HD74LS05 RECOMMENDED OPERATING CONDITIONS

Item	Symbol	min	typ	max	Unit
High level output voltage	V_{OH}	—	—	5.5	V
Low level output current	I_{OL}	—	—	8	mA

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

Item	Symbol	Test Conditions	HD74LS04			HD74LS05			Unit	
			min	typ*	max	min	typ*	max		
Input voltage	V_{IH}		2.0	—	—	2.0	—	—	V	
	V_{IL}		—	—	0.8	—	—	0.8	V	
Output voltage	V_{OH}	$V_{CC}=4.75\text{V}, V_{IL}=0.8\text{V}, I_{OH}=-400\mu\text{A}$	2.7	—	—	—	—	—	V	
	V_{OL}	$V_{CC}=4.75\text{V}, V_{IH}=2\text{V}$	$I_{OL}=8\text{mA}$	—	—	0.5	—	—	0.5	V
			$I_{OL}=4\text{mA}$	—	—	0.4	—	—	0.4	
Output current	I_{OH}	$V_{CC}=4.75\text{V}, V_{IL}=0.8\text{V}, V_{OH}=5.5\text{V}$	—	—	—	—	—	100	μA	
Input current	I_{IH}	$V_{CC}=5.25\text{V}, V_I=2.7\text{V}$	—	—	20	—	—	20	μA	
	I_{IL}	$V_{CC}=5.25\text{V}, V_I=0.4\text{V}$	—	—	-0.4	—	—	-0.4	mA	
	I_I	$V_{CC}=5.25\text{V}, V_I=7\text{V}$	—	—	0.1	—	—	0.1	mA	
Short-circuit output current	I_{OS}	$V_{CC}=5.25\text{V}$	-20	—	-100	—	—	—	mA	
Supply current	I_{CCH}	$V_{CC}=5.25\text{V}$	—	1.2	2.4	—	1.2	2.4	mA	
	I_{CCL}		—	3.6	6.6	—	3.6	6.6		
Input clamp voltage	V_{IK}	$V_{CC}=4.75\text{V}, I_{IN}=-18\text{mA}$	—	—	-1.5	—	—	-1.5	V	

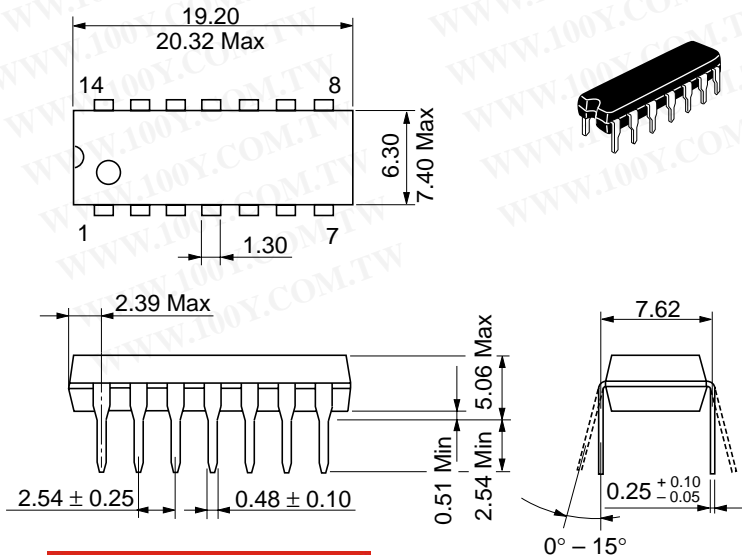
* $V_{CC}=5\text{V}, T_a=25^\circ\text{C}$

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

Item	Symbol	Test Conditions	HD74LS04			HD74LS05			Unit
			min	typ	max	min	typ	max	
Propagation delay time	t_{PLH}	$C_L=15\text{pF}, R_L=2\text{k}\Omega$	—	9	15	—	17	32	ns
	t_{PHL}		—	10	15	—	15	28	

Note) Refer to Test Circuit and Waveform of the Common Item

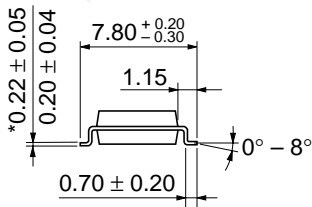
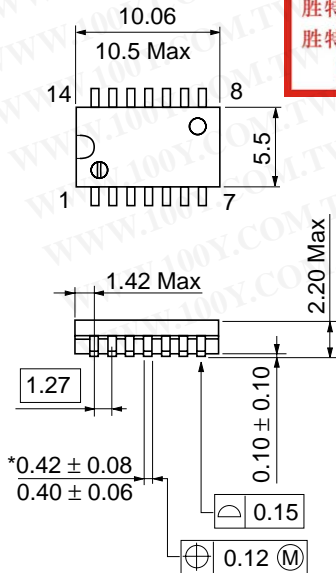
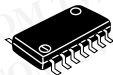
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Hitachi Code	DP-14
JEDEC	Conforms
EIAJ	Conforms
Weight (reference value)	0.97 g

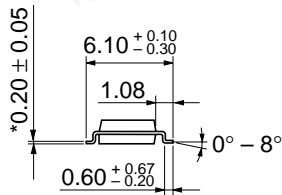
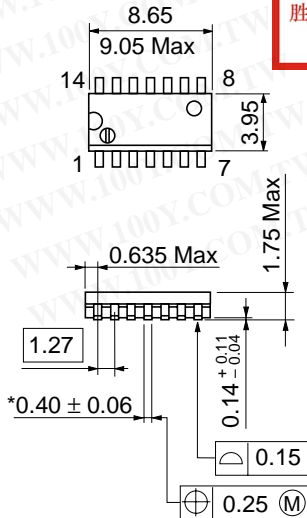
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*Dimension including the plating thickness
 Base material dimension

Hitachi Code	FP-14DA
JEDEC	—
EIAJ	Conforms
Weight (reference value)	0.23 g

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Hitachi Code	FP-14DN
JEDEC	Conforms
EIAJ	Conforms
Weight (reference value)	0.13 g

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