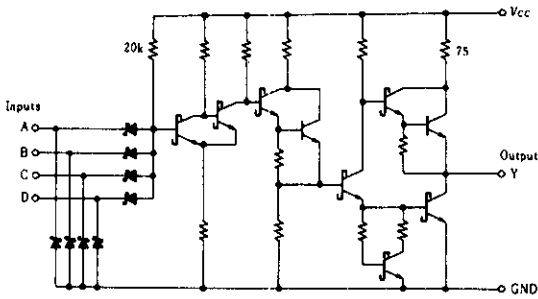
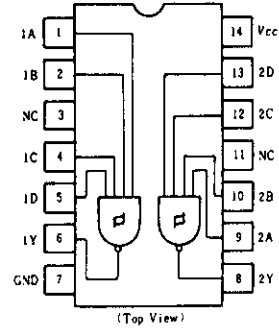


# HD74LS13 ● Dual 4-input Positive NAND Schmitt Triggers

## ■ CIRCUIT SCHEMATIC (1/2)



## ■ PIN ARRANGEMENT



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

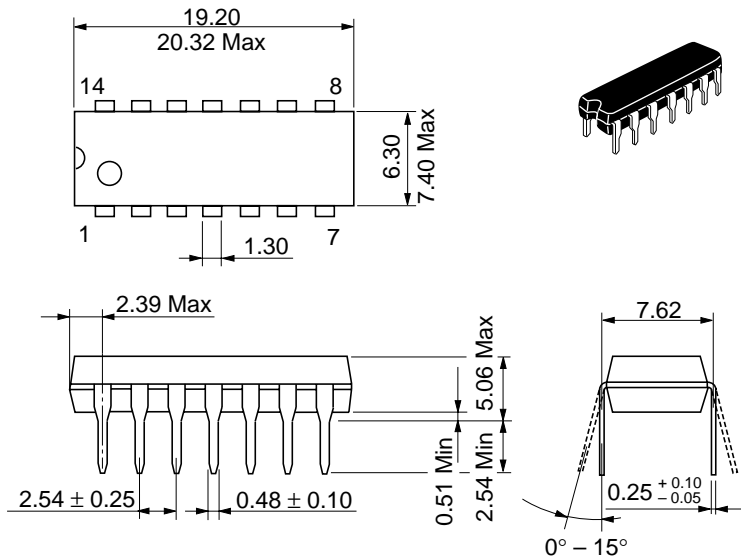
Item	Symbol	Test Conditions	min	typ*	max	Unit	
Input threshold voltage	$V_{T^+}$	$V_{CC} = 5\text{V}$	1.4	1.6	1.9	V	
	$V_{T^-}$	$V_{CC} = 5\text{V}$	0.5	0.7	1.0	V	
Hysteresis	$V_{T^+} - V_{T^-}$	$V_{CC} = 5\text{V}$	0.4	0.9	—	V	
Output voltage	$V_{OH}$	$V_{CC} = 4.75\text{V}, I_{OH} = -400\mu\text{A}, V_I = 0.5\text{V}$	2.7	—	—	V	
	$V_{OL}$	$V_{CC} = 4.75\text{V}, V_I = 1.9\text{V}$	$I_{OL} = 8\text{mA}$	—	—	0.5	V
			$I_{OL} = 4\text{mA}$	—	—	0.4	
Input threshold current	$I_{T^+}$	$V_{CC} = 5\text{V}, V_I = V_{T^+}$	—	-0.14	—	mA	
	$I_{T^-}$	$V_{CC} = 5\text{V}, V_I = V_{T^-}$	—	-0.18	—	mA	
Input current	$I_{IH}$	$V_{CC} = 5.25\text{V}, V_I = 2.7\text{V}$	—	—	20	$\mu\text{A}$	
	$I_{IL}$	$V_{CC} = 5.25\text{V}, V_I = 0.4\text{V}$	—	—	-0.4	mA	
	$I_I$	$V_{CC} = 5.25\text{V}, V_I = 7\text{V}$	—	—	0.1	mA	
Short-circuit output current	$I_{OS}$	$V_{CC} = 5.25\text{V}$	-20	—	-100	mA	
Supply current	$I_{CCH}$	$V_{CC} = 5.25\text{V}$	—	2.9	6	mA	
	$I_{CCL}$	$V_{CC} = 5.25\text{V}$	—	4.1	7	mA	
Input clamp voltage	$V_{IK}$	$V_{CC} = 4.75\text{V}, I_{IN} = -18\text{mA}$	—	—	-1.5	V	

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

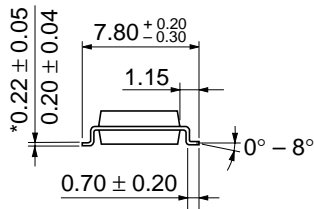
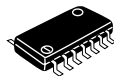
## ■ SWITCHING CHARACTERISTICS ( $V_{CC} = 5\text{V}, T_a = 25^\circ\text{C}$ )

Item	Symbol	Test Conditions	min	typ	max	Unit
Propagation delay time	$t_{PLH}$	$C_L = 15\text{pF}, R_L = 2\text{k}\Omega$	—	15	22	ns
	$t_{PHL}$		—	18	27	ns

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

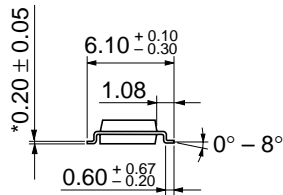
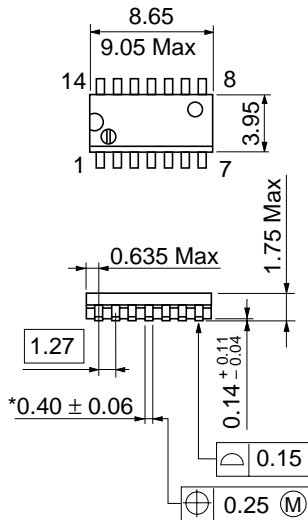


Hitachi Code	DP-14
JEDEC	Conforms
EIAJ	Conforms
Weight (reference value)	0.97 g



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

\*Dimension including the plating thickness  
Base material dimension



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

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