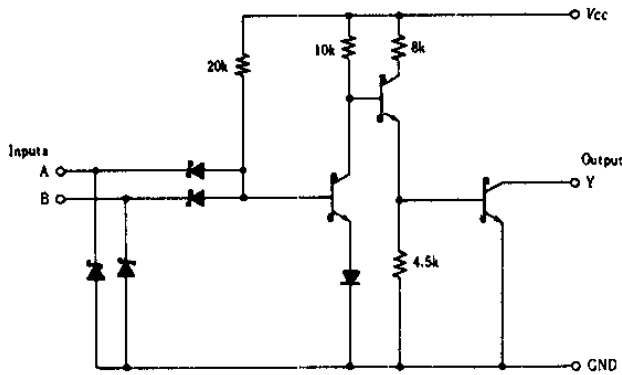
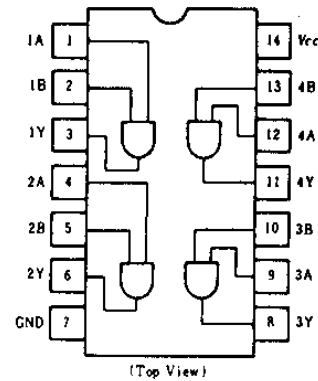


# HD74LS09 ● Quadruple 2-input Positive AND Gates (with Open Collector Outputs)

## ■ CIRCUIT SCHEMATIC (1/4)



## ■ PIN ARRANGEMENT



## ■ 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	min	typ*	max	Unit	
Input voltage	$V_{IH}$		2.0	—	—	V	
	$V_{IL}$		—	—	0.8	V	
Output voltage	$V_{OL}$	$V_{CC}=4.75\text{V}, V_{IL}=0.8\text{V}$	$I_{OL}=8\text{mA}$	—	—	0.5	V
			$I_{OL}=4\text{mA}$	—	—	0.4	
Output current	$I_{OH}$	$V_{CC}=4.75\text{V}, V_{IH}=2\text{V}, V_{OH}=5.5\text{V}$	—	—	100	$\mu\text{A}$	
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	
Supply current	$I_{CCH}$	$V_{CC}=5.25\text{V}$	—	2.4	4.8	mA	
	$I_{CCL}$	$V_{CC}=5.25\text{V}$	—	4.4	8.8	mA	
Input clamp voltage	$V_{IK}$	$V_{CC}=4.75\text{V}, I_{IN}=-18\text{mA}$	—	—	-1.5	V	

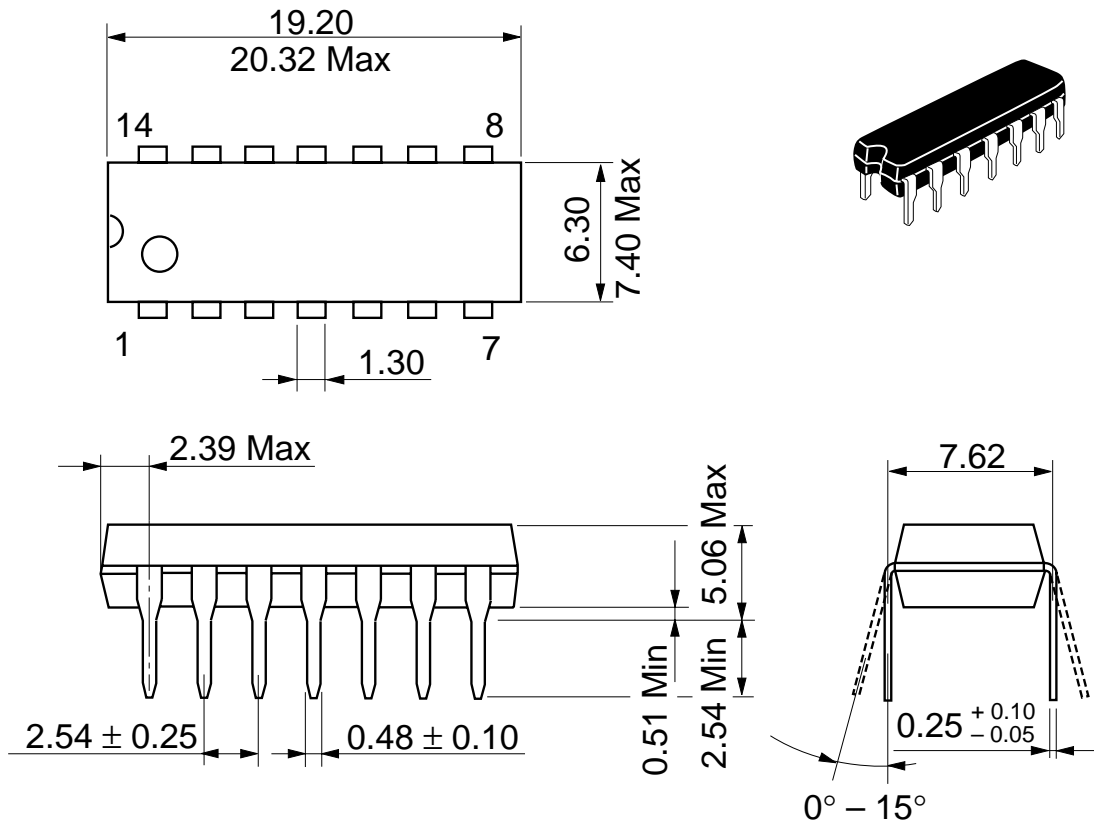
\*  $V_{CC}=5\text{V}, T_a=25^\circ\text{C}$

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

Item	Symbol	Test Conditions	min	typ	max	Unit
Propagation delay time	$t_{PLH}$	$C_L=15\text{pF}, R_L=2\text{k}\Omega$	—	20	35	ns
	$t_{PHL}$		—	17	35	ns

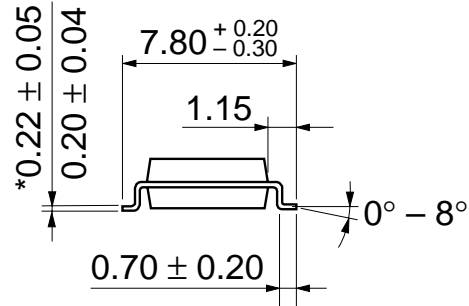
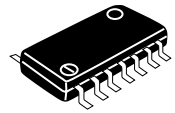
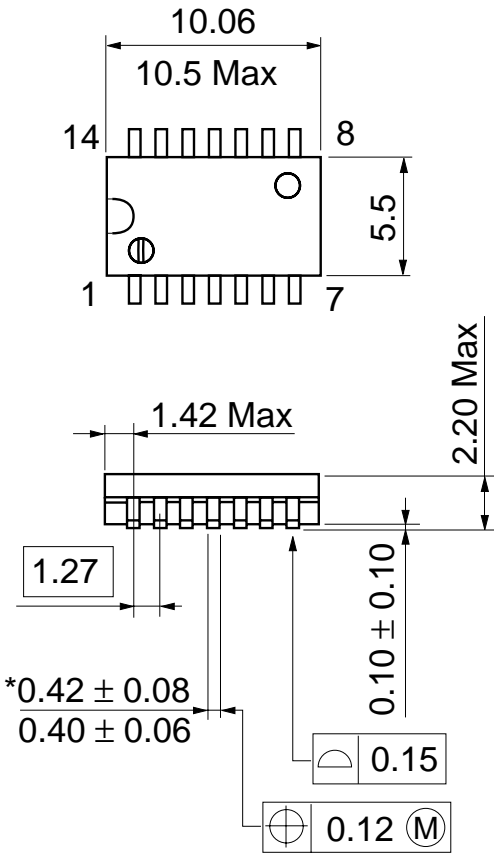
Note) Refer to Test Circuit and Waveform of the Common Item

Unit: mm



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

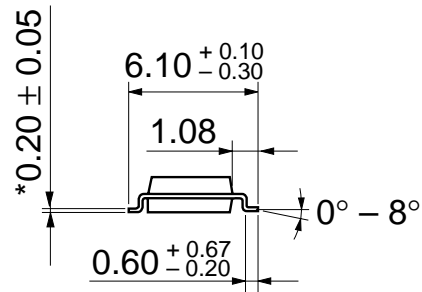
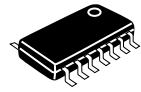
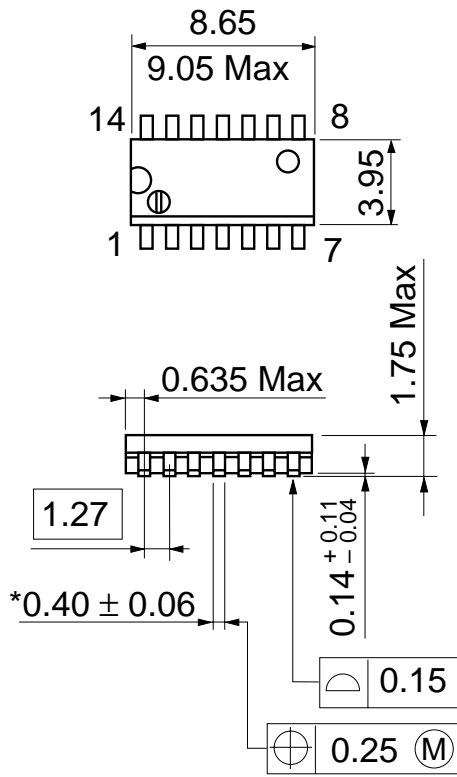
Unit: mm



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

\*Dimension including the plating thickness  
 Base material dimension

Unit: mm



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

\*Pd plating

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## Cautions

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