HD74AC14

Hex Inverter Schmitt Trigger

HITACHI

Description

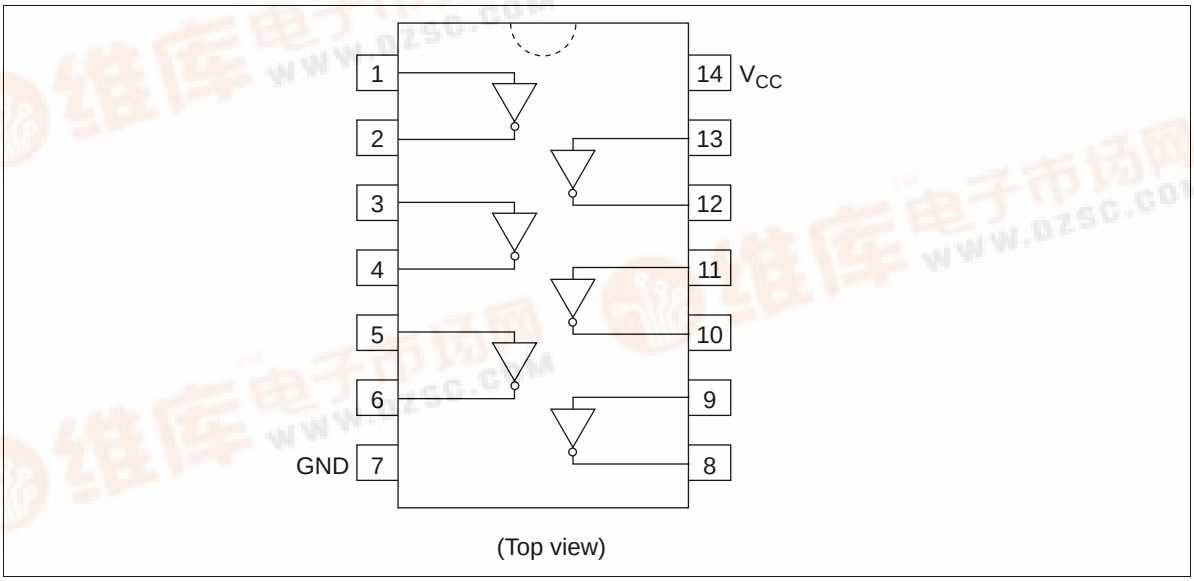
The HD74AC14 contains six logic inverters which accept standard CMOS input signals (TTL levels for HD74ACT14) and provide standard CMOS output levels. They are capable of transforming slowly changing input signals into sharply defined, jitter-free output signals. In addition, they have a greater noise margin than conventional inverters.

The HD74AC14 has hysteresis between the positive-going and negative-going input thresholds (typically 1.0 V) which is determined internally by transistor ratios and is essentially insensitive to temperature and supply voltage variations.

Feature

- Outputs Source/Sink 24 mA

Pin Arrangement



(Top view)

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Function Table

Input	Output
A	**O**
L	H
H	L

DC Characteristics (unless otherwise specified)

Item	Symbol	V_{CC} (V)	HD74AC14	HD74ACT14	Unit	Condition
Maximum quiescent supply current	I_{CC}		40	40	µA	V_{IN} = V_{CC} or ground, V_{CC} = 5.5 V, Ta = Wordt case
Maximum quiescent supply current	I_{CC}		4.0	4.0	µA	V_{IN} = V_{CC} or ground, V_{CC} = 5.5 V, Ta = 25°C
Maximum positive threshold	Vt^+	3.0	2.2	2.0	V	Ta = Worst case
		4.5	3.2			
		5.5	3.9			
Minimum negative threshold	Vt^-	3.0	0.5	0.8	V	Ta = Worst case
		4.5	0.9			
		5.5	1.1			
Maximum hysteresis	Vh (max)	3.0	1.2	1.2	V	Ta = Worst case
		4.5	1.4			
		5.5	1.6			
Minimum hysteresis	Vh (min)	3.0	0.3	0.4	V	Ta = Worst case
		4.5	0.4			
		5.5	0.5			

AC Characteristics

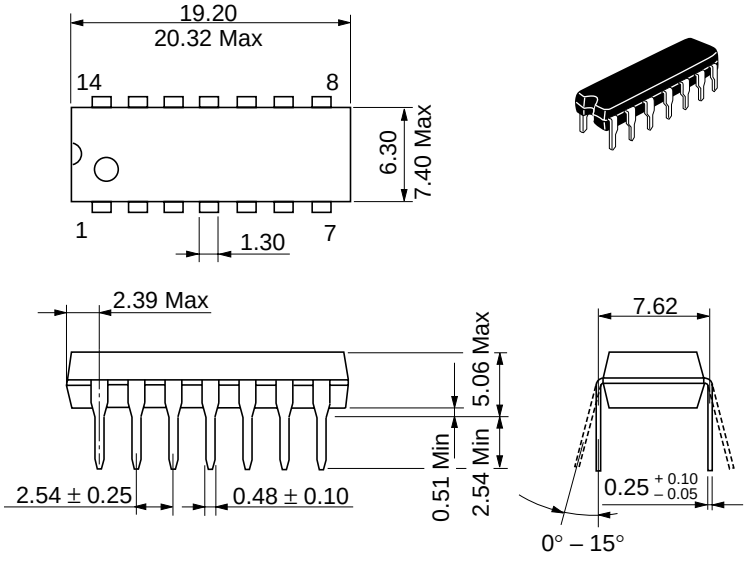
Item	Symbol	V_{CC} (V)*[1]	Ta = +25°C, C_L = 50 pF			Ta = –40°C to +85°C, C_L = 50 pF		Unit
			Min	Typ	Max	Min	Max	
Propagation delay	t_{PLH}	3.3	1.0	9.5	13.5	1.0	15.0	ns
		5.0	1.0	7.0	10.0	1.0	11.0	
Propagation delay	t_{PHL}	3.3	1.0	7.5	11.5	1.0	13.0	ns
		5.0	1.0	6.0	8.5	1.0	9.5	

Note: 1. Voltage Range 3.3 is 3.3 V ± 0.3 V
Voltage Range 5.0 is 5.0 V ± 0.5 V

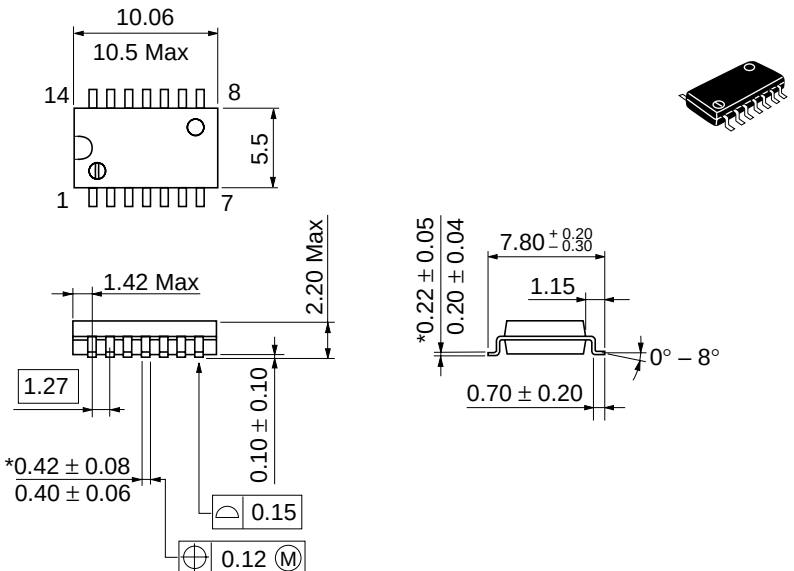
Capacitance

Item	Symbol	Typ	Unit	Condition
Input capacitance	C_{IN}	4.5	pF	V_{CC} = 5.5 V
Power dissipation capacitance	C_{PD}	25.0	pF	V_{CC} = 5.0 V

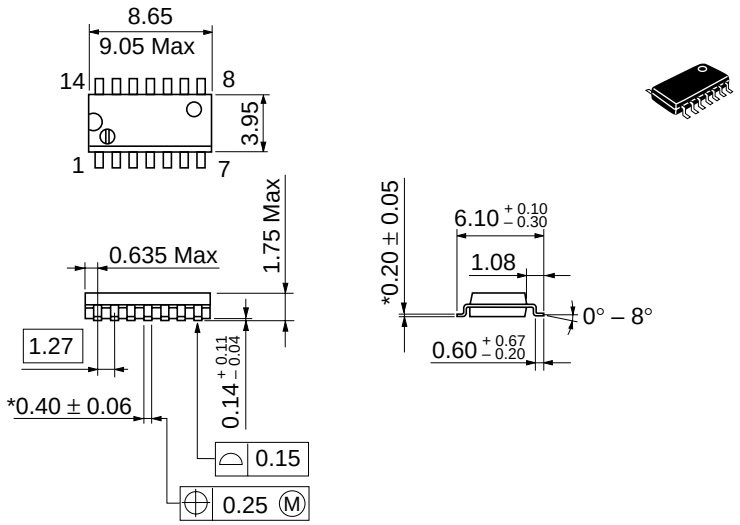
Unit: mm


19.20
20.32 Max
14
8
6.30
7.40 Max
1
7
1.30
2.39 Max
5.06 Max
0.51 Min
2.54 Min
2.54 ± 0.25
0.48 ± 0.10
7.62
0.25 + 0.10 − 0.05
0° – 15°

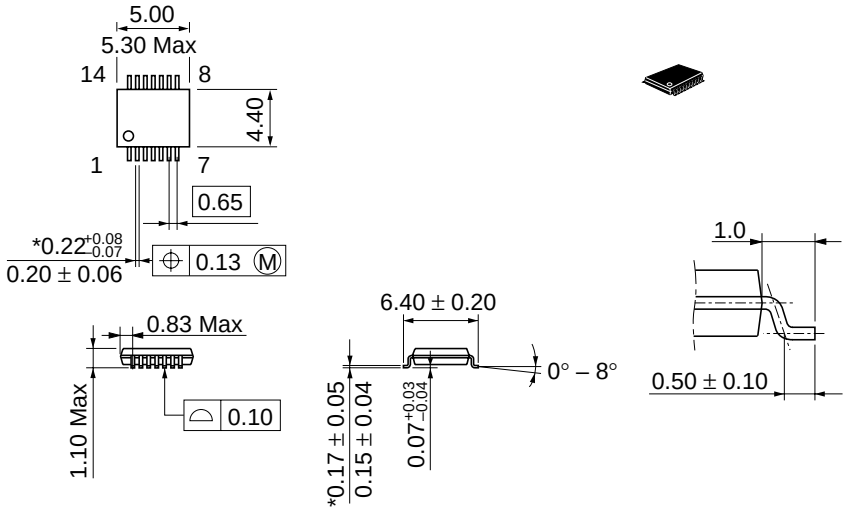
Unit: mm


10.06
10.5 Max
14
8
1
7
5.5
1.42 Max
2.20 Max
1.27
*0.42 ± 0.08
0.40 ± 0.06
0.10 ± 0.10
0.15
0.12 M
*0.22 ± 0.05
0.20 ± 0.04
7.80 +0.20 −0.30
1.15
0° – 8°
0.70 ± 0.20

Unit: mm


8.65
9.05 Max
14
8
3.95
1
7
1.75 Max
0.635 Max
1.27
*0.40 ± 0.06
0.14 +0.11 −0.04
0.15
0.25 M
*0.20 ± 0.05
6.10 +0.10 −0.30
1.08
0° – 8°
0.60 +0.67 −0.20

Unit: mm


5.00
5.30 Max
14
8
4.40
1
7
0.65
*0.22 +0.08 −0.07
0.20 ± 0.06
0.13 M
0.83 Max
1.10 Max
0.10
6.40 ± 0.20
0° – 8°
*0.17 ± 0.05
0.15 ± 0.04
0.07 +0.03 −0.04
1.0
0.50 ± 0.10

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