

HD74HC423A

Dual Retriggerable Monostable Multivibrators

HITACHI

ADE-205-505 (Z)
1st. Edition
Sep. 2000







Description

This multivibrator features output-pulse-duration control by two methods. The basic pulse duration is programmed by selection of external resistance and capacitance values. Once triggered, the basic pulse duration may be extended by retriggering the gated low-level-active (A) or high-level-active (B) inputs, or be reduced by use of the overriding clear. The B input is a Schmitt trigger enabling jitter-free triggering from input signals with slow transition rates.

Features

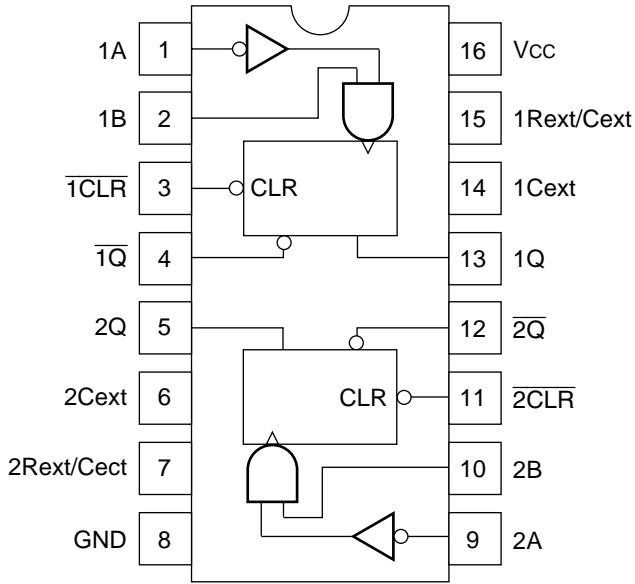
- High Speed Operation
- High Output Current: Fanout of 10 LSTTL Loads
- Wide Operating Voltage: $V_{CC} = 2$ to 6 V
- Low Input Current: 1 μ A max
- Low Quiescent Supply Current

Function Table

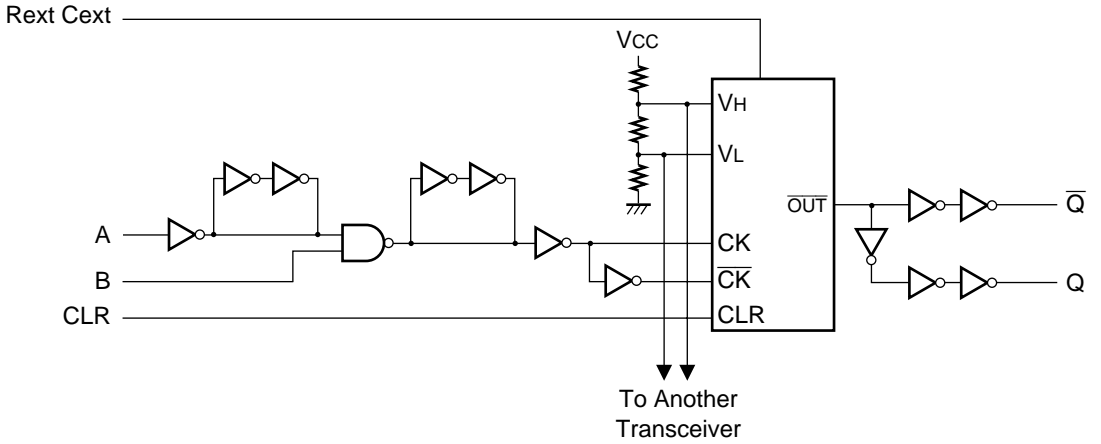
Inputs			Output	
Clear	A	B	Q	\bar{Q}
L	X	X	L	H
X	H	X	L	H
X	X	L	L	H
H	L			
H		H		

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Pin Arrangement



Logic diagram



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DC Characteristics

Item	Sym- bol	V _{CC} (V)	Ta = 25°C			Ta = -40 to +85°C		Unit	Test Conditions	
			Min	Typ	Max	Min	Max			
Input voltage	V _{IH}	2.0	1.5	—	—	1.5	—	V		
		4.5	3.15	—	—	3.15	—			
		6.0	4.2	—	—	4.2	—			
	V _{IL}	2.0	—	—	0.5	—	0.5	V		
		4.5	—	—	1.35	—	1.35			
		6.0	—	—	1.8	—	1.8			
Output voltage	V _{OH}	2.0	1.9	2.0	—	1.9	—	V	Vin = V _{IH} or V _{IL} I _{OH} = -20 μA	
		4.5	4.4	4.5	—	4.4	—			
		6.0	5.9	6.0	—	5.9	—			
		4.5	4.18	—	—	4.13	—			I _{OH} = -4 mA
		6.0	5.68	—	—	5.63	—			I _{OH} = -5.2 mA
	V _{OL}	2.0	—	0.0	0.1	—	0.1	V	Vin = V _{IH} or V _{IL} I _{OL} = 20 μA	
		4.5	—	0.0	0.1	—	0.1			
		6.0	—	0.0	0.1	—	0.1			
		4.5	—	—	0.26	—	0.33			I _{OL} = 4 mA
		6.0	—	—	0.26	—	0.33			I _{OL} = 5.2 mA
Input current	I _{in}	6.0	—	—	±0.1	—	±1.0	μA	Vin = V _{CC} or GND	
Quiescent supply current	Standby state	I _{CC}	6.0	—	—	130	—	220	μA	Vin = V _{CC} or GND I _{out} = 0 μA
	Active state		—	—	—	130	—	220		GND Rext/Cext = 0.5 V _{CC}

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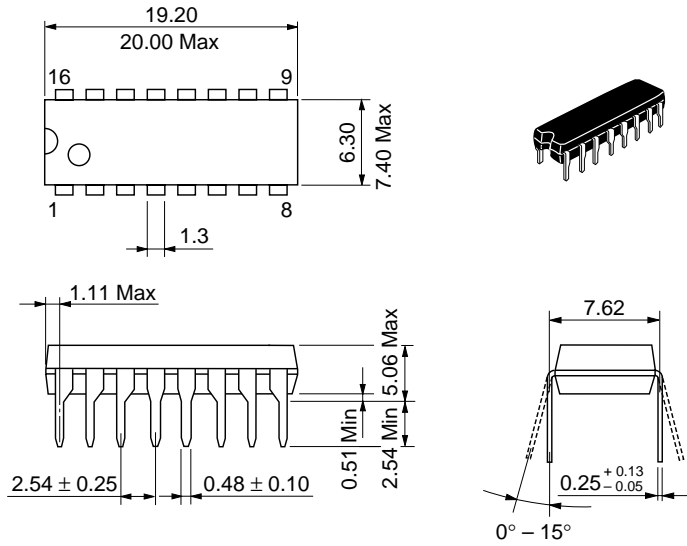
AC Characteristics ($C_L = 50$ pF, Input $t_r = t_f = 6$ ns)

Item	Symbol	V_{CC} (V)	$T_a = 25^\circ\text{C}$		$T_a = -40$ to $+85^\circ\text{C}$		Unit	Test Conditions				
			Min	Typ	Max	Min			Max			
Propagation delay time	t_{PLH}	2.0	—	—	210	—	265	ns	A or B to Q			
		4.5	—	20	42	—	53					
		6.0	—	—	36	—	45					
	t_{PHL}	2.0	—	—	240	—	300	ns	A or B to \bar{Q}			
		4.5	—	21	48	—	60					
		6.0	—	—	41	—	51					
	t_{PHL}	2.0	—	—	170	—	215	ns	Clear to Q			
		4.5	—	17	34	—	43					
		6.0	—	—	29	—	37					
	t_{PLH}	2.0	—	—	180	—	225	ns	Clear to \bar{Q}			
		4.5	—	15	36	—	45					
		6.0	—	—	31	—	38					
Pulse width	t_w	2.0	150	—	—	190	—	ns	A, B, Clear			
		4.5	30	6	—	38	—					
		6.0	26	—	—	33	—					
Removal time	t_{rem}	2.0	0	—	—	5	—	ns	Clear			
		4.5	0	-3	—	5	—					
		6.0	0	—	—	5	—					
Minimum output pulse width	$t_{WQ(\min)}$	2.0	—	1.5	—	—	—	μs	Cext = 28 pF	Rext = 6 k Ω		
		4.5	—	450	—	—	—				ns	Rext = 2 k Ω
		6.0	—	380	—	—	—					
Output pulse width	t_{WQ}	4.5	—	1.0	—	—	—	ms	Cext = 0.1 μF , Rext = 10 k Ω			
Output rise/fall time	t_{TLH}	2.0	—	—	75	—	95	ns				
	t_{THL}	4.5	—	5	15	—	19					
		6.0	—	—	13	—	16					
Input capacitance	C_{in}	—	—	—	20	—	20	pF	Pins 7 & 15			
		—	—	5	10	—	10		Other pins			

Caution in use: In order to prevent any malfunctions due to noise, connect a highfrequency performance capacitor between V_{CC} and GND, and keep the wiring between the external components and Cext, Rext/Cext pins as short as possible.

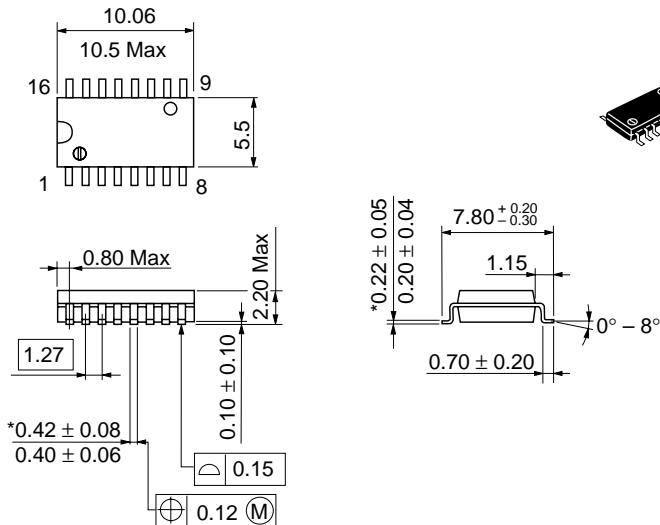
Package Dimensions

Unit: mm



Hitachi Code	DP-16
JEDEC	Conforms
EIAJ	Conforms
Mass (reference value)	1.07 g

Unit: mm



*Dimension including the plating thickness
Base material dimension

Hitachi Code	FP-16DA
JEDEC	—
EIAJ	Conforms
Mass (reference value)	0.24 g

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