

HD74HC123A

Dual Retriggerable Monostable Multivibrators (with Clear)

HITACHI

ADE-205-438 (Z)
1st. Edition
Sep. 2000

Description

This multivibrator features both a negative, A, and a positive, B, transition triggered input, either of which can be used as an inhibit input. Also included is a clear input that when taken low resets the one shot. The HD74HC123A can be triggered on the positive transition of the clear while A is held low and B is held high.

The HD74HC123A is retriggerable. That is it may be triggered repeatedly while their outputs are generating a pulse and the pulse will be extended.

Pulse width stability over a wide range of temperature. The output pulse equation is simply: $t_w = (R_{ext}) (C_{ext})$.

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 μA max
- Low Quiescent Supply Current

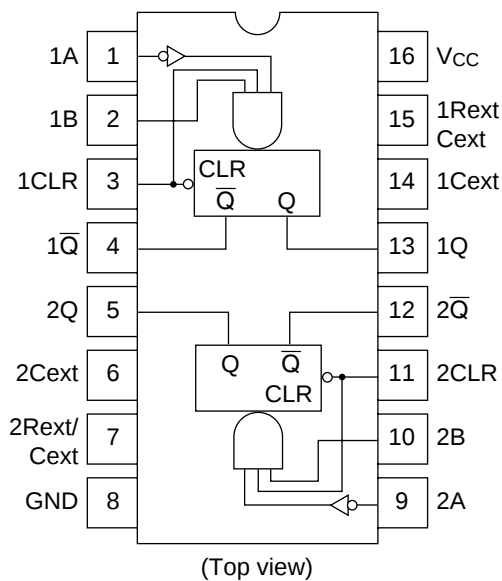
Function Table

Inputs			Outputs	
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		
	L	H		

Note: External timing capacitance connects between Cext and Rext/Cext.



Pin Arrangement



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	Standby state	I _{CC}	6.0	—	—	130	—	220	µA	Vin = V _{CC} or GND	I _{out} = 0 µA
supply current	Active state			—	—	130	—	220			Restt/Cext = 0.5 V _{CC}

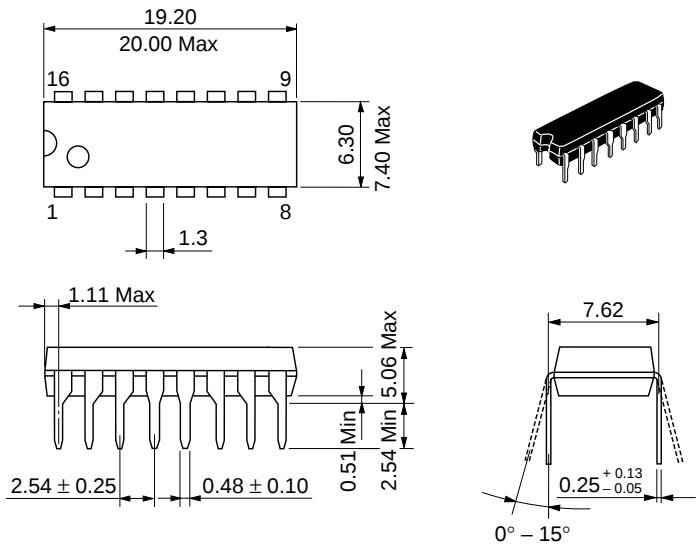
AC Characteristics (C_L = 50 pF, Input t_r = t_f = 6 ns)

Item	Symbol	V _{CC} (V)	Ta = 25°C		Ta = -40 to +85°C		Unit	Test Conditions	
			Min	Typ	Max	Min			
Propagation delay time	t _{PLH}	2.0	—	—	210	—	265	ns	A, B or Clear to Q
		4.5	—	22	42	—	53		
		6.0	—	—	36	—	45		
	t _{PHL}	2.0	—	—	240	—	300	ns	A, B or Clear to $\overline{Q}$
		4.5	—	23	48	—	60		
		6.0	—	—	41	—	51		
	t _{PHL}	2.0	—	—	170	—	215	ns	Clear to Q
		4.5	—	18	34	—	43		
		6.0	—	—	29	—	37		
	t _{PLH}	2.0	—	—	180	—	225	ns	Clear to $\overline{Q}$
		4.5	—	16	36	—	45		
		6.0	—	—	31	—	38		
Output rise time	t _{TLH}	2.0	—	—	75	—	95	ns	
		4.5	—	5	15	—	19		
		6.0	—	—	13	—	16		
Output fall time	t _{THL}	2.0	—	—	75	—	95	ns	
		4.5	—	5	15	—	19		
		6.0	—	—	13	—	16		
Pulse width	t _w	2.0	150	—	—	190	—	ns	A, B, Clear
		4.5	30	6	—	38	—		
		6.0	26	—	—	33	—		
Minimum output pulse width	t _{WQ(min)}	2.0	—	1.5	—	—	—	μs	Cext = 28 pF Rext = 6 kΩ
		4.5	—	450	—	—	—	ns	Rext = 2 kΩ
		6.0	—	380	—	—	—		
Output pulse width	t _{WQ}	4.5	—	1.0	—	—	—	ms	Cext = 0.1 μF, Rext = 10 kΩ
Input capacitance	Cin	—	—	5	10	—	10	pF	

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

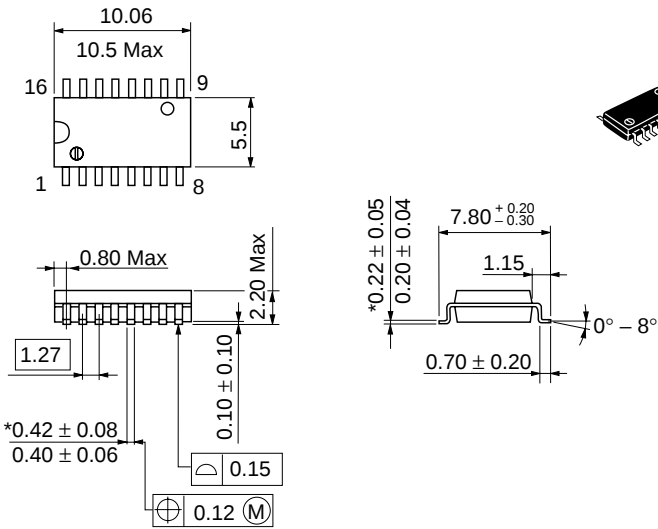
Package Dimensions

Unit: mm



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

Unit: mm



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

*Dimension including the plating thickness
Base material dimension

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Colophon 2.0