

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

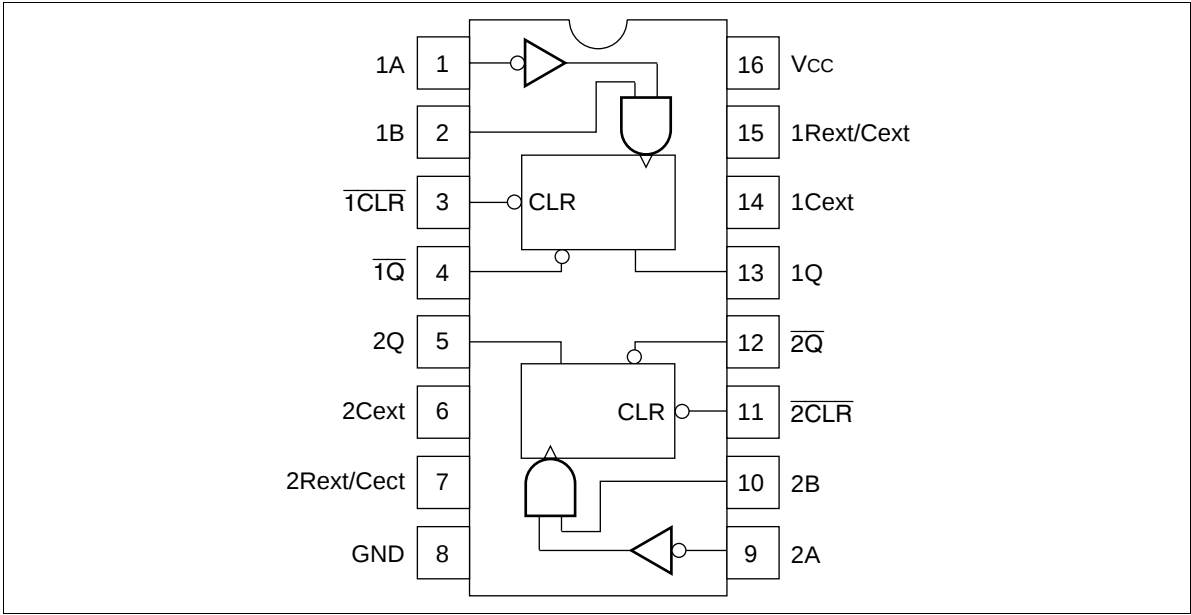
- High Speed Operation
- High Output Current: Fanout of 10 LSTTL Loads
- Wide Operating Voltage: $V_{CC} = 2$ to 6 V
- Low Input Current: 1 μ A max
- Low Quiescent Supply Current

Function Table

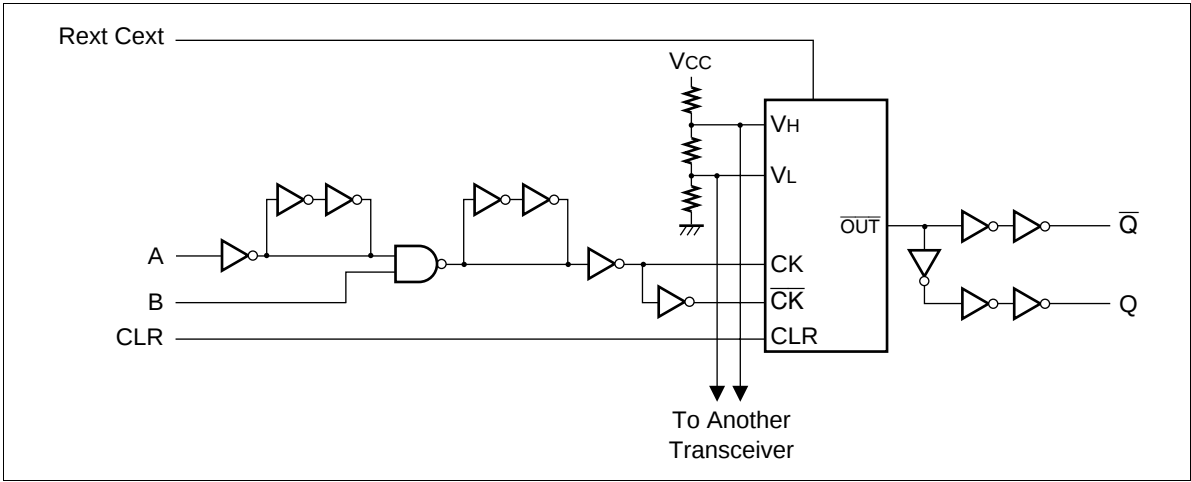
Inputs			Output	
Clear	A	B	Q	$\bar{Q}$
L	X	X	L	H
X	H	X	L	H
X	X	L	L	H
H	L			
H		H		

HD74HC423A

Pin Arrangement



Logic diagram



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	I _{out} = 0 μA
supply current	Active state			—	—	130	—	220	GND	Rext/Cext = 0.5 V _{CC}

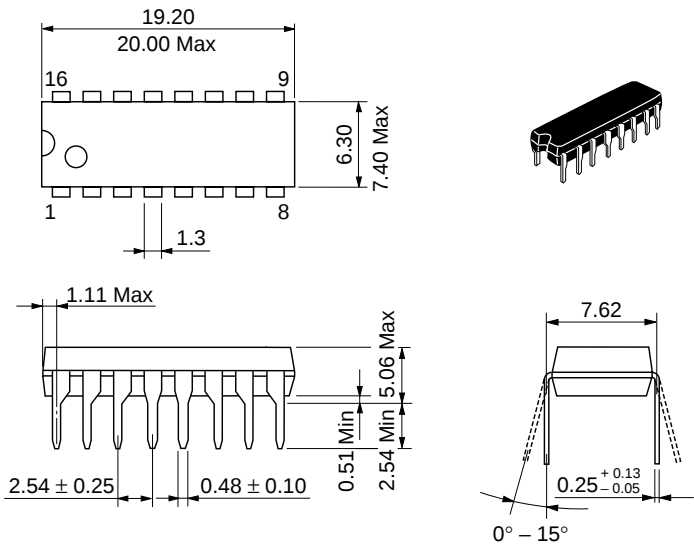
AC Characteristics (C_L = 50 pF, Input t_r = t_f = 6 ns)

Item	Symbol	V _{CC} (V)	Ta = 25°C		Ta = −40 to +85°C		Unit	Test Conditions		
			Min	Typ	Max	Min				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 $\overline{Q}$	
		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 $\overline{Q}$	
		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 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	
Output rise/fall time	t _{TLH}	2.0	—	—	75	—	95	ns		
	t _{THL}	4.5	—	5	15	—	19			
		6.0	—	—	13	—	16			
Input capacitance	Cin	—	—	—	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.

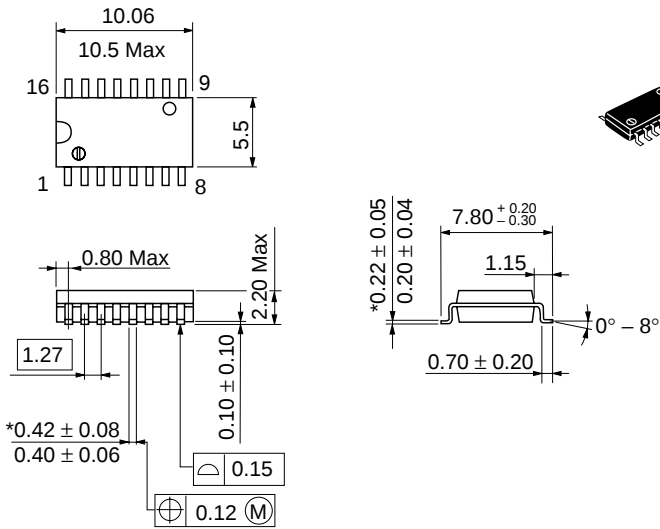
Package Dimensions

Unit: mm



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

Unit: mm



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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