HD14566B

Industrial Time Base Generator

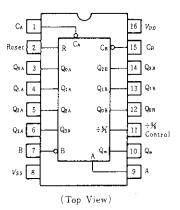
The HD14566B industrial time base generator consists of a divide-by-10 ripple counter and a divide-by-5 or divide-by-6 ripple counter to permit stable time generation from a 50 or 60Hz line. By cascading this device as divide-by-60 counter to permit stable time generation from a 50 or 60Hz line. By cascading this device as divide-by-60 counters, seconds and minutes can be counted and are available in BCD format at the circuit outputs

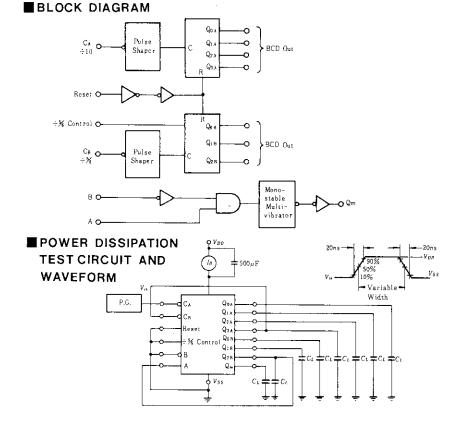
An internal monostable multivibrator is included whose output can be used as a reset or clock pulse providing additional frequency flexibility. Also a pin has been included to allow divide-by-5 counting for generating 1.0Hz from European 50Hz line.

FEATURES

- Negative Edge Triggered Counters for Ease of Cascading
- Pulse Shapers on Counter Inputs Accept Slow Input Rise Times
- Monostable Multivibrator Positive or Negative Edge Triggered
- Noise Immunity = 45% of V_{DD} typ.
- Quiescent Current = 5nA/pkg typ. @5V
- Supply Voltage Range = 3 to 18V
- Capable of Driving One Low-power Schottky TTL Load Over the Rated Temperature Range







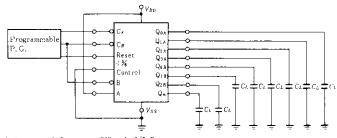
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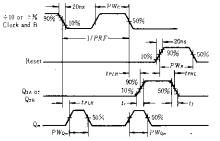
Characteristic Sy	Symbol		-40°C		25° C			8 5°C			
	Зушног	$V_{oo}(V)$	$V_{DD}(V)$ Test Conditions	min	max	min	typ	max	min	max	Unit
Output Voltage -		5.0	$V_{in} = V_{DD}$ or 0	-	0.05	—	0	0.05	-	0.05	v
	Vol	10		—	0.05		0	0.05	—	0.05	
		15		-	0.05	—	0	0.05	—	0.05	
		5.0	$V_{in} = 0$ or V_{DD}	4.95		4.95	5.0	—	4.95		
	V _{0H}	10		9.95	-	9,95	10	_	9.95	_	v
		15		14.95	—	14.95	15	—	14.95	—	
Input Voltage		5.0	$V_{out} = 4.5$ or $0.5 \mathrm{V}$	-	1.5		2.25	1.5	_	1.5	v
	VIL	10	$V_{out} = 9.0 \text{ or } 1.0 \text{ V}$	_	3.0	—	4.50	3.0	—	3.0	
		15	$V_{out} = 13.5 \text{ or } 1.5 \text{ V}$	-	4.0	_	6.75	4.0	_	4.0	
		5.0	$V_{out} = 0.5 \text{ or } 4.5 \text{ V}$	3.5	- 1	3.5	2.75	_	3.5	—	v
	VIH	10	$V_{out} = 1.0 \text{ or } 9.0 \text{ V}$	7.0	-	7.0	5.50	-	7.0	-	
		15	$V_{out} = 1.5$ or $13.5 \mathrm{V}$	11.0	_	11.0	8.25	_	11.0	—	
Output Drive Current		5.0	$V_{OH} = 2.5 \text{ V}$	-1.0	_	0.8	-1.7	—	-0.6	—	mA
	7	5.0	$V_{OH} = 4.6 \mathrm{V}$	-0.2	-	-0.16	-0.36	—	- 0.12		
	Іон	10	$V_{OH} = 9.5 \mathrm{V}$	-0.5	—	-0.4	-0.9	_	-0.3	_	
		15	$V_{OH} = 13.5 \mathrm{V}$	-1.4	_	-1.2	-3.5	_	-1.0	_	
		5.0	$V_{OL} = 0.4 \mathrm{V}$	0.52	_	0.44	0.88	_	0.36		mA
	Ioc	10	$V_{OL} = 0.5 \mathrm{V}$	1.3	-	1.1	2.25	_	0.9	—	
		15	$V_{GL} = 1.5 \mathrm{V}$	3.6	-	3.0	8.8	_	2.4		
Input Current	Iin	15			± 0.3	—	± 0.0001	± 0.3	-	± 1.0	μA
Input Capacitance	<i>C</i>		$V_{in} = 0$	-	_	_	5.0	7.5	_	_	pF
Quiescent Current		5.0	- Zero Signal, - per Package	_	20	—	0.005	20	_	150	
	IDD	10		-	40	. —	0.010	40	_	300	μA
		15		_	80		0.015	80	_	600	
Total Supply Current*		5.0	Dynamic-IDD,	1 -	-	_	1.0			-	<u></u>
	Ιτ	10	per Gate	Gate — — — 4	2.0	_	_	_	μA		
		15	$C_L = 50 \mathrm{pF}, f = 1 \mathrm{kHz}$		_	_	3.0	_	i —		-

ELECTRICAL CHARACTERISTICS

* To calculate total supply current at frequency other than 1kHz. $(@V_{DD} = 5.0V I_T = (1.0 \mu A/kHz)f + I_{DD}, @V_{DD} = 10V I_T = (2.0 \mu A/kHz)f + I_{DD}, @V_{DD} = 15V I_T = (3.0 \mu A/kHz)f + I_{DD}$

SWITCHING TIME TEST CIRCUIT





Note) Assume ± 10 Counter at "6" and $\pm 5/6$ Counter at "2" at bigining of sequence.

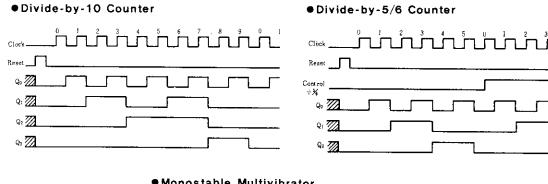


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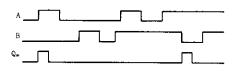
SWITCHING CHARACTERISTICS ($C_L = 50 \text{pF}, Ta = 25^{\circ}\text{C}$)

Characteri	Symbol	$V_{DD}(\mathbf{V})$	min	typ	max	Unit	
	t.	5.0	_	180	400	ns	
Output Rise Time		10		90	200		
		15		65	160		
Output Fall Time		tj	5.0	_	120	250	ns
			10		60	125	
			15	_	40	100	
	Clock to Q3A	tрін, tphi	5.0		1450	4500	ns
·•			10	_	530	1500	
			15		320	1000	
Propagation Delay Time	Reset to Q _{3A}	t phl	5.0		930	3000	ns
			10	_	315	1000	
			15		210	750	
	PWc	5.0	1200	400	·	ns	
Clock Pulse Width		10	400	125			
		15	270	90			
	PW _R	5.0	1200	400		ns	
Reset Pulse Width		10	400	125	—		
		15	270	90			
	PRF	5.0		1.0	0.3	MHz	
Clock Frequency		10		2.5	1.0		
		15	_	4.2	1.5		
		tr, lj	5.0	No Limit			
Clock Pulse Rise and Fall Time	10						
	15						
	PW Qm	5.0	1200	2800			
Monostable Multibivrator Pulse W		10	400	900	_	ns	
		15	300	600			

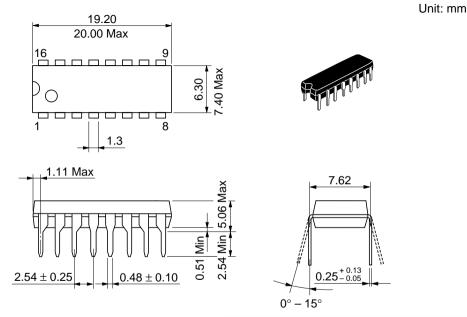
TIMING DIAGRAM



Monostable Multivibrator



💹 = Don't Care



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

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