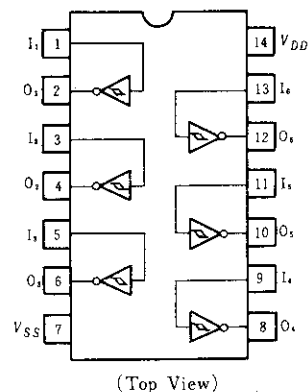


Hex Schmitt Trigger

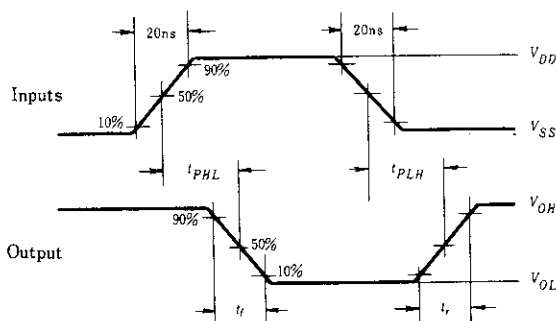
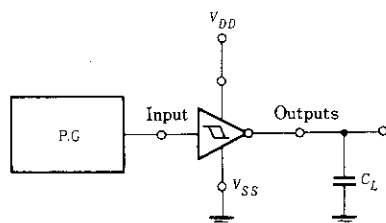
■ FEATURES

- Quiescent Current = 0.5nA typ/pkg @5V
- Noise Immunity = 45% of V_{DD} typ
- Capable of Driving One Low-power Schottky TTL Load Over the Rated Temperature Range
- Pin-for Pin Replacements for MC14584B Series

■ PIN ARRANGEMENT



■ SWITCHING TIME TEST CIRCUIT



ELECTRICAL CHARACTERISTICS

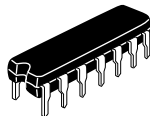
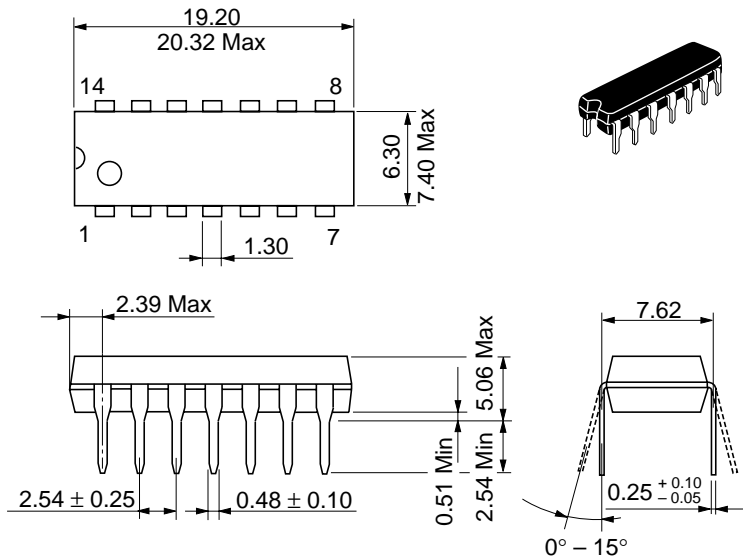
Characteristic	Symbol	$V_{DD}(V)$	Test Conditions	-40°C		25°C			85°C		Unit
				min	max	min	typ	max	min	max	
Output Voltage	V_{OL}	5.0	$V_{in}=V_{DD}$	—	0.05	—	0	0.05	—	0.05	V
		10		—	0.05	—	0	0.05	—	0.05	
		15		—	0.05	—	0	0.05	—	0.05	
	V_{OH}	5.0	$V_{in}=0$	4.95	—	4.95	5.0	—	4.95	—	V
		10		9.95	—	9.95	10	—	9.95	—	
		15		14.95	—	14.95	15	—	14.95	—	
Input Voltage	V_{IL}	5.0	$V_{out}=4.5V$	—	1.5	—	2.25	1.5	—	1.5	V
		10	$V_{out}=9.0V$	—	3.0	—	4.50	3.0	—	3.0	
		15	$V_{out}=13.5V$	—	4.0	—	6.75	4.0	—	4.0	
	V_{IH}	5.0	$V_{out}=0.5V$	3.5	—	3.5	2.75	—	3.5	—	V
		10	$V_{out}=1.0V$	7.0	—	7.0	5.50	—	7.0	—	
		15	$V_{out}=1.5V$	11.0	—	11.0	8.25	—	11.0	—	
Output Drive Current	I_{OH}	5.0	$V_{OH}=2.5V$	-2.5	—	-2.1	-4.2	—	-1.7	—	mA
		5.0	$V_{OH}=4.6V$	-0.52	—	-0.44	-0.88	—	-0.36	—	
		10	$V_{OH}=9.5V$	-1.3	—	-1.1	-2.25	—	-0.9	—	
		15	$V_{OH}=13.5V$	-3.6	—	-3.0	-8.8	—	-2.4	—	
	I_{OL}	5.0	$V_{OL}=0.4V$	0.52	—	0.44	0.88	—	0.36	—	mA
		10	$V_{OL}=0.5V$	1.3	—	1.1	2.25	—	0.9	—	
		15	$V_{OL}=1.5V$	3.6	—	3.0	8.8	—	2.4	—	
Input Current	I_{in}	15		—	± 0.3	—	± 0.0001	± 0.3	—	± 1.0	μA
Input Capacitance	C_{in}		$V_{in}=0$	—	—	—	5.0	7.5	—	—	pA
Quiescent Current	I_{DD}	5.0	Zero Signal, per Package	—	1.0	—	0.0005	1.0	—	7.5	μA
		10		—	2.0	—	0.0010	2.0	—	15	
		15		—	4.0	—	0.0015	4.0	—	34	
Total Supply Current*	I_T	5.0	Dynamic + I_{DD} ,	—	—	—	1.8	—	—	—	μA
		10	per Gate	—	—	—	3.6	—	—	—	
		15	$C_L=50pF$, $f=1kHz$	—	—	—	5.4	—	—	—	
Hysteresis Voltage	V_H	5.0		0.12	1.0	0.10	0.55	1.0	0.08	1.0	V
		10		0.26	1.3	0.20	0.7	1.2	0.15	1.2	
		15		0.47	1.4	0.30	1.1	1.5	0.2	1.4	
Threshold Voltage	V_{T^+}	5.0		1.9	3.5	1.8	2.7	3.4	1.7	3.4	V
		10		3.4	7.0	3.3	5.3	6.9	3.2	6.9	
		15		5.2	10.6	5.2	8.0	10.5	5.2	10.5	
	V_{T^-}	5.0		1.6	3.3	1.6	2.1	3.2	1.5	3.2	
		10		3.0	6.7	3.0	4.6	6.7	3.0	6.7	
		15		4.5	9.7	4.6	6.9	9.8	4.7	9.9	

* To calculate total supply current at frequency other than 1kHz.

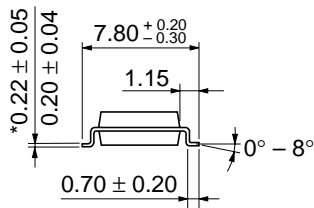
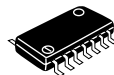
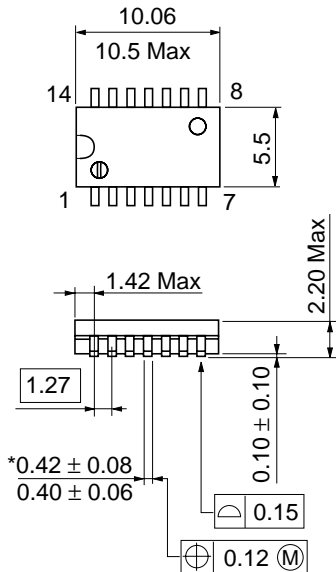
@ $V_{DD}=5.0V$ $I_T=(1.8\mu A/kHz)f+I_{DD}$ @ $V_{DD}=10V$ $I_T=(3.6\mu A/kHz)f+I_{DD}$ @ $V_{DD}=15V$ $I_T=(5.4\mu A/kHz)f+I_{DD}$

SWITCHING CHARACTERISTICS ($C_L=50pF$, $T_a=25^\circ C$)

Characteristic	Symbol	$V_{DD}(V)$	min	typ	max	Unit
Output Rise Time	t_r	5.0	—	100	200	ns
		10	—	50	100	
		15	—	40	80	
Output Fall Time	t_f	5.0	—	100	200	ns
		10	—	50	100	
		15	—	40	80	
Propagation Delay Time	t_{PLH}	5.0	—	125	250	ns
		10	—	50	100	
		15	—	40	80	
	t_{PHL}	5.0	—	125	250	ns
		10	—	50	100	
		15	—	40	80	

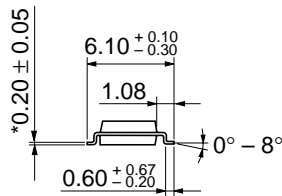
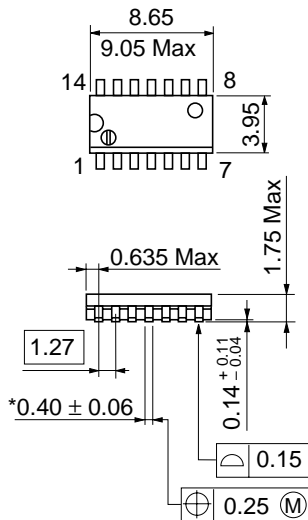


Hitachi Code	DP-14
JEDEC	Conforms
EIAJ	Conforms
Weight (reference value)	0.97 g



Hitachi Code	FP-14DA
JEDEC	—
EIAJ	Conforms
Weight (reference value)	0.23 g

*Dimension including the plating thickness
Base material dimension



Hitachi Code	FP-14DN
JEDEC	Conforms
EIAJ	Conforms
Weight (reference value)	0.13 g

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