

Master-Slave Flip-Flop

Master slave construction renders the MC1670 relatively insensitive to the shape of the clock waveform, since only the voltage levels at the clock inputs control the transfer of information from data input (D) to output.

When both clock inputs (C1 and C2) are in the low state, the data input affects only the "Master" portion of the flip-flop. The data present in the "Master" is transferred to the "Slave" when clock inputs (C1 "OR" C2) are taken from a low to a high level. In other words, the output state of the flip-flop changes on the positive transition of the clock pulse.

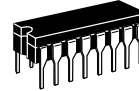
While either C1 "OR" C2 is in the high state, the "Master" (and data input) is disabled.

Asynchronous Set (S) and Reset (R) override Clock (C) and Data (D) inputs.

Power Dissipation = 220 mW typ (No Load)

f_{Tog} = 350 MHz typ

MC1670



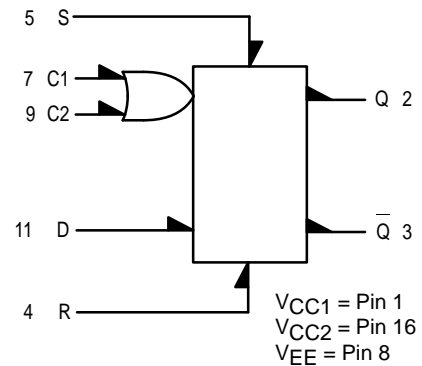
L SUFFIX
CERAMIC PACKAGE
CASE 620-10

TRUTH TABLE

R	S	D	C	Q_{n+1}
L	H	X	X	H
H	L	X	X	L
H	H	X	X	N.D.
L	L	L	L	Q_n
L	L	L	H	L
L	L	L	L	Q_n
L	L	H	L	Q_n
L	L	H	H	H
L	L	H	L	Q_n

ND = Not Defined
C = C1 + C2

LOGIC DIAGRAM



ELECTRICAL CHARACTERISTICS

Characteristic	Symbol	-30°C		+25°C		+85°C		Unit
		Min	Max	Min	Max	Min	Max	
Power Supply Drain Current	I_E	—	—	—	48	—	—	mAdc
Input Current Set, Reset Clock Data	I_{inH}	—	—	—	550	—	—	μ Adc
Switching Times								ns
Propagation Delay	t_{pd}	1.0	2.7	1.1	2.5	1.1	2.9	
Rise Time (10% to 90%)	t^+	0.9	2.7	1.0	2.5	1.0	2.9	ns
Fall Time (10% to 90%)	t^-	0.5	2.1	0.6	1.9	0.6	2.3	ns
Setup Time	$t_{S"1"}$ $t_{S"0"}$	—	—	0.4	—	—	—	ns
Hold Time	$t_{H"1"}$ $t_{H"0"}$	—	—	0.3	—	—	—	ns
Toggle Frequency	f_{Tog}	270	—	300	—	270	—	MHz

PIN ASSIGNMENT

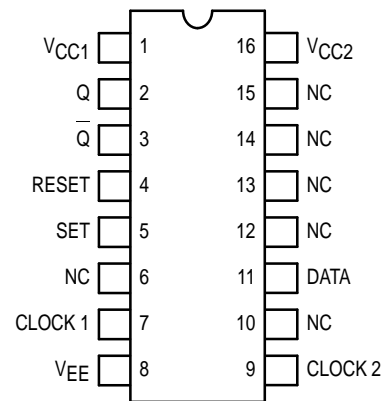


FIGURE 1 — TOGGLE FREQUENCY WAVEFORMS

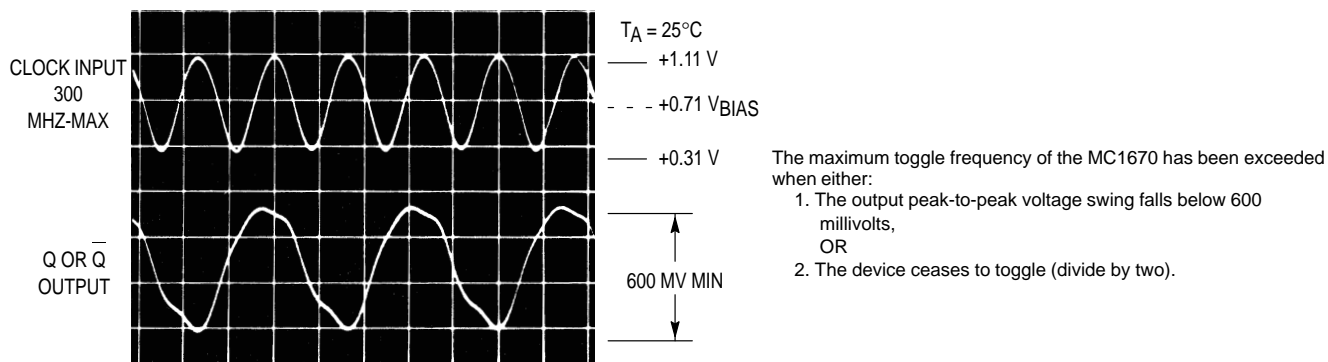


FIGURE 2 — MAXIMUM TOGGLE FREQUENCY (TYPICAL)

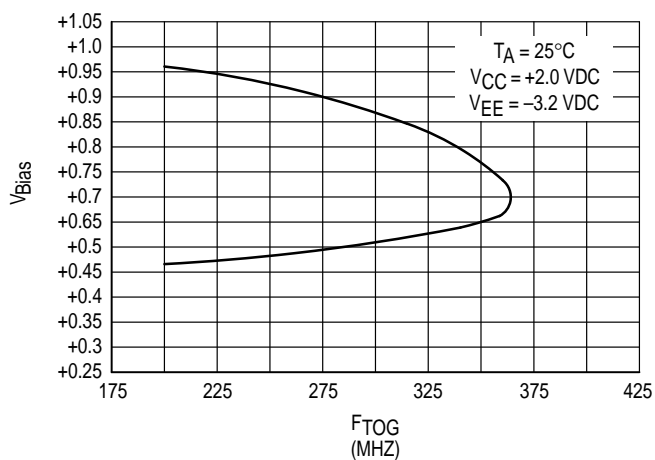
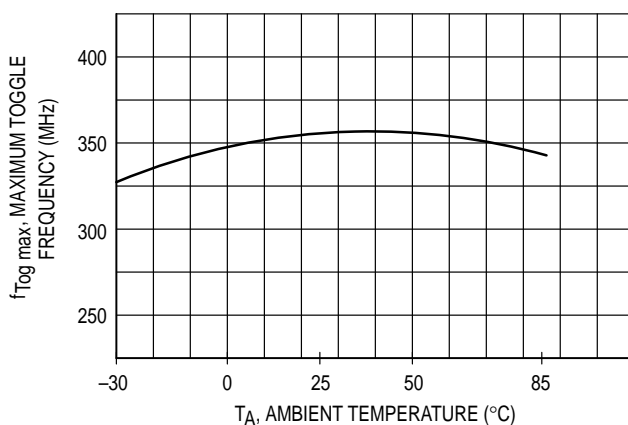


Figure 2 illustrates the variation in toggle frequency with the dc offset voltage (V_{Bias}) of the input clock signal. Figures 4 and 5 illustrate minimum clock pulse width recommended for reliable operation of the MC1670.

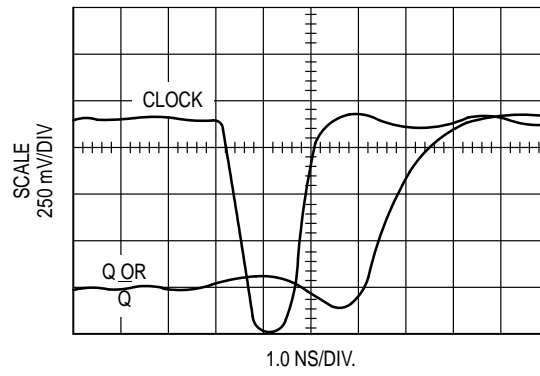
FIGURE 3 — TYPICAL MAXIMUM TOGGLE FREQUENCY versus TEMPERATURE



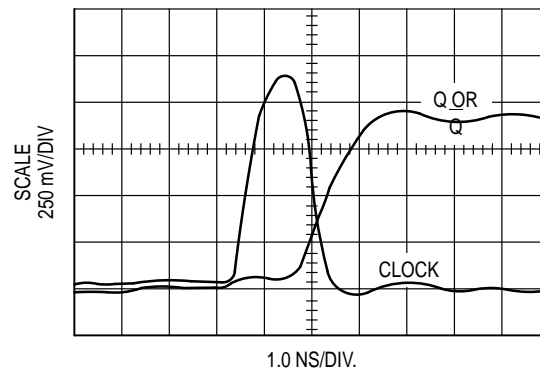
Temperature	-30°C	+25°C	+85°C
V_{Bias}	+0.66 Vdc	+0.71 Vdc	+0.765 Vdc

Note: All power supply and logic levels are shown shifted 2.0 volts positive.

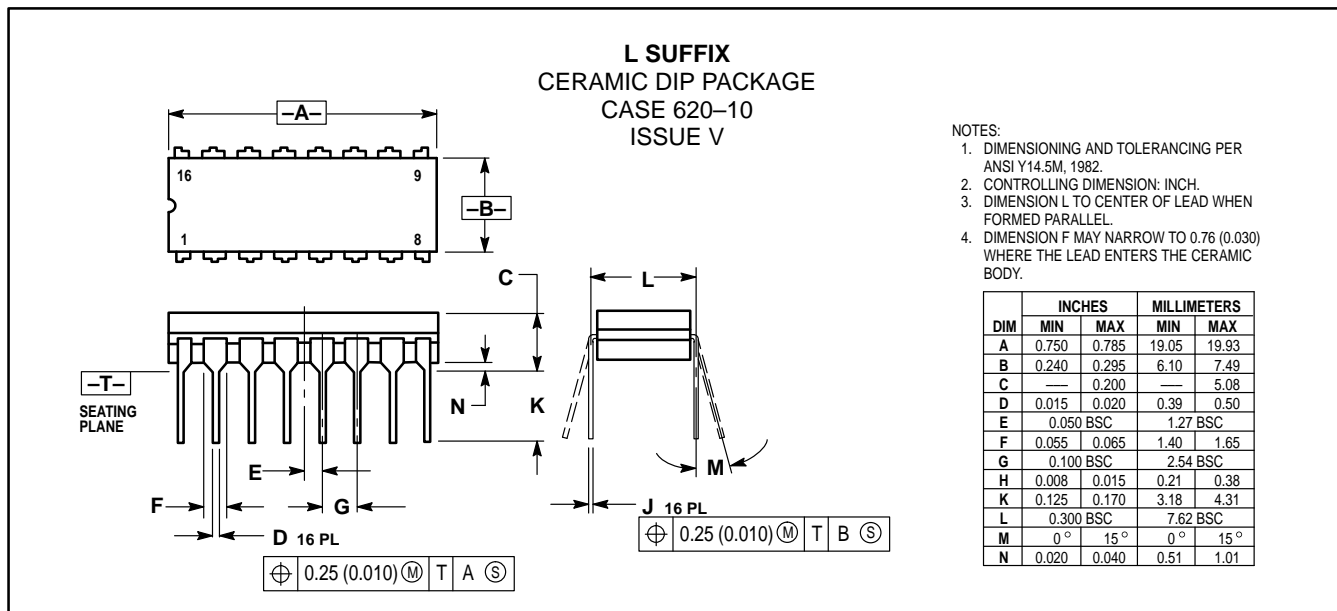
**FIGURE 4 — MINIMUM “DOWN TIME” TO CLOCK
OUTPUT LOAD = 50 Ω**



**FIGURE 5 — MINIMUM “UP TIME” TO CLOCK
OUTPUT LOAD = 50 Ω**



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