



## 2.8 GHz Prescaler

The MC12079 is a single modulus divide by 64, 128, 256 prescaler for low power frequency division of a 2.8 GHz (typical) high frequency input signal. Divide ratio control inputs SW1 and SW2 select the required divide ratio of  $\div 64$ ,  $\div 128$ , or  $\div 256$ .

An external load resistor is required to terminate the output. A 1.2 k $\Omega$  resistor is recommended to achieve a 1.6 V<sub>pp</sub> output swing, when dividing a 1.1 GHz input signal by the minimum divide ratio of 64, assuming a 12 pF load. Output current can be minimized dependent on conditions such as output frequency, capacitive load being driven, and output voltage swing required. Typical values for load resistors are included in the V<sub>out</sub> specification for various divide ratios at 2.8 GHz input frequency.

- 2.8 GHz Toggle Frequency
- Supply Voltage 4.5 to 5.5 V
- Low Power 9mA Typical at V<sub>CC</sub> = 5.0 V
- Operating Temperature Range of -40 to 85°C

### FUNCTIONAL TABLE

SW1	SW2	Divide Ratio
H	H	64
H	L	128
L	H	128
L	L	256

NOTE: SW1 & SW2: H = V<sub>CC</sub>, L = Open.

### MAXIMUM RATINGS

Characteristic	Symbol	Range	Unit
Power Supply Voltage, Pin 2	V <sub>CC</sub>	-0.5 to 7.0	Vdc
Operating Temperature Range	T <sub>A</sub>	-40 to 85	°C
Storage Temperature Range	T <sub>stg</sub>	-65 to 150	°C
Maximum Output Current, Pin 4	I <sub>O</sub>	4.0	mA

NOTE: ESD data available upon request.

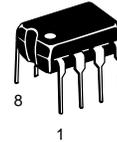
## MC12079

### MECL PLL COMPONENTS $\div 64/128/256$ PRESCALER

#### SEMICONDUCTOR TECHNICAL DATA

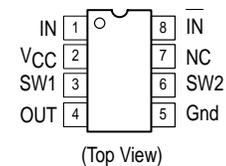


**D SUFFIX**  
PLASTIC PACKAGE  
CASE 751  
(SO-8)



**P SUFFIX**  
PLASTIC PACKAGE  
CASE 626

### PIN CONNECTIONS



### ORDERING INFORMATION

Device	Operating Temperature Range	Package
MC12079D	T <sub>A</sub> = -40° to +85°C	SO-8
MC12079P		Plastic

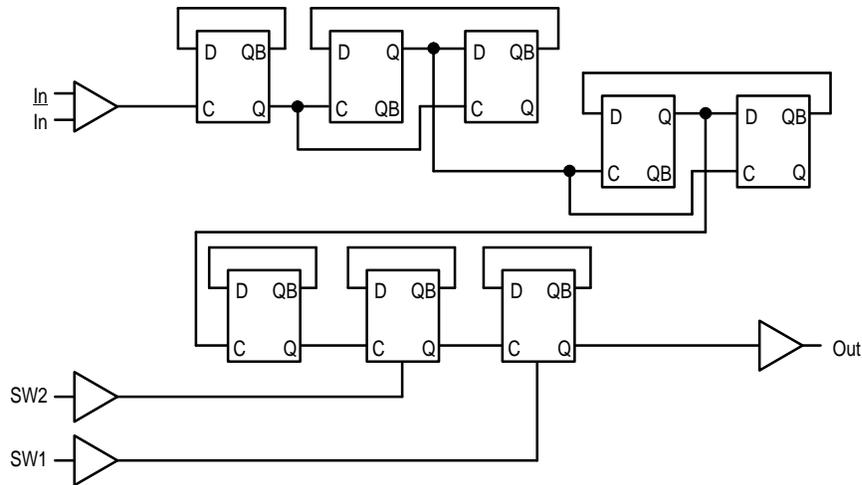
# MC12079

**ELECTRICAL CHARACTERISTICS** ( $V_{CC} = 4.5$  to  $5.5$  V;  $T_A = -40$  to  $85^\circ\text{C}$ , unless otherwise noted.)

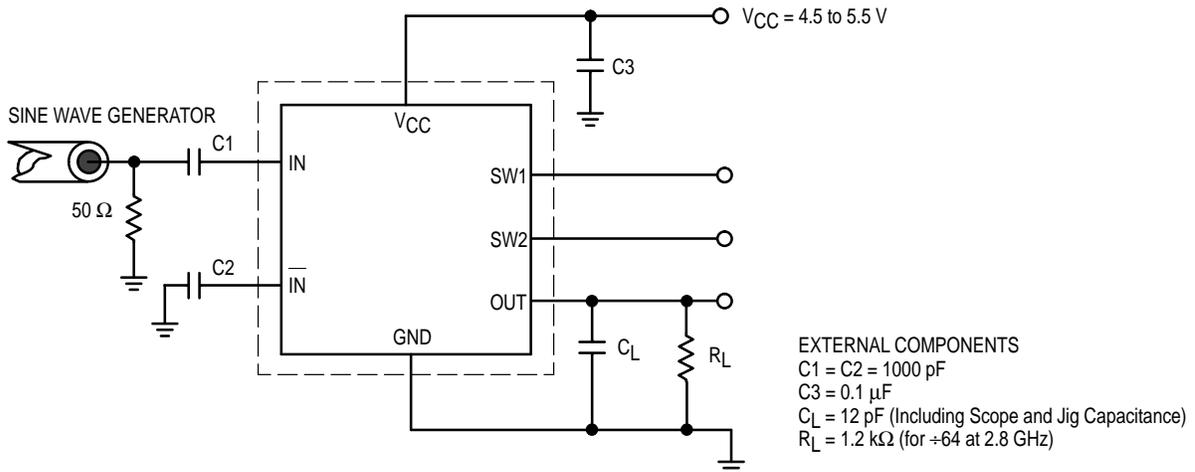
Parameter	Symbol	Min	Typ	Max	Unit
Toggle Frequency (Sine Wave)	ft	0.25	3.4	2.8	GHz
Supply Current Output (Pin 2)	$I_{CC}$	–	9.0	11.5	mA
Input Voltage Sensitivity	$V_{in}$	400 100	– –	1000 1000	mVpp
250–500 MHz 500–2800 MHz					
Divide Ratio Control Input High (SW)	$V_{IH}$	$V_{CC}$	$V_{CC}$	$V_{CC}$	V
Divide Ratio Control Input Low (SW)	$V_{IL}$	Open	Open	Open	–
Output Voltage Swing	$V_{out}$	1.0	1.6	–	$V_{pp}$
$(C_L = 12$ pF; $R_L = 1.2$ k $\Omega$ ; $I_O = 2.7$ mA) <sup>1</sup> $(C_L = 12$ pF; $R_L = 2.2$ k $\Omega$ ; $I_O = 1.5$ mA) <sup>2</sup> $(C_L = 12$ pF; $R_L = 3.9$ k $\Omega$ ; $I_O = 0.85$ mA) <sup>3</sup>					

**NOTES:** 1. Divide ratio of +64 at 2.8 GHz.  
2. Divide ratio of +128 at 2.8 GHz.  
3. Divide ratio of +256 at 2.8 GHz.

**Figure 1. Logic Diagram (MC12079)**

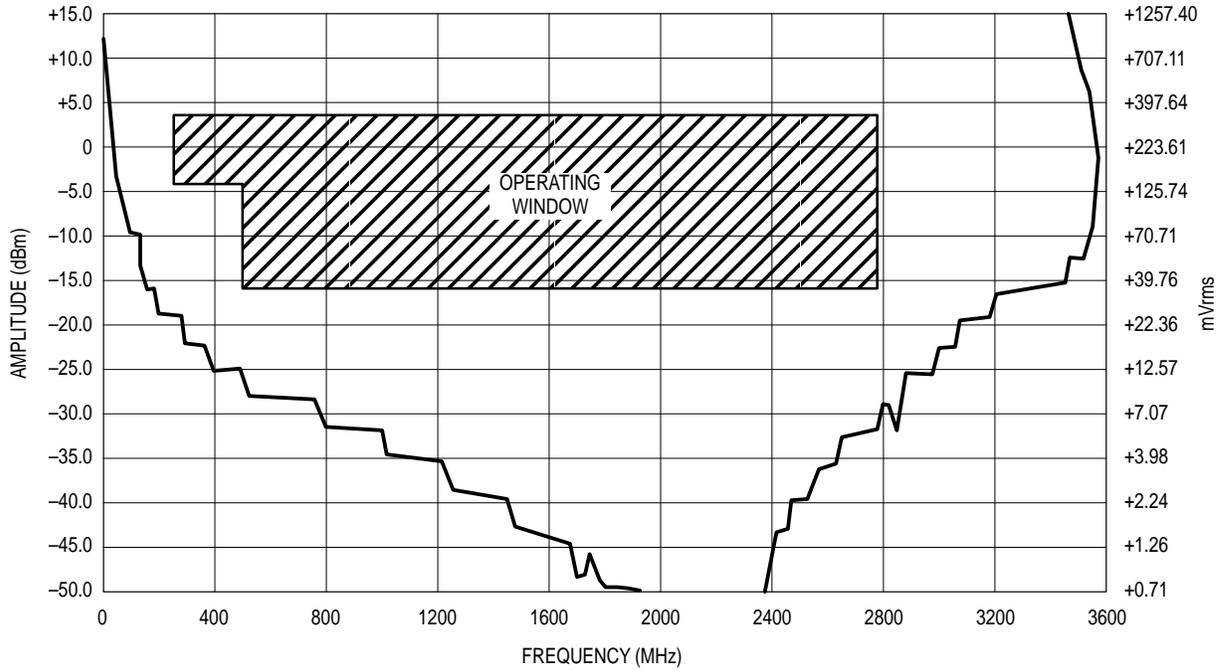


**Figure 2. AC Test Circuit**



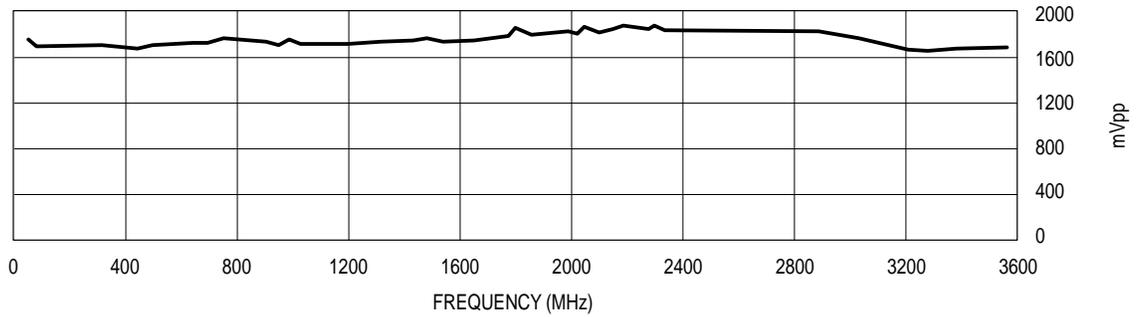
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## Figure 3. Input Signal Amplitude versus Input Frequency



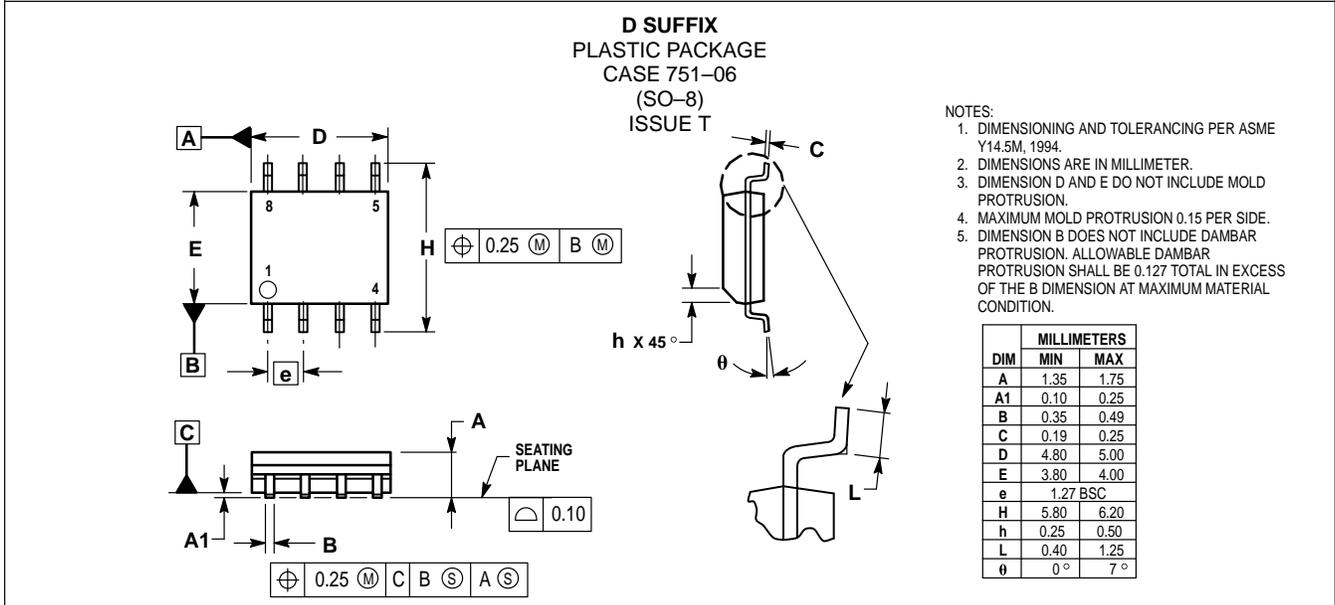
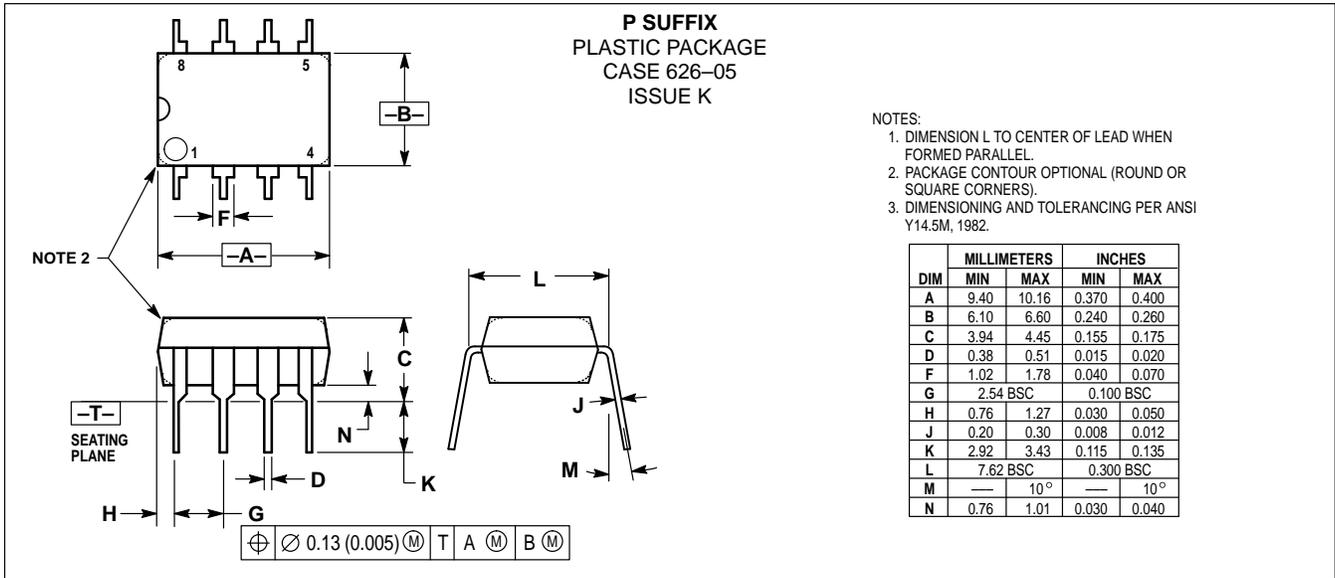
Divide Ratio = 64;  $V_{CC} = 5.0$  V;  $T_A = 25^\circ\text{C}$

## Figure 4. Output Amplitude versus Input Frequency



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## OUTLINE DIMENSIONS



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