



## 1.1 GHz Prescaler

The MC12080 is a single modulus divide by 10, 20, 40, 80 prescaler for low power frequency division of a 1.1 GHz high frequency input signal. Divide ratio control inputs SW1, SW2 and SW3 select the required divide ratio of  $\div 10$ ,  $\div 20$ ,  $\div 40$ , or  $\div 80$ .

An external load resistor is required to terminate the output. A 820  $\Omega$  resistor is recommended to achieve a 1.2 V<sub>pp</sub> output swing, when dividing a 1.1 GHz input signal by the minimum divide by ratio of 10, assuming a 8.0 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 1.1 GHz input frequency.

- 1.1 GHz Toggle Frequency
- Supply Voltage 4.5 to 5.5 V
- Low Power 3.7mA Typical at V<sub>CC</sub> = 5.0 V
- Operating Temperature Range of -40 to 85°C

### FUNCTIONAL TABLE

SW1	SW2	SW3	Divide Ratio
L	L	L	80
L	L	H	40
L	H	L	40
L	H	H	20
H	L	L	40
H	L	H	20
H	H	L	20
H	H	H	10

**NOTE:** SW1, SW2 and SW3: 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>	10	mA

**NOTE:** ESD data available upon request.

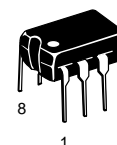
## MC12080

### MECL PLL COMPONENTS $\div 10/20/40/80$ PRESCALER

#### SEMICONDUCTOR TECHNICAL DATA

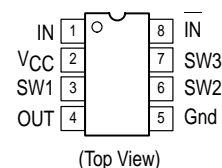


**D SUFFIX**  
PLASTIC PACKAGE  
CASE 751  
(SO-8)



**P SUFFIX**  
PLASTIC PACKAGE  
CASE 626

### PIN CONNECTIONS



### ORDERING INFORMATION

Device	Operating Temperature Range	Package
MC12080D	T <sub>A</sub> = -40° to +85°C	SO-8
MC12080P		Plastic

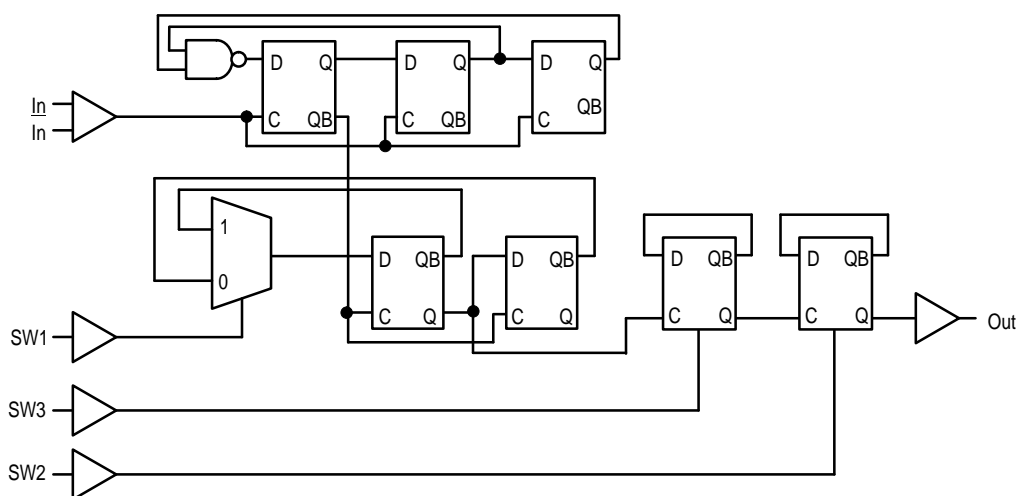
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**ELECTRICAL CHARACTERISTICS** ( $V_{CC} = 4.5$  to  $5.5$  V;  $T_A = -40$  to  $85^\circ\text{C}$ , unless otherwise noted.)

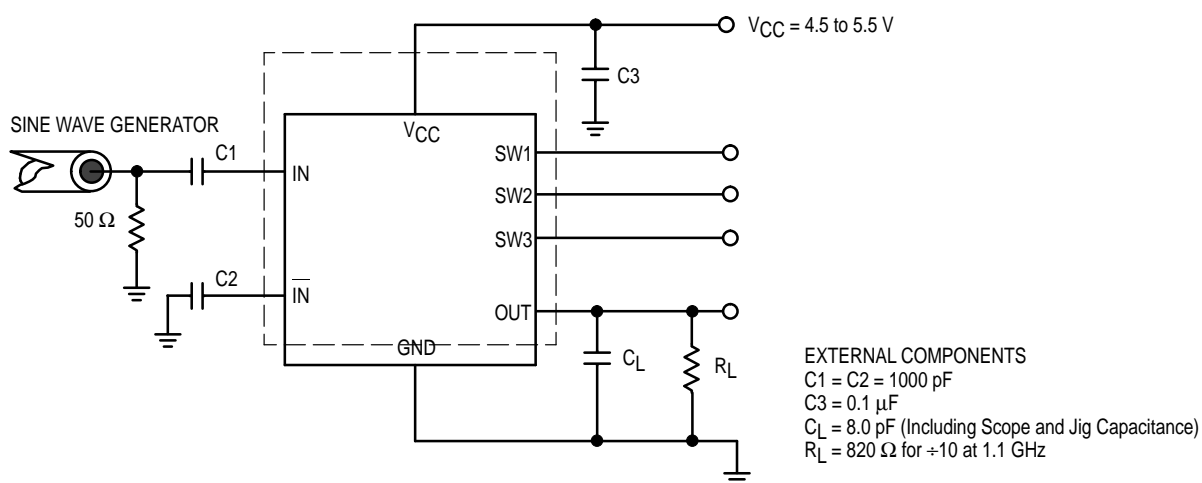
Parameter	Symbol	Min	Typ	Max	Unit
Toggle Frequency (Sine Wave)	ft	0.1	1.4	1.1	GHz
Supply Current Output (Pin 2)	I <sub>CC</sub>	–	3.7	5.0	mA
Input Voltage Sensitivity	V <sub>in</sub>	400 100	– –	1000 1000	mV <sub>pp</sub>
Divide Ratio Control Input High (SW1, SW2, SW3)	V <sub>IH</sub>	V <sub>CC</sub> – 0.5 V	V <sub>CC</sub>	V <sub>CC</sub> + 0.5 V	V
Divide Ratio Control Input Low (SW1, SW2, SW3)	V <sub>IL</sub>	Open	Open	Open	–
Output Voltage Swing <sup>1</sup> R <sub>L</sub> = 820 Ω, I <sub>O</sub> = 4.0 mA for ±10 R <sub>L</sub> = 1.6 kΩ, I <sub>O</sub> = 2.1 mA for ±20 R <sub>L</sub> = 3.3 kΩ, I <sub>O</sub> = 1.1 mA for ±40 R <sub>L</sub> = 6.2 kΩ, I <sub>O</sub> = 0.57 mA for ±80	V <sub>out</sub>	0.8	1.2	–	V <sub>pp</sub>

**NOTE:** 1. Assumes 8.0 pF load and 1.1 GHz input frequency (typical),  $I_O$  at  $V_{CC} = 5.0$  V and  $T_A = 25^\circ\text{C}$

**Figure 1. Logic Diagram (MC12080)**

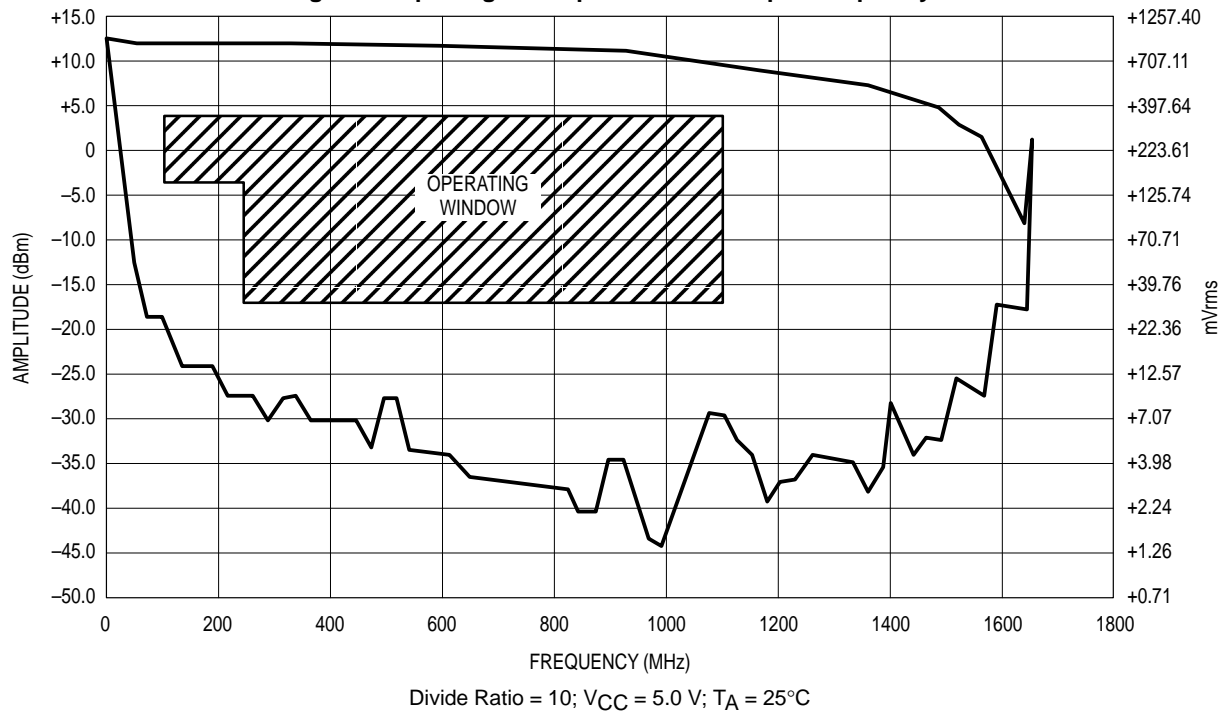


**Figure 2. AC Test Circuit**

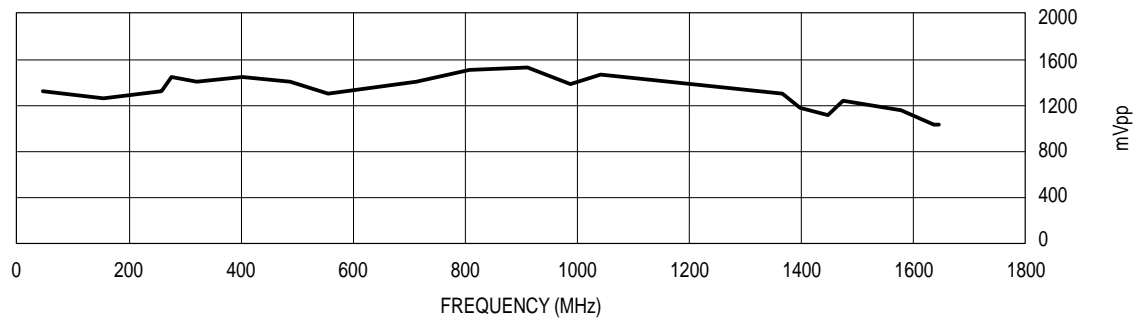


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**Figure 3. Input Signal Amplitude versus Input Frequency**

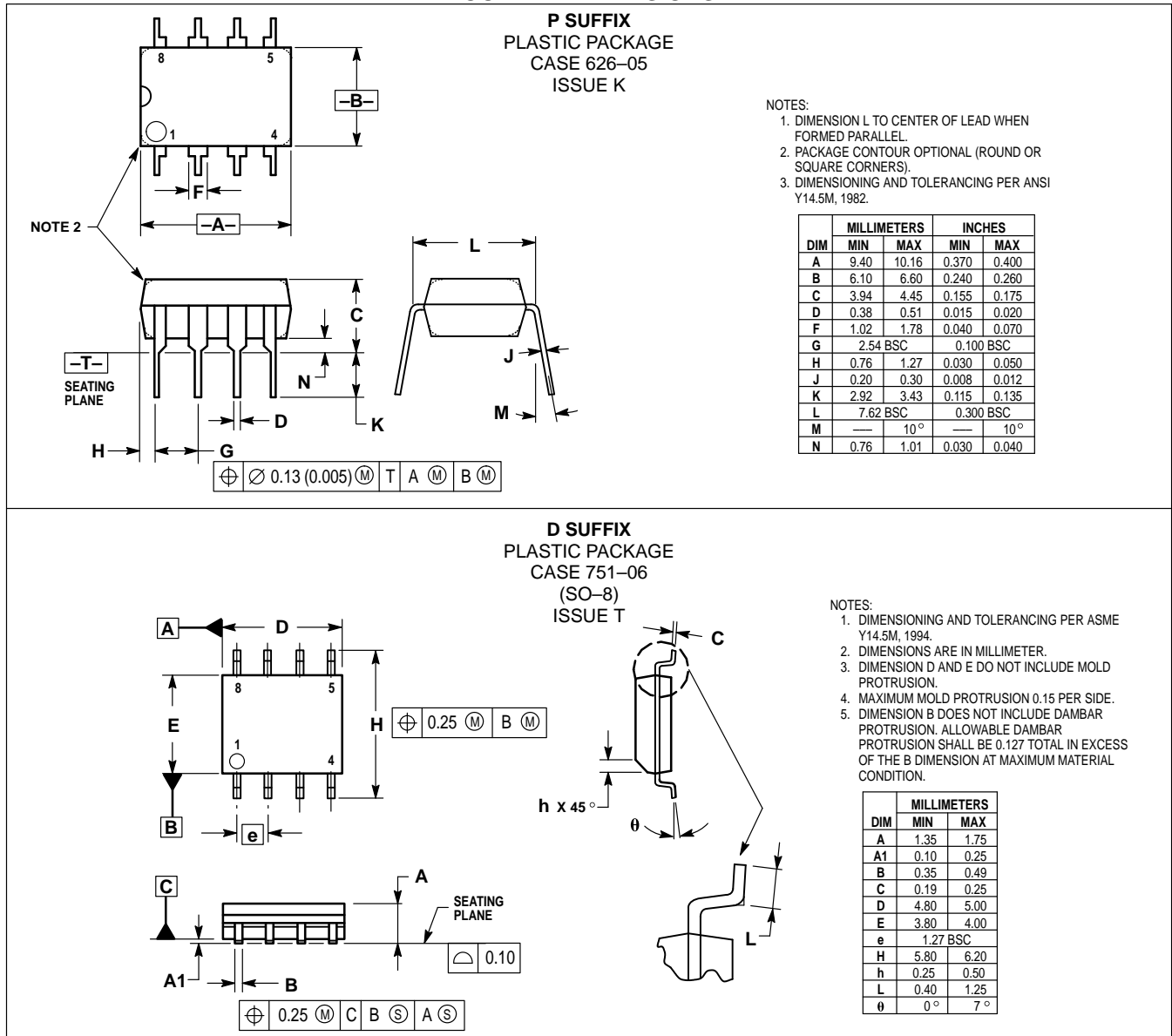


**Figure 4. Output Amplitude versus Input Frequency**



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## OUTLINE DIMENSIONS



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