



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 Ω resistor is recommended to achieve a 1.6 V_{pp} 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_{out} 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_{CC} = 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_{CC}, L = Open.

MAXIMUM RATINGS

Characteristic	Symbol	Range	Unit
Power Supply Voltage, Pin 2	V _{CC}	-0.5 to 7.0	Vdc
Operating Temperature Range	T _A	-40 to 85	°C
Storage Temperature Range	T _{stg}	-65 to 150	°C
Maximum Output Current, Pin 4	I _O	4.0	mA

NOTE: ESD data available upon request.

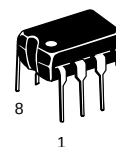
MC12079

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

SEMICONDUCTOR TECHNICAL DATA

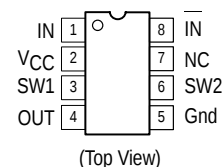


D SUFFIX
PLASTIC PACKAGE
CASE 751
(SO-8)



P SUFFIX
PLASTIC PACKAGE
CASE 626

PIN CONNECTIONS



ORDERING INFORMATION

Device	Operating Temperature Range	Package
MC12079D	T _A = -40° to +85°C	SO-8
MC12079P		Plastic

MC12079

ELECTRICAL CHARACTERISTICS ($V_{CC} = 4.5$ to 5.5 V; $T_A = -40$ to 85°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 250–500 MHz 500–2800 MHz	V _{in}	400 100	– –	1000 1000	mV _{pp}
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 (C _L = 12 pF; R _L = 1.2 kΩ; I _O = 2.7 mA) ¹ (C _L = 12 pF; R _L = 2.2 kΩ; I _O = 1.5 mA) ² (C _L = 12 pF; R _L = 3.9 kΩ; I _O = 0.85 mA) ³	V _{out}	1.0	1.6	–	V _{pp}

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)

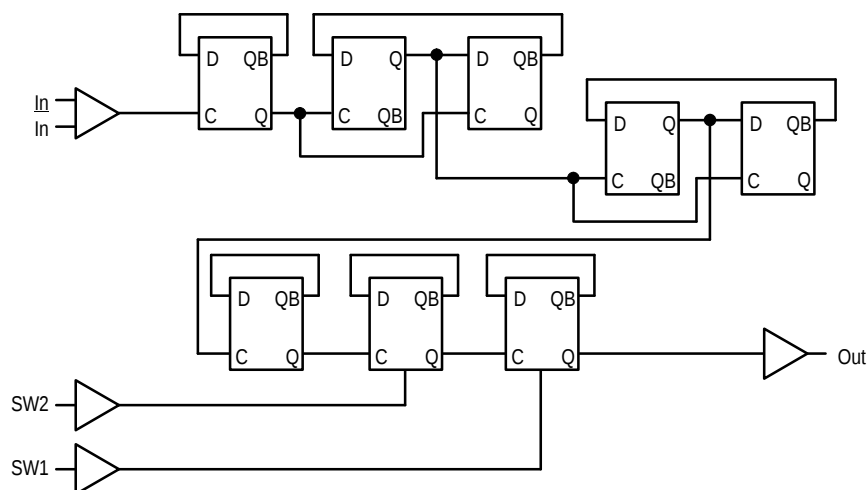


Figure 2. AC Test Circuit

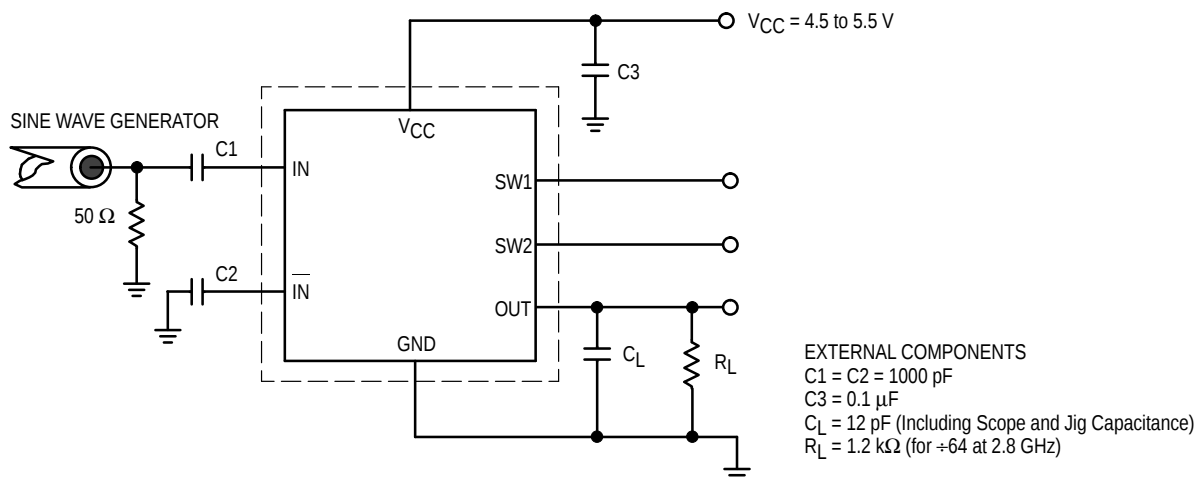


Figure 3. Input Signal Amplitude versus Input Frequency

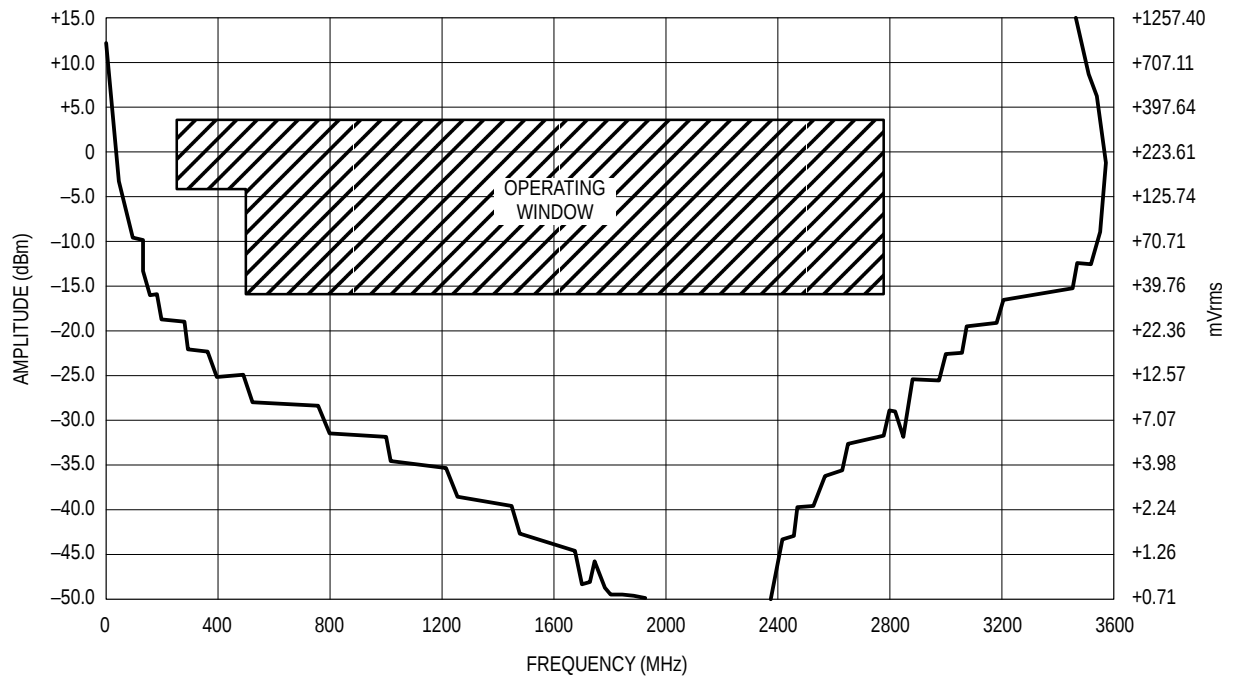
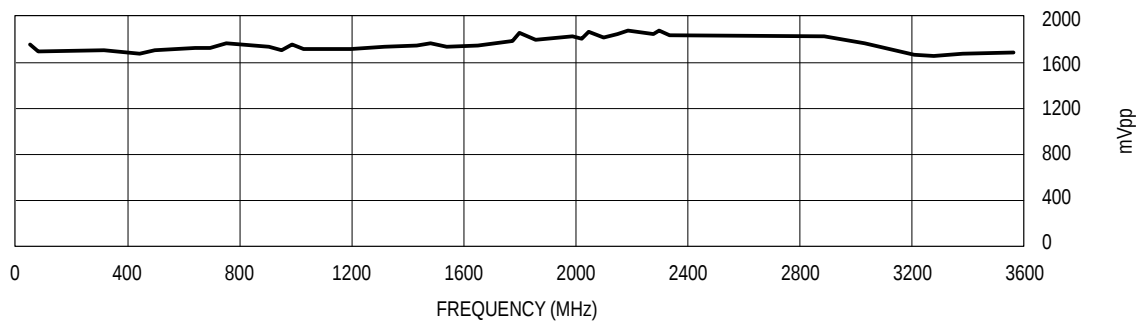
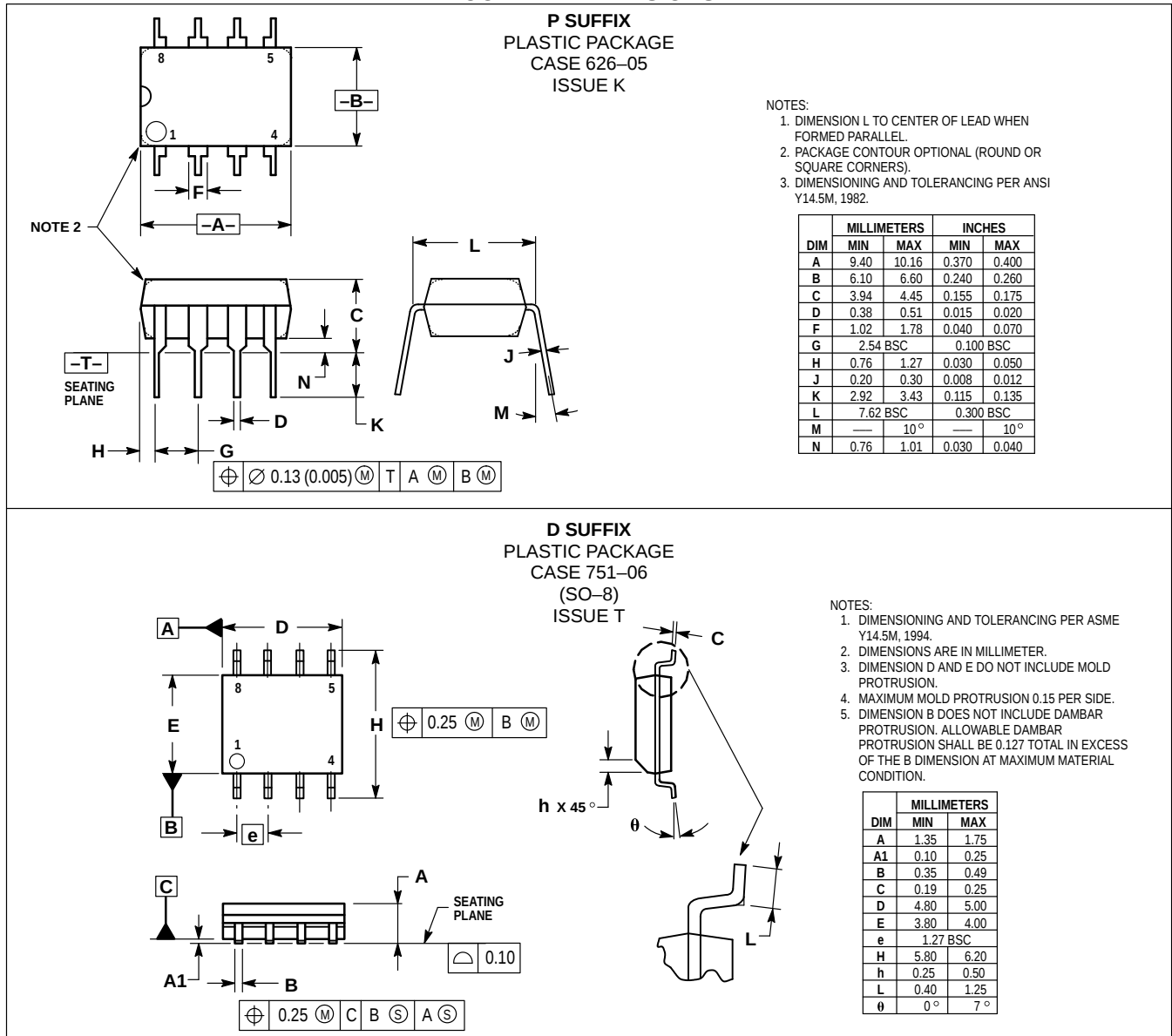
Divide Ratio = 64; $V_{CC} = 5.0\text{ V}$; $T_A = 25^\circ\text{C}$

Figure 4. Output Amplitude versus Input Frequency



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