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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 ÷64, ÷128, or ÷256.

An external load resistor is required to terminate the output. A 1.2 kΩ 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.

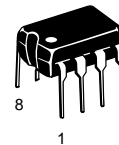
MC12079

**MECL PLL COMPONENTS
 ÷64/128/256 PRESCALER**

**SEMICONDUCTOR
 TECHNICAL DATA**

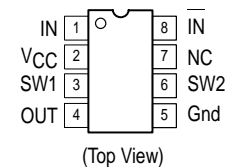


D SUFFIX
 PLASTIC PACKAGE
 CASE 751
 (SO-8)



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

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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)	f_t	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	–	1000	mVpp
		100	–	1000	
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 Ω ; $I_O = 2.7$ mA) ¹				
	$(C_L = 12$ pF; $R_L = 2.2$ k Ω ; $I_O = 1.5$ mA) ²				
	$(C_L = 12$ pF; $R_L = 3.9$ k Ω ; $I_O = 0.85$ mA) ³				

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)

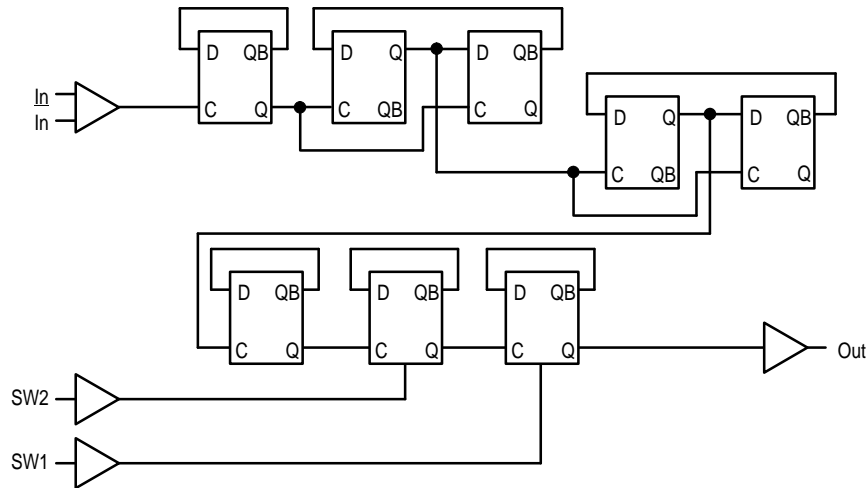
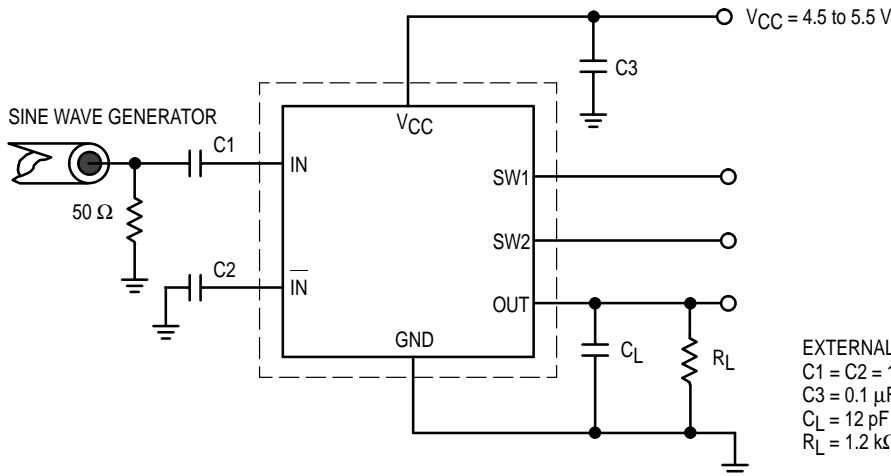


Figure 2. AC Test Circuit

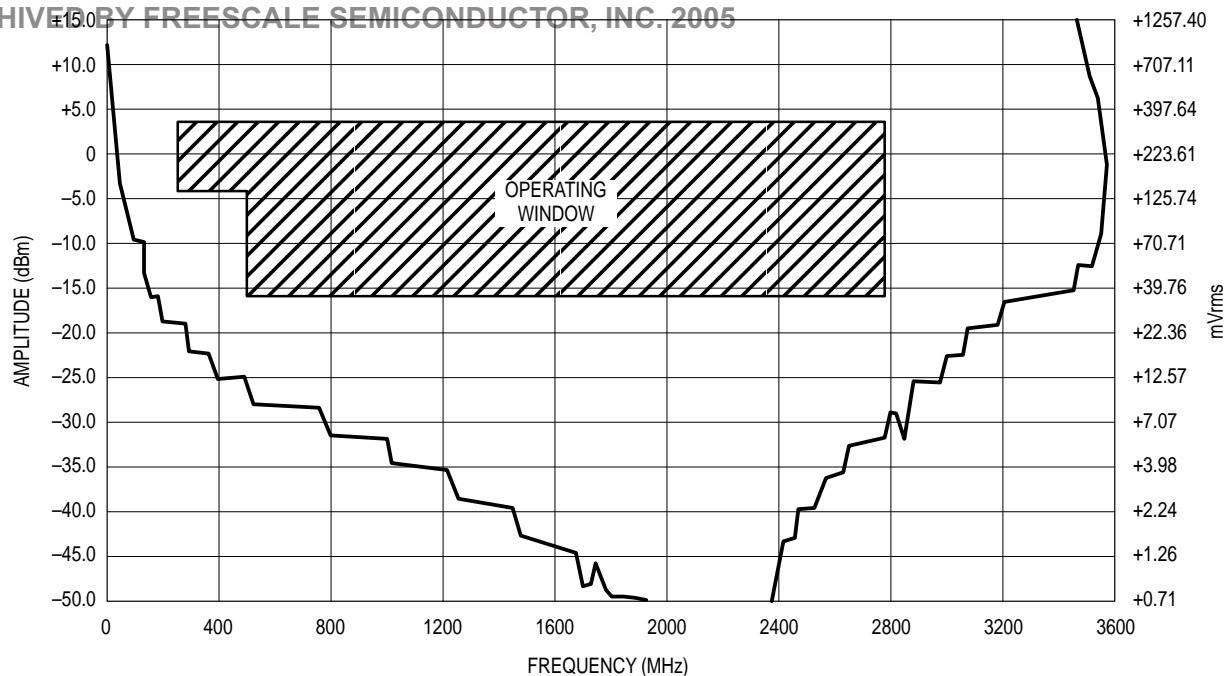


EXTERNAL COMPONENTS
 $C_1 = C_2 = 1000$ pF
 $C_3 = 0.1$ μF
 $C_L = 12$ pF (Including Scope and Jig Capacitance)
 $R_L = 1.2$ k Ω (for +64 at 2.8 GHz)



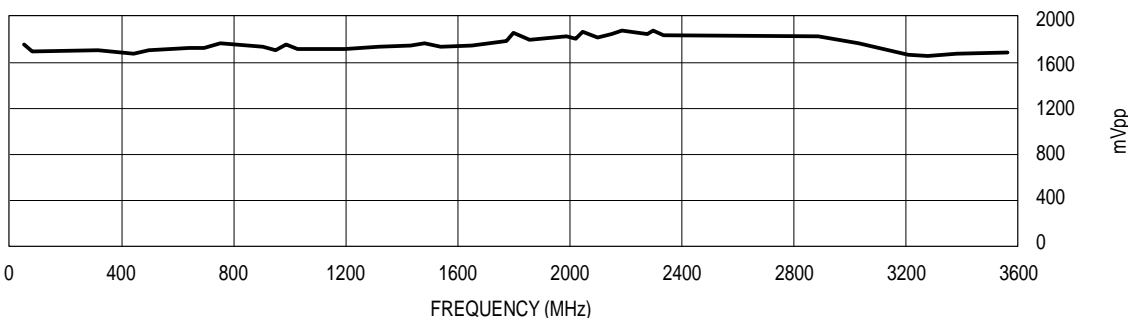
Figure 3. Input Signal Amplitude versus Input Frequency

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Divide Ratio = 64; V_{CC} = 5.0 V; T_A = 25°C

Figure 4. Output Amplitude versus Input Frequency



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OUTLINE DIMENSIONS

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P SUFFIX
PLASTIC PACKAGE
CASE 626-05
ISSUE K

NOTE 2

SEATING PLANE

NOTES:

- DIMENSION L TO CENTER OF LEAD WHEN FORMED PARALLEL.
- PACKAGE CONTOUR OPTIONAL (ROUND OR SQUARE CORNERS).
- DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.

DIM	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	9.40	10.16	0.370	0.400
B	6.10	6.60	0.240	0.260
C	3.94	4.45	0.155	0.175
D	0.38	0.51	0.015	0.020
F	1.02	1.78	0.040	0.070
G	2.54 BSC		0.100 BSC	
H	0.76	1.27	0.030	0.050
J	0.20	0.30	0.008	0.012
K	2.92	3.43	0.115	0.135
L	7.62 BSC		0.300 BSC	
M	10°		10°	
N	0.76	1.01	0.030	0.040

⊕ ∅ 0.13 (0.005) (M) T A (M) B (M)

D SUFFIX
PLASTIC PACKAGE
CASE 751-06
(SO-8)
ISSUE T

NOTES:

- DIMENSIONING AND TOLERANCING PER ASME Y14.5M, 1994.
- DIMENSIONS ARE IN MILLIMETER.
- DIMENSION D AND E DO NOT INCLUDE MOLD PROTRUSION.
- MAXIMUM MOLD PROTRUSION 0.15 PER SIDE.
- DIMENSION B DOES NOT INCLUDE DAMBAR PROTRUSION. ALLOWABLE DAMBAR PROTRUSION SHALL BE 0.127 TOTAL IN EXCESS OF THE B DIMENSION AT MAXIMUM MATERIAL CONDITION.

DIM	MIN	MAX
A	1.35	1.75
A1	0.10	0.25
B	0.35	0.49
C	0.19	0.25
D	4.80	5.00
E	3.80	4.00
e	1.27 BSC	
H	5.80	6.20
h	0.25	0.50
L	0.40	1.25
θ	0° - 7°	

⊕ 0.25 (M) C B (S) A (S)

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