



ARCHIVED BY FREESCALE SEMICONDUCTOR, INC. 2005  
**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<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.

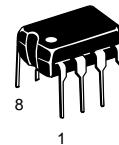
**MC12079**

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

**SEMICONDUCTOR  
 TECHNICAL DATA**

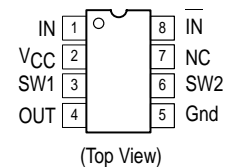


**D SUFFIX  
 PLASTIC PACKAGE  
 CASE 751  
 (SO-8)**



**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

Freescale Semiconductor, Inc. ARCHIVED BY FREESCALE SEMICONDUCTOR, INC. 2005

ARCHIVE INFORMATION

# Freescale Semiconductor, Inc.

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)	$f_t$	0.25	3.4	2.8	GHz
Supply Current Output (Pin 2)	$I_{CC}$	–	9.0	11.5	mA
Input Voltage Sensitivity	$V_{in}$	400 100	– –	1000 1000	mVpp
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; $R_L = 1.2$ 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>	$V_{out}$	1.0	1.6	–	Vpp

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)

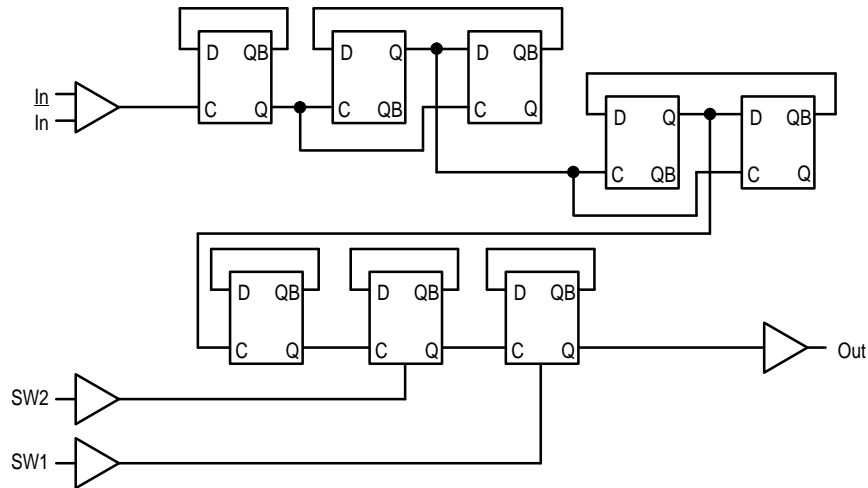
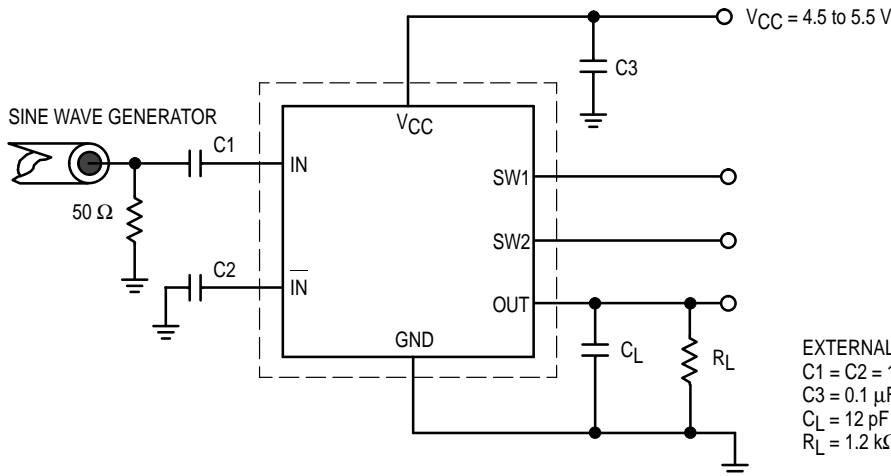


Figure 2. AC Test Circuit

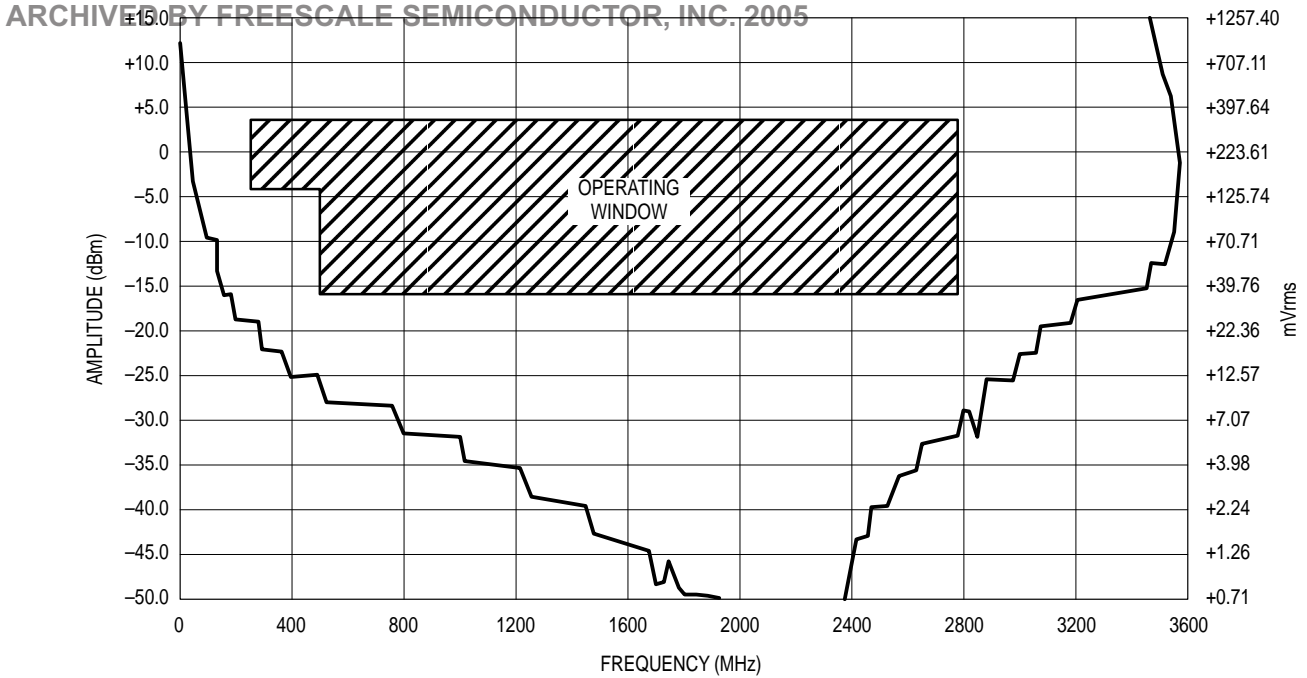


EXTERNAL COMPONENTS  
 $C_1 = C_2 = 1000$  pF  
 $C_3 = 0.1$   $\mu$ F  
 $C_L = 12$  pF (Including Scope and Jig Capacitance)  
 $R_L = 1.2$  k $\Omega$  (for +64 at 2.8 GHz)

Freescale Semiconductor, Inc. ARCHIVE INFORMATION

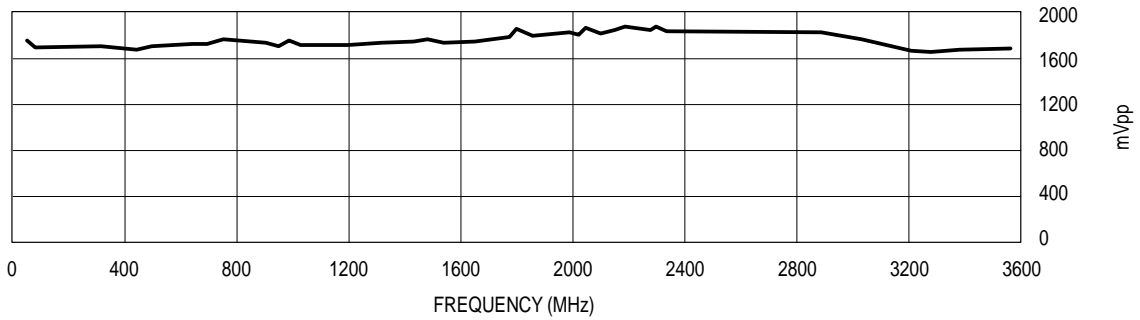
ARCHIVE INFORMATION

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



Freescale Semiconductor, Inc. ARCHIVED BY FREESCALE SEMICONDUCTOR, INC. 2005

ARCHIVE INFORMATION

OUTLINE DIMENSIONS

ARCHIVED BY FREESCALE SEMICONDUCTOR, INC. 2005

**P SUFFIX**  
PLASTIC PACKAGE  
CASE 626-05  
ISSUE K

NOTE 2

NOTES:

1. DIMENSION L TO CENTER OF LEAD WHEN FORMED PARALLEL.
2. PACKAGE CONTOUR OPTIONAL (ROUND OR SQUARE CORNERS).
3. 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

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

NOTES:

1. DIMENSIONING AND TOLERANCING PER ASME Y14.5M, 1994.
2. DIMENSIONS ARE IN MILLIMETER.
3. DIMENSION D AND E DO NOT INCLUDE MOLD PROTRUSION.
4. MAXIMUM MOLD PROTRUSION 0.15 PER SIDE.
5. 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	MILLIMETERS	
	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°	

Motorola reserves the right to make changes without further notice to any products herein. Motorola makes no warranty, representation or guarantee regarding the suitability of its products for any particular purpose, nor does Motorola assume any liability arising out of the application or use of any product or circuit, and specifically disclaims any and all liability, including without limitation consequential or incidental damages. "Typical" parameters which may be provided in Motorola data sheets and/or specifications can and do vary in different applications and actual performance may vary over time. All operating parameters, including "Typicals" must be validated for each customer application by customer's technical experts. Motorola does not convey any license under its patent rights nor the rights of others. Motorola products are not designed, intended, or authorized for use as components in systems intended for surgical implant into the body, or other applications intended to support or sustain life, or for any other application in which the failure of the Motorola product could create a situation where personal injury or death may occur. Should Buyer purchase or use Motorola products for any such unintended or unauthorized application, Buyer shall indemnify and hold Motorola and its officers, employees, subsidiaries, affiliates, and distributors harmless against all claims, costs, damages, and expenses, and reasonable attorney fees arising out of, directly or indirectly, any claim of personal injury or death associated with such unintended or unauthorized use, even if such claim alleges that Motorola was negligent regarding the design or manufacture of the part. Motorola and are registered trademarks of Motorola, Inc. Motorola, Inc. is an Equal Opportunity/Affirmative Action Employer.

Mfax is a trademark of Motorola, Inc.

How to reach us:

**USA/EUROPE/Locations Not Listed:** Motorola Literature Distribution;  
P.O. Box 5405, Denver, Colorado 80217. 1-303-675-2140 or 1-800-441-2447

**JAPAN:** Nippon Motorola Ltd.: SPD, Strategic Planning Office, 141,  
4-32-1 Nishi-Gotanda, Shagawa-ku, Tokyo, Japan. 03-5487-8488

**Customer Focus Center: 1-800-521-6274**

**Mfax™:** RMFAX0@email.sps.mot.com – TOUCHTONE 1-602-244-6609  
Motorola Fax Back System – US & Canada ONLY 1-800-774-1848  
– http://sps.motorola.com/mfax/

**ASIA/PACIFIC:** Motorola Semiconductors H.K. Ltd.; 8B Tai Ping Industrial Park,  
51 Ting Kok Road, Tai Po, N.T., Hong Kong. 852-26629298

**HOME PAGE:** <http://motorola.com/sps/>



For More Information On This Product,  
Go to: [www.freescale.com](http://www.freescale.com)

Freescale Semiconductor, Inc. ARCHIVE INFORMATION

ARCHIVE INFORMATION