

ML12079 2.8 GHz Prescaler MECL PLL Components ÷64/128/256 Prescaler

Legacy Device: Motorola MC12079

The ML12079 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_{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 Supply Current 9mA Typical at $V_{CC} = 5.0 \text{ V}$
- Operating Temperature Range of $T_A = -40$ to $85^{\circ}C$

FUNCTIONAL TABLE

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

NOTE: SW1 & SW2: H = V_{CC}, L = Open.

MAXIMUM RATINGS

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



SO 8 = -5P PLASTIC PACKAGE CASE 751



P DIP 8 = PP PLASTIC PACKAGE CASE 626

CROSS REFERENCE/ORDERING INFORMATION

PACKAGE_	MOTOROLA	LANSDALE
P DIP 8	MC12079P	ML12079PP
SO 8	MC12079D	ML12079-5P

Note: Lansdale lead free (**Pb**) product, as it becomes available, will be identified by a part number prefix change from **ML** to **MLE**.

PIN CONNECTIONS

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

Parameter	Symbol	Min	Тур	Max	Unit
Toggle Frequency (Sine Wave)	ft	0.25	3.4	2.8	GHz
Supply Current Output (Pin 2)	Icc	_	9.0	11.5	mA
Input Voltage Sensitivity 250–500 MHz 500–2800 MHz	V _{in}	400 100	-	1000 1000	mVpp
Divide Ratio Control Input High (SW)	V _{IH}	V _{CC}	V _{CC}	VCC	V
Divide Ratio Control Input Low (SW)	V _{IL}	Open	Open	Open	_
Output Voltage Swing	V _{out}	1.0	1.6	- 1	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 (ML12079)

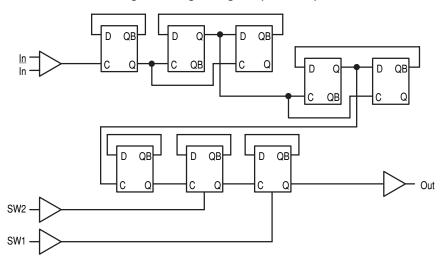
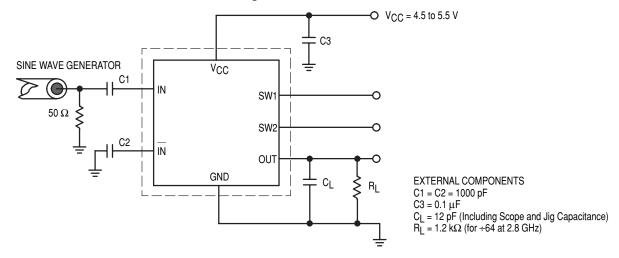


Figure 2. AC Test Circuit



+15.0 +1257.40 +10.0 +707.11 +5.0 +397.64 0 +223.61 OPERATING _ WINDOW -5.0 +125.74 -10.0 +70.71 AMPLITUDE (dBm) -15.0 +39.76 mVrms +22.36 -20.0 -25.0 +12.57 -30.0 +7.07 -35.0 +3.98 -40.0 +2.24 -45.0 +1.26 -50.0 +0.71 400 800 1200 1600 2000 2400 2800 3200 3600 FREQUENCY (MHz)

Figure 3. Input Signal Amplitude versus Input Frequency

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

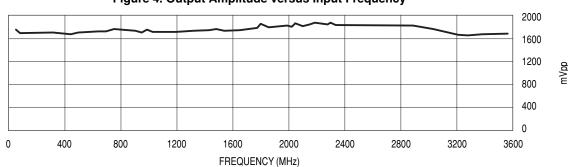
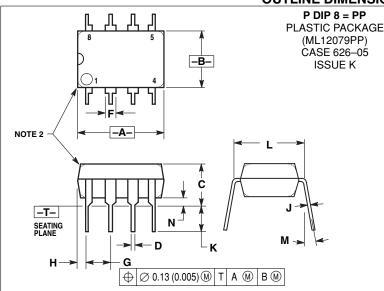


Figure 4. Output Amplitude versus Input Frequency

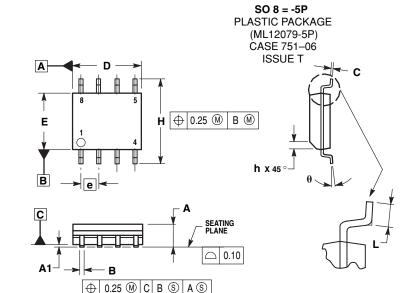
OUTLINE DIMENSIONS



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.

	MILLIMETERS		INC	HES
DIM	MIN	MAX	MIN	MAX
Α	9.40	10.16	0.370	0.400
В	6.10	6.60	0.240	0.260
С	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	
Н	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	
М		10°		10°
N	0.76	1.01	0.030	0.040



- 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

	MILLIMETERS		
DIM	MIN	MAX	
Α	1.35	1.75	
A1	0.10	0.25	
В	0.35	0.49	
С	0.19	0.25	
D	4.80	5.00	
E	3.80	4.00	
е	1.27 BSC		
Н	5.80	6.20	
h	0.25	0.50	
L	0.40	1.25	
θ	0°	7°	

Lansdale Semiconductor reserves the right to make changes without further notice to any products herein to improve reliability, function or design. Lansdale does not assume any liability arising out of the application or use of any product or circuit described herein; neither does it convey any license under its patent rights nor the rights of others. "Typical" parameters which may be provided in Lansdale data sheets and/or specifications can vary in different applications, and actual performance may vary over time. All operating parameters, including "Typicals" must be validated for each customer application by the customer's technical experts. Lansdale Semiconductor is a registered trademark of Lansdale Semiconductor, Inc.