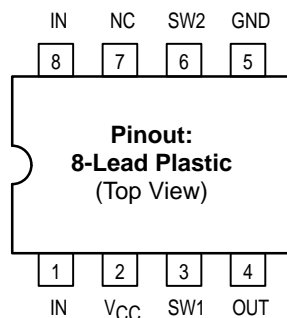


2.8GHz Prescaler

The MC12079 is a single modulus divide by 64, 128, 256 prescaler for low power frequency division of a 2.8GHz (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 1.2k Ω resistor is recommended to achieve a 1.6V_{pp} output swing, when dividing a 1.1GHz input signal by the minimum divide ratio of 64, assuming a 12pF 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 2.8GHz input frequency.

- 2.8GHz Toggle Frequency
- Supply Voltage 4.5V to 5.5V
- Low Power 9mA Typical at V_{CC} = 5.0V
- Operating Temperature Range of -40°C to +85°C



MAXIMUM RATINGS

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

ELECTRICAL CHARACTERISTICS (V_{CC} = 4.5 to 5.5V; T_A = -40 to +85°C)

| Symbol | Parameter | Min | Typ | Max | Unit |
|------------------|---|---|-----------------|-----------------------|------------------|
| f _t | Toggle Frequency (Sine Wave) | 0.25 | 3.4 | 2.8 | GHz |
| I _{CC} | Supply Current Output (Pin 2) | — | 9.0 | 11.5 | mA |
| V _{in} | Input Voltage Sensitivity | 250–500MHz 400 500–2800MHz 100 | — — | 1000 1000 | mV _{pp} |
| V _{IH} | Divide Ratio Control Input High (SW) | V _{CC} - 0.5 | V _{CC} | V _{CC} + 0.5 | V |
| V _{IL} | Divide Ratio Control Input Low (SW) | Open | Open | Open | — |
| V _{out} | Output Voltage Swing (C _L = 12pF; R _L = 1.2k Ω ; I _O = 2.7mA) ¹ (C _L = 12pF; R _L = 2.2k Ω ; I _O = 1.5mA) ² (C _L = 12pF; R _L = 3.9k Ω ; I _O = 0.85mA) ³ | 1.0 | 1.6 | — | V _{pp} |

¹ Divide ratio of $\div 64$ at 2.8GHz.

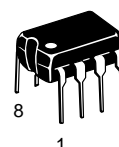
² Divide ratio of $\div 128$ at 2.8GHz.

³ Divide ratio of $\div 256$ at 2.8GHz.

MC12079

MECL PLL COMPONENTS

$\div 64/128/256$
PRESALER



P SUFFIX
PLASTIC PACKAGE
CASE 626-05



D SUFFIX
PLASTIC SOIC PACKAGE
CASE 751-05



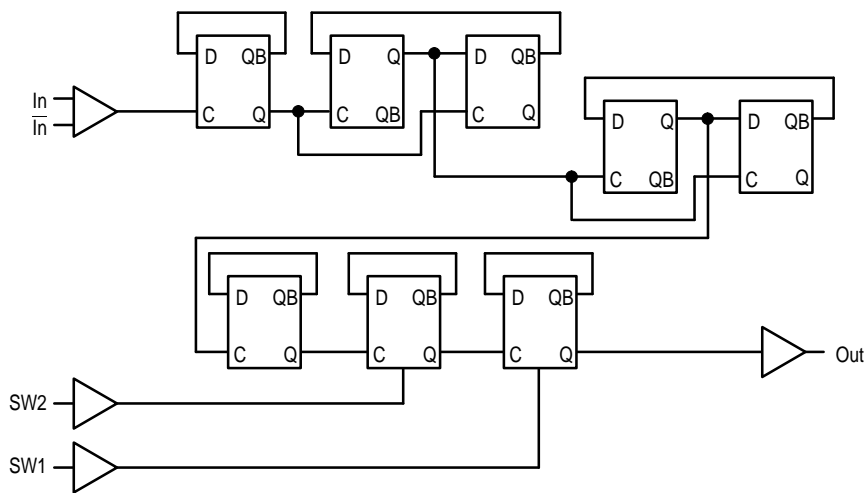


Figure 1. Logic Diagram (MC12079)

FUNCTION 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

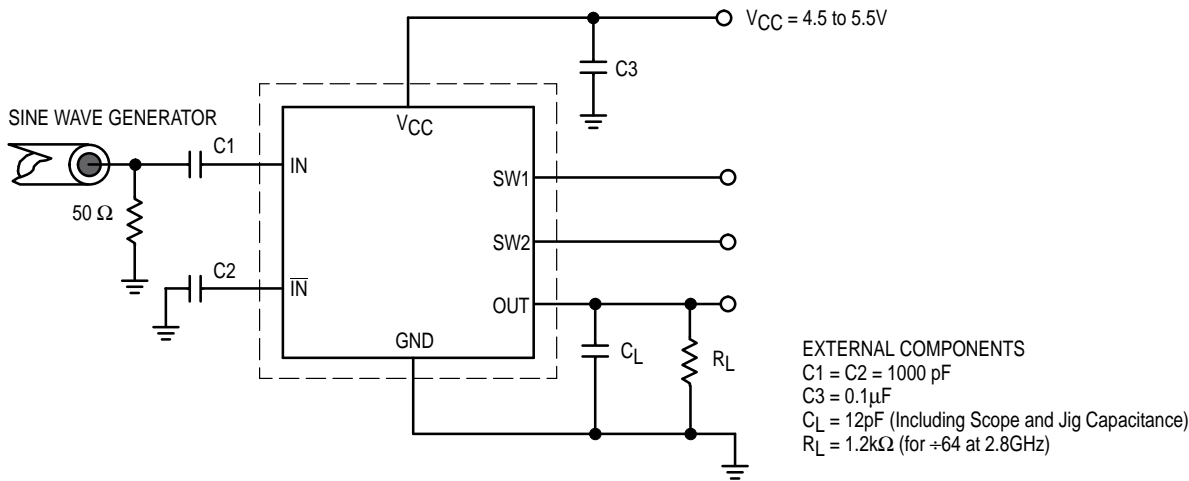


Figure 2. AC Test Circuit

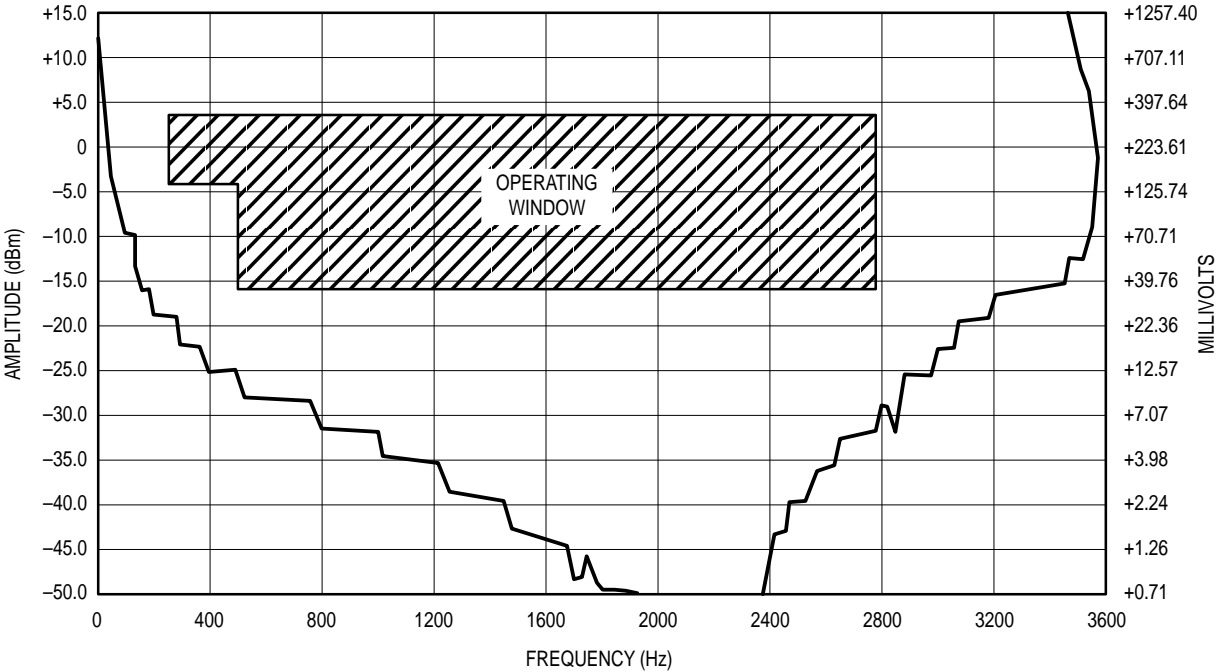


Figure 3. Input Signal Amplitude versus Input Frequency
Divide Ratio = 64; $V_{CC} = 5.0V$; $T_A = 25^{\circ}C$

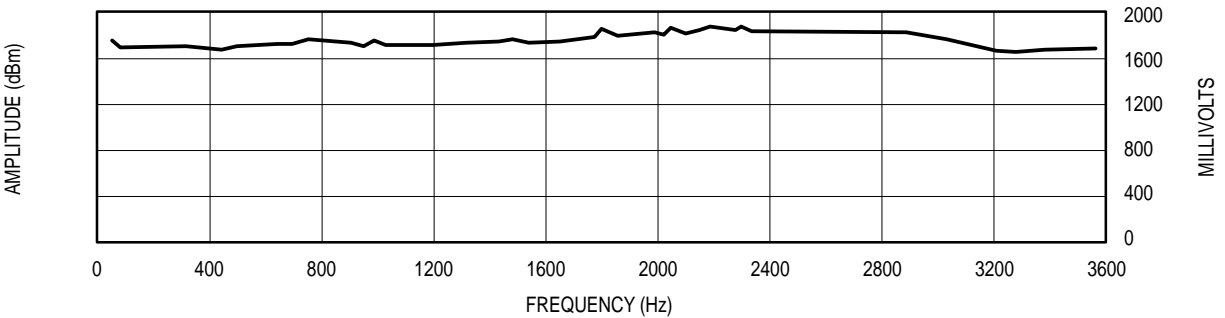
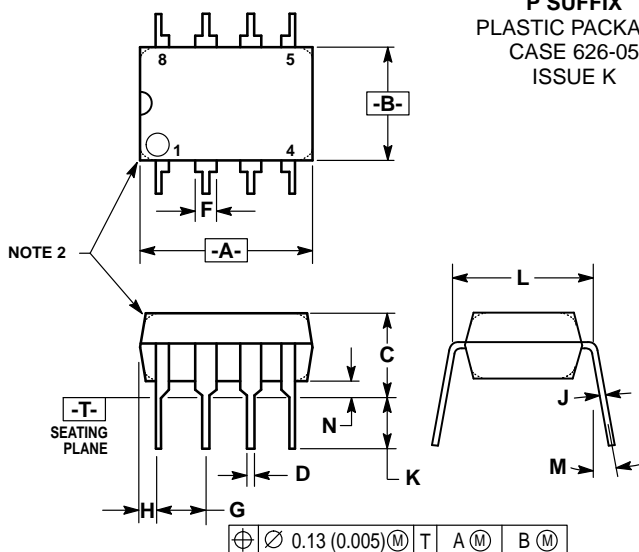


Figure 4. Output Amplitude versus Input Frequency

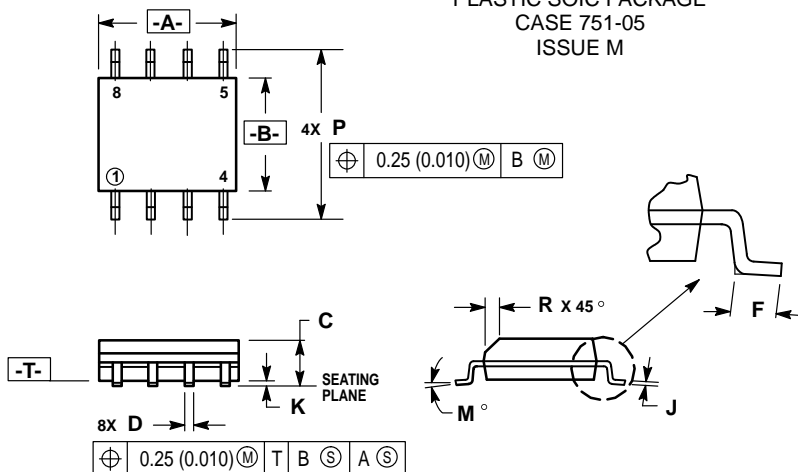
OUTLINE DIMENSIONS

P SUFFIX
 PLASTIC PACKAGE
 CASE 626-05
 ISSUE K


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 SOIC PACKAGE
 CASE 751-05
 ISSUE M


NOTES:

1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
2. CONTROLLING DIMENSION: MILLIMETER.
3. DIMENSIONS A AND B DO NOT INCLUDE MOLD PROTRUSION.
4. MAXIMUM MOLD PROTRUSION 0.15 (0.006) PER SIDE.
5. DIMENSION D DOES NOT INCLUDE DAMBAR PROTRUSION. ALLOWABLE DAMBAR PROTRUSION SHALL BE 0.127 (0.005) TOTAL IN EXCESS OF THE D DIMENSION AT MAXIMUM MATERIAL CONDITION.

| DIM | MILLIMETERS | | INCHES | |
|-----|-------------|-----------|--------|-------|
| | MIN | MAX | MIN | MAX |
| A | 4.80 | 5.00 | 0.189 | 0.196 |
| B | 3.80 | 4.00 | 0.150 | 0.157 |
| C | 1.35 | 1.75 | 0.054 | 0.068 |
| D | 0.35 | 0.49 | 0.014 | 0.019 |
| F | 0.40 | 1.25 | 0.016 | 0.049 |
| G | 1.27 BSC | 0.050 BSC | | |
| J | 0.18 | 0.25 | 0.007 | 0.009 |
| K | 0.10 | 0.25 | 0.004 | 0.009 |
| M | 0° | 7° | 0° | 7° |
| P | 5.80 | 6.20 | 0.229 | 0.244 |
| R | 0.25 | 0.50 | 0.010 | 0.019 |

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MC12079/D

