

# 1.3GHz Prescaler

The MC12078 is a divide by 256 prescaler. Typical frequency synthesis applications include electronically tuned TV/CATV and communication systems as well as instrumentation.

An internal preamplifier is included which isolates the differential inputs and provides gain for the input signal. Differential PECL outputs are provided.

- 1.3GHz Toggle Frequency
- Operating Supply Voltage of 4.5 to 5.5V
- Low-Power 28mA Typical at  $V_{CC} = 5.0V$
- Operating Temperature Range of 0°C to +85°C
- High Input Sensitivity
- 800mV Minimum Peak-to-Peak Output Swing
- Differential PECL Outputs

### DESIGN GUIDE

Criteria	Value	Unit
Internal Gate Count*	62	ea
Internal Gate Propagation Delay	250	ps
Internal Gate Power Dissipation	10	mW
Speed Power Product	2.5	pJ

\* Equivalent to a two-input NAND gate

### MAXIMUM RATINGS

Symbol	Characteristic	Range	Unit
$V_{CC}$	Power Supply Voltage	7.0	Vdc
$T_A$	Operating Temperature Range	0 to +85	°C
$T_{stg}$	Storage Temperature Range	-65 to +175	°C

### ELECTRICAL CHARACTERISTICS ( $V_{CC} = 4.5$ to $5.5V$ ; $T_A = 0$ to $+85^\circ C$ )

Symbol	Characteristic	Min	Typ*	Max	Unit
$f_{max}^1$ $f_{min}$	Toggle Frequency (Sine Wave Input)	1.3	1.6	90	GHz MHz
$I_{CC}$	Supply Current at 5.5V		28	35	mA
$V_{out}$	Output Voltage (Load = 10pF)	0.8	1.2		$V_{PP}$
$V_{in min}$	Input Voltage Sensitivity		10 4.0 7.0	20 10 20	mV <sub>rms</sub>
$V_{in max}$	Input Overload	400 400			mV <sub>rms</sub>

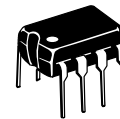
\* Typical measured at +25°C, 5.0V

1. See Figure 1

# MC12078

## MECL PLL COMPONENTS

÷256  
PRESCALER

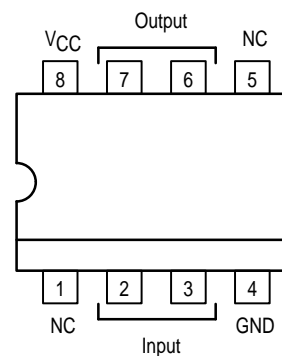


**P SUFFIX**  
8-LEAD PLASTIC PACKAGE  
CASE 626-05

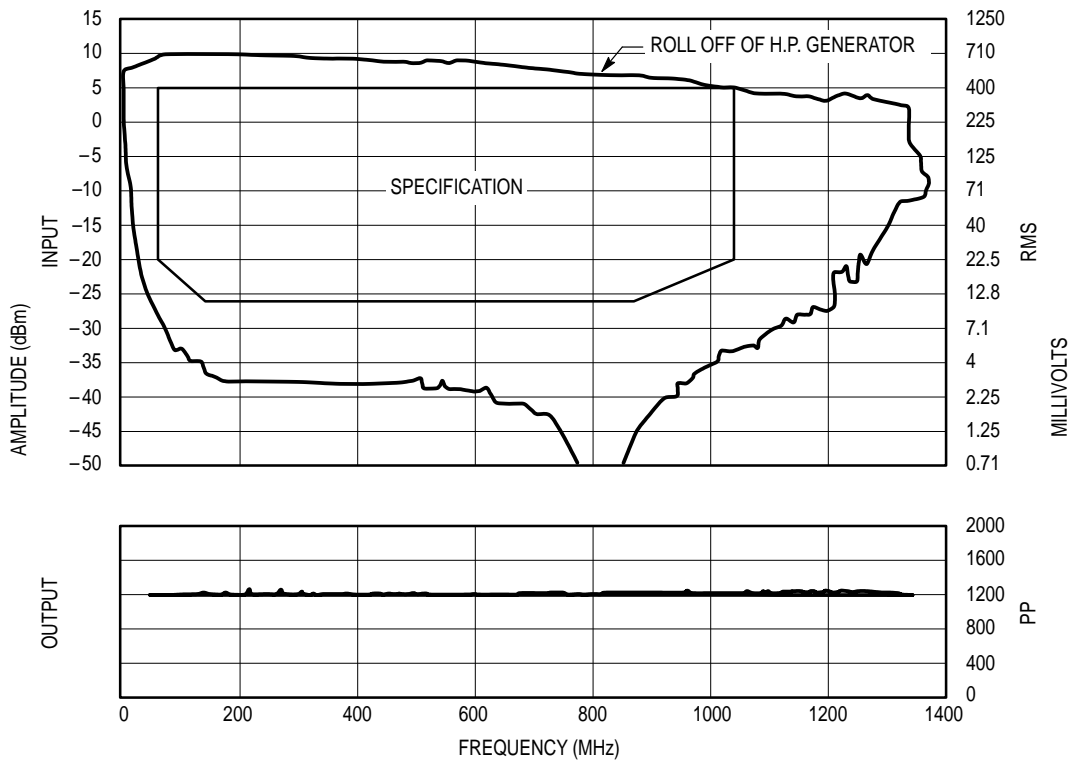
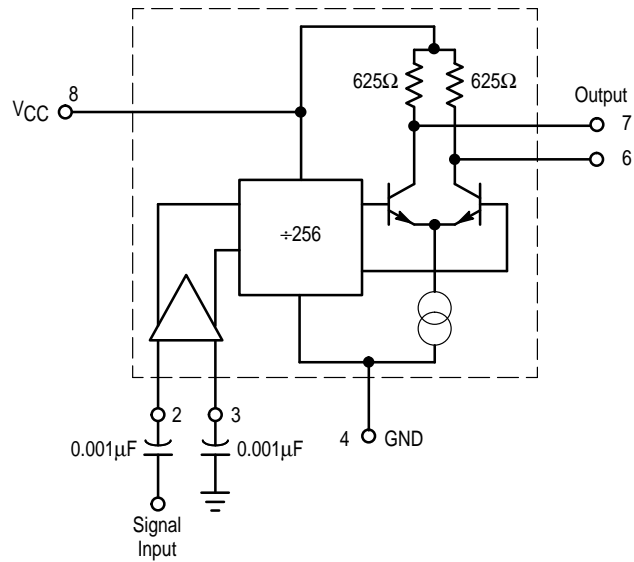


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### Pinout: 8-Lead Plastic (Top View)



**PRESCALER BLOCK DIAGRAM**



**Figure 1. MC12078 Input Signal Amplitude versus Input Frequency**

