

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 $0^{\circ}C$ to $+85^{\circ}C$
- 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	$^{\circ}C$
T_{stg}	Storage Temperature Range	-65 to +175	$^{\circ}C$

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

Symbol	Characteristic	Min	Typ*	Max	Unit
f_{max} 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 90MHz 150-1100MHz 1.3GHz		10 4.0 7.0	20 10 20	mV _{rms}
$V_{in\ max}$	Input Overload 90-500MHz 500-1300MHz	400 400			mV _{rms}

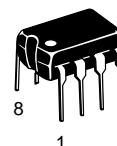
* Typical measured at $+25^{\circ}C$, 5.0V

1. See Figure 1

MC12078

MECL PLL COMPONENTS

$\div 256$
PRESCALER

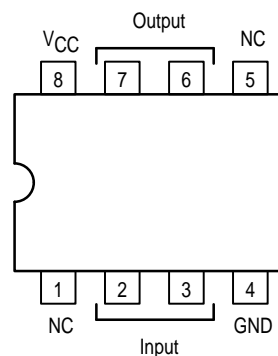


P SUFFIX
PLASTIC PACKAGE
CASE 626-05

D SUFFIX
PLASTIC SOIC PACKAGE
CASE 751-04



Pinout: 8-Lead Plastic (Top View)



PRESCALER BLOCK DIAGRAM

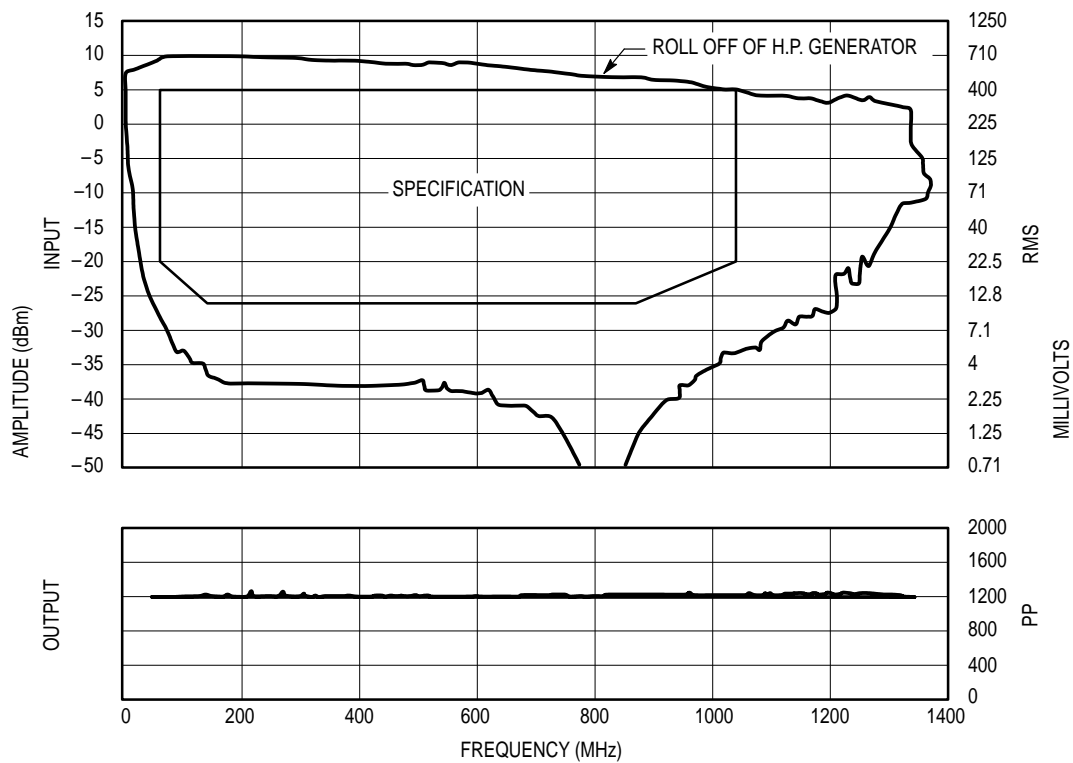
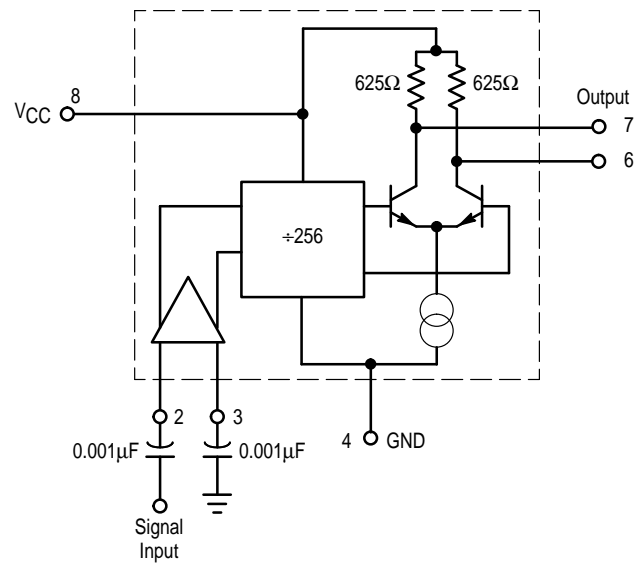
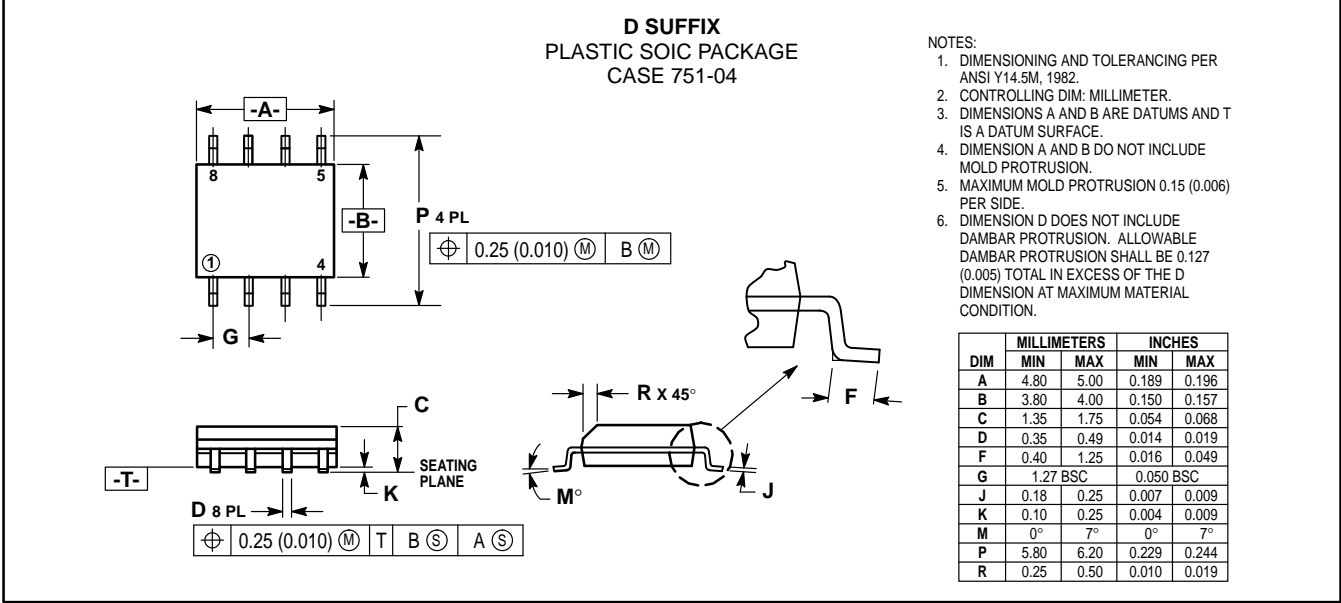
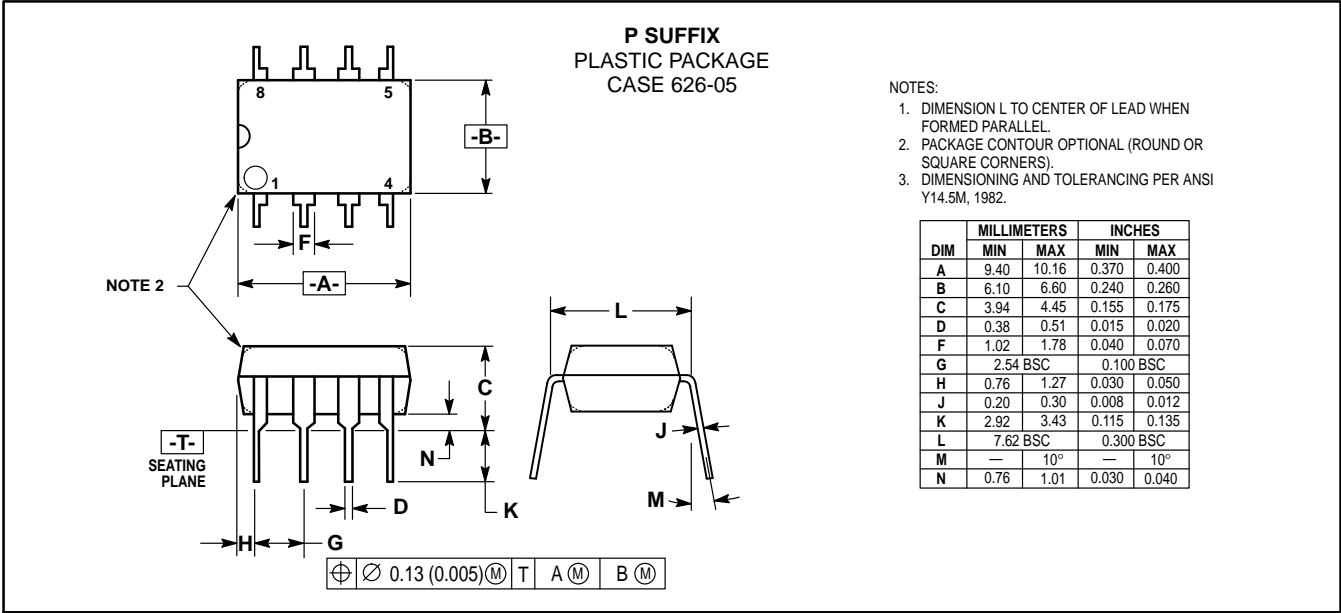



Figure 1. MC12078 Input Signal Amplitude versus Input Frequency

OUTLINE DIMENSIONS



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