

# 1.3GHz Prescaler

The MC12076 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 36mA 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
$f_{max}^1$	Toggle Frequency	1.3	1.6		GHz
$f_{min}$	(Sine Wave Input)			70	MHz
$I_{CC}$	Supply Current at 5.5V		36	50	mA
$V_{out}$	Output Voltage (Load = 10pF)	0.8	1.2		$V_{PP}$
$V_{in min}$	Input Voltage		10	20	mV <sub>rms</sub>
	Sensitivity		1.0	4.0	
	70MHz		1.5	15	
	150-1100MHz		3.0	20	
$V_{in max}$	Input Overload	400			mV <sub>rms</sub>
	70-1300MHz				

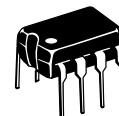
\* Typical measured at +25°C, 5.0V

1. See Figure 1

# MC12076

## MECL PLL COMPONENTS

÷256  
PRESCALER

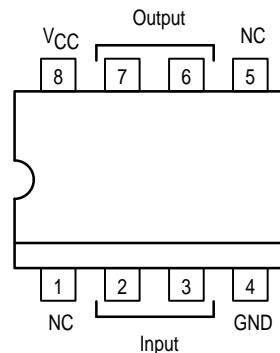


**P SUFFIX**  
8-LEAD PLASTIC PACKAGE  
CASE 626-05



**D SUFFIX**  
8-LEAD PLASTIC SOIC PACKAGE  
CASE 751-05

Pinout: 8-Lead Plastic (Top View)



PRESCALER BLOCK DIAGRAM

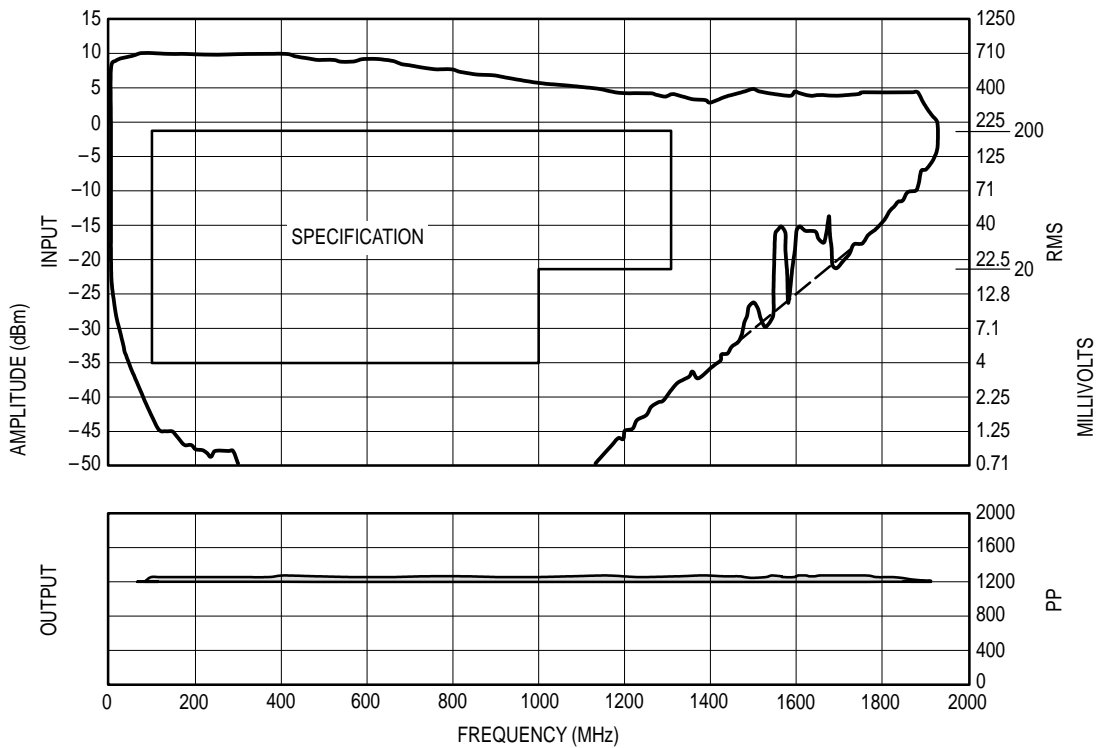
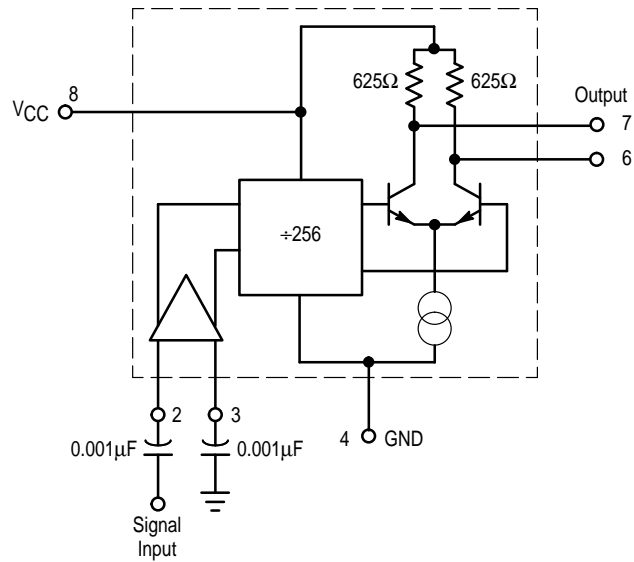
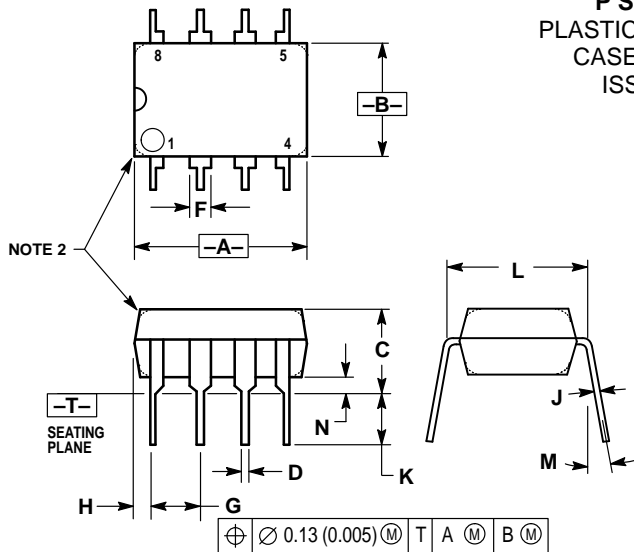


Figure 1. MC12076 Input Signal Amplitude versus Input Frequency

OUTLINE DIMENSIONS

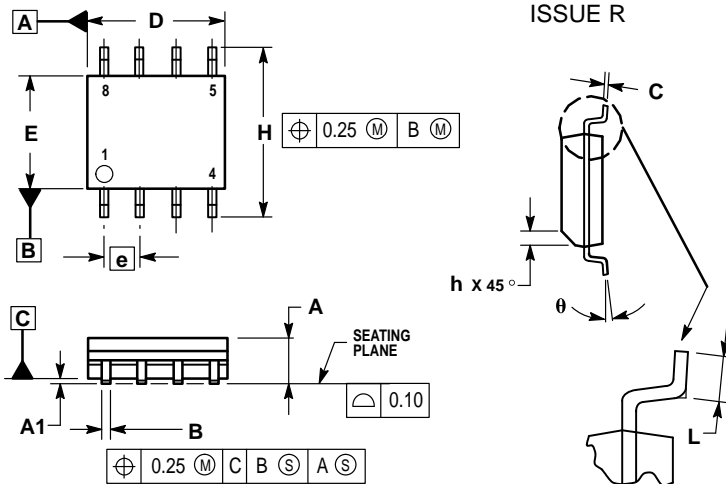
**P SUFFIX**  
PLASTIC PACKAGE  
CASE 626-05  
ISSUE K



- NOTES:
- DIMENSION L TO CENTER OF LEAD WHEN FORMED PARALLEL.
  - PACKAGE CONTOUR OPTIONAL (ROUND OR SQUARE CORNERS).
  - 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 R



- NOTES:
- DIMENSIONING AND TOLERANCING PER ASME Y14.5M, 1994.
  - DIMENSIONS ARE IN MILLIMETERS.
  - DIMENSION D AND E DO NOT INCLUDE MOLD PROTRUSION.
  - MAXIMUM MOLD PROTRUSION 0.15 PER SIDE.
  - DIMENSION B DOES NOT INCLUDE MOLD 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	0.18	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
$\theta$	0° 7°	

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