1.3GHz Prescaler

The MC12076 is a divide by 256 prescaler. Typical frequency synthesis applications include elctronically tuned TV/CATV and communication systems as well as instrumentation.

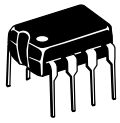
An internal preamplifier is included which isolates the differential inputs and provides gain for the input signal. Differential PECL outputs are provided.

- 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

MC12076

MECL PLL COMPONENTS

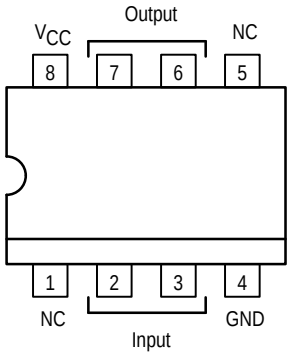
÷256
PRESCALER



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)



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

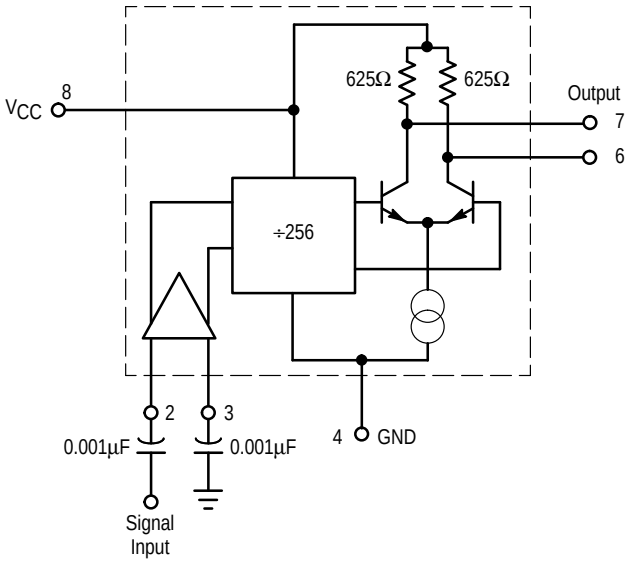
ELECTRICAL CHARACTERISTICS (V_{CC} = 4.5 to 5.5V; T_A = 0 to +85°C)

Symbol	Characteristic	Min	Typ*	Max	Unit
f_{max}[1] f_{min}	Toggle Frequency (Sine Wave Input)	1.3	1.6	 70	GHz 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 70MHz Sensitivity 150–1100MHz 1.2GHz 1.3GHz		10 1.0 1.5 3.0	20 4.0 15 20	mV_{rms}
$V_{in\ max}$	Input 70–1300MHz Overload	400			mV_{rms}

* Typical measured at +25°C, 5.0V

1. See Figure 1

PRESCALER BLOCK DIAGRAM



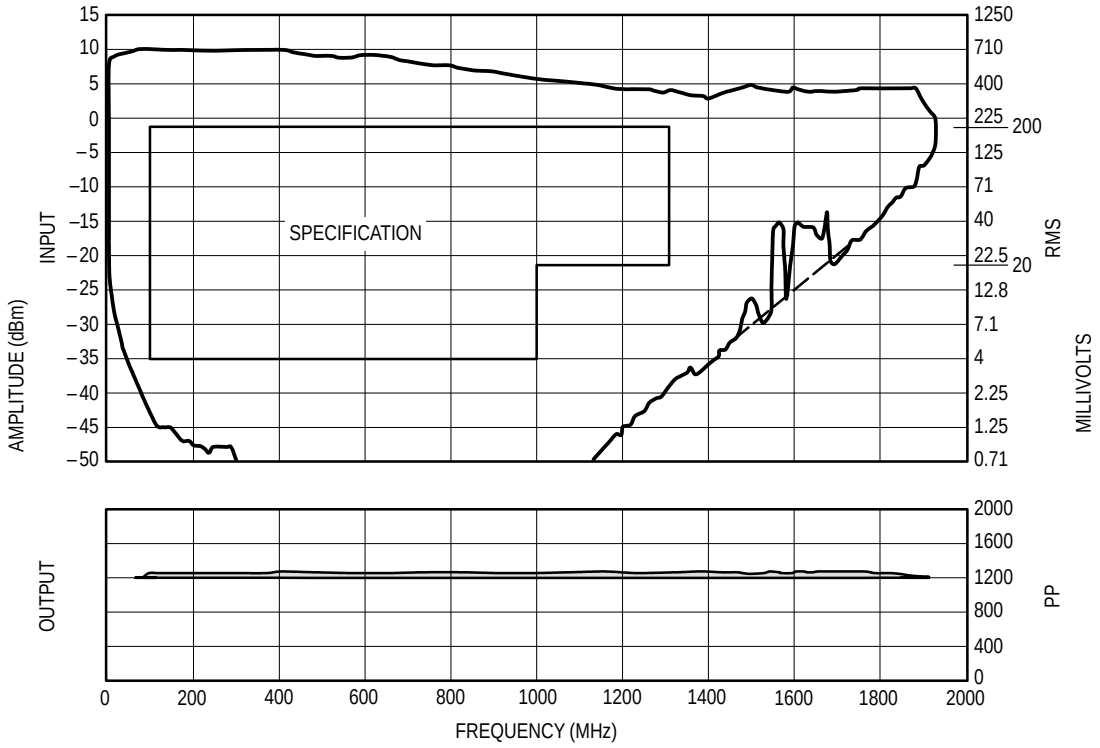
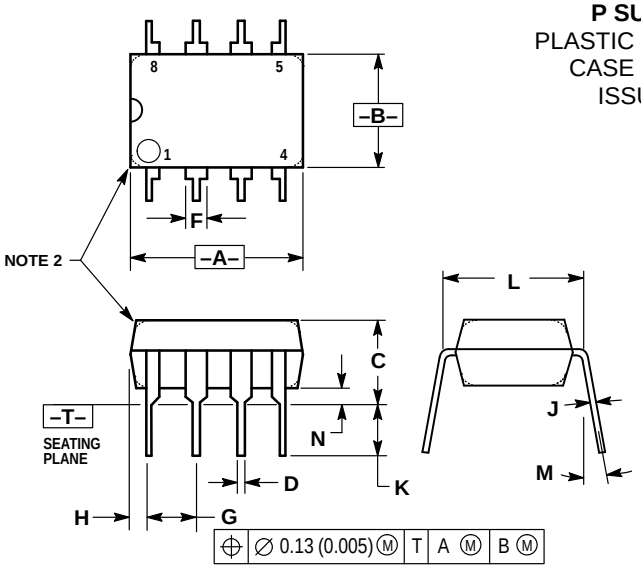


Figure 1. MC12076 Input Signal Amplitude versus Input Frequency

OUTLINE DIMENSIONS

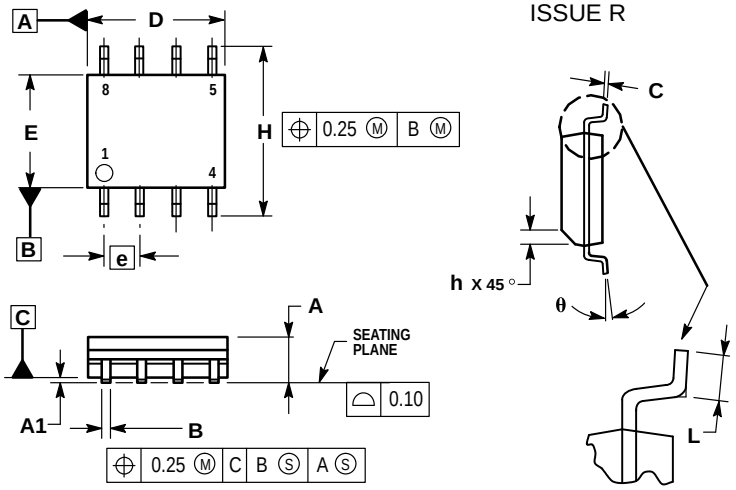
P SUFFIX
PLASTIC PACKAGE
CASE 626–05
ISSUE K



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.

	MILLIMETERS		INCHES	
DIM	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:
1. DIMENSIONING AND TOLERANCING PER ASME Y14.5M, 1994.
2. DIMENSIONS ARE IN MILLIMETERS.
3. DIMENSION D AND E DO NOT INCLUDE MOLD PROTRUSION.
4. MAXIMUM MOLD PROTRUSION 0.15 PER SIDE.
5. 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.

	MILLIMETERS	
DIM	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
θ	0°	7°

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