

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}^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 _{rms}
$V_{in\ max}$	Input Overload	400 400			mV _{rms}

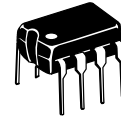
* Typical measured at $+25^{\circ}C$, 5.0V

1. See Figure 1

MC12078

MECL PLL COMPONENTS

**÷256
PRESCALER**

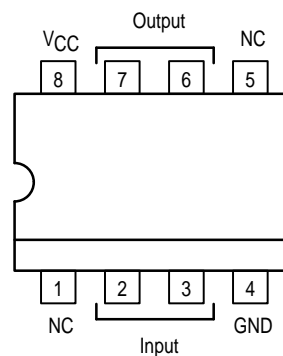


P SUFFIX
8-LEAD PLASTIC PACKAGE
CASE 626-05



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

Pinout: 8-Lead Plastic (Top View)



PRESCALER BLOCK DIAGRAM

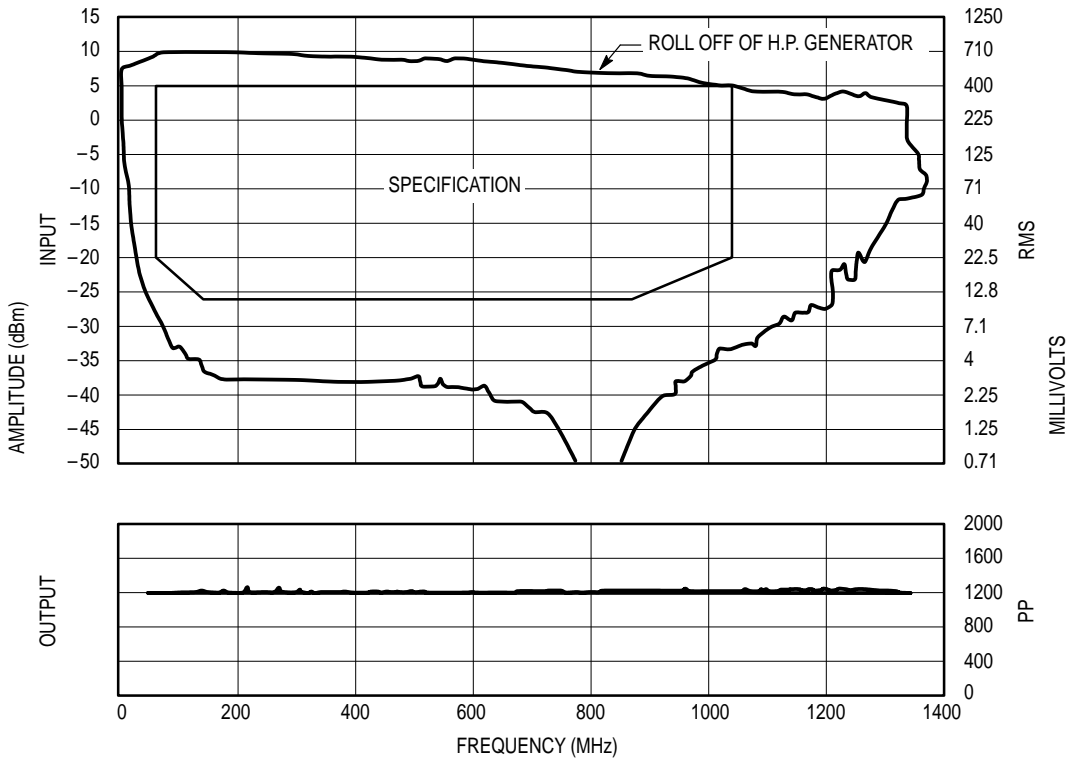
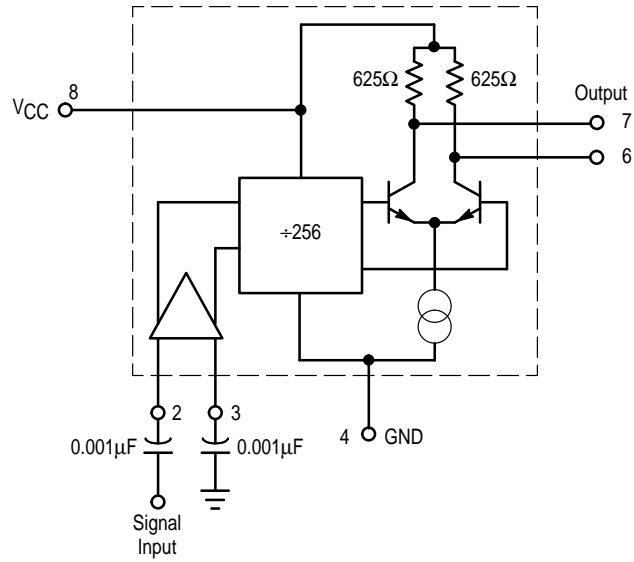


Figure 1. MC12078 Input Signal Amplitude versus Input Frequency

OUTLINE DIMENSIONS

P SUFFIX
PLASTIC PACKAGE
CASE 626-05
ISSUE K

NOTE 2: [Points to specific lead dimensions]

-T- SEATING PLANE

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

⊕ ∅ 0.13 (0.005) Ⓜ T A Ⓜ B Ⓜ

D SUFFIX
PLASTIC SOIC PACKAGE
CASE 751-05
ISSUE R

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

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
θ	0° 7°	

⊕ 0.25 Ⓜ B Ⓜ

⊕ 0.25 Ⓜ C B Ⓢ A Ⓢ

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How to reach us:

USA/EUROPE/Locations Not Listed: Motorola Literature Distribution; P.O. Box 5405; Denver, Colorado 80217. 303-675-2140 or 1-800-441-2447

Mfax™: RMFAX0@email.sps.mot.com – TOUCHTONE 602-244-6609
INTERNET: http://Design-NET.com

JAPAN: Nippon Motorola Ltd.; Tatumi-SPD-JLDC, 6F Seibu-Butsuryu-Center, 3-14-2 Tatumi Koto-Ku, Tokyo 135, Japan. 81-3-3521-8315

ASIA/PACIFIC: Motorola Semiconductors H.K. Ltd.; 8B Tai Ping Industrial Park, 51 Ting Kok Road, Tai Po, N.T., Hong Kong. 852-26629298