1.3GHz Prescaler

The MC12078 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 ECL 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 ECL 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	рЈ

^{*} Equivalent to a two-input NAND gate

MAXIMUM RATINGS

Symbol	Characteristic	Range	Unit
Vcc	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 ($V_{CC} = 4.5 \text{ to } 5.5V$; $T_A = 0 \text{ to } +85^{\circ}C$)

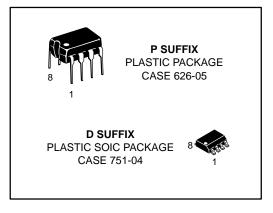
		, 00			
Symbol	Characteristic	Min	Тур*	Max	Unit
f _{max} 1 f _{min}	Toggle Frequency (Sine Wave Input)	1.3	1.6	90	GHz MHz
Icc	Supply Current at 5.5V		28	35	mA
V _{out}	Output Voltage (Load =10pF)	8.0	1.2		VPP
V _{in min}	Input Voltage 90MHz Sensitivity 150–1100MHz 1.3GHz		10 4.0 7.0	20 10 20	mV _{rms}
V _{in max}	Input 90–500MHz Overload 500–1300MHz	400 400			mV _{rms}

^{*} Typical meausred at +25°C, 5.0V

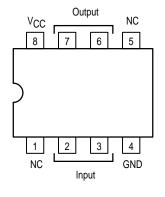
MC12078

MECL PLL COMPONENTS

÷256
PRESCALER



Pinout: 8-Lead Plastic (Top View)

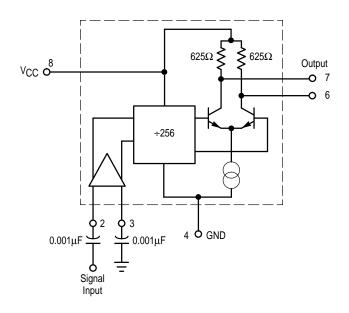




REV 1

¹ See Figure 1

PRESCALER BLOCK DIAGRAM



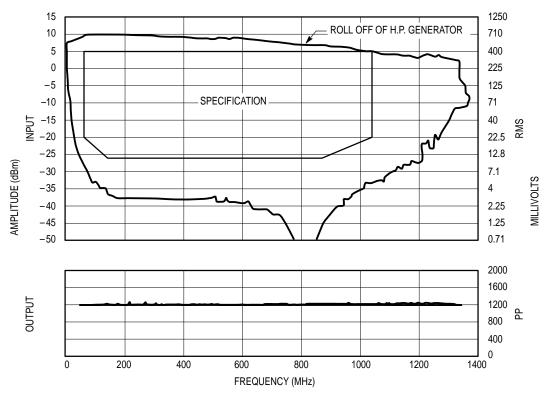
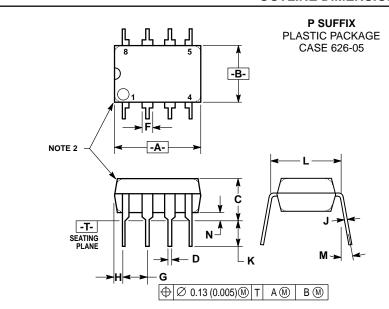


Figure 1. MC12078 Input Signal Amplitude versus Input Frequency

OUTLINE DIMENSIONS

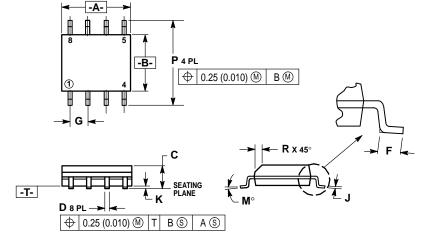


NOTES:

- 1. DIMENSION L TO CENTER OF LEAD WHEN
- FORMED PARALLEL
- PACKAGE CONTOUR OPTIONAL (ROUND OR SQUARE CORNERS).
 DIMENSIONING AND TOLERANCING PER ANSI

	MILLIMETERS		INCHES	
DIM	MIN	MAX	MIN	MAX
Α	9.40	10.16	0.370	0.400
В	6.10	6.60	0.240	0.260
С	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	
Н	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 751-04



NOTES:

- DIMENSIONING AND TOLERANCING PER ANSI Y14 5M 1982
- CONTROLLING DIM: MILLIMETER
- DIMENSIONS A AND B ARE DATUMS AND T IS A DATUM SURFACE.
- DIMENSION A AND B DO NOT INCLUDE MOLD PROTRUSION.
- MAXIMUM MOLD PROTRUSION 0.15 (0.006) PER SIDE.
- DIMENSION D DOES NOT INCLUDE DAMBAR PROTRUSION. ALLOWABLE DAMBAR PROTRUSION SHALL BE 0.127 (0.005) TOTAL IN EXCESS OF THE D DIMENSION AT MAXIMUM MATERIAL CONDITION.

	MILLIMETERS		INCHES	
DIM	MIN	MAX	MIN	MAX
Α	4.80	5.00	0.189	0.196
В	3.80	4.00	0.150	0.157
С	1.35	1.75	0.054	0.068
D	0.35	0.49	0.014	0.019
F	0.40	1.25	0.016	0.049
G	1.27 BSC		0.050 BSC	
J	0.18	0.25	0.007	0.009
K	0.10	0.25	0.004	0.009
M	0°	7°	0°	7°
Р	5.80	6.20	0.229	0.244
R	0.25	0.50	0.010	0.019

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