

1.3GHz Prescaler

The MC12075 is a divide by 64 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.

The MC12075 is pin and functionally compatible with the Plessey SP4633.

- 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°C)

Symbol	Characteristic	Min	Typ*	Max	Unit
f_{max} 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 Sensitivity 70MHz 150-1100MHz 1.2GHz 1.3GHz		10 1.0 1.5 3.0	20 4.0 15 20	mV _{rms}
$V_{in max}$	Input Overload 70-1300MHz	400			mV _{rms}

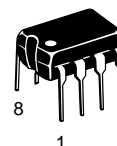
* Typical measured at +25°C, 5.0V

1. See Figure 1

MC12075

MECL PLL COMPONENTS

÷64
PRESCALER

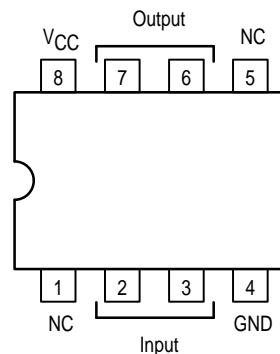


P SUFFIX
PLASTIC PACKAGE
CASE 626-05

D SUFFIX
PLASTIC SOIC PACKAGE
CASE 751-05



Pinout: 8-Lead Plastic (Top View)



PRESCALER BLOCK DIAGRAM

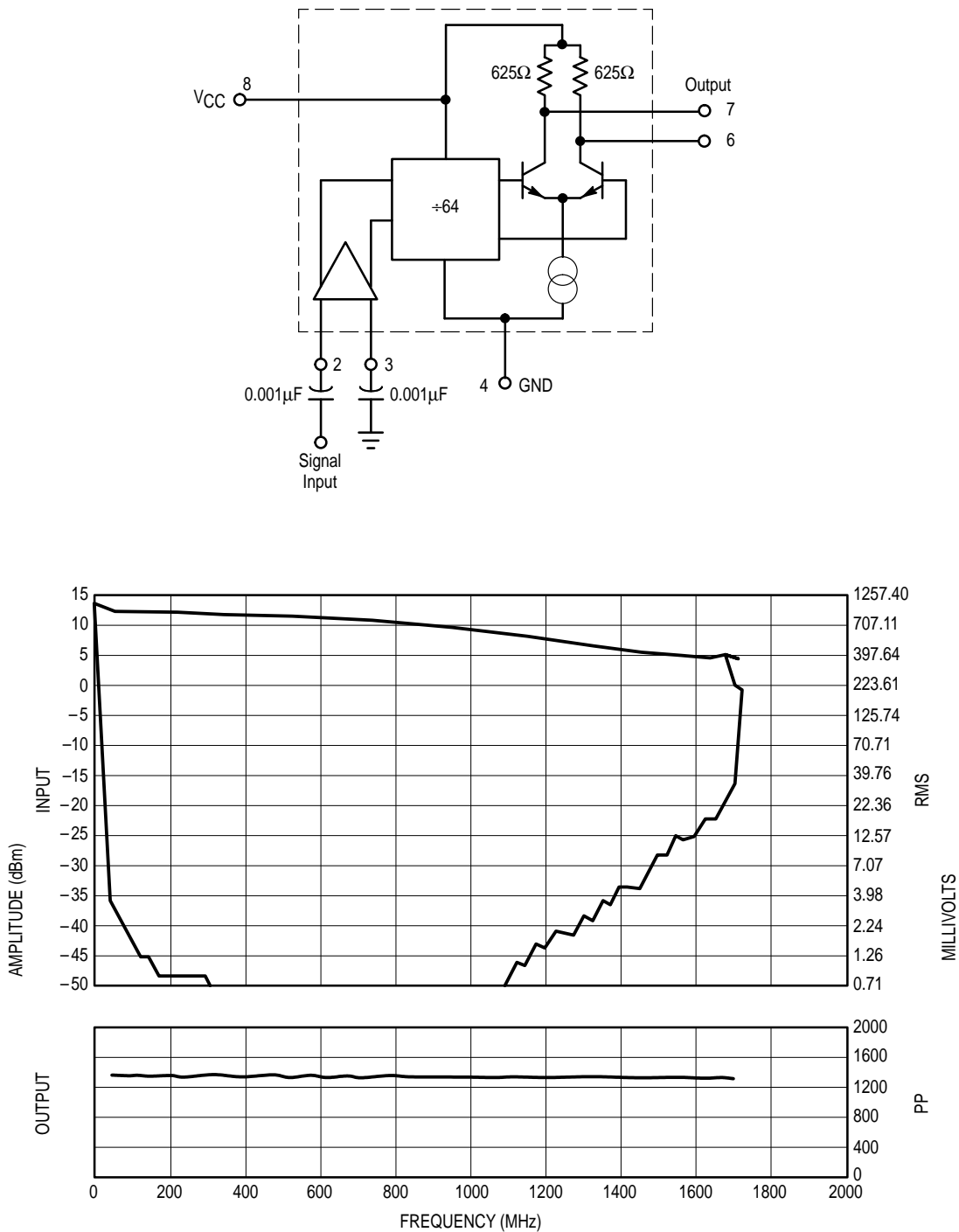
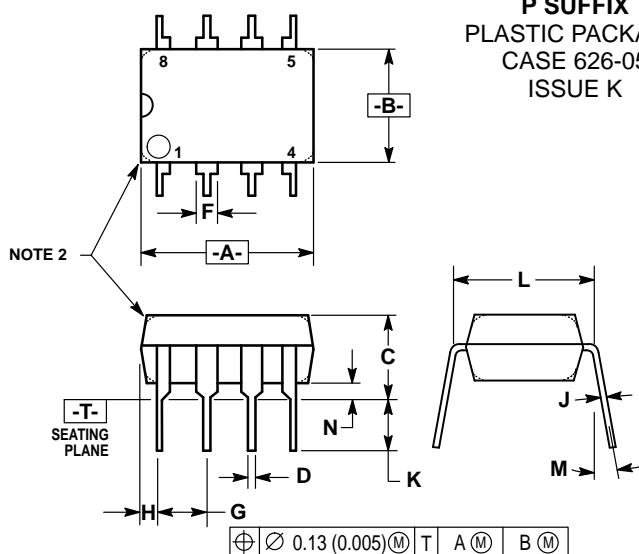


Figure 1. Typical MC12075 Input Signal Amplitude versus Input Frequency

OUTLINE DIMENSIONS

P SUFFIX
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ISSUE K

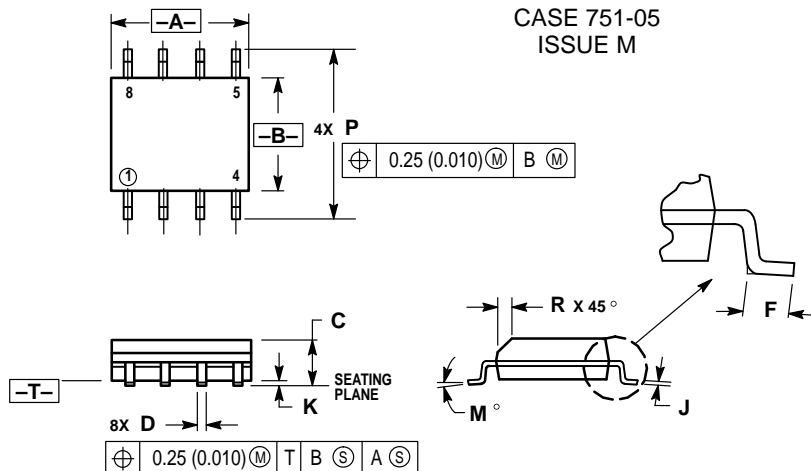


NOTES:

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.

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 M



NOTES:

1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
2. CONTROLLING DIMENSION: MILLIMETER.
3. DIMENSIONS A AND B DO NOT INCLUDE MOLD PROTRUSION.
4. MAXIMUM MOLD PROTRUSION 0.15 (0.006) PER SIDE.
5. 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.

DIM	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	4.80	5.00	0.189	0.196
B	3.80	4.00	0.150	0.157
C	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°
P	5.80	6.20	0.229	0.244
R	0.25	0.50	0.010	0.019

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MC12075/D