

Two-Modulus Prescaler

The MC12015, MC12016 and MC12017 are two-modulus prescalers which will drive divide by 32 and 33, 40 and 41, and 64 and 65, respectively. An internal regulator is provided to allow these devices to be used over a wide range of power-supply voltages. The devices may be operated by applying a supply voltage of 5.0Vdc $\pm 10\%$ at Pin 7, or by applying an unregulated voltage source from 5.5Vdc to 9.5Vdc to Pin 8.

- 225MHz Toggle Frequency
- Low-Power 7.5mA Maximum at 6.8V
- Control Input and Output Are Compatible With Standard CMOS
- Connecting Pins 2 and 3 Allows Driving One TTL Load
- Supply Voltage 4.5V to 9.5V

MAXIMUM RATINGS

Symbol	Characteristic	Range	Unit
V _{reg}	Regulated Voltage, Pin 7	8.0	Vdc
V _{CC}	Power Supply Voltage, Pin 8	10.0	Vdc
T _A	Operating Temperature Range	-40 to +85	°C
T _{stg}	Storage Temperature Range	-65 to +175	°C

ELECTRICAL CHARACTERISTICS (V_{CC} = 5.5 to 9.5V; V_{reg} = 4.5 to 5.5V; T_A = -40 to +85°C)

Symbol	Characteristic	Min	Typ	Max	Unit
f _{max} f _{min}	Toggle Frequency (Sine Wave Input)	225		35	MHz
I _{CC}	Supply Current		6.0	7.8	mA
V _{IH}	Control Input HIGH (÷32, 40 or 64)	2.0			V
V _{IL}	Control Input LOW (÷33, 41 or 65)			0.8	V
V _{OH}	Output Voltage HIGH ¹ (I _{source} = 50μA)	2.5			V
V _{OL}	Output Voltage LOW ¹ (I _{sink} = 2mA)			0.5	V
V _{in}	Input Voltage Sensitivity 35MHz 50-225MHz	400 200		800 800	mVpp
t _{PLL}	PLL Response Time (Notes 2 and 3)			t _{out} -70	ns

1 Pin 2 connected to Pin 3

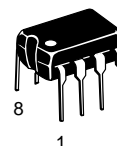
2 t_{PLL} = the period of time the PLL has from the prescaler rising output transition (50%) to the modulus control input edge transition (50%) to ensure proper modulus selection

3 t_{out} = period of output waveform

MC12015
MC12016
MC12017

MECL PLL COMPONENTS

TWO-MODULUS PRESCALER

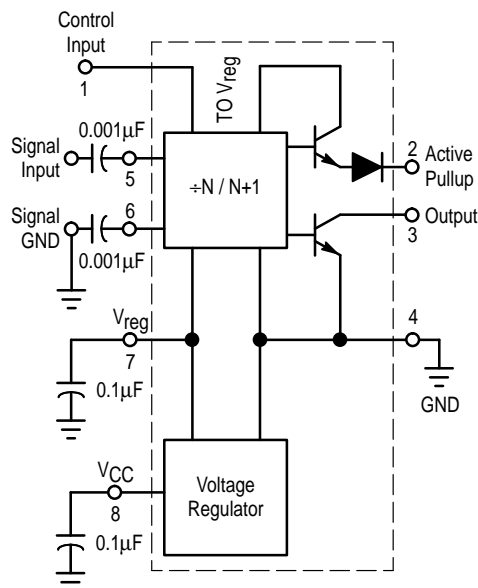


P SUFFIX
PLASTIC PACKAGE
CASE 626-05

D SUFFIX
PLASTIC SOIC PACKAGE
CASE 751-05



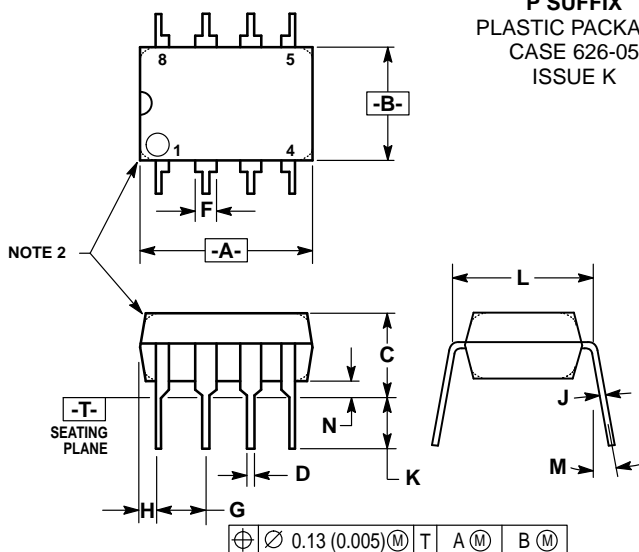
PRESCALER BLOCK DIAGRAM



1. V_{reg} at Pin 7 is not guaranteed to be between 4.5 and 5.5V when V_{CC} is being applied to Pin 8
2. Pin 7 is not to be used as a source of regulated output voltage



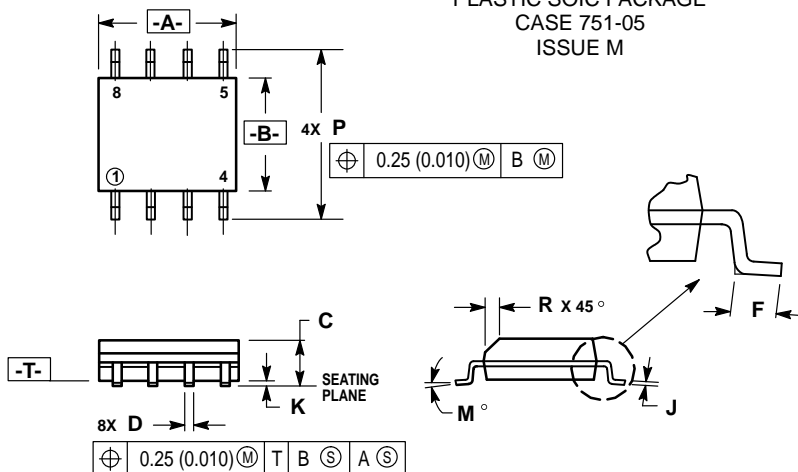
OUTLINE DIMENSIONS

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.


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
E	1.02	1.78	0.040	0.070
F	2.54 BSC	0.100 BSC		
G	0.76	1.27	0.030	0.050
H	0.20	0.30	0.008	0.012
J	2.92	3.43	0.115	0.135
K	7.62 BSC	0.300 BSC		
L	—	10°	—	10°
M	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
E	0.40	1.25	0.016	0.049
F	1.27 BSC	0.050 BSC		
G	0.18	0.25	0.007	0.009
H	0.10	0.25	0.004	0.009
J	0°	7°	0°	7°
K	5.80	6.20	0.229	0.244
L	0.25	0.50	0.010	0.019

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