



**MOTOROLA**

Order this document by MC12019/D

**MC12019**

## **Dual Modulus Prescaler**

The MC12019 is a divide by 20 and 21 dual modulus prescaler. It will divide by 20 when the modulus control input is HIGH and divide by 21 when the modulus control input is LOW.

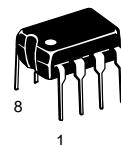
- 225 MHz Toggle Frequency
- Low-Power 7.5 mA Maximum at 5.5 V
- Control Input is Compatible with Standard Motorola CMOS Synthesizers
- Emitter Follower Output

### **MECL PLL COMPONENTS ÷20/21 DUAL MODULUS PRESCALER**

**SEMICONDUCTOR  
TECHNICAL DATA**

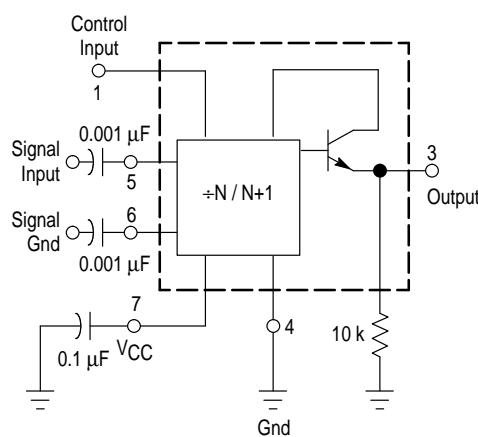


**D SUFFIX**  
PLASTIC PACKAGE  
CASE 751  
(SO-8)

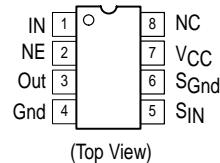


**P SUFFIX**  
PLASTIC PACKAGE  
CASE 626

### **SIMPLIFIED BLOCK DIAGRAM**



### **PIN CONNECTIONS**



### **ORDERING INFORMATION**

Device	Operating Temperature Range	Package
MC12019D	TA = -40° to +85°C	SO-8
MC12019P		Plastic

## MAXIMUM RATINGS

Rating	Symbol	Value	Unit
Power Supply Voltage, Pin 7	V <sub>CC</sub>	8.0	V <sub>dc</sub>
Operating Temperature Range	T <sub>A</sub>	-40 to +85	°C
Storage Temperature Range	T <sub>stg</sub>	-65 to +175	°C

NOTE: ESD data available upon request.

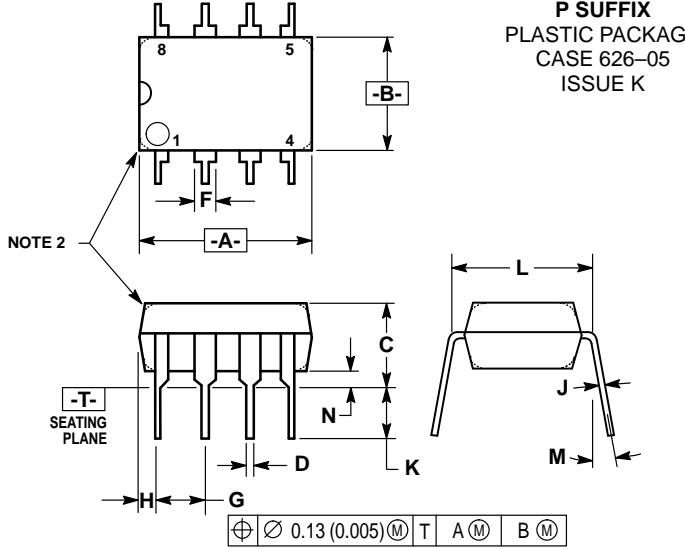
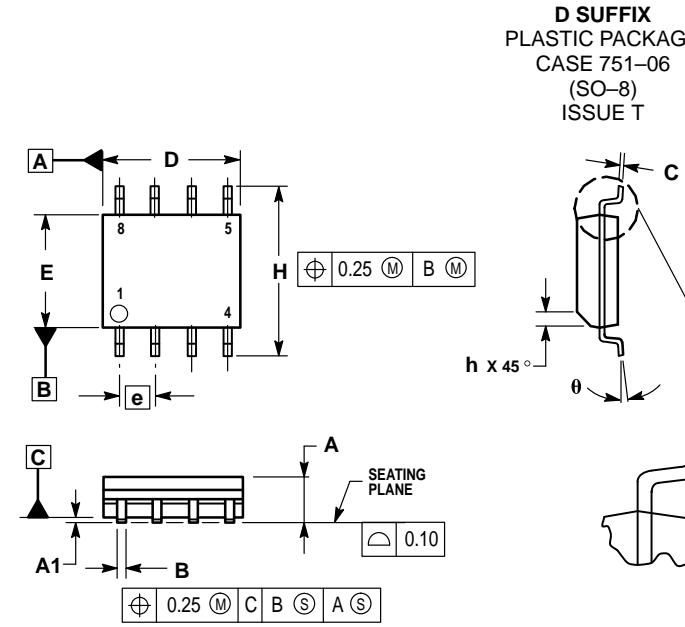
ELECTRICAL CHARACTERISTICS (V<sub>CC</sub> = 4.5 to 5.5 V; T<sub>A</sub> = -40 to 85°C), unless otherwise noted.)

Characteristic	Symbol	Min	Typ	Max	Unit
Toggle Frequency (Sine Wave Input)	f <sub>max</sub> f <sub>min</sub>	225 —	— —	— 20	MHz
Supply Current	I <sub>CC</sub>	—	—	7.5	mA
Control Input HIGH (±20)	V <sub>IH</sub>	2.0	—	—	V
Control Input LOW (±21)	V <sub>IL</sub>	—	—	0.8	V
Output Swing Voltage (10 kΩ to ground)	V <sub>out</sub>	600	—	1200	mV <sub>pp</sub>
Input Voltage Sensitivity 20 MHz to 225 MHz	V <sub>in</sub>	200	—	800	mV <sub>PP</sub>
PLL Response Time (Notes 1 and 2)	t <sub>PLL</sub>	—	—	t <sub>out</sub> -70	ns

NOTES: 1. t<sub>PLL</sub> = 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.

2. t<sub>out</sub> = period of output waveform.

## OUTLINE DIMENSIONS

 <p>NOTE 2</p> <p><b>P SUFFIX</b> PLASTIC PACKAGE CASE 626-05 ISSUE K</p> <p><b>DIM</b> <b>MILLIMETERS</b> <b>INCHES</b> DIM MIN MAX MIN MAX</p> <p>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</p>	<p>NOTES:</p> <ol style="list-style-type: none"> <li>1. DIMENSION L TO CENTER OF LEAD WHEN FORMED PARALLEL.</li> <li>2. PACKAGE CONTOUR OPTIONAL (ROUND OR SQUARE CORNERS).</li> <li>3. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.</li> </ol>
 <p><b>D SUFFIX</b> PLASTIC PACKAGE CASE 751-06 (SO-8) ISSUE T</p> <p><b>DIM</b> <b>MILLIMETERS</b> DIM MIN MAX</p> <p>A 1.35 1.75 A1 0.10 0.25 B 0.35 0.49 C 0.19 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°</p>	<p>NOTES:</p> <ol style="list-style-type: none"> <li>1. DIMENSIONING AND TOLERANCING PER ASME Y14.5M, 1994.</li> <li>2. DIMENSIONS ARE IN MILLIMETER.</li> <li>3. DIMENSION D AND E DO NOT INCLUDE MOLD PROTRUSION.</li> <li>4. MAXIMUM MOLD PROTRUSION 0.15 PER SIDE.</li> <li>5. DIMENSION B DOES NOT INCLUDE DAMBAR PROTRUSION. ALLOWABLE DAMBAR PROTRUSION SHALL BE 0.127 TOTAL IN EXCESS OF THE B DIMENSION AT MAXIMUM MATERIAL CONDITION.</li> </ol>

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