



$\div 2, \div 4, \div 8$ 1.1GHz Low Power Prescaler with Stand-By Mode

The MC12093 is a single modulus prescaler for low power frequency division of a 1.1 GHz high frequency input signal. Motorola's advanced MOSAIC™ V technology is utilized to achieve low power dissipation of 6.75 mW at a minimum supply voltage of 2.7 V.

On-chip output termination provides output current to drive a 2.0 pF (typical) high impedance load. If additional drive is required for the prescaler output, an external resistor can be added parallel from the OUT pin to GND to increase the output power. Care must be taken not to exceed the maximum allowable current through the output.

Divide ratio control inputs SW1 and SW2 select the required divide ratio of $\div 2$, $\div 4$, or $\div 8$.

Stand-By mode is featured to reduce current drain to 50 μ A typical when the standby pin SB is switched LOW disabling the prescaler.

- 1.1 GHz Toggle Frequency
- Supply Voltage 2.7 V to 5.5 Vdc
- Low Power 3.0 mA Typical
- Operating Temperature -40 to 85°C
- Divide by 2, 4 or 8 Selected by SW1 and SW2 Pins
- On-Chip Termination

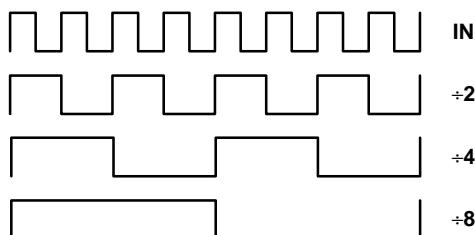
MOSAIC V is a trademark of Motorola

FUNCTIONAL TABLE

SW	SW2	Divide Ratio
L	L	8
H	L	4
L	H	4
H	H	2

NOTES: 1. SW1 & SW2: H = (V_{CC} - 0.5 V) to V_{CC}; L = Open.
2. SB: H = 2.0 V to V_{CC}; L = GND to 0.8 V.

Function Chart



MC12093

MECL PLL COMPONENTS

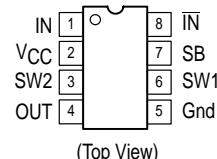
$\div 2, \div 4, \div 8$ LOW POWER PRESCALER WITH STAND-BY MODE

SEMICONDUCTOR TECHNICAL DATA



D SUFFIX
PLASTIC PACKAGE
CASE 751
(SO-8)

PIN CONNECTIONS

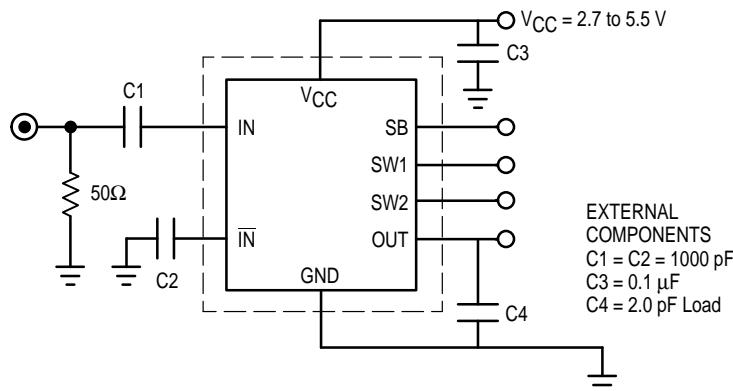


A LOW on the Stand-By Pin 7 disables the device.

ORDERING INFORMATION

Device	Operating Temp Range	Package
MC12093D	T _A = -40 to 85°C	SO-8

Figure 1. AC Test Circuit



MAXIMUM RATINGS

Parameter	Symbol	Value	Unit
Power Supply Voltage, Pin 2	V _{CC}	-0.5 to 6.0	V _{dc}
Operating Temperature Range	T _A	-40 to 85	°C
Storage Temperature Range	T _{stg}	-65 to 150	°C
Maximum Output Current, Pin 4	I _O	4.0	mA

NOTE: ESD data available upon request.

ELECTRICAL CHARACTERISTICS (V_{CC} = 2.7 to 5.5 V; T_A = -40 to 85°C)

Parameter	Symbol	Min	Typ	Max	Unit
Toggle Frequency (Sine Wave)	f _t	0.1	1.4	1.1	GHz
Supply Current	I _{CC}	—	3.0	4.5	mA
Stand-By Current	I _{SB}	—	120	200	μA
Stand-By Input HIGH (SB)	V _{IH1}	2.0	—	V _{CC}	V
Stand-By Input LOW (SB)	V _{IL1}	Gnd	—	0.8	V
Divide Ratio Control Input HIGH (SW1 & SW2)	V _{IH2}	V _{CC} - 0.5	V _{CC}	V _{CC} + 0.5	V
Divide Ratio Control Input LOW (SW1 & SW2)	V _{IL2}	OPEN	OPEN	OPEN	
Output Voltage Swing (2.0 pF Load)	V _{OUT}				
Output Frequency 12.5–350 MHz (Note 1)		0.6	0.80	—	V _{pp}
Output Frequency 350–400 MHz (Note 2)		0.5	0.70	—	
Output Frequency 400–450 MHz (Note 3)		0.4	0.55	—	
Output Frequency 450–550 MHz (Note 4)		0.3	0.45	—	
Input Voltage Sensitivity	V _{IN}	100 400	—	1000 1000	mV _{pp}

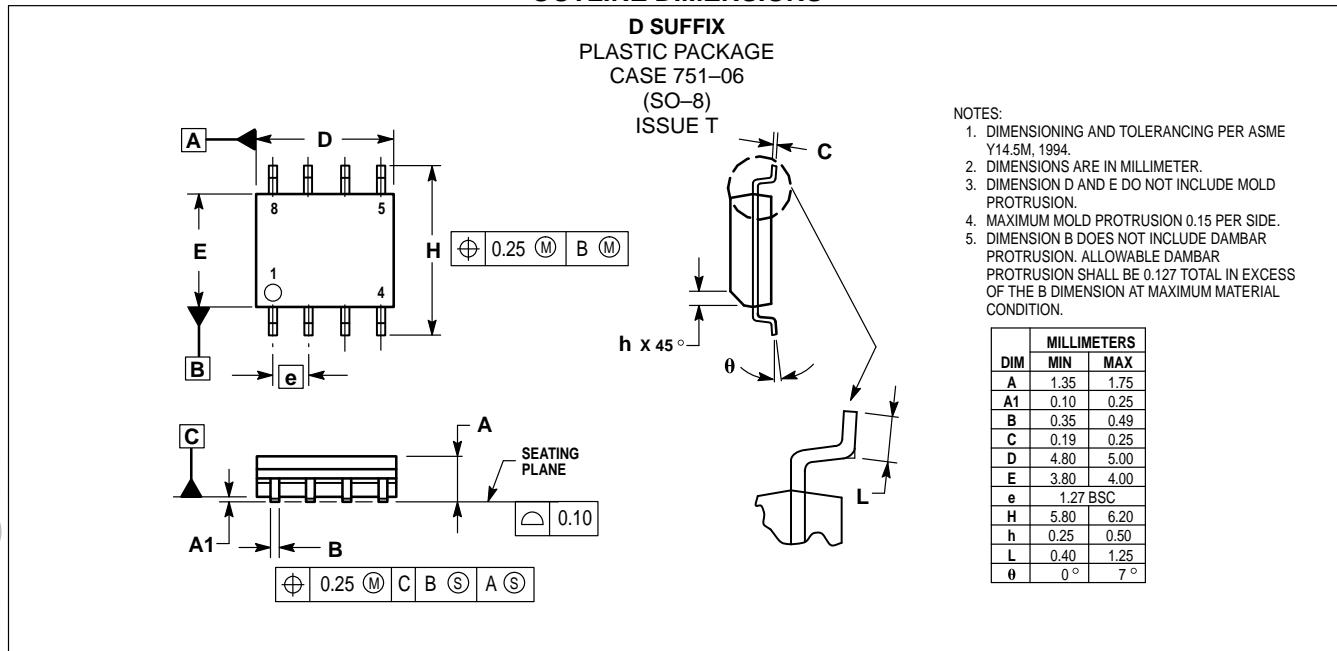
NOTES: 1. Input frequency 1.1 GHz, +8, minimum output frequency of 12.5 MHz.

2. Input frequency 700–800 MHz, +2.

3. Input frequency 800–900 MHz, +2.

4. Input frequency 900–1100 MHz, +2.

OUTLINE DIMENSIONS



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