

Product Preview

2.5GHz Low Power Prescaler With Stand-By Mode

The MC12095 is a single modulus prescaler for low power frequency division of a 2.5GHz high frequency input signal. Motorola's advanced MOSAIC™ V technology is utilized to achieve low power dissipation of 27mW at a minimum supply voltage of 2.7V.

On-chip output termination provides output current to drive a 2pF (typical) high impedance load. If additional drive is required for the prescaler output, an external resistor can be added in 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 input (SW) selects the required divide ratio of ÷2 or ÷4. Stand-By mode is available to reduce current drain to 100μA typical when the standby pin SB is switched LOW disabling the prescaler.

- 2.5GHz Toggle Frequency
- Supply Voltage 2.7V to 5.5VDC
- Low Power 10mA Typical
- Operating Temperature -40°C to +85°C
- Divide by 2 or 4 Selected by the SW Pin

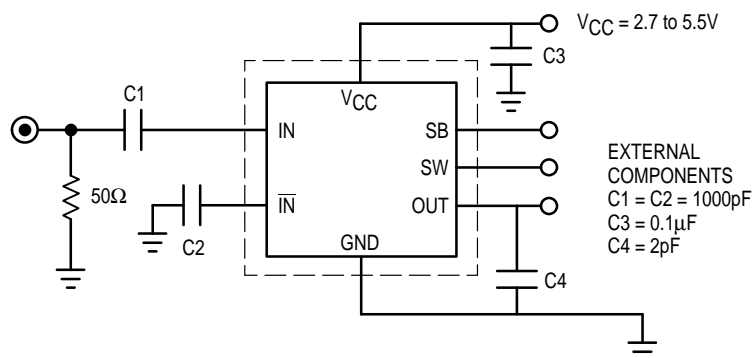
FUNCTIONAL TABLE

SW	Divide Ratio
H	2
L	4

Note: SW: H = ($V_{CC} - 0.4V$) to V_{CC} ; L = OPEN

SB: H = 2.0V to V_{CC} ; L = GND to 0.8V

AC TEST CIRCUIT



MC12095

MECL PLL COMPONENTS

÷2, ÷4 LOW POWER PRESCALER WITH STAND-BY MODE

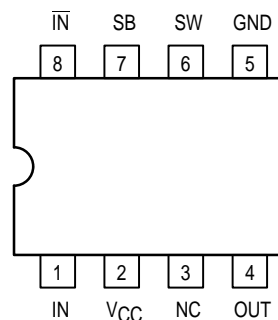


D SUFFIX
PLASTIC SOIC PACKAGE
CASE 751-05



SD SUFFIX
PLASTIC SSOP PACKAGE
CASE 940-02

Pinout: 8-Lead Plastic SOIC (Top View)



MOSAIC V is a trademark of Motorola.

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MAXIMUM RATINGS


Symbol	Parameter	Value	Unit
V _{CC}	Power Supply Voltage, Pin 2	−0.5 to +6.0	VDC
T _A	Operating Temperature Range	−40 to +85	°C
T _{stg}	Storage Temperature Range	−65 to +150	°C
I _O	Maximum Output Current, Pin 4	8.0	mA

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

Symbol	Parameter	Min	Typ	Max	Unit
f _t	Toggle Frequency (Sine Wave)	0.1	3.0	2.5	GHz
I _{CC}	Supply Current		8.7	TBD	mA
I _{SB}	Stand-By Current		100	TBD	μA
V _{IH1}	Stand-By Input HIGH (SB)	2.0		V _{CC}	V
V _{IL1}	Stand-By Input LOW (SB)	GND		0.8	V
V _{IH2}	Divide Ratio Control Input HIGH (SW)	V _{CC} − 0.4	V _{CC}	V _{CC}	V
V _{IL2}	Divide Ratio Control Input LOW (SW)	OPEN	OPEN	OPEN	
V _{OUT}	Output Voltage Swing (2pF Load) Output Frequency 1.25GHz ¹ Output Frequency 1.5GHz ²	TBD TBD	450 250		mV _{pp}
V _{IN}	Input Voltage Sensitivity 500–2500MHz 100–500MHz	100 400		1000 1000	mV _{pp}

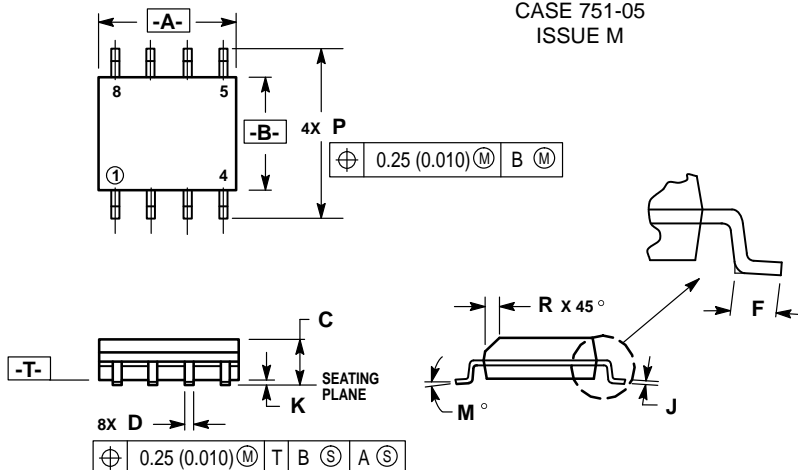
¹ Input frequency 2.5GHz, ±2.

² Input frequency 3.0GHz, ±2.

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OUTLINE DIMENSIONS

D SUFFIX
PLASTIC SOIC PACKAGE
CASE 751-05
ISSUE M

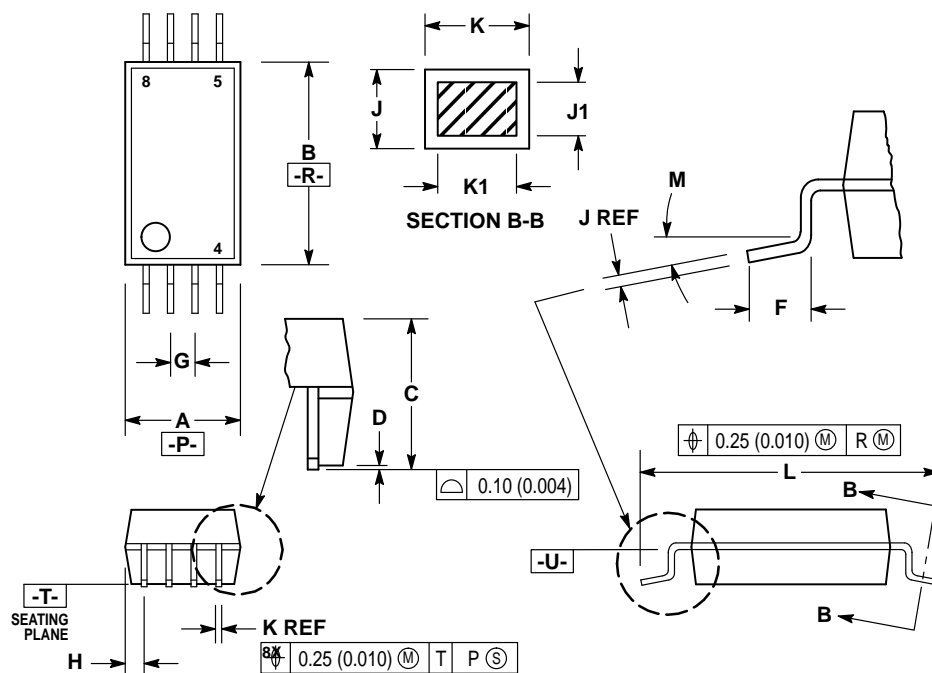


NOTES:

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

SD SUFFIX
PLASTIC SSOP PACKAGE
CASE 940-02
ISSUE A



NOTES:

1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5, 1982.
2. CONTROLLING DIMENSION: MILLIMETER.
3. DIMENSION "A" DOES NOT INCLUDE MOLD FLASH, PROTRUSIONS OR GATE BURRS. MOLD FLASH OR GATE BURRS SHALL NOT EXCEED 0.15 (0.006) PER SIDE.
4. DIMENSION "B" DOES NOT INCLUDE INTERLEAD FLASH OR PROTRUSION. INTERLEAD FLASH OR PROTRUSION SHALL NOT EXCEED 0.25 (0.010) PER SIDE.
5. DIMENSION "K" DOES NOT INCLUDE DAMBAR PROTRUSION. ALLOWABLE DAMBAR PROTRUSION SHALL BE 0.08 (0.003) TOTAL IN EXCESS OF THE "K" DIMENSION AT MAXIMUM MATERIAL CONDITION.
6. TERMINAL NUMBERS ARE SHOWN FOR REFERENCE ONLY.
7. DATUMS [-P-] AND [-R-] ARE TO BE DETERMINED AT DATUM PLANE [-U-].
8. DIMENSION "A" AND "B" ARE TO BE DETERMINED AT DATUM PLANE [-U-].
9. CROSS SECTION B-B TO BE DETERMINED AT 0.10 (0.004) TO 0.25 (0.010) FROM THE LEAD TIP.

DIM	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	2.87	3.13	0.113	0.123
B	5.20	5.38	0.205	0.212
C	1.73	1.99	0.068	0.078
D	0.05	0.21	0.002	0.008
F	0.55	0.95	0.022	0.037
G	0.65 BSC		0.026 BSC	
H	0.50	—	0.020	—
J	0.09	0.20	0.004	0.008
J1	0.09	0.16	0.004	0.006
K	0.22	0.38	0.009	0.015
K1	0.22	0.33	0.009	0.013
L	7.65	7.90	0.301	0.311
M	0°	8°	0°	8°

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