MC12093

÷2, ÷4, ÷8 1.1 GHz Low Power Prescaler with Stand-By Mode

Description

The MC12093 is a single modulus prescaler for low power frequency division of a 1.1 GHz high frequency input signal. 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 ÷2, ÷4, or ÷8.

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

Features

- 1.1 GHz Toggle Frequency
- Supply Voltage 2.7 V to 5.5 Vdc
- Low Power 3.0 mA Typical
- Operating Temperature = −40°C to 85°C
- Divide by 2, 4 or 8 Selected by SW1 and SW2 Pins
- On-Chip Termination
- These Devices are Pb-Free, Halogen Free and are RoHS Compliant

Table 1. FUNCTIONAL TABLE

SW	SW2	Divide Ratio
L	L	8

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MC12093/D

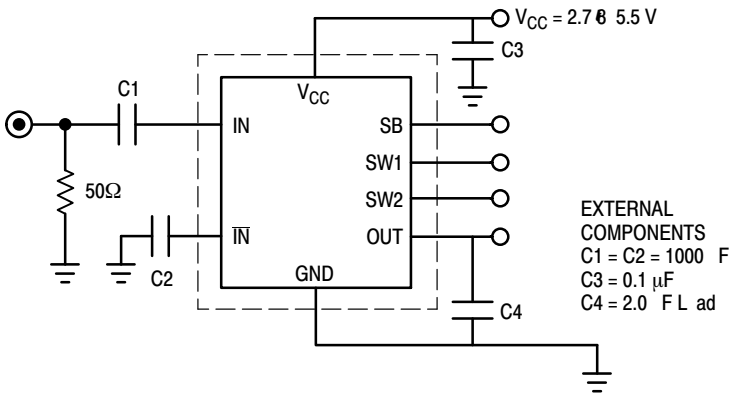


Figure 2. AC Test Circuit

Table 2. ATTRIBUTES

Characteristics	Value
Internal Input Pulldown Resistor	N/A
Internal Input Pullup Resistor	N/A
ESD Protection Human Body Model Machine Model Charged Device Model	 > 4 kV > 200 V > 2 kV
Moisture Sensitivity, Indefinite Time Out of Drypack (Note 1)	Pb-Free Pkg
SOIC−8 NB DFN8	Level 1 Level 1
Flammability Rating Oxygen Index: 28 to 34	UL 94 V−0 @ 0.125 in
Transistor Count	125 Devices
Meets or exceeds JEDEC Spec EIA/JESD78 IC Latchup Test	

1. For additional information, see Application Note AND8003/D.

Table 3. MAXIMUM RATINGS

Symbol	Rating	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	4.0	mA
θ_{JC}	Thermal Resistance (Junction-to-Case) (Note 1) DFN8	35 to 40	°C/W

Stresses exceeding those listed in the Maximum Ratings table may damage the device. If any of these limits are exceeded, device functionality should not be assumed, damage may occur and reliability may be affected.

NOTE: ESD data available upon request.

1. JEDEC standard multilayer board − 2S2P (2 signal, 2 power). For DFN8 only, thermal exposed pad must be connected to a sufficient thermal conduit. Electrically connect to the most negative supply (GND) or leave unconnected, floating open.

[redacted]

5°C)

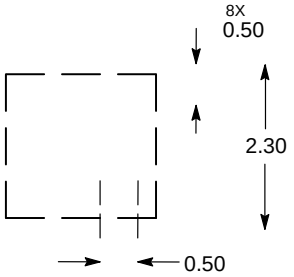
Min	Typ	Max	Unit
0.1	1.4	1.1	GHz
–	3.0	4.5	mA
–	120	200	μA
2.0	–	V_{CC}	V
Gnd	–	0.8	V
V_{CC} − 0.5	V_{CC}	V_{CC} + 0.5	V

DFN8 2x2, 0.5P
CASE 506AA
ISSUE F

DATE 04 MAY 2016

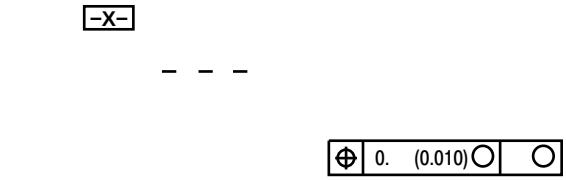
1
SCALE 4:1

SOLDERING FOOTPRINT*



DIMENSIONS: MILLIMETERS

*For additional information on our Pb−Free strategy and soldering details, please download the **onsemi** Soldering and Mounting Techniques Reference Manual, SOLDERRM/D.



C	1.35	1.75	0.053	0.069
D	0.33	0.51	0.013	0.020
G	1.27 BSC		0.050 BSC	
H	0.10	0.25	0.004	0.010
J	0.19	0.25	0.007	0.010
K	0.40	1.27	0.016	0.050
M	0	8	0	8
N	0.25	0.50	0.010	0.020
S	5.80	6.20	0.228	0.244

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