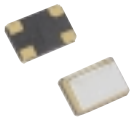
CRYSTAL OSCILLATORS
HCMOS/TTL 5V

SURFACE MOUNT
R models
R1210, R1211, R1212
R3210, R3211, R3212



5 x 7mm Surface Mount
Industrial: -40º to +85ºC
FIXED / TRISTATE, 1 MHz to 105 MHz

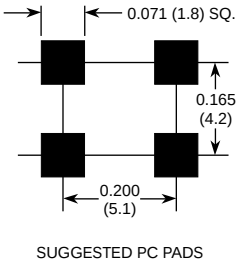
FEATURES
- Industrial operating temperature range from -40º to +85ºC accommodates rugged environments
- Low jitter of 5 ps RMS max ensures stable data transmission
- Stability options of ±100 ppm to ±25 ppm
- 45/55 symmetry is standard
- Guaranteed start-up with ramping DC Supply
- Start up time less than 5 ms
- Tristate option available
- Very low power when tristated

TYPICAL APPLICATIONS
- Telecom and data networking applications that require low jitter and are subjected to rugged environmental conditions, including:
  - ATM
  - Frame relay
  - DSL
  - Gigabit ethernet
  - Fibre Channel
  - VoIP

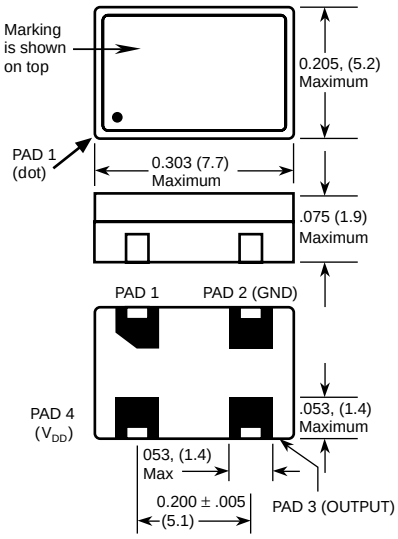
Description
MF Electronics R-Series industrial temperature range surface mount (SMD) oscillators provide low jitter clock waveforms needed to clock standard HCMOS or TTL circuits in PCBs mounted in rugged environments.

CONNECTIONS

	Fixed Output Models	Tristate Models
PAD 1	NOT USED	Floating or "1": Oscillator runs Ground or "0": Disable or Tristate
PAD 2	Ground and Case	
PAD 3	Output	
PAD 4	+5V, V_{DD}	

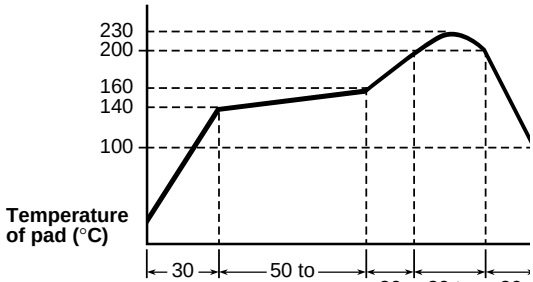


SUGGESTED PC PADS

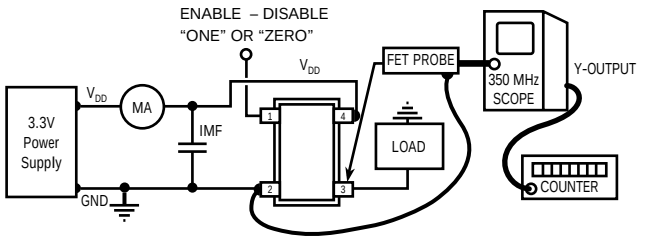


Millimeters are shown in ( ).

"R" Package



Recommended Reflow Soldering Profile



To adapt Fet probe to receptacle use Tektronix Part #103-0164-00

To connect output to scope use use Tektronix Part #131-0258-00 (receptacle)

TEST CIRCUIT

MF ELECTRONICS

International Sales: +1.914-712-2200 • USA Sales: +1.800.331.1236 • Fax: 914.712.2290 • www.mfelectronics.com • email:sales@mfelectronics.com

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HCMOS/TTL 5V
5 x 7 mm Surface Mount
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FIXED / TRISTATE, 1 MHz to 105 MHz

SURFACE MOUNT
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ELECTRICAL SPECIFICATIONS

Frequency Range 1 MHz to 105 MHz

Frequency Stability Includes calibration at 25°C, operating temperature, change of input voltage, change of load, shock and vibration.

	MIN	TYP	MAX	UNITS
Input Voltage	4.5	5.0	5.5	volts
Input Current			45	mA
Output Levels				
"0" Level, sinking 16 mA			0.4	volts
"1" Level, sourcing 8 mA	V_{DD}-.4			volts
Rise and Fall Time, max				
CMOS, 15pf, from 0.4 to (V_{DD} -0.4) V, T_R/T_F			4	ns
Jitter				
From positive edge to positive edge			5	ps RMS
Symmetry				
CMOS @50% V_{DD}		45/55		percent
Aging				
First year		3		ppm
After first year		1		ppm/yr

Input Requirements for Pin 1.:
"1": On – Pin 1 may float or 2.4V min., sourcing 400 microAmp
"0": Disable or Tristate – Pin 1 requires 0.4V, sinking 400 microAmp

ENVIRONMENTAL SPECIFICATIONS

Temperature
Operating -40º to +85°C
Storage -55º to +125°C

Shock – 1000 Gs, 0.35 ms, 1/2 sine wave, 3 shocks in each plane

Vibration – 10-2000 Hz of .06" d.a. or 20 Gs, whichever is less

Humidity – Resistant to 85° R.H. at 85°C

MECHANICAL SPECIFICATIONS

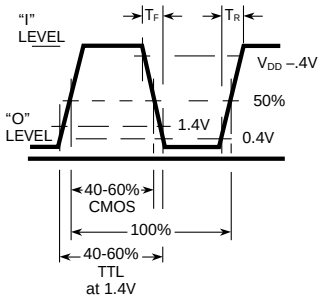
Leak – MIL STD 883, Method 1014, condition A1

Case – Ceramic

Pads – 15 microinch of gold over nickel

Marking – Epoxy ink or laser engraved

Resistance to Solvents – MIL STD 202, Method 215



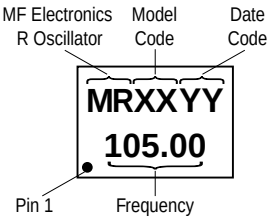
WAVEFORMS

TRISTATE		FIXED OUTPUT		
Model	**Marking Letter ID***	**Model**	**Marking Letter ID***	**Frequency Stability**
R3210	GO	R1210	GK	±100 ppm
R3212	GP	R1212	GL	±50 ppm
R3211	GV	R1211	GU	±25 ppm

* See Marking Specification

MARKING SPECIFICATION

The format for the marking is:



HOW TO ORDER

For Part Number, put package type before model number, and add frequency in MHz, for example:

R 3212 - 50M

R is SMD model
3212 is model type
50 M frequency

SS#	Rev.
R1210	A

Unless customer-specific terms and conditions are signed by an officer of MF Electronics, the sale of this and all MF Electronics products are subject to terms and conditions set forth at www.mfelectronics.com/terms