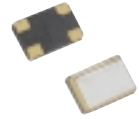




CRYSTAL OSCILLATORS HCMOS/TTL 5V

SURFACE MOUNT
R models
R1210, R1212
R3210, R3212



5 x 7mm Surface Mount

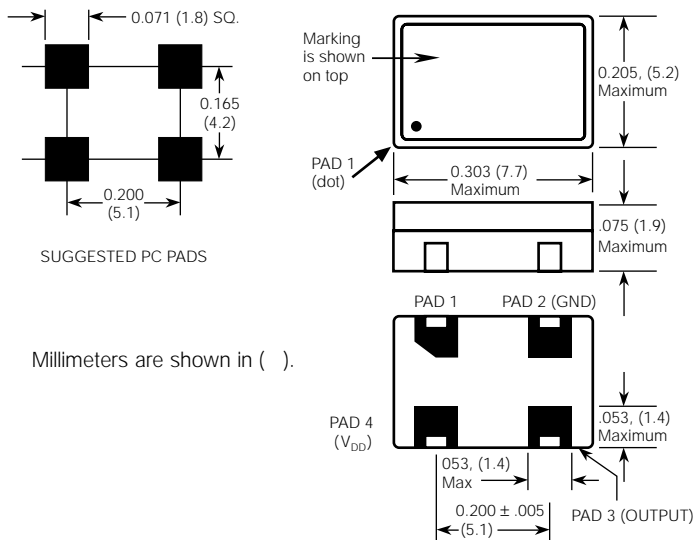
Industrial: -40° to +85°C
FIXED/TRISTATE, 1 MHz to 125 MHz

FEATURES

- Industrial operating temperature range from -40° to +85°C accommodates rugged environments
- Low jitter of 5 ps RMS max ensures stable data transmission
- Stability options of ± 100 ppm and ± 50 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



"R" Package

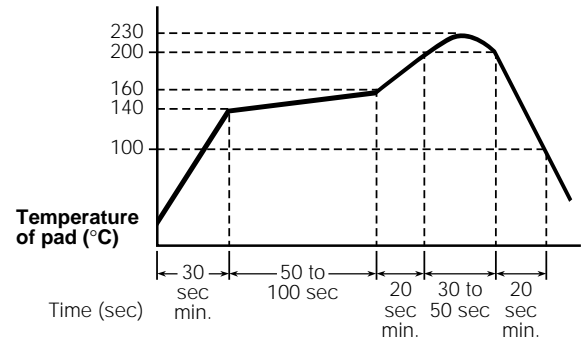
Millimeters are shown in ().

Description

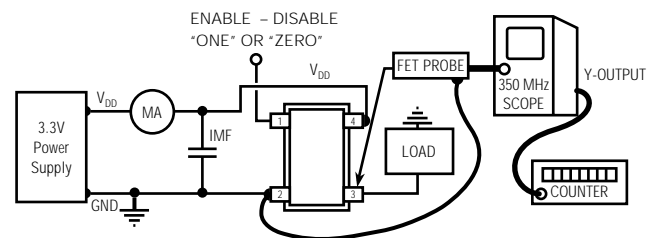
MF Electronics R-Series industrial temperature range surface mount (SMD) oscillators provide low jitter clock waveforms needed to clock standard HCMOS or TTL circuits in PCBs mounted in rugged environments.

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}	



Recommended Reflow Soldering Profile



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

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

TEST CIRCUIT





CRYSTAL OSCILLATORS
HCMOS/TTL 5V
Surface Mount
Industrial: -40° to +85°C
FIXED/TRISTATE, 1 MHz to 125 MHz

SURFACE MOUNT
R models
R1210, R1212
R3210, R3212

ELECTRICAL SPECIFICATIONS

Frequency Range 20 KHz to 100 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	$V_{DD}-0.4$			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	-40° to +85°C
Storage	-55° to +125°C

Temperature Cycle – Not to exceed ± 5 ppm change when exposed to 2 hours maximum at each temperature from 0 to 120°C, with 25°C reference

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

Gross Leak – Each unit checked in 125°C fluorocarbon

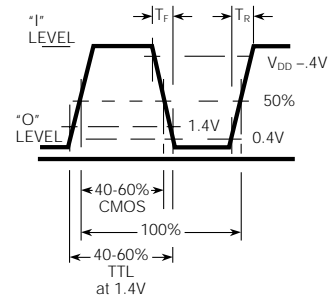
Fine Leak – Mass spectrometer leak rate less than 5×10^{-8} atoms, cc/sec of helium

Case – Ceramic

Pads – 15 microinch of gold over nickel

Marking – Print is permanent black ink or laser engraved

Resistance to Solvents – MIL STD 202, Method 215



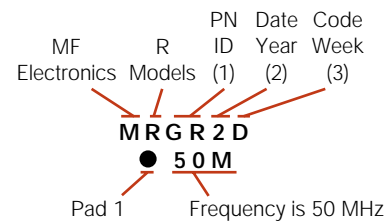
WAVEFORMS

TRISTATE		FIXED OUTPUT		Frequency Stability
Model	Marking Letter ID*	Model	Marking Letter ID*	
R3210	G0	R1210	GK	± 100 ppm
R3212	GP	R1212	GL	± 50 ppm

* See Marking Specification

MARKING SPECIFICATION

The format for the marking is:



NOTES

- (1) One or two letters are used to identify the model. See Table 1.
- (2) Number in date code is year. In example, "2" is 2002.
- (3) Letter in date code is one two-week period. Year is divided into 26 two-week intervals. Each two-week interval is represented by one letter of the alphabet, in sequence.

HOW TO ORDER

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



SS#	Rev.
R1210	A



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