

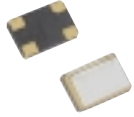


# CRYSTAL OSCILLATORS

## HCMOS/TTL 5V

### SURFACE MOUNT

**R models**  
R1210, R1211,  
R1212  
R3210, R3211,  
R3212



## 5 x 7mm Surface Mount

### Industrial: -40° to +85°C

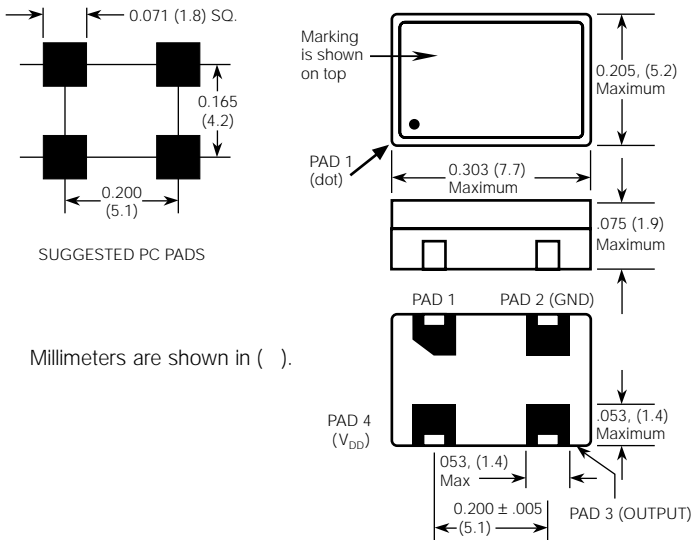
### FIXED/TRISTATE, 1 MHz to 105 MHz

#### 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  $\pm 100$  ppm to  $\pm 25$  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



"R" Package

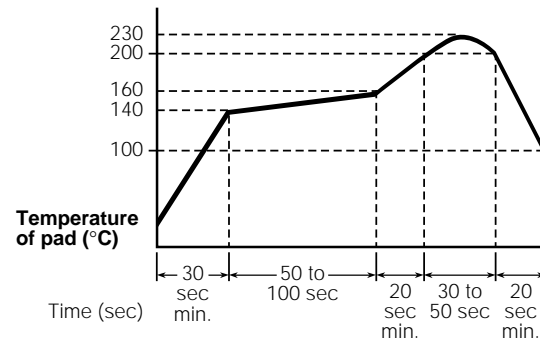
Millimeters are shown in ( ).

#### Description

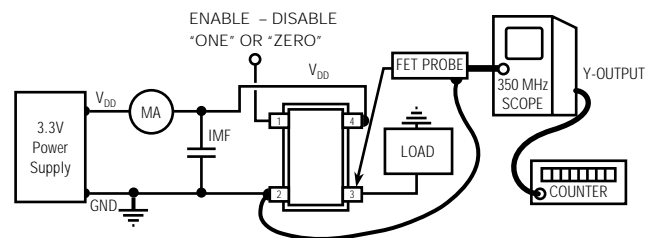
MF Electronics R-Series industrial temperature range surface mount (SMD) oscillators provide low jitter clock waveforms needed to clock standard HCMOS or TTL circuits in PCBs mounted in rugged environments.

#### 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 <sub>DD</sub>	



#### 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**  
**5 x 7 mm Surface Mount**  
**Industrial: -40° to +85°C**  
**FIXED/TRISTATE, 1 MHz to 105 MHz**

**SURFACE MOUNT**

**R models**  
 R1210, R1211,  
 R1212  
 R3210, R3211,  
 R3212

**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, change of shock and vibration.

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

**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**

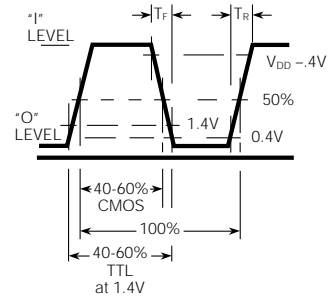
**Leak** – MIL STD 883, Method 1014, condition A1

**Case** – Ceramic

**Pads** – 15 microinch of gold over nickel

**Marking** – Epoxy ink or laser engraved

**Resistance to Solvents** – MIL STD 202, Method 215



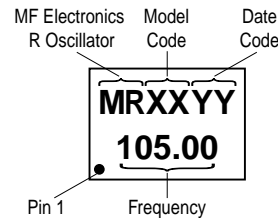
**WAVEFORMS**

TRISTATE		FIXED OUTPUT		Frequency Stability
Model	Marking Letter ID*	Model	Marking Letter ID*	
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:



*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](http://www.mfelectronics.com/terms)*

SS#	Rev.
R1210	A

