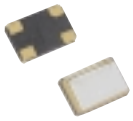
CRYSTAL OSCILLATORS
HCMOS/TTL 3.3V



5 x 7mm Surface Mount
Industrial: -40ºC to +85ºC
FIXED / TRISTATE, 1 MHz to 125 MHz

FEATURES
- Industrial operating temperature range from -40º to +85ºC accomodates rugged environments
- Low jitter of 6 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

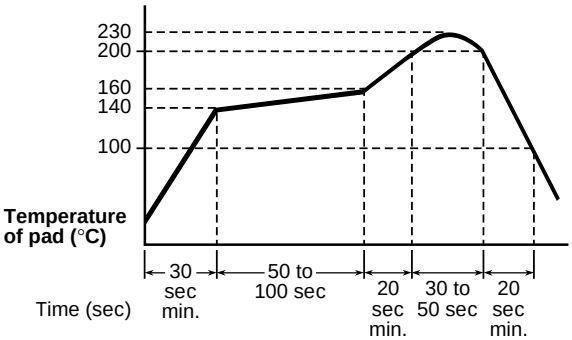
Description

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

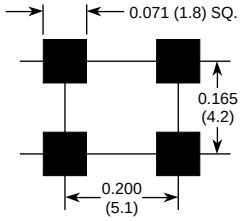
TYPICAL APPLICATIONS
- Telecom and data networking applications that require low jitter and are subjected to rugged environmental conditions, including:
  - DSL
  - Gigabit ethernet
  - Fibre Channel
  - VoIP

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	+3.3V, V_{DD}	

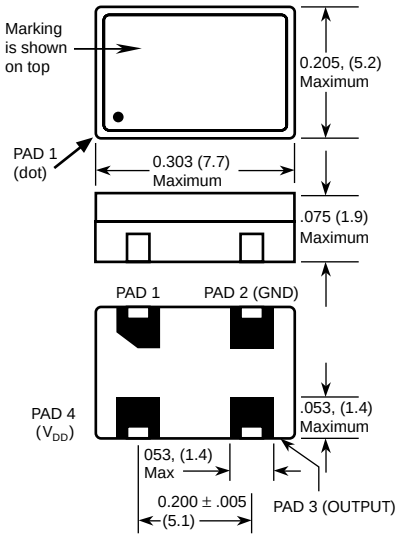


Recommended Reflow Soldering Profile



SUGGESTED PC PADS

Millimeters are shown in ( ).



"R" Package

ELECTRICAL SPECIFICATIONS

Frequency Range 1 MHz to 125 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, V_{DD}	3.0	3.3	3.6	volts
Input Current				
3 M to 10 MHz		3.0	4.5	ma
10.1 to 20 MHz		5.0	6.0	ma
20.1 to 30 MHz		10.0	15.0	ma
30.1 to 50 MHz		35.0	40.0	ma
50.1 to 67 MHz		40.0	50.0	ma
67.1 to 125 MHz		60.0	70.0	ma
Output Levels				
"0" Level, sinking 16 ma			0.4	volts
"1" Level				
CMOS, sourcing 8 ma	V_{DD}-.4			volts
Rise and Fall Times				
CMOS, 15 pf,				
20 to 80% (<60 MHz)		3.0	4	ns
CMOS, 30 pf,				
20 to 80% (<60 MHz)		4.0	5	ns
CMOS, 50 pf,				
20 to 80% (<60 MHz)		6.0	8	ns
CMOS, 15 pf,				
20 to 80% (>60 MHz)		2.0	2.5	ns
CMOS, 30 pf,				
20 to 80% (>60 MHz)		3.0	4.5	ns
Jitter			6	ps RMS
Symmetry				
CMOS, @ 50% V_{DD}		48/52	45/55	percent
Aging				
First year		3		ppm
After first year		1		ppm/yr

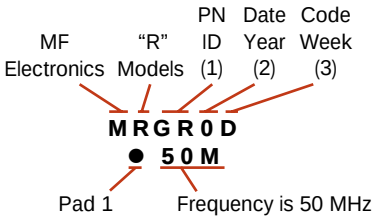
Input Requirements for Pin 1.:
"1": On – Pin 1 may float or 2.4V min., sourcing 400 microAmp
"0": Disable or Tristate – Pin 1 requires 0.4V, sinking 400 microAmp

TRISTATE		FIXED OUTPUT		
Model	**Marking Letter ID***	**Model**	**Marking Letter ID***	**Frequency Stability**
R3310	GQ	R1310	GM	±100 ppm
R3312	GR	R1312	GN	±50 ppm

* See Marking Specification

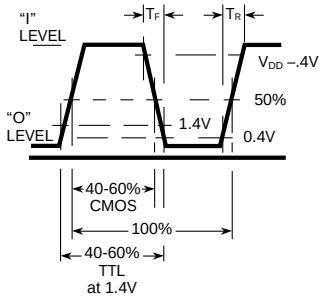
MARKING SPECIFICATION

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, "1" is 2001.
(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.



WAVEFORMS

CRYSTAL OSCILLATORS
HCMOS/TTL 3.3V
Surface Mount
Industrial: -40º TO +85ºC
FIXED / TRISTATE, 1 MHz to 125 MHz

SURFACE MOUNT
R models
R1310, R1312
R3310, R3312

ENVIRONMENTAL SPECIFICATIONS

Temperature

Operating	–40º to +85°C
Storage	–55º 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 flurocarbon

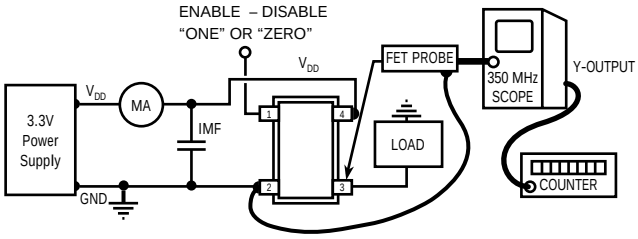
Fine Leak – Mass spectrometer leak rate less than 5 X 10 (-8) atoms, cc/sec of helium

Case – Ceramic

Pads – 60 microinch of gold over nickel

Marking – Print is permanent black ink or laser engraved

Resistance to Solvents – MIL STD 202, Method 215



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

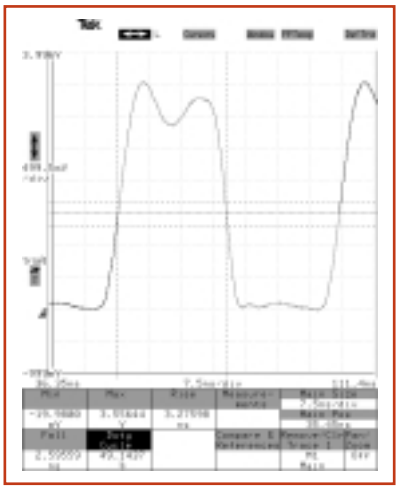


Fig.1 R3392-20M with 25pf load

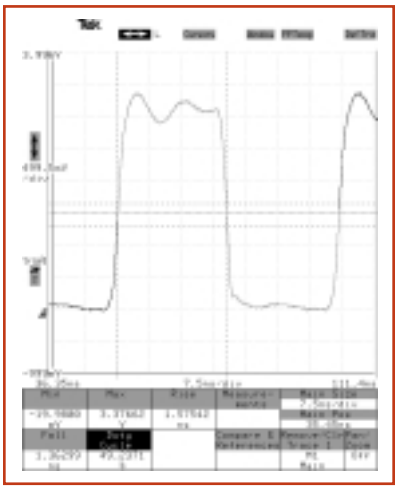


Fig. 2 R3392-20M without load

HOW TO ORDER

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

R 3312 - 50M

"R" is SMD model

"3312" is model type

"50 M" frequency

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SS#	Rev.
R1310	A

MF ELECTRONICS