



CRYSTAL OSCILLATORS

HCMOS/TTL 3.3V

SURFACE MOUNT

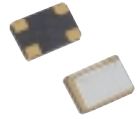
R models

R1310, R1311,

R1312

R3310, R3311,

R3312



5 x 7 mm Surface Mount

Industrial: -40°C to +85°C

FIXED/TRISTATE, 500 KHz to 125 MHz

FEATURES

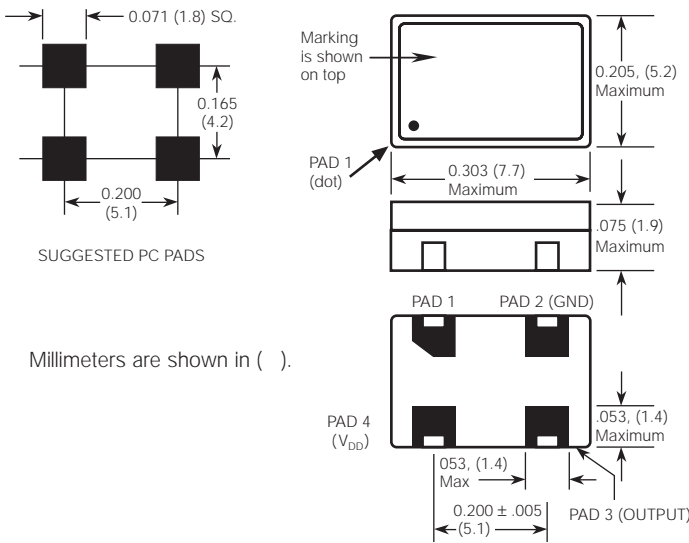
- Industrial operating temperature range from -40° to +85°C accomodates rugged environments
- Low jitter of 6 ps rms max ensures stable data transmission
- Stability options of ±100 ppm to ±25 ppm
- 45/55 symmetry is standard
- Guaranteed start-up with ramping DC Supply
- Start up time less than 5 ms
- Tristate option standard
- Very low power when tristated

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

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.

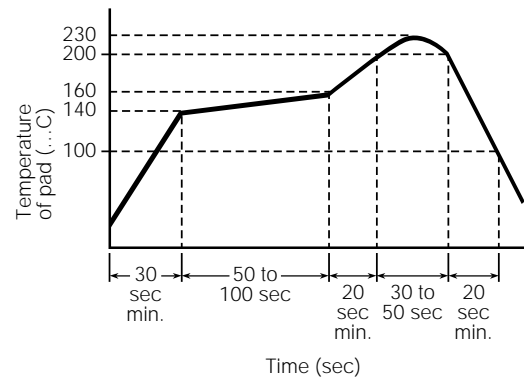


"R" Package

Millimeters are shown in ().

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





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5 x 7 mm Surface Mount
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ELECTRICAL SPECIFICATIONS

Frequency Range 500 KHz 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} -0.4 | | 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 |

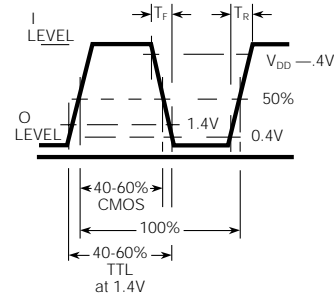
Jitter 6 ps RMS

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



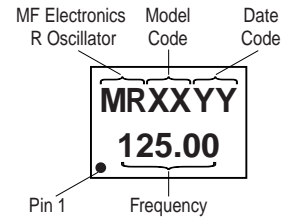
WAVEFORMS

| TRISTATE | | FIXED OUTPUT | | Frequency Stability |
|----------|--------------------|--------------|--------------------|---------------------|
| Model | Marking Letter ID* | Model | Marking Letter ID* | |
| R3310 | GQ | R1310 | GM | ±100 ppm |
| R3312 | GR | R1312 | GN | ±50 ppm |
| R3311 | GS | R1311 | GT | ±25 ppm |

* See Marking Specification

MARKING SPECIFICATION

The format for the marking is:





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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

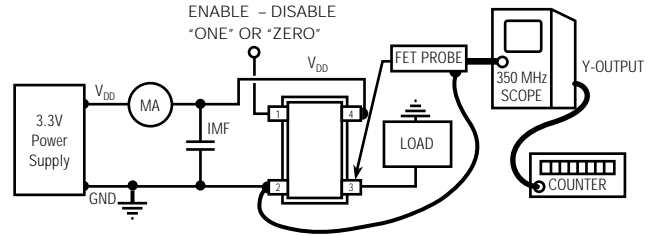
Leak - MIL STD 883, Method 1014, condition A1

Case - Ceramic

Pads - 60 microinch of gold over nickel

Marking - Epoxy 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 Tektronix Part #131-0258-00 (receptacle)

TEST CIRCUIT

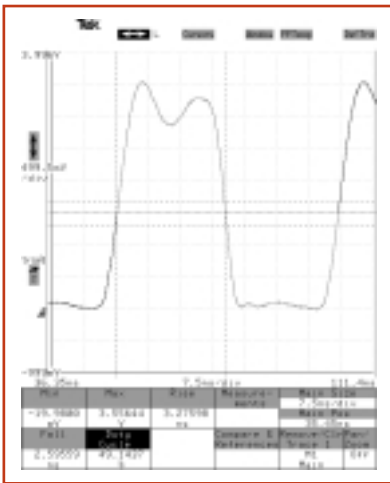


Fig.1 R3392-20M with 25pf load

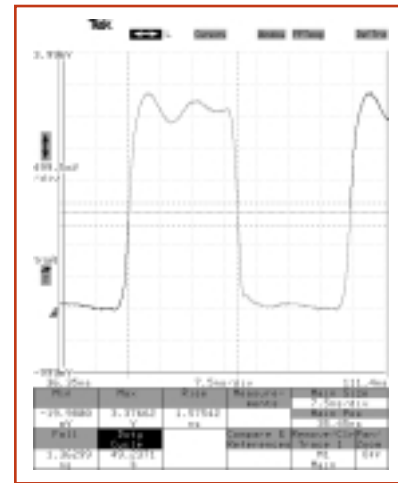


Fig. 2 R3392-20M without load

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

| | |
|-------|------|
| SS# | Rev. |
| R1310 | A |



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