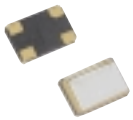
CRYSTAL OSCILLATORS
HCMOS/TTL 3.3V



SURFACE MOUNT
R models
R1380, R1381, R1382, R1388, R1389
R3390, R3391, R3392, R3398, R3399

Surface Mount 5 x 7 mm
Commercial: 0º to 70ºC
FIXED / TRISTATE, 500 KHz to 165 MHz

FEATURES
- Jitter from positive edge to positive edge is 6 ps RMS maximum, ensuring stable data transmission
- Fixed frequency or Tristate
- Very low power when tristated
- Frequency from 500 KHz to 165 MHz
- Start up time less than 5 ms
- Stability options from ±100ppm to ±20 ppm
- Guaranteed start-up with ramping DC Supply
- 45/55 symmetry is standard

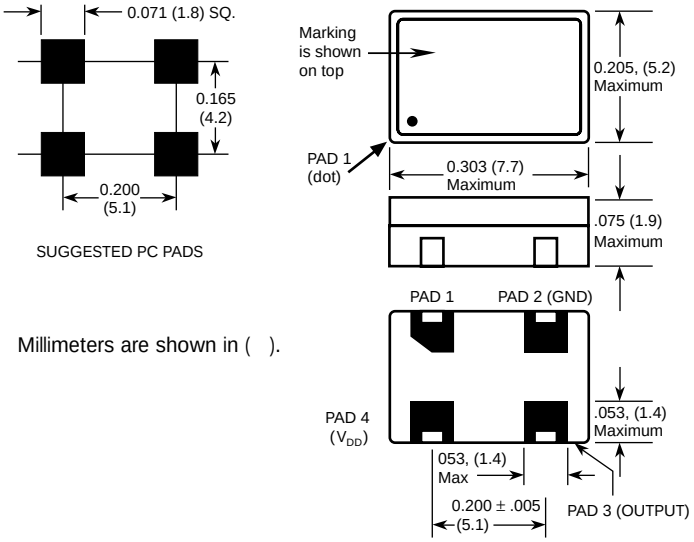
TYPICAL APPLICATIONS
- Telecom and data networking applications that require low jitter, including:
  - DSL
  - Gigabit ethernet
  - Fibre Channel
  - VoIP

Description

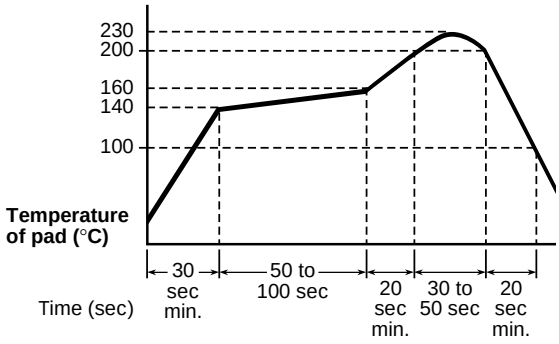
MF Electronics R-Series surface mount (SMD) oscillators provide clock waveforms needed to clock standard HCMOS or TTL circuits.

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}	



"R" Package



Recommended Reflow Soldering Profile

CRYSTAL OSCILLATORS

HCMOS/TTL 3.3V

5 x 7 mm Surface Mount

Commercial: 0º TO 70ºC

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SURFACE MOUNT
R models
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R3390, R3391, R3392, R3398, R3399

ELECTRICAL SPECIFICATIONS

Frequency Range 500 KHz to 165 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				
from positive edge to positive edge			6	ps RMS
Symmetry				
CMOS, @ 50% V_{DD}		48/52	45/55	percent
Aging				
First year		3		ppm
After first year		1		ppm/yr

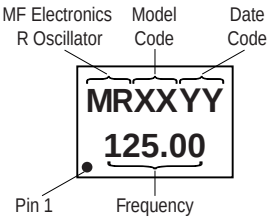
Input Requirements for Pin 1.:
"1": On – Pin 1 may float or 2.4V min., sourcing 400 microAmp
"0": Disable or Tristate – Pin 1 requires 0.4V, sinking 400 microAmp

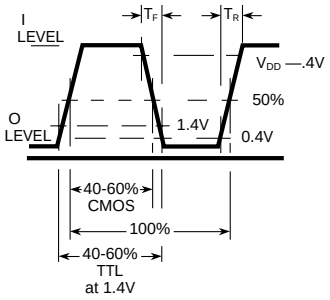
FIXED OUTPUT		TRISTATE		
MODEL	Marking Letter ID*	MODEL	Marking Letter ID*	Frequency Stability
R1380	E	R3390	G	±100 ppm
R1381	AL	R3391	Q	±25 ppm
R1382	F	R3392	H	±50 ppm
R1388	BV	R3398	BY	±20 ppm
R1389	BW	R3399	BZ	±32 ppm

* See Marking Specification

MARKING SPECIFICATION

The format for the marking is:





WAVEFORMS

CRYSTAL OSCILLATORS
HCMOS/TTL 3.3V
5 x 7 mm Surface Mount
Commercial: 0º TO 70ºC
FIXED / TRISTATE, 500 KHz to 165 MHz

SURFACE MOUNT
R models
R1380, R1381,
R1382, R1388,
R1389
R3390, R3391,
R3392, R3398,
R3399

ENVIRONMENTAL SPECIFICATIONS

Temperature

Operating	0º to 70°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

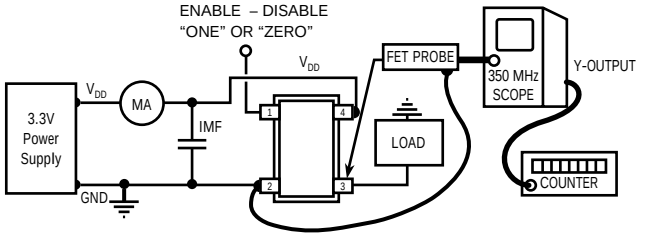
Leak – MIL STD 883, Method 1014, condition A1

Case – Ceramic with hermetic resistance-welded metal lid

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 use Tektronix Part #131-0258-00 (receptacle)

TEST CIRCUIT

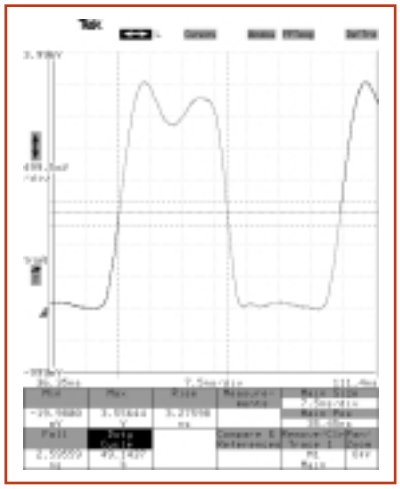


Fig.1 R3392-20M with 25pf load

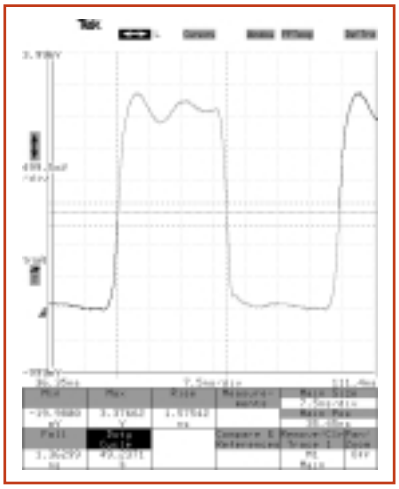


Fig. 2 R3392-20M without load

HOW TO ORDER

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

R 3391 - 50M

"R" is SMD model

"3391" is model type

"50 M" frequency

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

SS#	Rev.
R1380	A

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