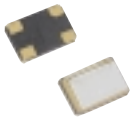
CRYSTAL OSCILLATORS HCMOS/TTL 5V

SURFACE MOUNT
R model
R1280, R1281, R1282, R1286, R1288, R1289 R1991, R1992, R1998, R1999
R3290, R3291, R3292, R3296, R3298, R3299 R3991, R3992, R3998, R3999



5 x 7mm Surface Mount

Commercial: 0 TO 70ºC
FIXED/TRISTATE, 1.544 MHz to 105 MHz

FEATURES

- Jitter from positive edge to positive edge is 6 ps RMS maximum, ensuring 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

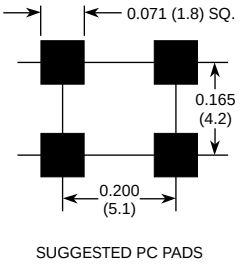
- Telecom and data networking applications that require low jitter, including:
  - DSL
  - Gigabit ethernet
  - Fibre Channel
  - VoIP

Description

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

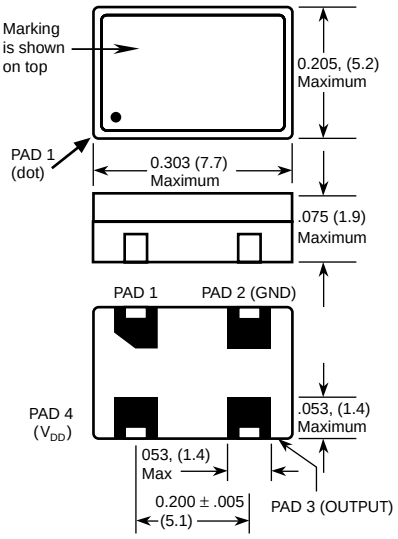
CONNECTIONS

	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	+5V, V_{DD}	

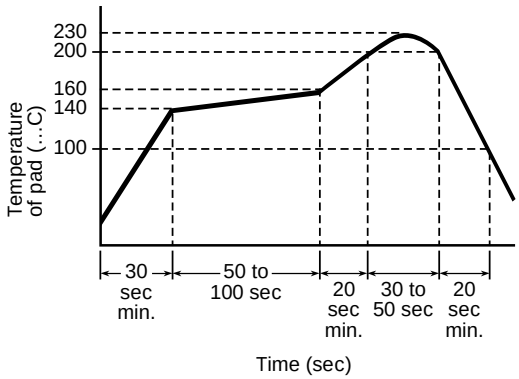


SUGGESTED PC PADS

Millimeters are shown in ( ).



"R" Package



Recommended Reflow Soldering Profile

MF ELECTRONICS

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5 x 7mm Surface Mount

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ELECTRICAL SPECIFICATIONS

Frequency Range 1.544 MHz to 105 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	4.50	5.0	5.50	volts
Input Current				
3 M to 10 MHz		5	8	ma
10.1 to 20 MHz		10	15	ma
20.1 to 30 MHz		20	30	ma
30.1 to 50 MHz		45	50	ma
50.1 to 67 MHz		50	60	ma
67.1 to 125 MHz		70.0	80	ma
Output Levels				
"0" Level, sinking 16 ma			0.4	volts
"1" Level,				
TTL	2.4	4.6		volts
CMOS, sourcing 8 ma	V_{DD}-.4			volts
Rise and Fall Times				
TTL, from 0.8 to 2.4V		2.4	4	ns
HCMOS, 15 pf, 20 to 80%				
1 KHz to 75 MHz		2.5	4	ns
75.1 to 175 MHz		1.5	2	ns
HCMOS, 30 pf, 20 to 80%				
1 KHz to 125MHz		4.0	6	ns
HCMOS, 50 pf, 20 to 80%				
1KHz to 75 MHz		4.0	6	ns
Jitter				
from positive edge to positive edge			6	ps RMS
Symmetry				
10 TTL, @ 1.4V		45/55	40/60	percent
Depending on model			or 45/55	percent
HCMOS, @ 50% V_{DD}		45/55	40/60	percent
Depending on model			or 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

40/60 Symmetry		45/55 Symmetry		
MODEL	Marking Letter ID*	MODEL	Marking Letter ID*	Frequency Stability
R3290	C	R3296	AN	±100 ppm
R3291	P	R3991	BA	±25 ppm
R3292	D	R3992	BC	±50 ppm
R3298	BE	R3998	BG	±20 ppm
R3299	BI	R3999	BL	±32 ppm

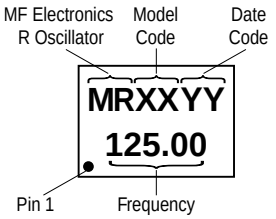
FIXED OUTPUT

40/60 Symmetry		45/55 Symmetry		
MODEL	Marking Letter ID*	MODEL	Marking Letter ID*	Frequency Stability
R1280	A	R1286	AM	±100 ppm
R1281	O	R1991	BB	±25 ppm
R1282	B	R1992	BD	±50 ppm
R1288	BF	R1998	BH	±20 ppm
R1289	BJ	R1999	BK	±32 ppm

* See Marking Specification

MARKING SPECIFICATION

The format for the marking is:



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HCMOS/TTL 5V

5 x 7mm Surface Mount

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ENVIRONMENTAL SPECIFICATIONS

Temperature — All models

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

Pads – 60 microinch of gold over nickel

Marking – Epoxy ink or laser engraved

Resistance to Solvents – MIL STD 202, Method 215

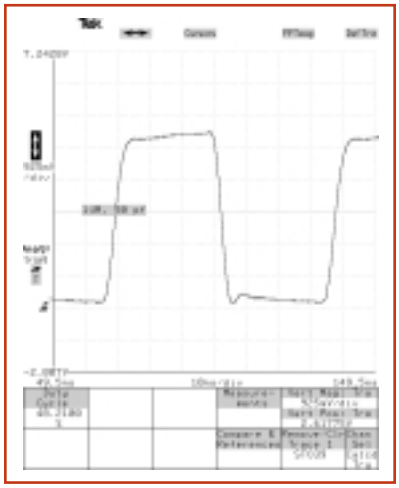
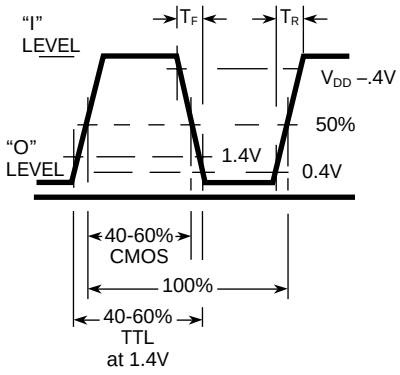
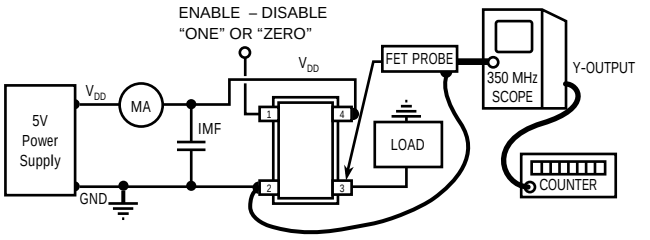


Fig. 1 R3290-14M with 50pf load
Duty Cycle is 48.2% at $V_{DD}/2$



WAVEFORMS



TEST CIRCUIT

HOW TO ORDER

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

R 3298 - 34.368M

R is SMD model

3298 is model type

34.368 M frequency

SS#	Rev.
R1280	A

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