

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 70°C

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

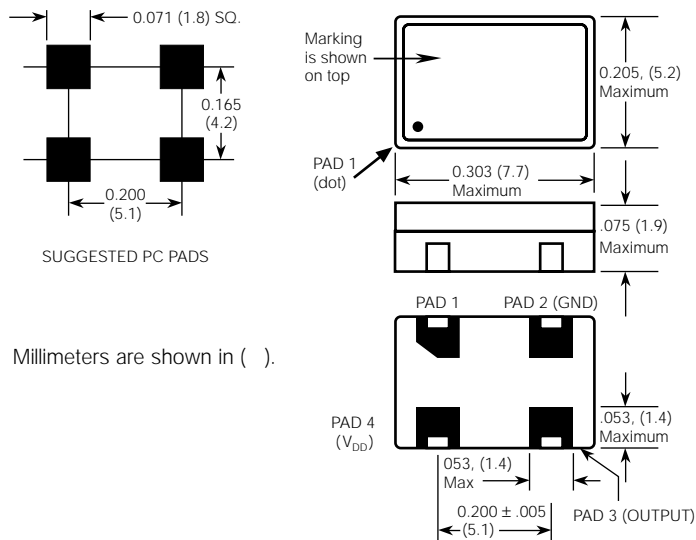
- Telecom and data networking applications that require low jitter, including:
 - DSL
 - Gigabit ethernet
 - Fibre Channel
 - VoIP

Description

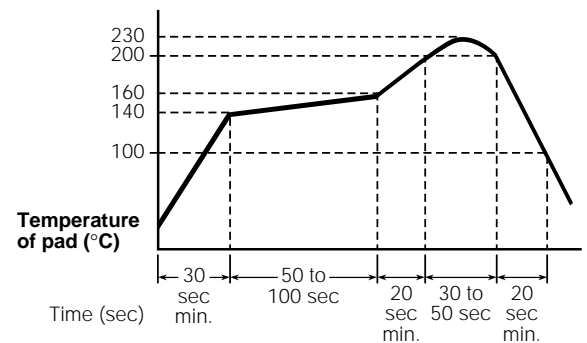
MF Electronics R-Series surface mount (SMD) oscillators provide clock waveforms needed to clock standard HCMOS or TTL circuits.

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}	



"R" Package



Recommended Reflow Soldering Profile





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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} -0.4			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
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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

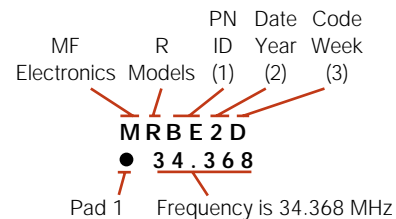
TRISTATE				
40/60 Symmetry		45/55 Symmetry		Frequency Stability
MODEL	Marking Letter ID*	MODEL	Marking Letter ID*	
R3290	C	R3296	AN	±100 ppm
R3291	P	R3991	BA	±25 ppm
R3292	D	R3992	BC	±50 ppm
R3298	BE	R3998	BG	±20 ppm
R3299	BI	R3999	BL	±32 ppm

FIXED OUTPUT				
40/60 Symmetry		45/55 Symmetry		Frequency Stability
MODEL	Marking Letter ID*	MODEL	Marking Letter ID*	
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:



NOTES

- (1) One or two letters are used to identify the model. See Table 1.
- (2) Number in date code is year. In example, "2" is 2002.
- (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.





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ENVIRONMENTAL SPECIFICATIONS

Temperature — All models

Operating 0° to 70°C
Storage -55° 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 fluorocarbon

Fine Leak – Mass spectrometer leak rate less than 2×10^{-8} atmos, cc/sec of helium

Case – Ceramic

Pads – 60 microinch of gold over nickel

Marking – Print is permanent

Resistance to Solvents – MIL STD 202, Method 215

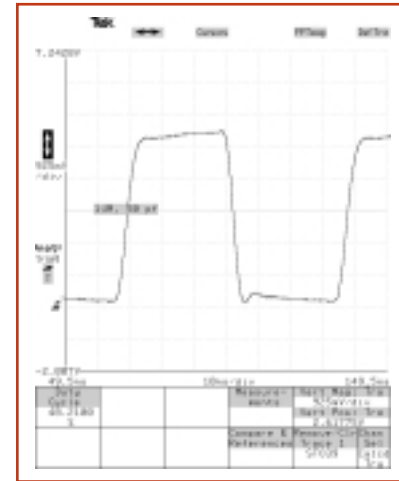
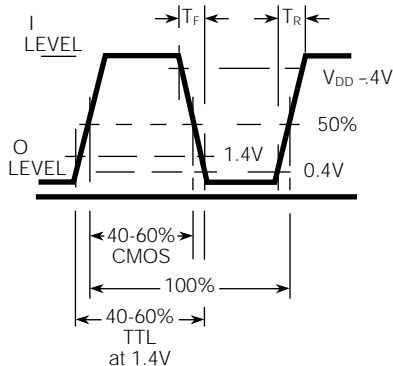
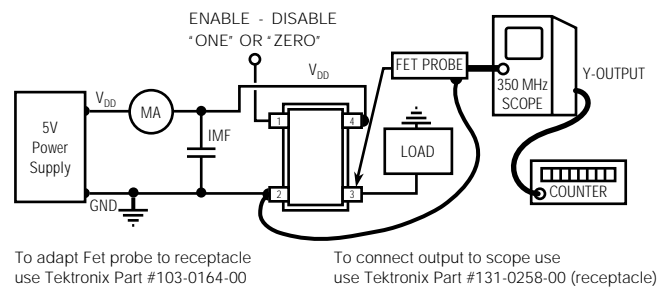


Fig. 1 R3290-14M with 50pf load
Duty Cycle is 48.2% at $V_{DD}/2$



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

MF ELECTRONICS

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