

SUNSTAR 射频通信 <http://www.rfoe.net/> TEL:0755-83396822 FAX:0755-83376182 E-MAIL:szss20@163.com

**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**

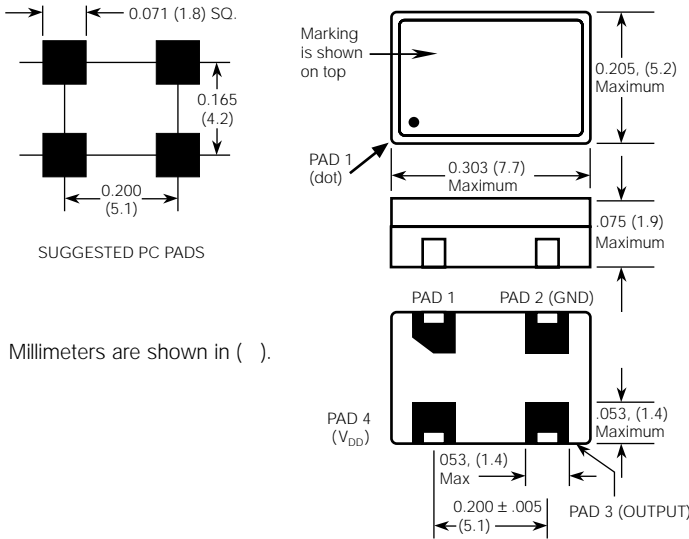
- Jitter from positive edge to positive edge is 6 ps RMS maximum, ensuring stable data transmission
- Stability options of  $\pm 100$  ppm and  $\pm 50$  ppm
- 45/55 symmetry is standard
- Guaranteed start-up with ramping DC Supply
- Start up time less than 5 ms
- Tristate option available
- Very low 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.

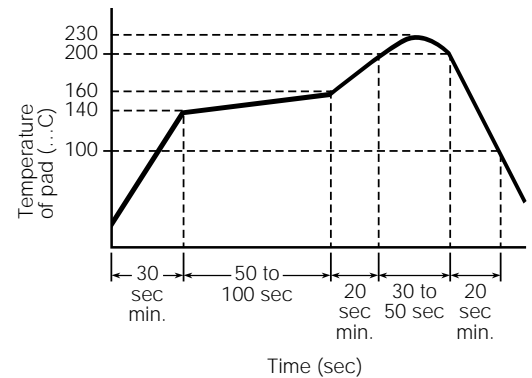


**"R" Package**

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	+5V, V <sub>DD</sub>	



**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
<b>Input Voltage</b>	4.50	5.0	5.50	volts
<b>Input Current</b>				
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 <sub>DD</sub> -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

**Symmetry**

10 TTL, @ 1.4V	45/55	40/60	percent
Depending on model		or 45/55	percent
HCMOS, @ 50% V <sub>DD</sub>	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

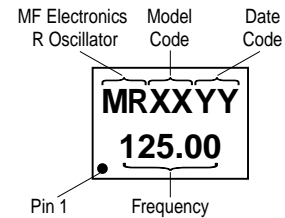
TRISTATE				
40/60 Symmetry		45/55 Symmetry		Frequency Stability
MODEL	Marking Letter ID*	MODEL	Marking Letter ID*	
R3290	C	R3296	AN	±100 ppm
R3291	P	R3991	BA	±25 ppm
R3292	D	R3992	BC	±50 ppm
R3298	BE	R3998	BG	±20 ppm
R3299	BI	R3999	BL	±32 ppm

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:





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**ENVIRONMENTAL SPECIFICATIONS**

**Temperature — All models**

Operating 0° to 70°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

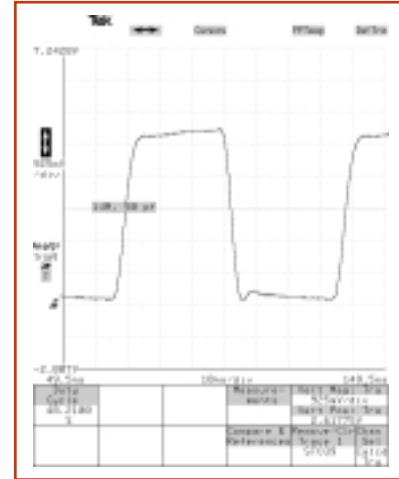
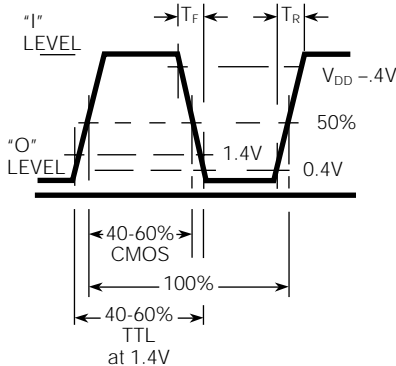
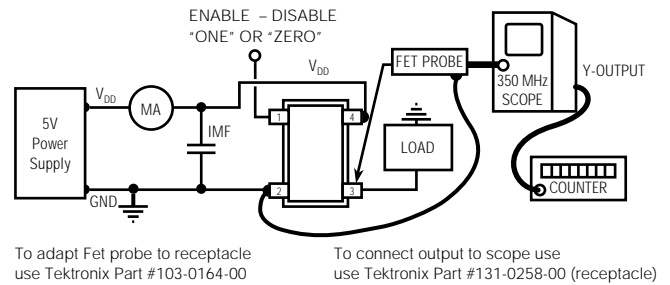


Fig. 1 R3290-14M with 50pf load  
 Duty Cycle is 48.2% at  $V_{DD}/2$



**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**



SS#	Rev.
R1280	A



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