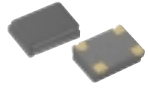




CRYSTAL OSCILLATORS

HCMOS/TTL 3.3V



SURFACE MOUNT
T package
 T1380, T1381,
 T1382, T1388,
 T1389
 T3390, T3391,
 T3392, T3398,
 T3399

5 x 7 mm Surface Mount

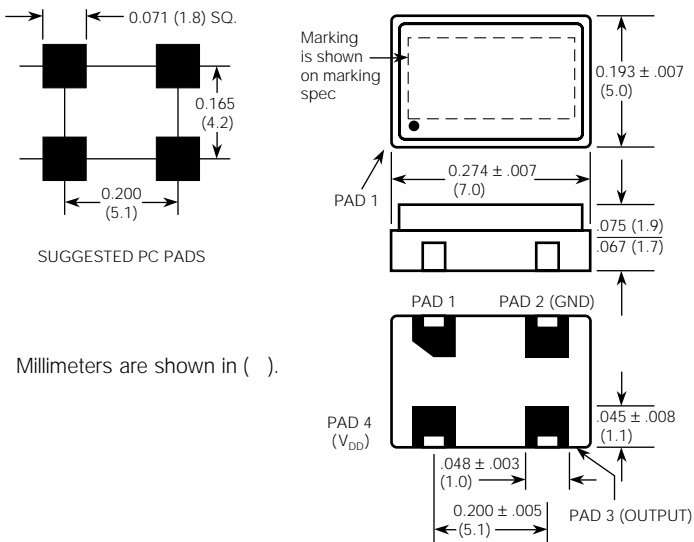
Commercial: 0° to 70°C
FIXED FREQUENCY, 1 KHz to 125 MHz
TRISTATE, 14 KHz to 125 MHz

FEATURES

- Fixed frequency or Tristate
- Very low power when tristated
- Start up time less than 5 ms.
- Stability options from ± 100 ppm to ± 20 ppm
- Guaranteed start-up with ramping DC Supply
- 45/55 symmetry is standard

TYPICAL APPLICATIONS

- Any surface mount PCB that requires a standard HCMOS/TTL 3.3V clock, including microprocessors and microcontrollers.



Millimeters are shown in ().

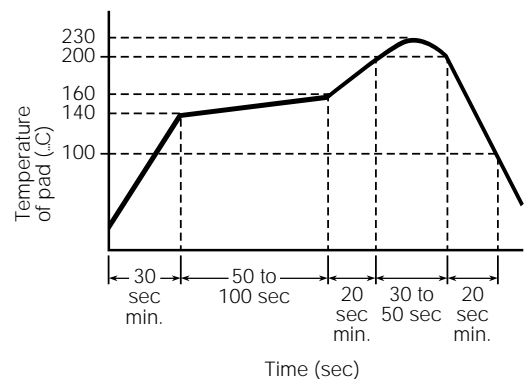
"T" Package

Description

MF Electronics T-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}	



Recommended Reflow Soldering Profile





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SURFACE MOUNT
T package
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ELECTRICAL SPECIFICATIONS

Frequency Range

Fixed Output	1 KHz to 125 MHz
Tristate	14 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		2.0	3.5	mA
10.1 to 20 MHz		3.0	4.0	mA
20.1 to 30 MHz		5.0	6.0	mA
30.1 to 50 MHz		7.0	8.0	mA
50.1 to 67 MHz		11.0	12.0	mA
67.1 to 125 MHz		13.0	16.0	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	100	ps RMS
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Symmetry

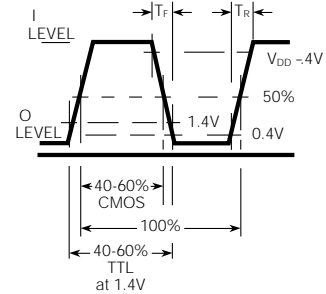
CMOS, @ 50% V _{DD}	48/52	45/55	percent
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Aging

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

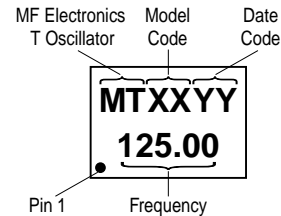
FIXED OUTPUT		
MODEL	Marking Letter ID*	Frequency Stability
T1380	E	±100 ppm
T1381	AL	±25 ppm
T1382	F	±50 ppm
T1388	BV	±20 ppm
T1389	BW	±32 ppm

TRISTATE		
MODEL	Marking Letter ID*	Frequency Stability
T3390	G	±100 ppm
T3391	Q	±25 ppm
T3392	H	±50 ppm
T3398	BY	±20 ppm
T3399	BZ	±32 ppm

* See Marking Specification

MARKING SPECIFICATION

The format for the marking is:





CRYSTAL OSCILLATORS
HCMOS/TTL 3.3V
5 x 7 mm Surface Mount
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TRISTATE, 14 KHz to 125 MHz

ENVIRONMENTAL SPECIFICATIONS

Temperature

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

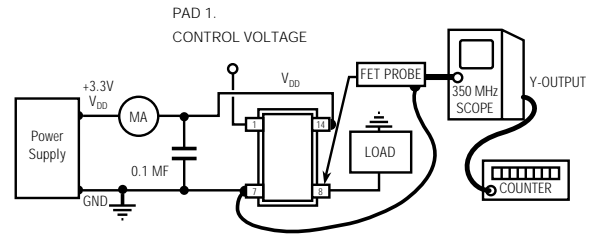
Leak – MIL STD 883, Method 1014, condition A1

Case – Hermetically sealed package

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

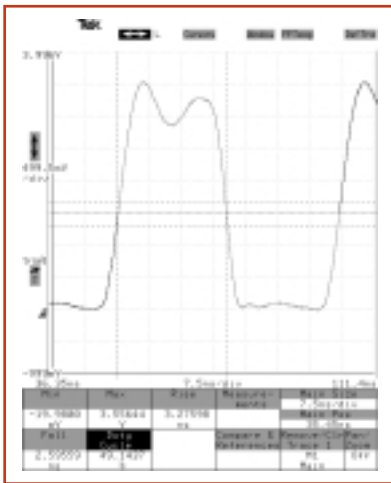


Fig.1 T3392-20M with 25pf load

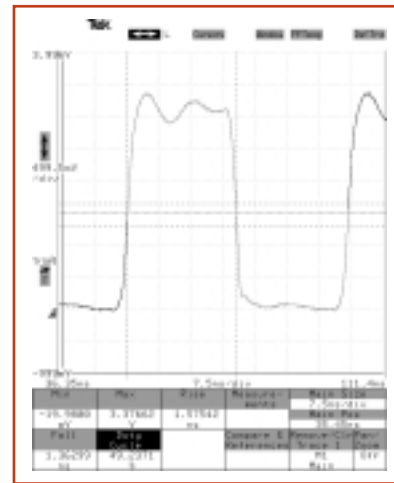


Fig. 2 T3392-20M without load

HOW TO ORDER

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

T 3391 - 125M

"T" is SMD
 "T" package

"3391"
 is model
 type

"125 M"
 frequency
 in MHz

SS#	Rev.
T1380	A



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