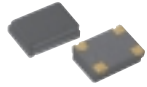




CRYSTAL OSCILLATORS HCMOS/TTL 3.3V



**SURFACE MOUNT
T package**
T7250, T7254
T7256, T7258
T7001 thru T7009
T9250, T9254
T9256, T9258
T9301 thru T9309

5 x 7 mm Surface Mount Extended Temperature/COTS 20 KHz to 100 MHz

FEATURES

- Tiny 5 x 7 SMD form factor
- Hermetically sealed for rugged environmental conditions
- Extremely wide operating temperature range accommodates harsh environments
- All crystals are processed in-house with tight angle control to assure best frequency-temperature characteristics
- All units are vacuum baked before sealing at 175°C for 16 hours to eliminate moisture traces and pre-age units for superior aging
- Tristate feature optional
- Equivalent 5V parts are available in series T1254

TYPICAL APPLICATIONS

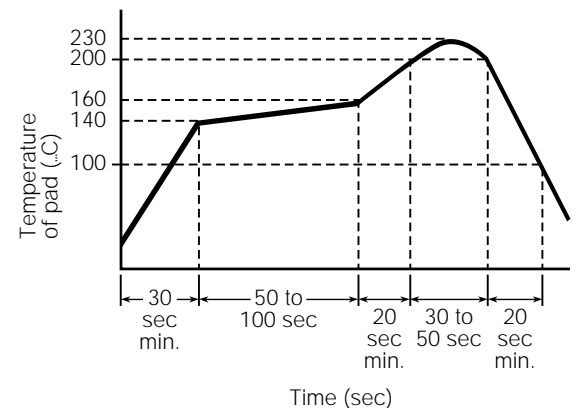
Any electronic circuit requiring 3.3V HCMOS clocking that is exposed to very high or very low temperatures such as oil drilling or weather observation equipment.

Fixed Output Model	Tristate Model	Frequency Stability	Temperature
T7250	T9250	±75 ppm	-40 to +85°C
T7254	T9254	±50 ppm	0 to 175°C
T7256	T9256	±75 ppm	-55 to +85°C
T7258*	T9258*	±100 ppm	-40 to +85°C
T7001	T9301	±500 ppm	-55 to 200°C
T7002	T9302	±500 ppm	0 to 200°C
T7003	T9303	±250 ppm	-55 to 175°C
T7004	T9304	±250 ppm	0 to 200°C
T7005	T9305	±250 ppm	-55 to 175°C
T7006	T9306	±250 ppm	0 to 175°C
T7007	T9307	±150 ppm	-55 to 175°C
T7008	T9308	±150 ppm	0 to 175°C
T7009	T9309	±100 ppm	-55 to 125°C

*Lower-cost, standard industrial parts are available, models R1310 and R3310 respectively.

Description

Owing to their small size, light weight, and rugged characteristics, these 3.3V HCMOS extended temperature/COTS oscillators fulfill tasks not previously feasible. They are used in applications that take advantage of their extended temperature range and high performance. Twenty six different models (with and without tristate) cover -55°C to +200°C operation and provide frequency selection from 20 KHz to 100 MHz. They combine excellent long-term reliability, loading characteristics, and superior startup performance.



Recommended Reflow Soldering Profile





CRYSTAL OSCILLATORS
 HCMOS/TTL 3.3V
Surface Mount
 Extended Temperature/COTS
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ELECTRICAL SPECIFICATIONS

Frequency 20 KHz to 100 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			40	mA

Output
 All units, full range
 Loads 3 TLL loads, or 10 LSTTL loads, or 15 pf CMOS

Rise and Fall Time

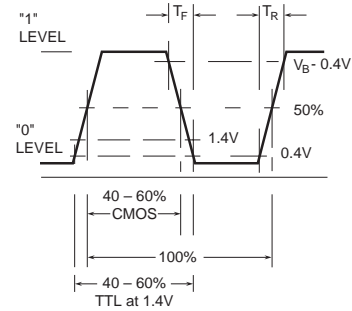
TTL and LSTTL from 0.4 to 2.4V	8	ns
CMOS, 15pf, from 0.4 to (V _{DD} -0.4) V	8	ns
CMOS, 30pf, from 0.4 to (V _{DD} -0.4) V	10	ns

Symmetry

TTL and LSTTL @ 1.4V	40/60	percent
CMOS @50% V _{DD}	40/60	percent

Aging

First year	3	ppm
After first year	1	ppm/yr



WAVEFORMS

ENVIRONMENTAL SPECIFICATIONS

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

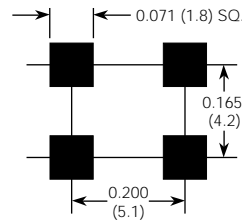
Shock – 1000 Gs, 0.35 ms, 1/2 sine wave, 3 shocks in each plane

Vibration – 10-2000 Hz of .06" d.a. or 20 Gs, whichever is less

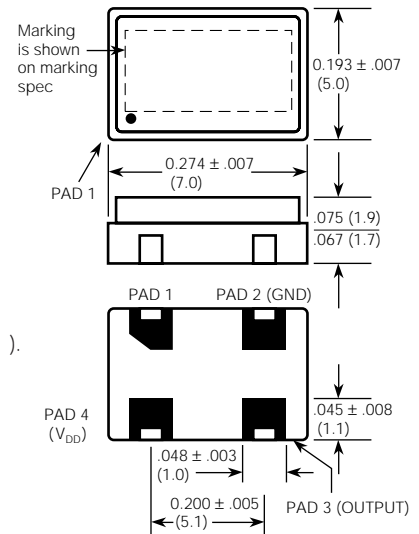
Humidity – Resistant to 85° R.H. at 85°C

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}	



SUGGESTED PC PADS



Millimeters are shown in ().

"T" Package





CRYSTAL OSCILLATORS
 HCMOS/TTL 3.3V
Surface Mount
 Extended Temperature/COTS
 20 KHz to 100 MHz

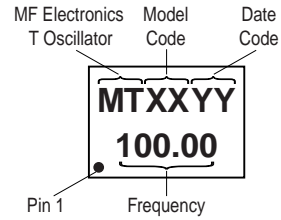
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MECHANICAL SPECIFICATIONS

- Gross Leak** – Each unit checked in 125°C fluorocarbon
- Fine Leak** – Mass spectrometer leak rate less than 2×10^{-8} atm, cc/sec of helium
- Case** – Ceramic with glass hermetic seal
- Pads** – 60 microinch of gold over nickel
- Marking** – Print is permanent white ink
- Resistance to Solvents** – MIL STD 202, Method 215

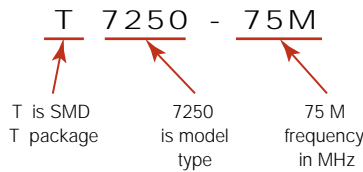
MARKING SPECIFICATION

The format for the marking is:



HOW TO ORDER

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



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.
T7250	B

