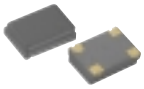
CRYSTAL OSCILLATORS
HCMOS/TTL 5V

SURFACE MOUNT
T1250, T1254,
T1256, T1258
T3250, T3254,
T3256, T3258
T4001 thru T4009
T4301 thru T4309



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

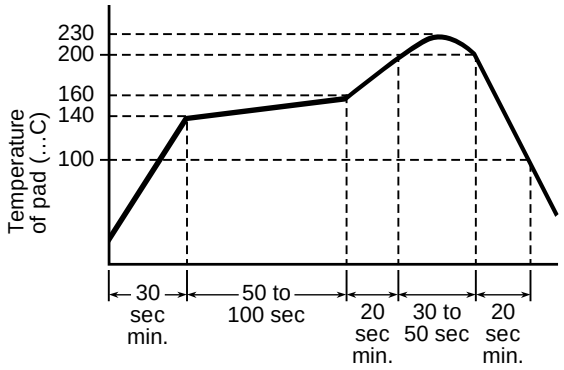
FEATURES
- Tiny 5 x 7 SMD form factor
- Hermetically sealed for rugged environmental conditions
- Extremely wide operating temperature range accomodates harsh environments
- All crystals are processed in-house with tight angle control to assure best frequency-temperature characteristics
- All units are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

TYPICAL APPLICATIONS
Any electronic circuit requiring 5V HCMOS clocking that is exposed to very high or very low termperatures such as oil drilling or weather observation equipment.

Description
Owing to their small size, light weight, and rugged characteristics, these 5V 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 four different models (with and without tristate) cover -55°C to +200°C operation and provide frequency selection from 1 KHz to 100 MHz. They combine excellent long-term reliability, loading characteristics, and superior startup performance.

FIXED OUTPUT		TRISTATE			
MODEL	Marking Letter ID*	MODEL	Marking Letter ID*	Frequency Stability	Temperature
T1250	FL	T3250**	FM	±75 ppm	-40 to +85°C
T1254	N	T3254	T	±50 ppm	0 to 175°C
T1256	K	T3256	L	±75 ppm	-55 to +85°C
T1258	I	T3258**	J	±100 ppm	-40 to +85°C
T4001	M	T4301	AQ	±500 ppm	-55 to 200°C
T4002	AD	T4302	AR	±500 ppm	0 to 200°C
T4003	AE	T4303	AS	±250 ppm	-55 to 175°C
T4004	AF	T4304	AT	±250 ppm	0 to 200°C
T4005	AG	T4305	AU	±250 ppm	-55 to 175°C
T4006	AH	T4306	AV	±250 ppm	0 to 175°C
T4007	AI	T4307	AW	±150 ppm	-55 to 175°C
T4008	AJ	T4308	AX	±150 ppm	0 to 175°C
T4009	AK	T4309	AY	±100 ppm	-55 to 125°C

* See Marking Specification
** Recommended for new designs



Recommended Reflow Soldering Profile

CRYSTAL OSCILLATORS
HCMOS/TTL 5V
Surface Mount
Extended Temperature/COTS
20 KHz to 100 MHz

SURFACE MOUNT
T package
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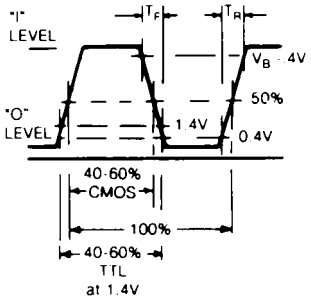
ELECTRICAL SPECIFICATIONS

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}	4.5	5.0	5.5	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, max				
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

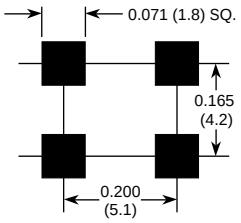
Vibration – 10-2000 Hz of .06" d.a. or 20 Gs, whichever is less

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

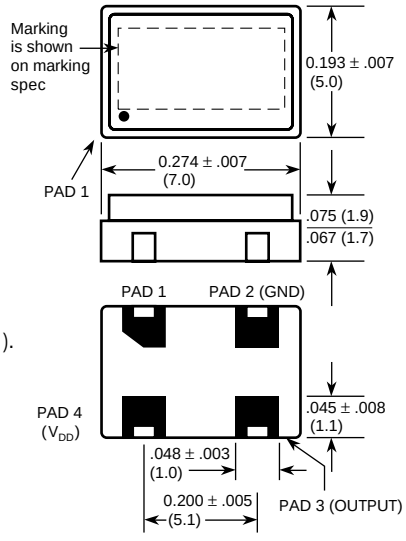
*Superior symmetry available on all models.

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 ( ).

"T" Package

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MECHANICAL SPECIFICATIONS

Gross Leak – Each unit checked in 125°C flurocarbon

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

Case – Ceramic with glass hermetic seal

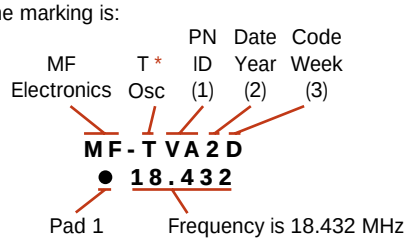
Pads – 60 microinch of gold over nickel

Marking – Print is permanent white ink

Resistance to Solvents – MIL STD 202, Method 21

MARKING SPECIFICATION

The format for the marking is:



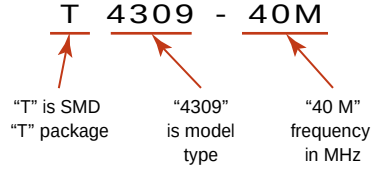
NOTES

(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.

* When Marking Letter ID is two letters, the “T” is deleted.

HOW TO ORDER

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



SS#	Rev.
T1254	A