



M250x Series SPECIFICATION FOR 2.5x2.0 mm SMT CRYSTAL OSCILLATOR

FEATURES

Surface mount crystal oscillator
Compliant to RoHS directive

APPLICATIONS

Clock circuits in communications equipment
Test equipment
Portable and wearable devices

Ordering Information:

Product Series (Supply Voltage Option)	Temperature Range		Stability		Output Type		Symmetry		Package/Lead Configuration		Frequency MHz
	Code	Value	Code	Value	Code	Value	Code	Value	Code	Value	
M2500 (3.3V)	6	-20 to +70 °C	3	±100 ppm	T	Tristate	C	45/55 CMOS	N	Leadless	xxx.xxxxxx
M2501 (2.5V)	2	-40 to +85 °C	4	± 50 ppm							
M2502 (1.8V)			6	± 25 ppm							
			8	± 20 ppm							
Example: M250064TCN 25.000000 MHz											
M2500	6		4		T		C		N		25.000000

Electrical Specifications:

Parameter	Symbol	Min.	Typ.	Max.	Units	Conditions
Frequency of Operation	F _O	1		100	MHz	
Frequency Stability						
Frequency Stability	ΔF/F	See Ordering Information			ppm	
Output						
Output Type		HCMOS Compatible				
Output Load				15	pF	
Symmetry (duty cycle)	T _{DC}	45		55	%	Ref to ½ V _{DD}
Logic "1" Level	V _{OH}	90% V _{DD}			V	HCMOS load
Logic "0" Level	V _{OL}			10% V _{DD}	V	HCMOS load
Rise/Fall Time	T _R /T _F			5	ns	1 – 100 MHz
Start-Up Time				10	ms	
Tristate Function		Logic (70% V _{DD} min) or floating				Pad 1: Enables output
		Logic (30% V _{DD} max) to a high-Z state				Pad 1: Disables output
Supply Voltage & Power Consumption						
Supply Voltage	V _{DD}	2.97	3.30	3.63	V	M2500
		2.25	2.50	2.75	V	M2501
		1.62	1.80	1.98	V	M2502
Supply Current	I _{DD}			6	mA	0.500 – 20.000 MHz
				10	mA	20.001 – 60.000 MHz
				16	mA	60.001 – 100.000 MHz



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Environmental & Mechanical Requirements:

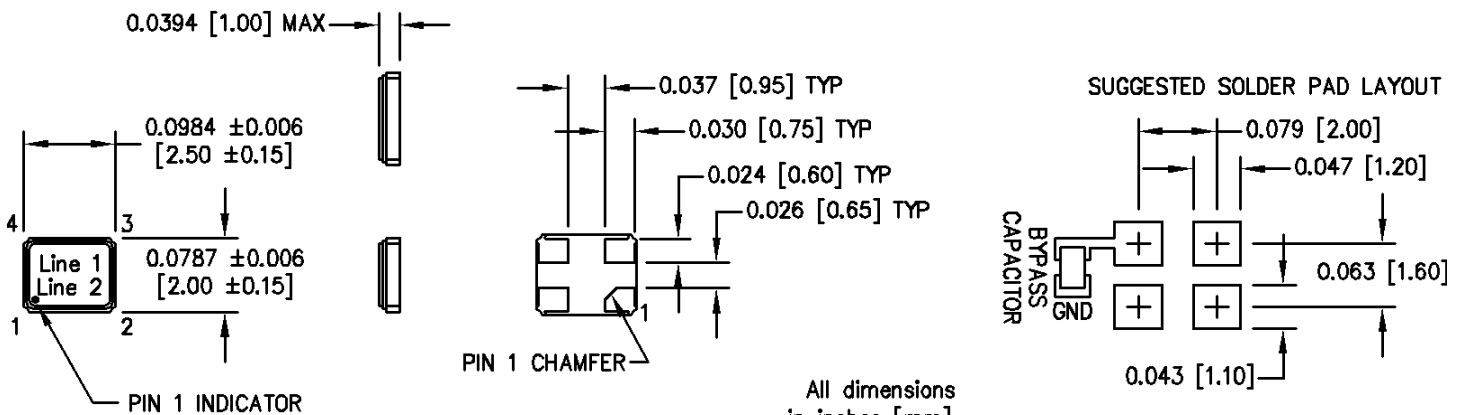
Operating Temperature	T _A	See Ordering Information		°C
Storage Temperature	T _S	-55	+125	°C
Mechanical Shock	Per MIL-STD-202, Method 213, Condition C (100 g's, 6 ms duration, 1/2 sinewave)			
Vibration	Per MIL-STD-202, Method 201 & 204 (10 g's from 10-2000 Hz)			
Thermal Cycle	Per MIL-STD-883, Method 1010, B (-55°C to 125°C, 15 min. dwell, 10 cycles)			
Hermeticity	Per MIL-STD-202, Method 112 (1 x 10 ⁻⁸ atm cc/s of Helium)			
Solderability	Per EIAJ-STD-002			
Max. Soldering Conditions	See solder profile, Figure 1			
Package Type	2.0 X 2.5 X 1.0 mm, 4-pad leadless ceramic. RoHS 6/6 compliant			

Dimensions, Marking, and Pin Out Information:

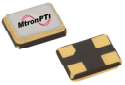
Pad	Function
1	Tristate
2	Ground
3	Output
4	+V _{DD}

Part Marking (MHz range)	
Line 1	xxxMxxx
Line 2	M ywwv

Legend	
xxxMxxx	Frequency in MHz
y	Year
ww	Work week
v	Factory code



Note : Layout should include 0.01 μF or larger bypass capacitor between +V_{DD} and ground.



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Reflow Soldering Conditions:

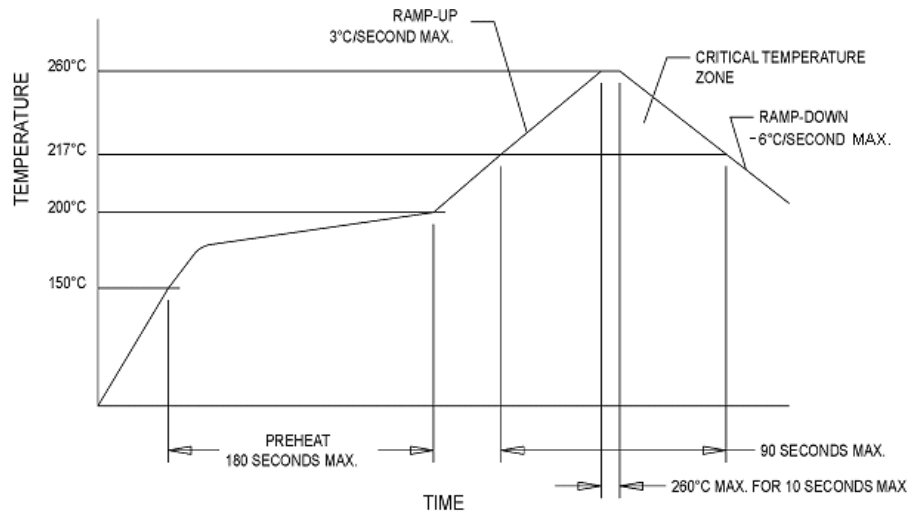
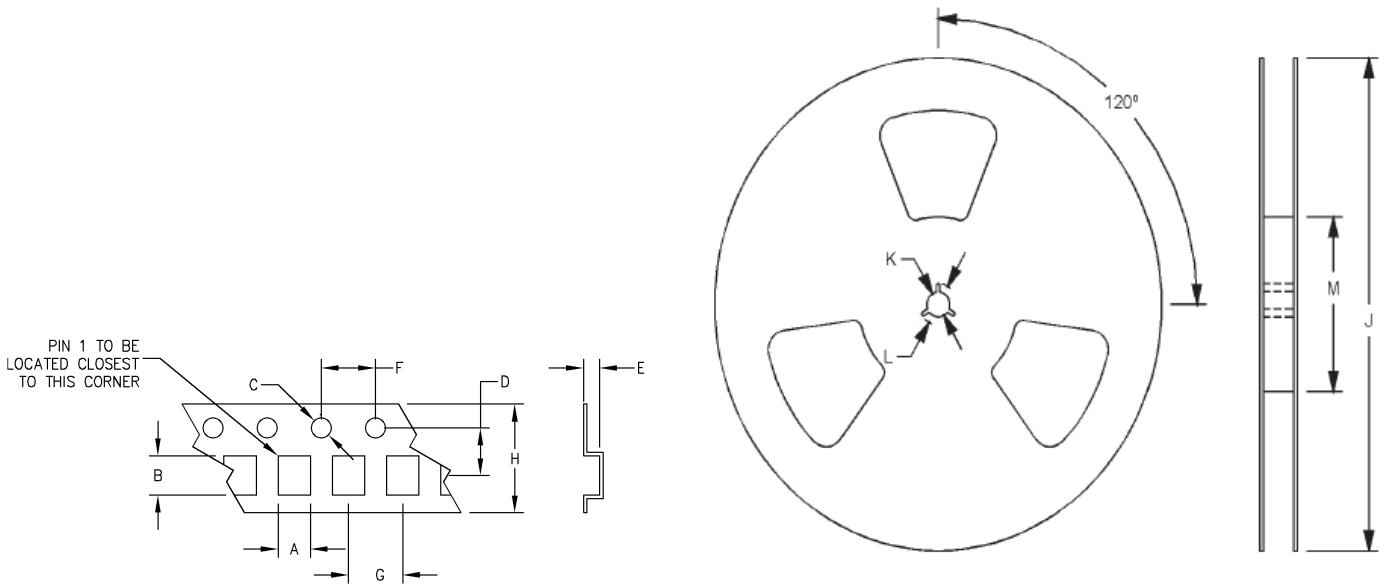


Figure 1

Tape and Reel Specifications:



All dimensions are in mm.

A	B	C	D	E	F	G	H	J	K	L	M
2.4	2.9	1.55	3.5	1.2	4	4	8	178	13	21	60

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