



M2403 Series SPECIFICATION FOR 2.5 x 3.2 mm SMT CRYSTAL OSCILLATOR

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	
M2403	6	-20 to +70 °C	3	±100 ppm	F	Fixed	C	45/55 CMOS	N	Leadless	xxx.xxxxxx
	2	-40 to +85 °C	4	± 50 ppm	Q	Standby	G	40/60 CMOS			
			5	± 35 ppm	T	Tristate					
			6	± 25 ppm							
Example: M240324TCN 25.000000 MHz											
M2403	2		4		T		C		N		25.000000

Electrical Specifications:

Parameter	Symbol	Min.	Typ.	Max.	Units	Conditions
Frequency of Operation	F_O	1		66	MHz	
Frequency Stability						
Frequency Stability	$\Delta F/F$	See Ordering Information			ppm	
Output						
Output Type		HCMOS Compatible				
Output Load				15	pF	
Symmetry (duty cycle)	T_{DC}	See Ordering Information			%	Ref to $\frac{1}{2} V_{DD}$
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			10	ns	1 – 66 MHz
Start-Up Time				10	ms	
Standby Current				50	μA	Standby Mode
Tristate or Standby 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}	3.135	3.300	3.465	V	M2403
Supply Current	I_{DD}			6	mA	1.000 – 20.000 MHz
				15	mA	20.001 – 66.000 MHz
Additional Specifications						
Phase Jitter				10	ps	@ 1M (12 kHz to 1 MHz)
				1.5	ps	@ 20M (12 kHz to 20 MHz)
				1.2	ps	@ 25M (12 kHz to 20 MHz)
				1.0	ps	@ 30M (12 kHz to 20 MHz)
				0.8	ps	@ 40M (12 kHz to 20 MHz)
				0.7	ps	@ 50M (12 kHz to 20 MHz)
				0.5	ps	@ 66M (12 kHz to 20 MHz)
				0.5	ps	@ 70M (12 kHz to 20 MHz)
			0.4	ps	@ 100M (12 kHz to 20 MHz)	



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Environmental & Mechanical Requirements:

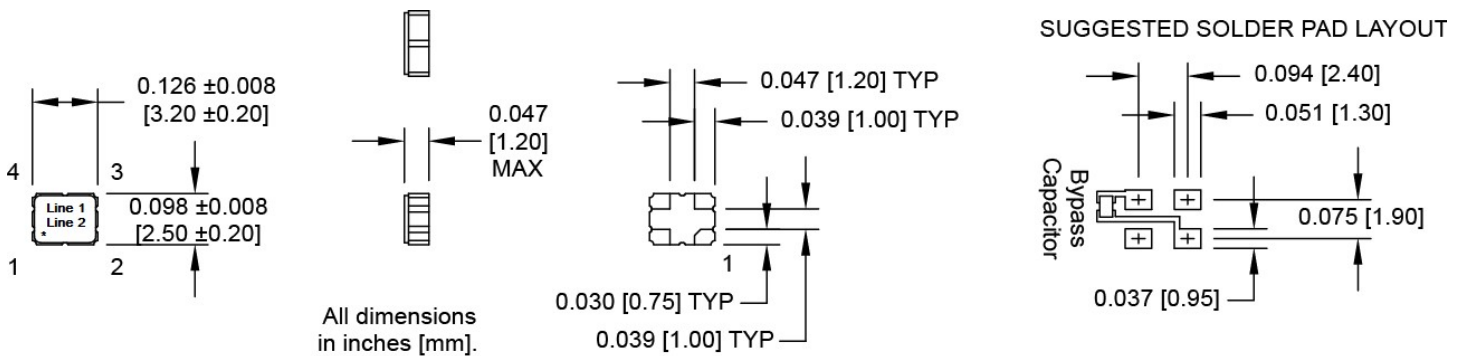
Operating Temperature	T _A	See Ordering Information			°C
Storage Temperature	T _S	-55		+125	°C
Mechanical Shock	Per MIL-STD-202, Method 213, Condition C (100 g's, 6 ms duration, ½ sinewave)				
Vibration	Per MIL-STD-202, Method 201 & 204 (10 g's from 10-2000 Hz)				
Thermal Cycle	Per MIL-STD-883, Method 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	4-pad 2.5 X 3.2 X 1.2 mm leadless ceramic. RoHS compliant.				

Dimensions, Marking, and Pin Out Information:

Pad	Function
1	Tristate, Standby or N/C
2	Ground
3	Output
4	+V _{DD}

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

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:

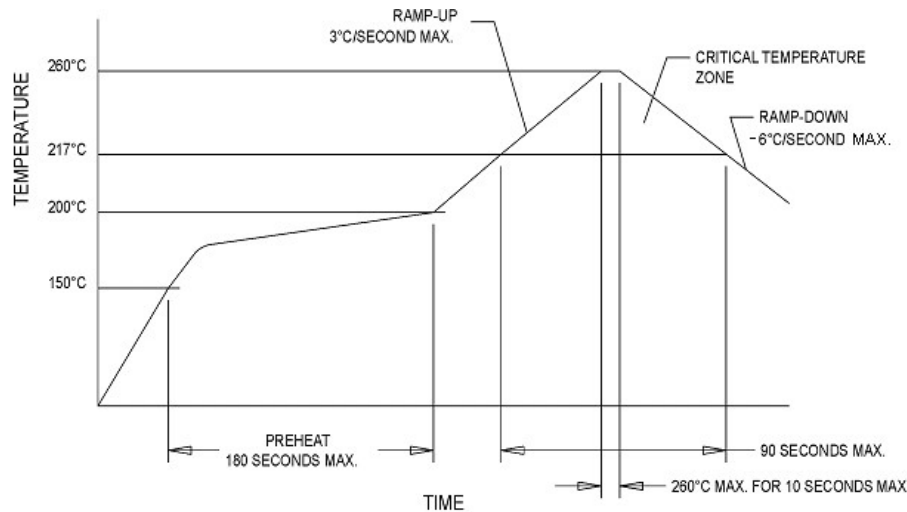
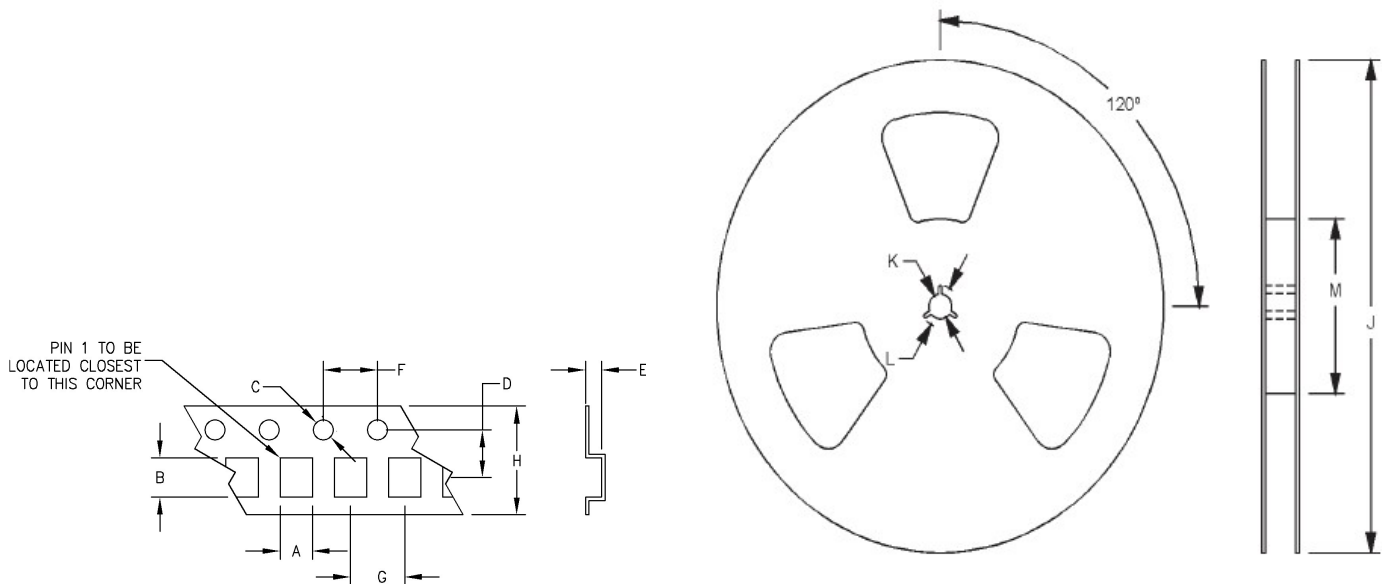


Figure 1

Tape and Reel Specifications:



All dimensions are in mm.

A	B	C	D	E	F	G	H	J	K	L	M
3	3.7	1.5	3.5	1.4	4	4	8	250	13	21	60

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