



M250x Series

2.5x2.0 mm, CMOS SMT Oscillator

FEATURES

Low profile, Surface mount
Wide operating temperature range
Compliant to RoHS directive
Operating Voltage: 3.3/2.5/1.8 Volt

APPLICATIONS

Avionics and Aerospace
Communication and Navigation
Instrumentation and Industrial
Portable and wearable devices

ORDERING INFORMATION

M250x	2	4	T	C	N	00.0000 MHz
Product Series M2500 = 3.3 V M2501 = 2.5 V M2502 = 1.8 V						
Temperature Range 1: 0°C to +70°C 3: -55°C to +105°C <small>Note 1</small> 6: -20°C to +70°C 4: -55°C to +125°C <small>Note 1</small> 2: -40°C to +85°C						
Stability 3: ± 100 ppm 6: ± 25 ppm 4: ± 50 ppm 8: ± 20 ppm						
Output Type Q: Fixed <small>Note 1</small> Q: Standby <small>Note 1</small> T: Tristate						
Symmetry/Logic Compatibility A: 40/60% CMOS C: 45/55% CMOS						
Package/Lead Configurations N: Leadless Ceramic (4 Pads)						
Frequency (Customer Specified)						

Example Part Number: M250024TCN 16 .0000MHz

07/18/22 Rev. B

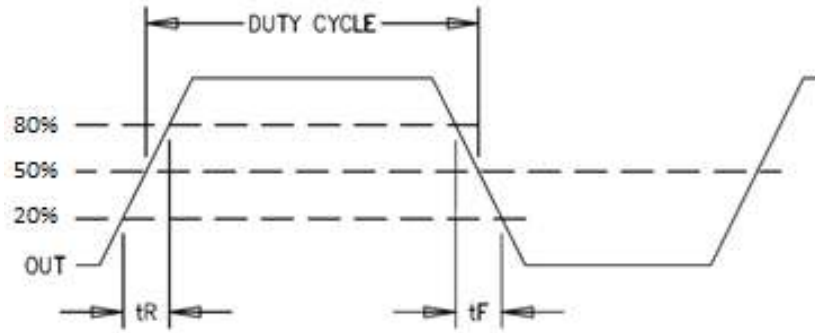
ELECTRICAL SPECIFICATIONS

Parameter	Symbol	Min.	Typ.	Max.	Units	Conditions
Frequency Range	F ₀	1.0		135	MHz	
Frequency Stabilities						
vs. Operating Temperature	$\Delta F/F$	(See ordering information)			ppm	
vs. Aging			±3		ppm	1st year
			±2		ppm	Thereafter (per year)
RF Output						
Output Type		CMOS Compatible				
Output Load				15	pF	CMOS ^{Note 2}
Symmetry (Duty Cycle)		(See Ordering Information)				
Logic "1" Level	V _{OH}	90% V _{DD}			V	CMOS Load
Logic "0" Level	V _{OL}			10%V _{DD}	V	CMOS Load
Rise/Fall Time	T _R /T _F			6	ns	1.5000 to 50.000 MHz
				4	ns	50.001 to 80.000 MHz
				2	ns	80.001 to 135.000 MHz
Standby/Tristate Function		Input Logic (70% V _{DD} min) or floating Input Logic (30% V _{DD} max)				Output Active Output Disables to High Z
Start-up Time	T _{SU}			10	ms	T _{ambient} = +25°C
Operating Voltage and Current						
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	1.000 – 20.000 MHz
				10	mA	20.001 – 60.000 MHz
				16	mA	60.001 – 100.000 MHz
				55	mA	100.001 – 135.000 MHz
Temperature						
Operating Temperature	T _A	See ordering information			°C	
Storage Temperature	T _S	-55		+125	°C	
Notes						
Note 1	Contact factory for availability.					
Note 2	Refer to the load circuit diagram in this data sheet.					

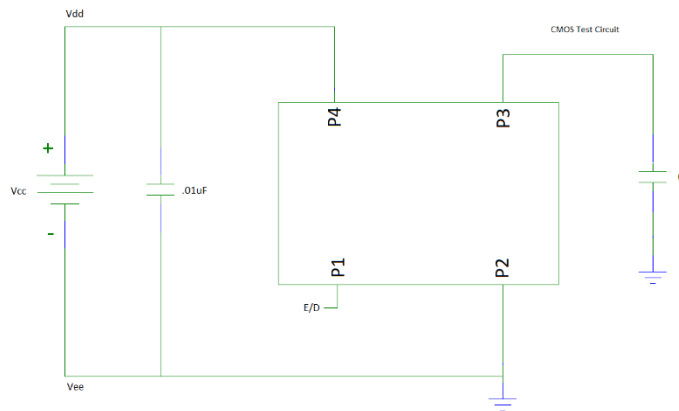
ENVIRONMENTAL CONDITIONS

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, Condition 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

OUTPUT WAVEFORM



LOAD CIRCUIT DIAGRAM

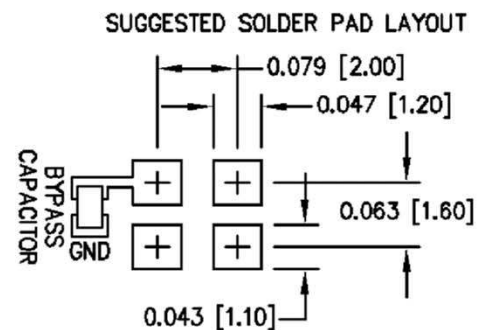
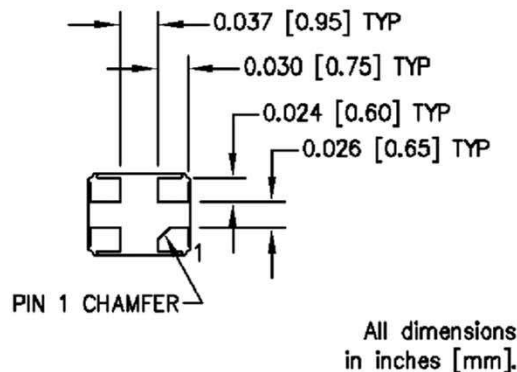
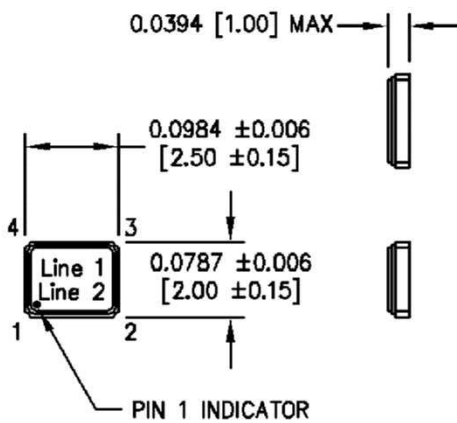


MECHANICAL AND PIN OUT INFORMATION

Pad	Function
1	Tristate/Standby or N/C
2	Ground
3	Output
4	Supply Voltage +VDD

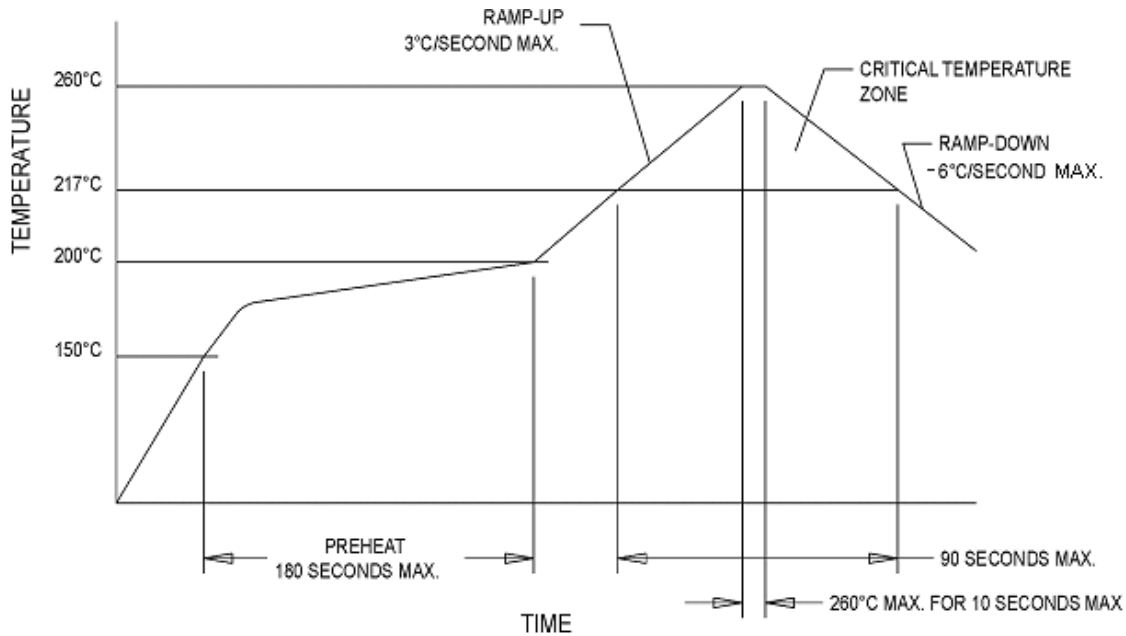
Part Marking	
Line 1	xxxMxxx
Line 2	M ywww

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



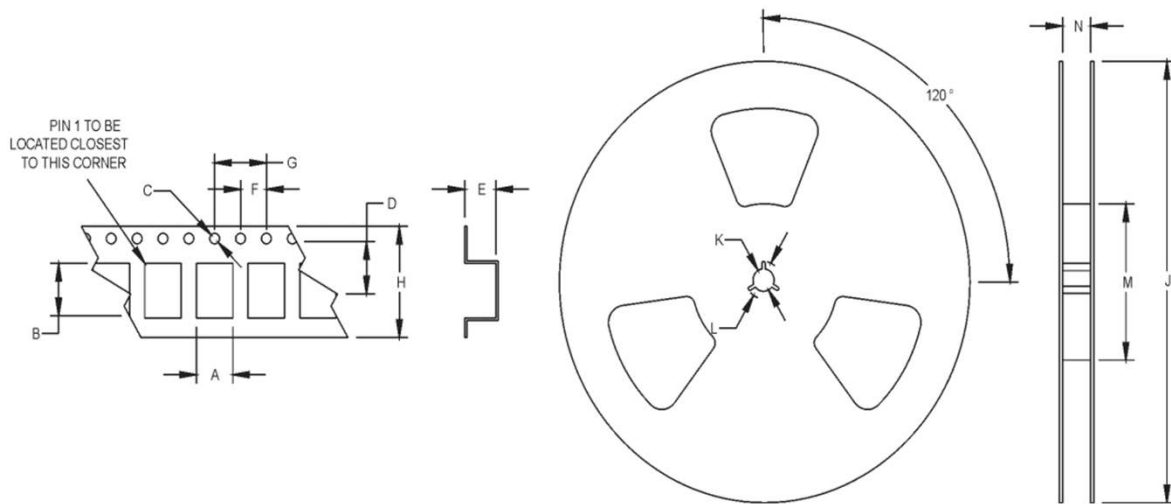
Layout should include 0.01 μ F or larger bypass capacitor between +VDD and ground

LEAD FREE SOLDER PROFILE



TAPE AND REEL SPECIFICATIONS

All units 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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