

Temperature Compensated Crystal Oscillators TCXO

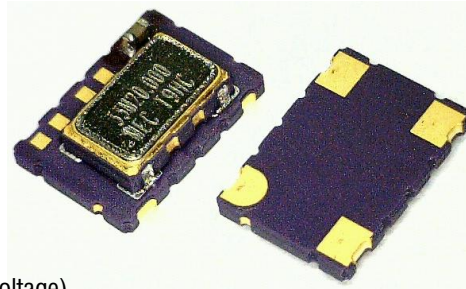
M572T Series, CMOS Output, 32.768 KHz



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Features:

- ◆ Suitable for non-battery operated real time clocks require 32.768 KHz reference frequency
- ◆ 5x7x2.3 mm ceramic SMD TCXOs with CMOS square wave output
- ◆ RoHS compliant



RoHS Compliant Product
by Mercury

General Specifications (at +25°C and specified input voltage)

Product Series		M572T				
Frequency		32.768 KHz				
Output Wave Form		Square wave. Wave form code is "T"				
Initial Calibration Tolerance ⁽¹⁾		±2 ppm at +25°C and Vcon = +1.5 V D.C.				
Frequency Stability (ppm)		± 1 ppm	±1.5 ppm	±2.0 ppm	±2.5 ppm	✓: Available □: Call us ✗: Not available
Temperature Range	-10 to +60°C	✓	✓	✓	✓	
	-20 to +70°C	✓	✓	✓	✓	
	Standard → -30 to +75°C	✓	✓	✓	✓	
	-40 to +85°C	✗	✓	✓	✓	
Frequency Stability vs Aging vs Voltage Change vs Load Change vs reflow		±1.0 ppm max. first year at +25°C ±0.3 ppm max. for a ±5% input voltage change ±0.3 ppm max. for a ±10% loading condition change ±1 ppm max. 1 reflow and measured 24 hours afterwards				
Supply Voltage (V_{DD})		+2.8 V (voltage code is "28")	+3.0 V (voltage code is "3")	+3.3 V (voltage code is "33")	+5.0 V (voltage code is "5")	
Output Voltage Level V_{DD}=3.0V	Logic "1"	2.7 V min.				
	Logic "0"	0.3 V max.				
Rise Time and Fall Time		3 nano. sec. typ. 20% ↔ 80% of waveform				
Duty Cycle (Symmetry)		50% ±10% measured at 50% waveform				
Start-up Time		2 m. sec. typ.				
Current Consumption		3.5 mA typ. at + 3.3V / 7 mA typ. at +5.0V				
Output Load		15 pF				
SSB Phase Noise at +25°C	Offset	10 Hz	100 Hz	1 kHz	10 kHz	100 kHz
	Typical	-65 dBc/Hz	-100 dBc/Hz	-130 dBc/Hz	-150 dBc/Hz	-150 dBc/Hz
Storage Temperature		-50°C to +100°C				

⁽¹⁾: Frequency stability over temperature will be from this measured initial frequency.

MERCURY www.mercury-crystal.com

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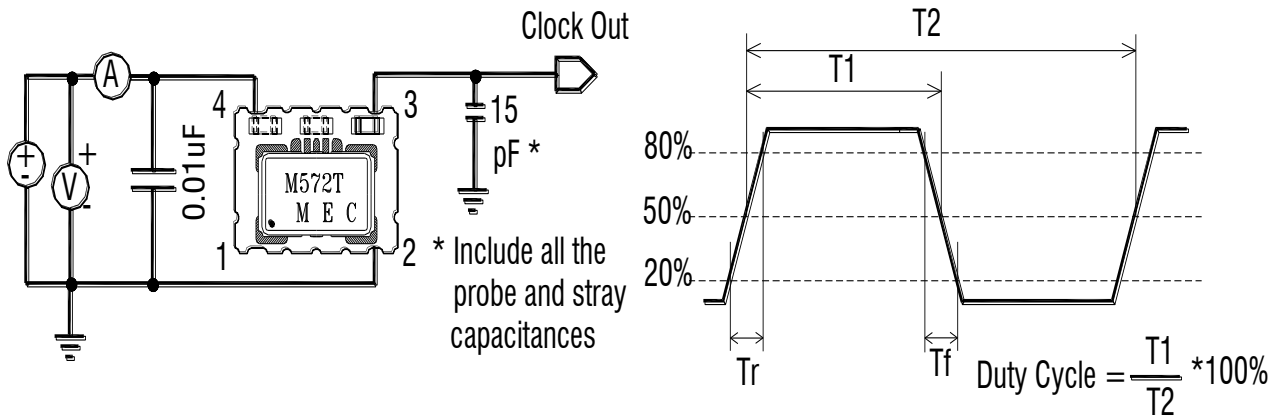
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Part Number Format and Example:

Part number example:		M572T3-32.768K-2.5/-30+75					≠ = Please specify	
M572T	3	—	32.768K	—	2.5	/	-30+75	
①	②		③		④		⑤	

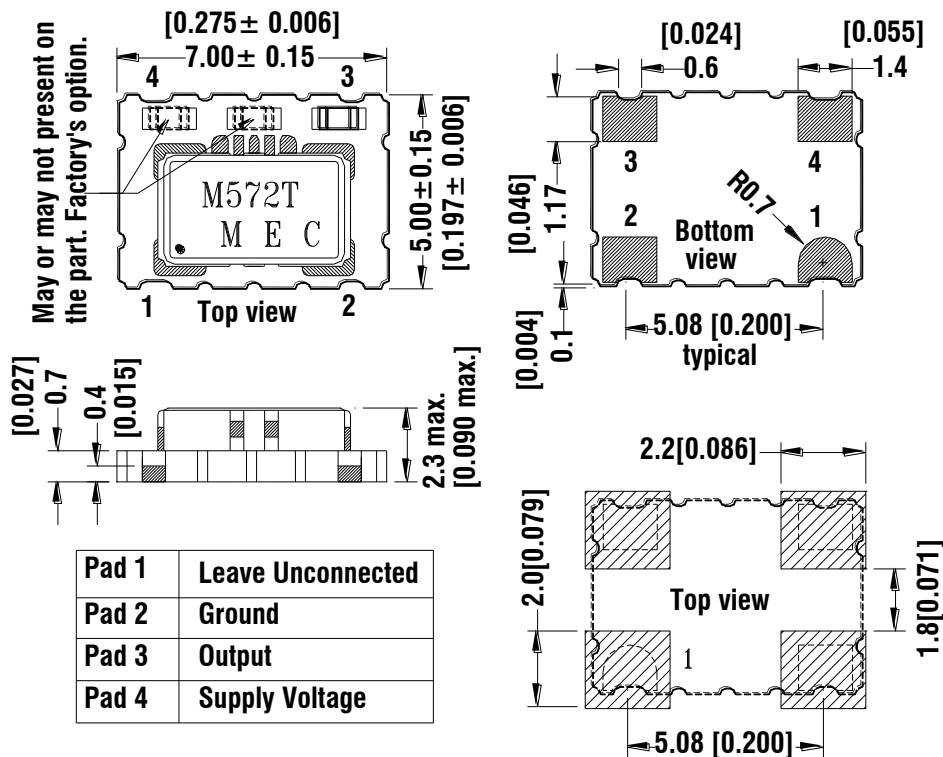
①: Product Series ②: Voltage code; Use "28" for +2.8 V; use "3" for +3.0 V; use "33" for +3.3 V; use "5" for +5.0 V ③: Frequency in KHz ④: Frequency stability ⑤: Operating Temperature range in °C

CMOS Square Wave TCXO Test Circuit and Waveform:



Package Dimensions and Suggested Land Pattern:

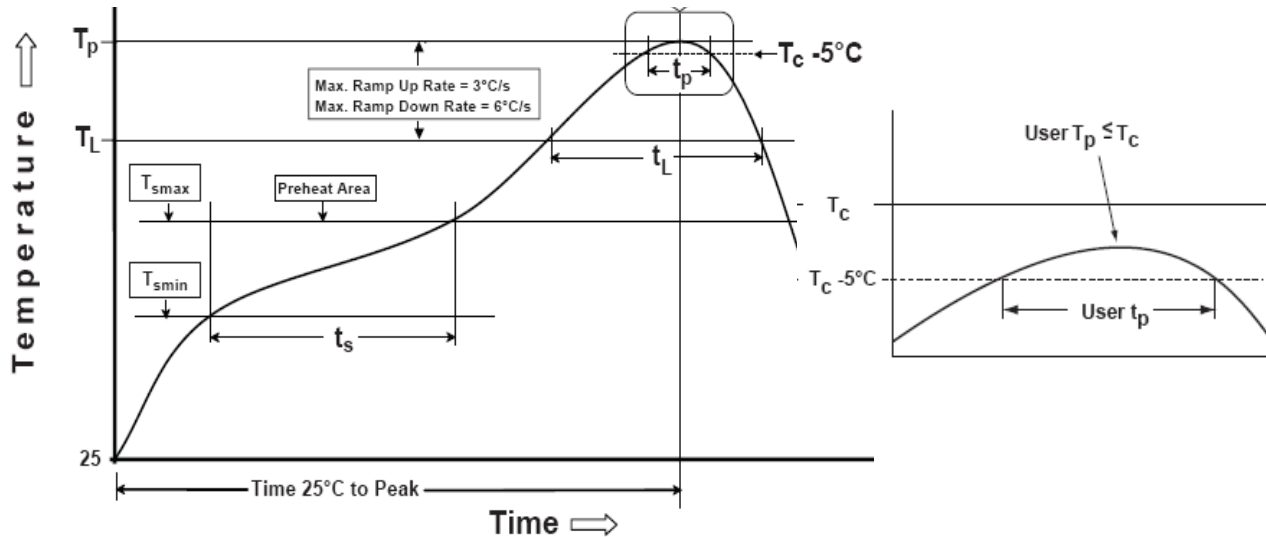
Unit: mm



Rounded pad is pad No. 1. Count counter-clockwise when looking at top view.

Count clockwise when looking at bottom view. 0.01µF decoupling capacitor is recommended.

Recommended Reflow Soldering Profile



Profile Feature	Sn-Pb Eutectic Assembly	Pb-free Assembly
Preheat/Soak		
- Temperature min. (Ts min.)	100°C	150°C
- Temperature max. (Ts max.)	150°C	200°C
- Time (ts) (Ts min. to Ts max.)	60 to 120 seconds	60 to 180 seconds
Ramp-up rate (TL to Tp)	3°C / sec. max.	3°C / sec. max.
Liquidous temperature (TL)	183°C	217°C
Time (tl) maintained above TL	60 to 150 seconds	60 to 150 seconds
Peak package body temperature (Tp)	235°C	260°C
Time (Tp) within 5°C of the classification temperature Tc	10 to 30 seconds	20 to 40 seconds
Ramp-down rate (Tp to TL)	6°C / second max.	6°C / second max.
Time 25°C to peak temperature	6 minutes max.	8 minutes max.

Environment Performance Specifications

Green Requirement	RoHS compliant, Pb (lead) free
Moisture Sensitivity Level	MSL=1 per IPC/JEDEC J-STD-020D.1
Humidity	85% RH, 85°C, 48 hours
Hermeticity	Leak rate 2×10^{-8} ATM-cm ³ /sec max. Crystal part only.
Solderability	MIL-STD-202F method 208E
Vibration	MIL-STD-202F method 204, 35G, 50 to 2000 Hz
Shock	MIL-STD-202F method 213B, test condi. E, 1000GG ½ sine wave
Storage temp. range	-55 to +125°C
ESD Protection	2.5 KV min. Human body model.
Solder Pad Surface Finish	Gold (0.3~1.2 um) over nickel (1.27~8.89um)