

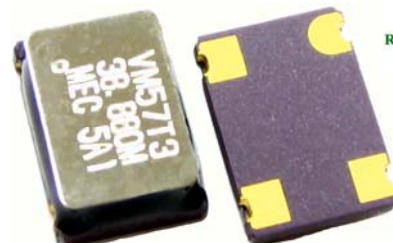
Voltage Controlled Temperature Compensated Crystal Oscillators VCTCXO, VM57T series, HCMOS Output



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Features:

- ◆ 5x7x2.5 mm ceramic SMD VCTCXOs with HCMOS square wave output
- ◆ 0.01 uF decoupling capacitor built-in
- ◆ Wide frequency range: 2.5 MHz to 170.0 MHz
- ◆ Frequency stability as tight as ± 0.5 ppm over 0 to +50°C or ± 1 ppm over -40 to +85°C



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

Product Series		VM57T				
Frequency Range		2.5 MHz ~ 170.0 MHz				
Output Wave Form		Square wave. Wave form code is "T"				
Initial Calibration Tolerance ⁽¹⁾		± 2 ppm at +25°C $\pm 2^\circ\text{C}$ and $V_{\text{con}} = +1.5$ V D.C.				
Standard Frequencies (partial list)		10.0, 12.8, 13.0, 14.4, 16.0, 16.384, 19.2, 19.440, 19.680, 20.0, 38.880, 77.760, 155.520 MHz ↓				
Frequency Stability (ppm)		± 0.5 ppm	± 1 ppm	± 1.5 ppm	± 2.0 ppm	± 2.5 ppm
Temperature Range	0 to +50°C	√	√	√	√	√
	-10 to +60°C	□	√	√	√	√
	-20 to +70°C	✗	√	√	√	√
	-30 to +75°C	✗	√	√	√	√
Standard →	-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 $\pm 5\%$ input voltage change ± 0.3 ppm max. for a $\pm 10\%$ 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")		
Current Consumption (typical)	2 mA @ 8.192MHz 3 mA @ 10 MHz 14 mA @ 77.760 MHz 16 mA @ 155.520 MHz	2 mA @ 8.192MHz 4 mA @ 10 MHz 17 mA @ 77.760 MHz 21 mA @ 155.520 MHz		5 mA @ 8.192MHz 7 mA @ 10 MHz 32 mA @ 77.760 MHz 43 mA @ 155.520 MHz		
Output Voltage Level	Logic "1"	2.4 V min.				
	Logic "0"	0.4 V max.				
Rise Time and Fall Time		10 nano. sec. max. 20% ↔ 80% of waveform				
Duty Cycle (Symmetry)		50% $\pm 10\%$ measured at 50% V_{DD}				
Start-up Time		10 m. sec. max.				
E.F.C. Electronic Frequency Tuning. Frequency Deviation Range by V_{con} on Slope Polarity		$\pm 5 \sim \pm 12$ ppm with $V_{\text{con}} = +1.5 \text{ V} \pm 1.0 \text{ V}$. For all supply voltages include +5 V. Wider tuning range (up to ± 25 ppm) is also available				
Slope Polarity		Positive: Positive voltage for positive frequency shift				
Linearity		10 % max.				
Output Load		15 pF				
SSB Phase Noise at +25°C	Offset	10 Hz	100 Hz	1 kHz	10 kHz	100 kHz
	VM57T33-100.000	-72 dBc/Hz	-110 dBc/Hz	-125 dBc/Hz	-132 dBc/Hz	-125 dBc/Hz

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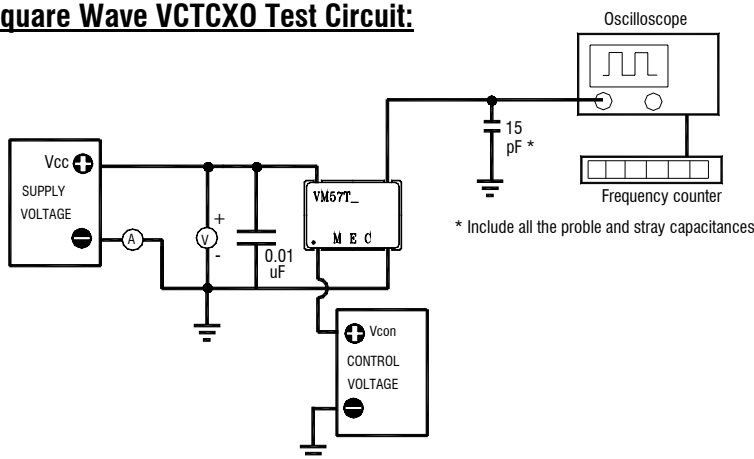
Output Format	AC block, DC coupled
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(1): Frequency stability over temperature will be from this measured initial frequency.

Part Number Format and Example:

Part number example:		VM57T3-20.000-2.5/-30+75					✍ = Please specify	
	✍		✍		✍		✍	
VM57T	3	—	20.000	—	2.5	/	-30+75	
❶	❷		❸		❹		❺	
❶: Product Series		❷: 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		❸: Frequency in MHz		❹: Frequency stability		❺: Operating Temperature range in °C

HCMOS Square Wave VCTCXO Test Circuit:



Environment Performance Specifications

Green Requirement	RoHS compliant, Pb (lead) free
Storage temp. range	-55 to +125°C
Humidity	85% RH, 85°C, 48 hours
Hermetic seal	Leak rate 2×10^{-8} ATM-cm ³ /sec max.
Solderability	MIL-STD-202F method 208E
Reflow	260°C for 10 sec. 1 time.
Vibration	MIL-STD-202F method 204, 35G, 50 to 2000 Hz
Shock	MIL-STD-202F method 213B, test condi. E, 1000GG ½ sine wave

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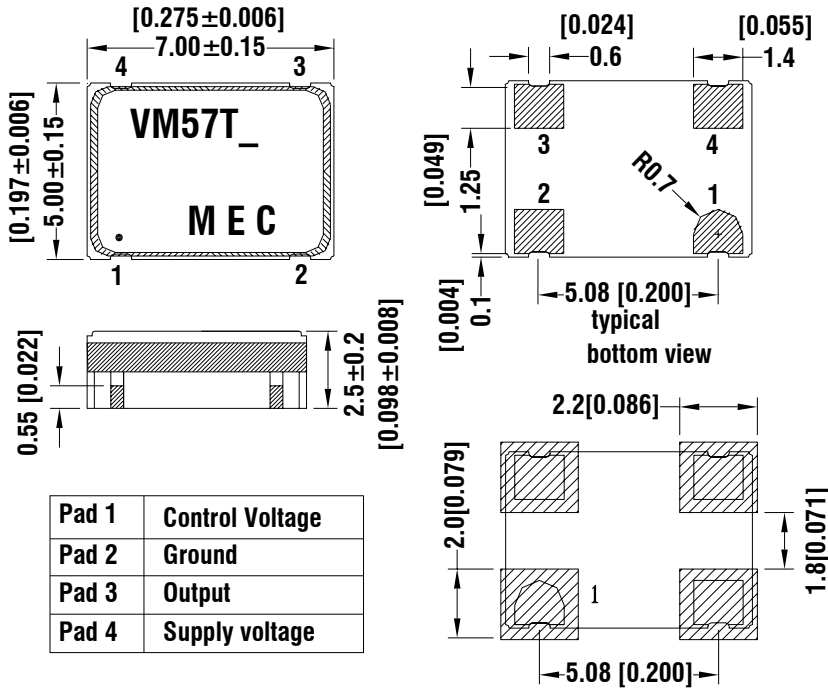
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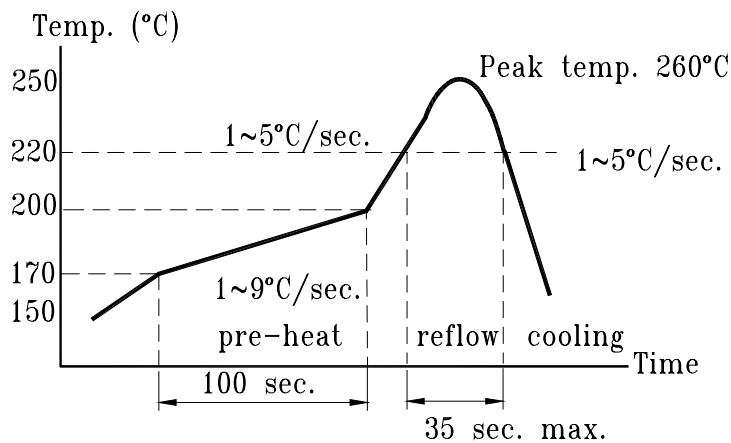
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Package Dimensions and Suggested Land Pattern: Unit: mm



Rounded pad is pad No. 1. Count counter-clockwise when looking at top view.
Count clockwise when looking at bottom view. 0.01 uF decoupling capacitor is built-in.

Recommended Reflow Soldering Profile



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