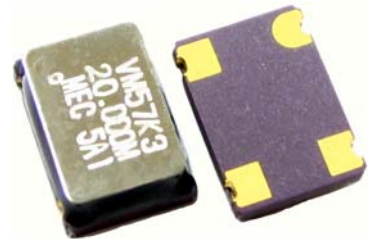


With VM57K design engineers enjoy the benefits of HCMOS output, VCTCXO stability, ultra low current and miniaturized 5x7 packaging. VM57K consumes less than 4 mA at 26 MHz +3.3 V with low phase noise of -130 dBc / Hz at 1 KHz offset.



General Specifications $T_A = +25^\circ\text{C}$, V_{DD} at specified voltage, load 15 pF

Frequency Range		12.8 MHz ~ 26.0 MHz				PRELIMINARY	
Output Wave Form		CMOS Square wave.					
Initial Calibration Tolerance		± 2 ppm at $+25^\circ\text{C} \pm 2^\circ\text{C}$					
Standard Frequencies		12.8, 13.0, 14.4, 15.36, 16.0, 16.384, 16.8, 19.2, 19.44, 19.68, 20.0 and 26.0 MHz (partial list)					
Frequency Stability vs Temperature vs Aging vs Supply Voltage Change vs Load Change vs reflow (SMD models)		± 1 ppm, ± 1.5 ppm, ± 2.0 ppm, ± 2.5 ppm, ± 3 ppm, ± 5 ppm or ± 10 ppm over specified operating temperature range ± 1.0 ppm max. first year at $+25^\circ\text{C}$ ± 1.0 ppm max. for a $\pm 10\%$ input voltage change ± 0.3 ppm max. for a $\pm 10\%$ loading condition change ± 1 ppm max. 1 reflow and measured 24 hours afterwards					
Typical Operating Temperature Range (examples)		0°C to $+60^\circ\text{C}$ 0°C to $+70^\circ\text{C}$ -10°C to $+60^\circ\text{C}$ -20°C to $+70^\circ\text{C}$ -30°C to $+60^\circ\text{C}$ -30°C to $+75^\circ\text{C}$ or custom ± 5 ppm stability for -40°C to $+85^\circ\text{C}$ is also available					
Input Voltage Range (V_{DD})		+2.8 V (voltage code is "28")		+3.0 V (voltage code is "3")		+3.3 V (voltage code is "33")	
Output Voltage Levels	Logic High "1"	1.9 V min.; 2.3 V typical		2.1 V min.; 2.6 V typical		2.4 V min.; 2.9 V typical	
	Logic Low "0"	0.27 V typical; 0.34V max.		0.29 V typical; 0.36V max.		0.32 V typical; 0.4 V max.	
Current Consumption mA, typical	12.8 MHz	2.3 mA typical		2.4 mA typical		2.6 mA typical	
	13.0 MHz	2.5 mA typical		2.6 mA typical		2.8 mA typical	
	14.4 MHz	2.6 mA typical		2.8 mA typical		3.1 mA typical	
	16.384 MHz	2.8 mA typical		3.0 mA typical		3.2 mA typical	
	19.200 MHz	3.2 mA typical		3.3 mA typical		3.6 mA typical	
	19.440 MHz	3.2 mA typical		3.4 mA typical		3.7 mA typical	
	20.000 MHz	3.2 mA typical		3.4 mA typical		3.7 mA typical	
26.000 MHz	3.6 mA typical		3.8 mA typical		4.1 mA typical		
Rise Time and Fall Time		4 n sec. typical. 0.3 V \leftrightarrow 3.0 V with 15 pF load					
Duty Cycle (Symmetry)		50% \pm 5% measured at 1.4 V					
Start-up Time		10 m. sec. max.					
Pad 1 Function	Electrical Frequency Tuning	$\pm 5 \sim \pm 12$ ppm for $+1.5 \text{ V} \pm 1.5 \text{ V}$			$\pm 5 \sim \pm 12$ ppm for $+1.5 \text{ V} \pm 1.5 \text{ V}$		
	Slope Polarity	Positive: Increasing control voltage increases output frequency.					
	Linearity	10 % max.					
Output Load		15 pF					
Fanout (Drive Capability)		12 mA typical 17 mA max. (at TTL level)					
SSB Phase Noise at $+25^\circ\text{C}$	Offset	100 Hz	1 KHz	10 kHz	100 kHz	1 MHz	
	VM57K3-13.000	-80 dBc/Hz	-110 dBc/Hz	-130 dBc/Hz	-135 dBc/Hz	-142 dBc/Hz	
RMS Period Jitter		3 ps max. (1 sigma, 1000 samples; with capacitive coupling between V_{DD} and gnd)					
Packaging		16 mm tape; 8 mm pitch; 1000 pcs per reel.					

MERCURY www.mercury-crystal.com

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⁽¹⁾Inclusive of 25°C tolerance, operating temperature range, ±10% input voltage variation, load change, aging, shock and vibration.

Part Number Format and Example

= Please specify

Example: VM57K3-20.000-2.5/-30+75

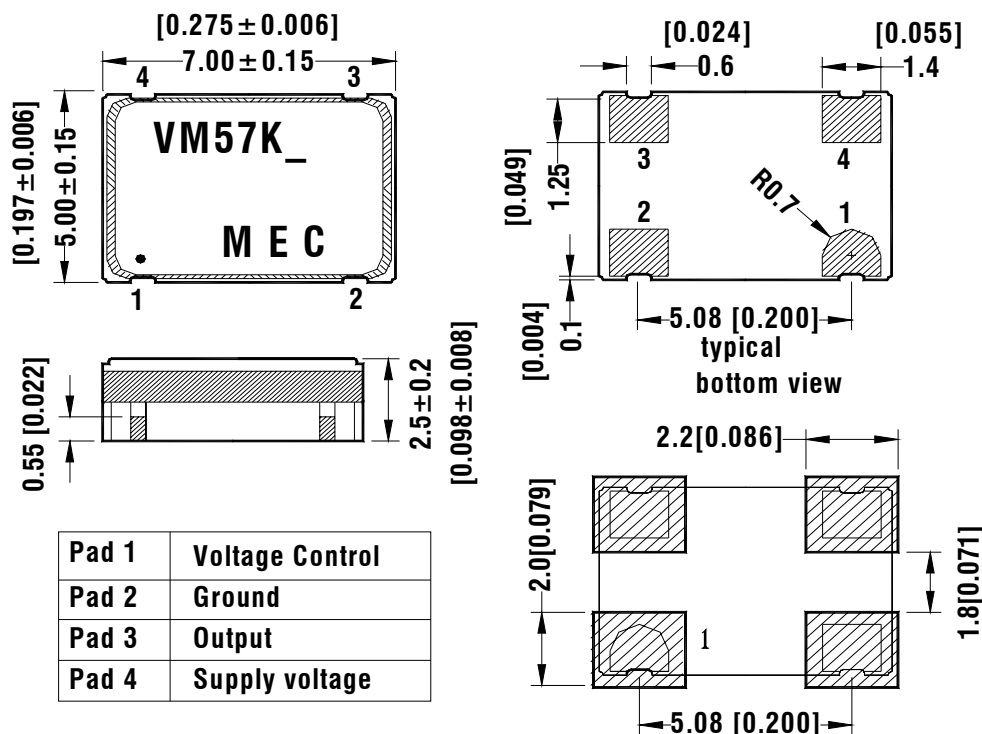
Explanation: Ultra low current VCTCXO 20.000 MHz; +3.0 V supply voltage; ±2.5 ppm over -30°C to +75°C frequency stability.

VM57K	3	—	20.000	—	2.5	/	-30+75
	❶	❷	❸		❹		❺

❶: Product series; ❷: Voltage codes: “28” for +2.8 V; ”3” for +3.0 V; “33” for +3.3 V ❸: Frequency in MHz; ❹: Frequency stability in ppm; ❺ Operating temperature range in °C

VM57K Package Dimensions and Recommended Pad Layout:

unit mm[inches]



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



Environment Performance Specifications

RoHS Compliance	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.
Vibration	MIL-STD-202F method 204, 35G, 50 to 2000 Hz
Shock	MIL-STD-202F method 213B, test condi. E, 1000GG ½ sine wave

RECOMMENDED REFLOW SOLDERING PROFILE

