

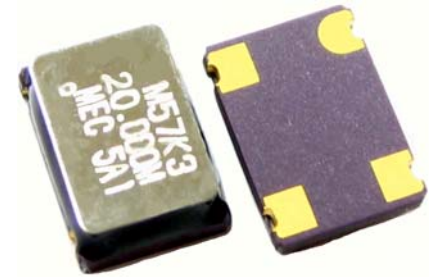
TCXO – Ultra Low Current
“M57K” SERIES 5x7 mm

Logic: HCMOS
Wave Form: Square Wave



MERCURY
 Since 1973

With M57K design engineers enjoy the benefits of HCMOS output, TCXO stability, ultra low current and miniaturized 5x7 packaging. M57K consumes less than 4 mA at 26 MHz +3.3 V with low phase noise of -130 dBc / Hz at 1 KHz offset. M57K also features Tri-state option on pad 1. Oscillator can be tuned off by grounding the pad 1 to further reduce the power.



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

Frequency Range		12.8 MHz ~ 26.0 MHz			
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 "3")		+3.0 V (voltage code is "3")	
Output Voltage Levels	Logic High "1"	1.9 V min.; 2.3 V typical		2.1 V min.; 2.6 V typical	
	Logic Low "0"	0.27 V typical; 0.34V max.		0.29 V typical; 0.36V max.	
Current Consumption mA, typical	12.8 MHz	2.3 mA typical		2.4 mA typical	
	13.0 MHz	2.5 mA typical		2.6 mA typical	
	14.4 MHz	2.6 mA typical		2.8 mA typical	
	16.384 MHz	2.8 mA typical		3.0 mA typical	
	19.200 MHz	3.2 mA typical		3.3 mA typical	
	19.440 MHz	3.2 mA typical		3.4 mA typical	
	20.000 MHz	3.2 mA typical		3.4 mA typical	
Rise Time and Fall Time	26.000 MHz	3.6 mA typical		3.8 mA typical	
	Rise Time and Fall Time				
Duty Cycle (Symmetry)		4 n sec. typical. 0.3 V \leftrightarrow 3.0 V with 15 pF load			
Start-up Time		50% \pm 5% measured at 1.4 V			
Output Load		10 m. sec. max.			
Fanout (Drive Capability)		15 pF			
Pad 1 Options		12 mA typical 17 mA max. (at TTL level)			
SSB Phase		When connected to ground: Output is disabled (oscillator is off). When no connection or connected to logic high: TCXO output Disable time is 10 m sec. typical. Enable time (when ground is removed from pad 1) is 10 m sec. typical.			
Offset		100 Hz	1 KHz	10 kHz	100 kHz
					1 MHz

MERCURY www.mercury-crystal.com

Taiwan: TEL (886)-2-2406-2779, FAX (886)-2-2496-0769, e-mail: sales-tw@mercury-crystal.com


U.S.A.: TEL (1)-909-466-0427, FAX (1)-909-466-0762, e-mail: sales-us@mercury-crystal.com





VCTCXO – Ultra Low Current	Logic: HCMOS		MERCURY Since 1973
“M57K” SERIES 5x7 mm	Wave Form: Square Wave		

Noise at +25°C	M57K3-13.000	-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.					

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

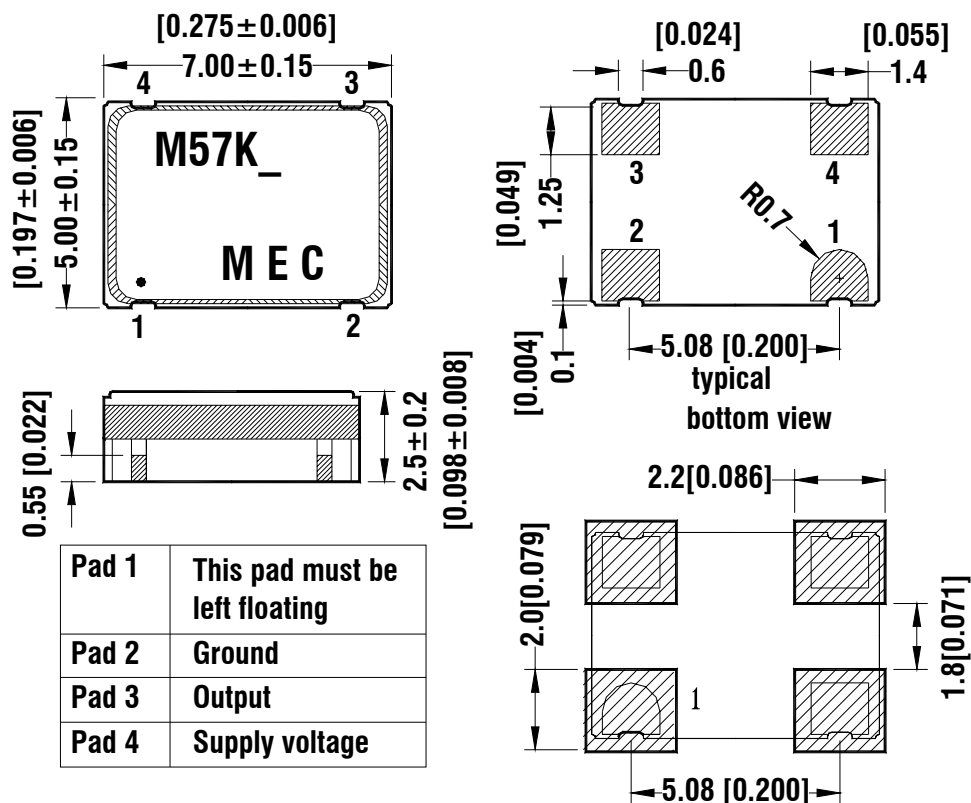
Part Number Format and Example

 = Please specify

Example: M57K3-20.000-2.5/-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. With Tri-state option on pad 1.							
							
M57K	3	—	20.000	—	2.5	/	-30+75
①	②		③		④		⑤
①: Product series; ②: Voltage codes: “28” for +2.8V; “3” for +3.3 V; “33” for +3.3 V ③: Frequency in MHz; ④: Frequency stability in ppm; ⑤: Operating temperature range in °C							

M57K 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.

0.01 uF 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

