EM57K ULTRA-LOW CURRENT TCXO

HCMOS 7 x 5 x 2.5mm SMD

- **Highly stable CMOS TCXO with ultra-low supply current**
- **Miniaturized 7 x 5mm SMD package**
- **Consumes less than 4mA at 20.0MHz with 3.3V supply**
- **Low phase noise**
- **RoHS compliant**



DESCRIPTION

EM57K TCXOs and VCTCXOs are packaged in a 7 x 5 x 2.5mm ceramic SMD package. The part offers the stability of a TCXO and the design convenience of HCMOS output with ultra-low current consumption.

SPECIFICATION

Product Code	TCXO: VCTCXO:	EM57K VEM57K
Frequency Range:		12.8MHz to 26.0MHz
Output Waveform:		HCMOS
Initial Calibration Tolerance:		<±2.0ppm at +25°±2°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 26.0MHz (*Partial list.*)
Operating Temperature Range:		*See table*
Frequency Stability		
vs. Temperature		*See table*
vs. Ageing:		±1.0 ppm max. first year
vs. Voltage Change:		±1.0 ppm max. ±10% change
vs. Load Change:		±0.3 ppm max. ±10% change
vs. Reflow (SMD type):		±1.0ppm max. for one reflow (*Measured after 24 hours*)
Supply Voltage:		+2.8, 3.0 or 3.3 Volts
Current Consumption:		*See table*
Output Logic Levels:		*See table*
Rise and Fall Times:		4ns typical with 15pF load
Duty Cycle:		50%±5%
Start-up Time:		5ms typical, 10ms max.
Output Load:		15pF
Fanout (drive capability):		12mA typical, 17mA max. (at TTL level)
RMS Period Jitter:		3ps max. (1 Sigma, 1000 samples; capacitive coupling between Vdd and Ground).
RoHS Status:		RoHS compliant and pB free
Packaging:		16mm tape, 8mm pitch 1000 pieces per reel.

CURRENT CONSUMPTION

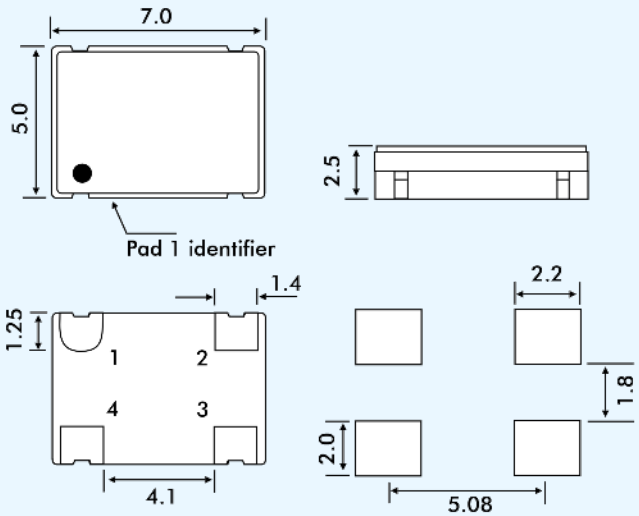
Frequency	Input Voltage		
	+2.8V	+3.0V	+3.3V
12.800MHz	2.3mA typ.	2.4mA typ.	2.6mA typ.
13.000MHz	2.5mA typ.	2.6mA typ.	2.8mA typ.
14.400MHz	2.6mA typ.	2.8mA typ.	3.1mA typ.
16.384MHz	2.8mA typ.	3.0mA typ.	3.2mA typ.
19.200MHz	3.2mA typ.	3.3mA typ.	3.6mA typ.
19.440MHz	3.2mA typ.	3.4mA typ.	3.7mA typ.
20.000MHz	3.2mA typ.	3.4mA typ.	3.7mA typ.
26.000MHz	3.6mA typ.	3.8mA typ.	4.1mA typ.

FREQUENCY STABILITY OVER TEMPERATURE

Stability (ppm)		±1.0	±2.0	±2.5	±3.0	±4.0	±5.0
Temp. Range (°C)	0 ~ +50	✓	✓	✓	✓	✓	✓
	-10 ~ +60	ASK	✓	✓	✓	✓	✓
	-20 ~ +70	X	✓	✓	✓	✓	✓
	-30 ~ +75	X	✓	✓	✓	✓	✓
	-40 ~ +85	X	X	X	ASK	ASK	✓

✓ = available, x = not available, ASK = call Technical Sales

OUTLINES AND DIMENSIONS



Pad Connections TCXO
1. Allow to 'float' electrically
2. Ground
3. Output
4. Supply Voltage

Pad Connections VCTCXO
1. Voltage control
2. Ground
3. Output
4. Supply Voltage

Chamfered pad is Pad 1. Count counter-clockwise when looking at top view. Count clockwise from bottom view.
0.01µF capacitor is built-in.

VEM57K VOLTAGE CONTROL SPECIFICATION

Control Voltage:	±5 to ±12ppm for +1.5 ±1.5 Volts
Slope Polarity:	Positive *(increase of control voltage increases output frequency.)*

SSB PHASE NOISE at 25°C

Offset		100Hz	1kHz	10kHz	100kHz	1MHz
Part = VEM57K30	at 13.000MHz (dBc/Hz)	-80	-110	-130	-135	-142

PART NUMBER FORMAT

Example: **EM57K33-20.000-2.5/-30+75**

Series Description
TCXO = EM57K
VCTCXO = VEM57K
Supply Voltage
28=2.8V, 30=3.0V, 33=3.3VDC
Frequency (MHz)
Stability over OTR (±ppm)
Operating Temperature Range (OTR)
Lower and upper limits (°C)

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