

- Highly stable CMOS TCXO with ultra-low supply current
- Industry-standard SMD package
- Consumes less than 4mA at 20.0MHz with 3.3V supply
- Low phase noise
- RoHS compliant



DESCRIPTION

EM64K TCXOs and VCTCXOs are packaged in a 11.4 x 9.6 x 4.7mm 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:	EM64K
	VCTCXO:	VEM64K
Frequency Range:	12.8MHz to 26.0MHz	
Output Waveform:	HCMOS	
Initial Calibration Tolerance:	$\pm 2.0\text{ppm}$ at $+25^\circ\pm 2^\circ\text{C}$	
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 26.0MHz (Partial list.)	
Operating Temperature Range:	See table	
Frequency Stability	See table	
vs. Temperature	$\pm 1.0\text{ ppm max. first year}$	
vs. Ageing:	$\pm 1.0\text{ ppm max. } \pm 10\% \text{ change}$	
vs. Voltage Change:	$\pm 0.3\text{ ppm max. } \pm 10\% \text{ change}$	
vs. Load Change:	$\pm 1.0\text{ppm max. for one reflow}$	
vs. Reflow (SMD type):	(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% $\pm$ 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

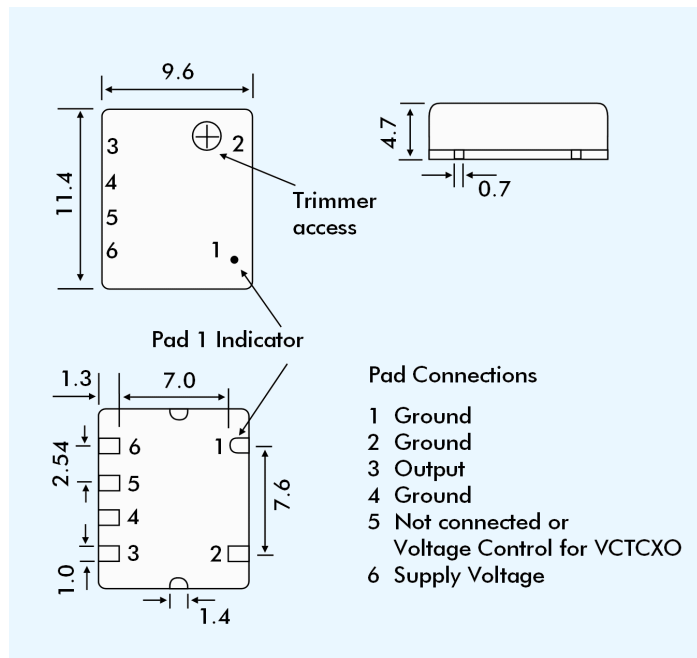
Frequency	Input Voltage		
	+2.8V	+3.0V	+3.3V
12.800MHz	2.3mA typ.	2.4mA typ.	2.6mA typ.
13.000MHz	2.5mA typ.	2.6mA typ.	2.8mA typ.
14.400MHz	2.6mA typ.	2.8mA typ.	3.1mA typ.
16.384MHz	2.8mA typ.	3.0mA typ.	3.2mA typ.
19.200MHz	3.2mA typ.	3.3mA typ.	3.6mA typ.
19.440MHz	3.2mA typ.	3.4mA typ.	3.7mA typ.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



VEM64K VOLTAGE CONTROL SPECIFICATION

Control Voltage:	± 5 to $\pm 12\text{ppm}$ for $+1.5 \pm 1.5$ Volts
Slope Polarity:	Positive (increase of control voltage increases output frequency.)
Linearity:	6% typical, 10% maximum

SSB PHASE NOISE at 25°C

Offset	100Hz	1kHz	10kHz	100kHz	1MHz
Part = VEM64K30 at 13.000MHz (dBc/Hz)	-80	-110	-130	-135	-142

PART NUMBER FORMAT

Example:

EM64K33-20.000-2.5/-30+75

Series Description

TCXO = EM64K

VCTCXO = VEM64K

Supply Voltage

28=2.8V, 30=3.0V, 33=3.3VDC

Frequency (MHz)

Stability over OTR ($\pm$ ppm)

Operating Temperature Range (OTR)

Lower and upper limits (°C)