

## Clipped Sinewave, 4 Pad FR4 substrate SMD

- Industry-standard SMD package 11.4 x 9.6 x 4.7mm
- Close tolerance stabilities from  $\pm 0.5\text{ppm}$  over  $0^\circ$  to  $+50^\circ\text{C}$
- $\pm 1\text{ppm}$  over  $-40$  to  $+85^\circ\text{C}$
- Low power consumption
- RoHS compliant



### DESCRIPTION

EM44S series TCXOs are packaged in the industry-standard 11.4 x 9.6 x 4.7mm SMD package. With clipped sinewave output, close tolerances are available from  $\pm 0.5\text{ppm}$  over  $0^\circ$  to  $50^\circ\text{C}$  or  $\pm 1\text{ppm}$  over  $-40^\circ$  to  $+85^\circ\text{C}$ . The part has low power consumption.

### SPECIFICATION

Product Series Code	TCXO: EM44GS VCTCXO: VEM44GS
Frequency Range:	10.0MHz to 27.0MHz
Output Waveform:	Clipped Sinewave
Initial Calibration Tolerance**:	$< \pm 1\text{ppm}$ at $25^\circ\text{C}$
Standard Frequencies:	10.0, 12.80, 13.0, 14.40, 15.36, 16.384, 19.2, 19.440, and 19.68MHz (Partial list)
Operating Temperature Range:	See table
Frequency Stability	
vs. Ageing:	$\pm 1.0\text{ppm}$ max. first year
vs. Voltage Change:	$\pm 0.3\text{ppm}$ max. $\pm 5\%$ change
vs. Load Change:	$\pm 0.3\text{ppm}$ max. $\pm 10\%$ change
vs. Reflow:	$\pm 1\text{ppm}$ max. for one reflow (Measured after 24 hours)
Supply Voltage:	+2.8, +3.0 or +5.0Volts (Specify when ordering)
Output Voltage Level:	0.8V p-p minimum
Start-up Time:	2ms typical, 5ms max.
Current Consumption:	See table below
Output Load:	10kOhm//10pF $\pm 10\%$
Harmonic Distortion:	-10dB typical, -7dB max.
SSB Phase Noise:	See table
Output Format:	DC block, AC coupled
Storage Temperature:	$-50^\circ$ to $+100^\circ\text{C}$

### FREQUENCY STABILITY

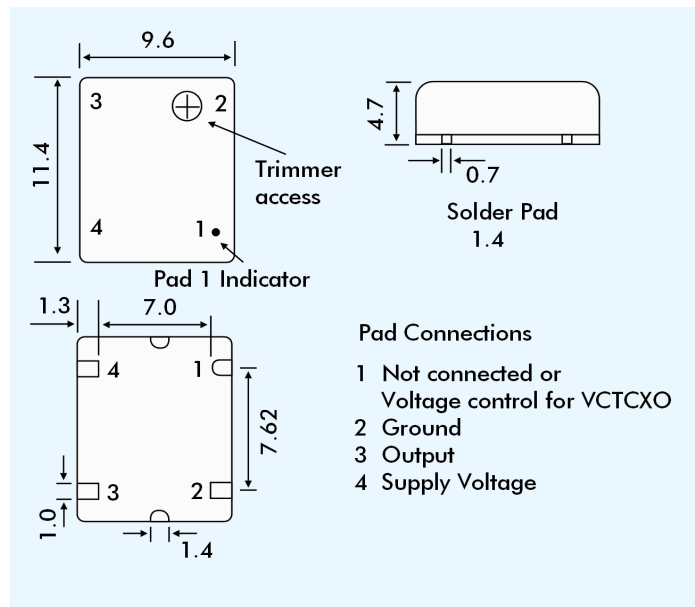
Frequency Stability (ppm)		$\pm 0.5$	$\pm 1.0$	$\pm 1.5$	$\pm 2.0$	$\pm 2.5$
Temperature Range ( $^\circ\text{C}$ )	0 ~ +50	ASK	✓	✓	✓	✓
	-10 ~ +60	x	✓	✓	✓	✓
	-20 ~ +70	x	x	✓	✓	✓
	-30 ~ +75	x	x	x	✓	✓
	-40 ~ +85	x	x	x	x	✓

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

### CURRENT CONSUMPTION

Frequency Range	+3.0 V	+5.0 V
10.0MHz to 13MHz	1.3mA	2.0mA
13.1MHz to 20MHz	1.5mA	2.2mA
20.1MHz to 27MHz	2.0mA	2.5mA

### EM44GS - OUTLINES AND DIMENSIONS



### VEM44GS VOLTAGE CONTROL SPECIFICATION

Control Voltage:	Standard = $+1.5 \pm 1.0\text{Volts}$ for all input voltages. (Contact technical sales if $+2.5 \pm 2.0\text{Volts}$ is required.)
Frequency Deviation:	$\pm 6.0\text{ppm}$ min.
Slope Polarity:	Positive (increase of control voltage increases output frequency.)
Input Impedance:	1.0M $\Omega$ min.
Modulation Bandwidth:	3.0kHz min. measured at -3dB
Linearity:	10% max.

### PHASE NOISE

SSB Phase Noise at $25^\circ\text{C}$	Offset (Hz)	10	100	1k	10k	100k
	EM44GS 13MHz (dBc/Hz)		-80	-115	-135	-148

### PART NUMBERING PROCEDURE

Example: **EM44GS3-19.44-2.5/-30+75**

Series Description: EM44GS  
 TCXO = EM44GS  
 VCTCXO = VEM44GS

Supply Voltage: 28 = 2.8 VDC  
 3 = 3.0 VDC  
 5 = 5.0 VDC

Frequency (MHz): 19.44  
 Stability over OTR ( $\pm\text{ppm}$ ): 2.5  
 Operating Temperature Range (OTR) ( $^\circ\text{C}$ ): -30 to +75  
 Lower and upper limits.