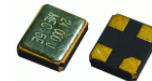
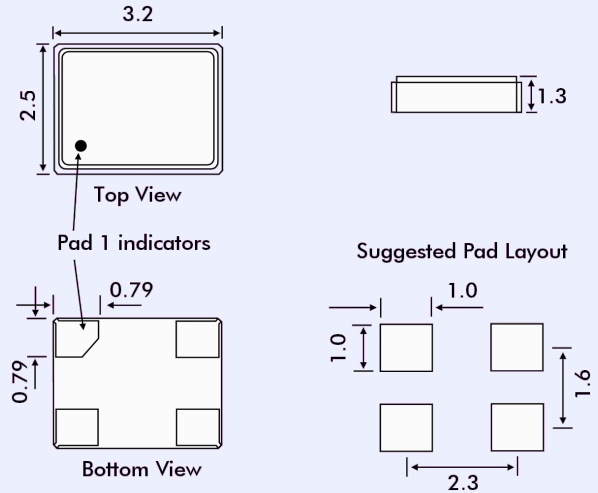


Clipped Sinewave 3.2 x 2.5 x 1.3mm SMD

- Ultra-miniature SMD package 3.2 x 2.5 x 1.3mm
- Stability from ± 1 ppm over -30° to $+75^\circ\text{C}$
- Supply Voltage from 2.3 Volts to 5.5 Volts
- Produced as TCXO or VCTCXO with EFC
- Readily customized



M32S - OUTLINES AND DIMENSIONS



Pad Connections

- 1 Ground or Voltage control for VCTCXO
- 2 Ground
- 3 Output
- 4 Supply Voltage

DESCRIPTION

M32 series TCXOs are ceramic SMD TCXOs packaged in an industry-standard, ultra-miniature 3.2 x 2.5mm package. This TCXO can be run from a supply voltage of 2.3 to 5.5 Volts. Close tolerances from ± 1 ppm over -30° to $+75^\circ\text{C}$ are available. The part can be produced as either a standard TCXO or a voltage-controlled TCXO (VCTCXO).

SPECIFICATION

Product Series Code	TCXO:	M32S
	VCTCXO:	VM32S
Frequency Range:	16.0MHz to 40.0MHz*	
Output Waveform:	Clipped Sinewave	
Initial Calibration Tolerance**:	$< \pm 1$ ppm at 25°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:	± 1.0 ppm max. first year	
vs. Voltage Change:	± 0.3 ppm max. $\pm 5\%$ change	
vs. Load Change:	± 0.3 ppm max. $\pm 10\%$ change	
vs. Reflow:	± 1 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:	10k Ω /10pF $\pm 10\%$	
Harmonic Distortion:	-10dB typical, -7dB max.	
SSB Phase Noise:	See table	
Output Format:	DC block, AC coupled	
Storage Temperature:	-50° to $+100^\circ\text{C}$	

* Note: The frequency range between 26MHz to 40MHz is only available for 2.8 Volt and 3.0 Volt supply voltages.

** Stability over temperature is measured from this initial frequency.

FREQUENCY STABILITY

Frequency Stability (ppm)		± 0.5	± 1.0	± 1.5	± 2.0	± 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		Max. Current
9.6 to 15MHz		1.5mA
15.01 to 26MHz		2.0mA
26.01 to 40MHz		2.5mA

VM32S VOLTAGE CONTROL SPECIFICATION

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

PHASE NOISE

SSB Phase Noise at 25°C	Offset (Hz)	10	100	1k	10k	100k
	M32S 13MHz (dBc/Hz)		-80	-115	-135	-148

PART NUMBERING PROCEDURE

Example: **M32S3-40.00-3.0/-30+75**

Series Description
 TCXO = M32S
 VCTCXO = VM32S

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

Frequency (MHz)
 Stability over OTR (\pm ppm)
 Operating Temperature Range (OTR) ($^\circ\text{C}$)
 Lower and upper limits.