SMD Clipped Sine Wave TCXOs 6.4MHz to 52MHz

- **Wide range of miniature SMD packages**
- **Frequency range: 6.4MHz to 52MHz**
- **Close tolerance stability available from ±0.5ppm**
- **Supply voltage 1.8, 2.5, 2.8, 3.0, 3.3,**
- **Very low power consumption**

DESCRIPTION

(V)EM_S series TCXOs are packaged miniature SMD (VC)TCXOs. With clipped sinewave output, tolerances are available from ±1.0ppm over -40° to +85°C.

SPECIFICATION

Package Name	(V)M21S	(V)M22S	(V)M32S	(V)M53S	(V)M57S	(V)M572S
Pads	6	4	4	4	4	4
Package Size	2.0 x 1.6 x 0.7mm	2.5 x 2.0 x 0.8mm	3.2 x 2.5 x 1.2mm	5.0 x 3.2 x 1.3mm	7.0 x 5.0 x 2.0mm	7.0 x 5.0 x 2.3mm
Supply Voltage	1.8V, 2.5V, 2.8V, 3.0V, 3.3V	1.8V, 2.5V, 2.8V, 3.0V, 3.3V	1.8V, 2.5V, 3.0V, 3.3V	1.8V, 2.5V, 2.8V, 3.0V, 3.3V	2.5V, 3.0V, 3.3V	1.8V, 2.5V, 2.8V, 3.0V, 3.3V
Frequency Range	10.0 ~ 52.0MHz	10.0 ~ 52.0MHz	8.192 ~ 52.0MHz	6.4 ~ 52.0MHz	6.4 ~ 52.0MHz	6.4 ~ 52.0MHz

Initial Calibration Tolerance		<±1ppm at +25±2°C					
Frequency Stability (ppm)		±0.5	±1.0	±1.5	±2.0	±2.5	±3.0
Frequency Stability vs Temperature	0°C to 50°C	√	√	√	√	√	√
	-10°C to 60°C	ASK	√	√	√	√	√
	-20°C to 70°C	ASK	√	√	√	√	√
	-30°C to 75°C	ASK	√	√	√	√	√
	-30°C to 85°C	ASK	√	√	√	√	√
	-40°C to 85°C	ASK	ASK	√	√	√	√
Frequency Stability	vs Aging (Ta = +25°C)	±1.0ppm per year max.					
	vs Voltage Change	±0.2ppm max. for a ±5% input voltage change					
	vs Load Change	±0.2ppm max. for a ±10% load condition change					
	vs Reflow (SMD type)	±1.0ppm max., 1 reflow measured after 24 hours					
Output Voltage Level (peak-to-peak)		0.8V p-p max.					
Current Consumption (max.)		10.0~15.MHz: 1.5mA; 15.1~26MHz: 2.0mA; 26.1~52MHz: 3.5mA					

FREQUENCY CONTROL

Electrical Frequency Tuning (EFC) by external Control Voltage	Control Voltage Centre	1.8V	2.5V	3.0/3.3V
		0.9±0.6V	1.4±1.0V	1.5±1.0V
	Frequency Deviation Range	±5.0ppm (min.)		
	Slope Polarity (Transfer Function)	Positive slope. Positive voltage for positive frequency shift.		
		Input Impedance: 1.0MΩ (min.)	Modulation Bandwidth: 3kHz (min.)	Linearity: ±10% (max.)

Start-up Time	2.0msec. (typ.), 5.0msec. (max.) to reach 90% amplitude at +25±2°C				
Output Load	10kΩ // 10pF±10%				
Output Format	DC block, AC coupled.				
Phase Noise [dBc/Hz (typ.)]	Offset	10Hz	100Hz	1kHz	10kHz
	13.0MHz	-80	-115	-135	-148
Storage Temperature	-40°C to +85°C or -55°C to +125°C (package dependant)				

PAD CONNECTIONS (Package Drawings Overleaf)

For (V)M21S Only:

Pad 1: Control voltage for VCTCXO; Ground for TCXO
Pad 2: Ground Pad 3: Output Pad 4: Supply Voltage
Pad 5: No Connection Pad 6: No Connection

For all 4-pad packages:
Pad 1: Control voltage for VCTCXO; Ground for TCXO
Pad 2: Ground Pad 3: Output Pad 4: Supply Voltage

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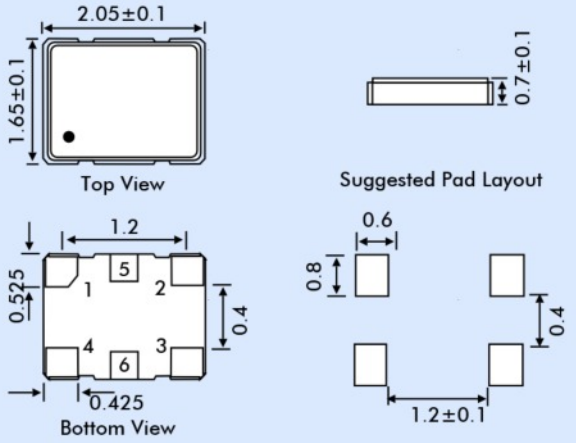
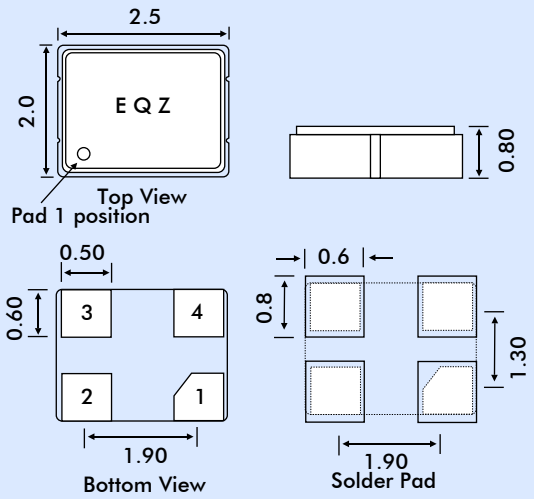
PACKAGE DIMENSTIONS (in mm)

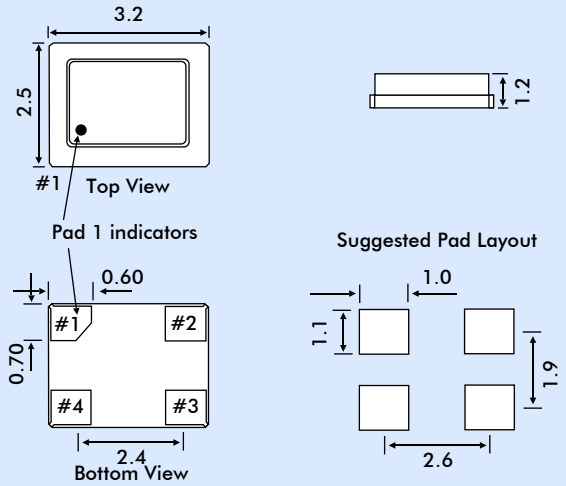
(V)M21S



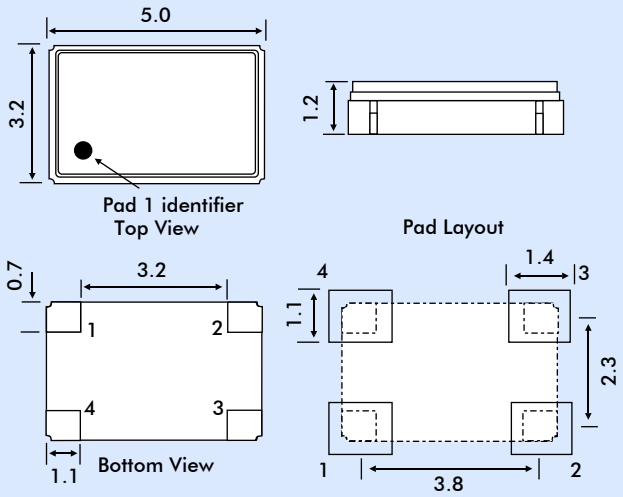
(V)M22S



(V)M32S



(V)M53S



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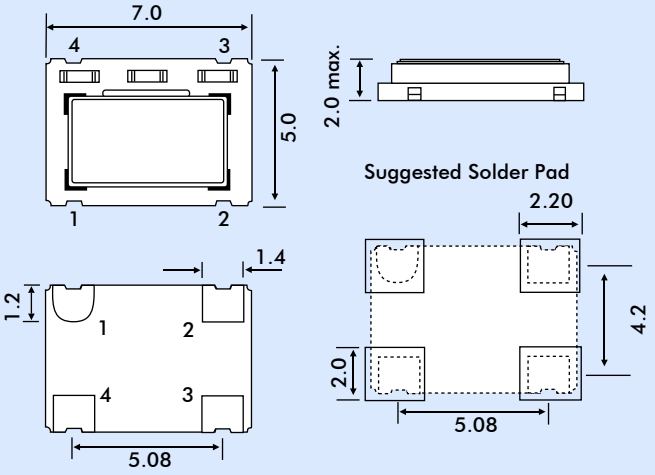
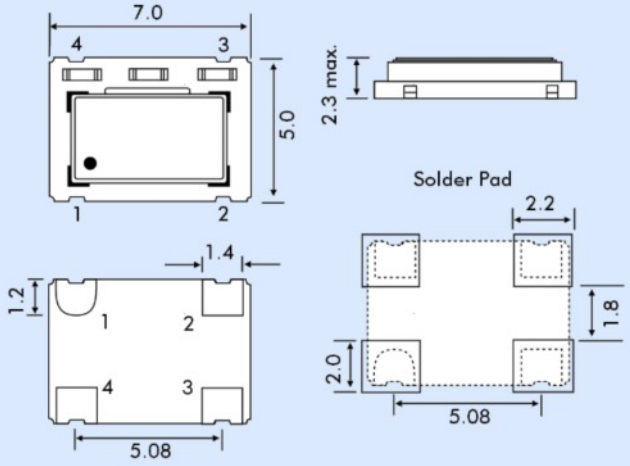


(V)572S



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PART NUMBERS GENERATION:

Example: **VEM53S 33-38.120-1.5/-30+75**

Package Size and Type
TCXO = EM53S
VCTCXO = VEM53S

Supply Voltage
3.3V = 33
3.0V = 3
2.8V = 28
2.5V = 25
1.8V = 18

Frequency (MHz)

Stability over OTR (±ppm)

Operating Temperature Range (OTR) (°C)
(*Lower and upper limits.*)

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