EUROQUARTZ

EM22S TCXO

2.5 x 2.0 x 0.8mm Clipped Sinewave Output 13MHz to 52MHz

- **Ultra-miniature SMD package 2.5 x 2.0 x 0.8mm**
- **Stability from ±0.5ppm over -20° to +70°C**
- **Supply Voltage 1.8V, 2.5V or 3.0Volts**
- **Miniature, lightweight and compact**
- **Ideal for portable devices such as GPS and handsets**

SPECIFICATION

Product Series	M22S (Refer to VEM22S if voltage control function is required.)		
Output Wave Form:	Clipped Sine Wave		
Supply Voltage	1.8V±5% (1.71V ~ 1.89V)	2.5V±5% (2.37V ~ 2.62V)	3.0V±5% (2.85V ~ 3.15V)
Frequency Range:	12.0MHz to 52.0MHz		
Initial Calibration Tolerance:	±2ppm maximum, +25°C, 1 hour after reflow		
Frequency Stability vs Temperature: vs Ageing: vs Voltage Change: vs Load Change: vs Reflow:	From ±0.5ppm to ±2.5ppm over operating temperature range. Referenced to frequency reading at 25°C. See table below for availability ±1.0ppm maximum, first year at 25°C ±0.2ppm maximum for a ±5% voltage change ±0.2ppm maximum for a ±10% load change ±1.0ppm maximum for 1 reflow and measured after 24 hours		
Output Voltage Level (Peak to peak):	0.8V p-p min., 2.0V p-p max. Load 10kΩ//10pF ±10%		
Output Format:	DC coupled. See below for output waveform. Requires an external AC-Coupling capacitor at pin 3, 1000pF recommended.		
Current Consumption:	fo <26MHz: 2mA max. fo >26MHz: 2.5mA max.		
Startup Time:	2ms max. (to reach 90% amplitude and at 25°C±2°C)		
Packaging:	8.0mm tape; 4.0mm pitch; 180mm reel; 1000 pieces (code P1) or 3000 pieces (code P3) per reel. Cut tape for <1k pieces.		

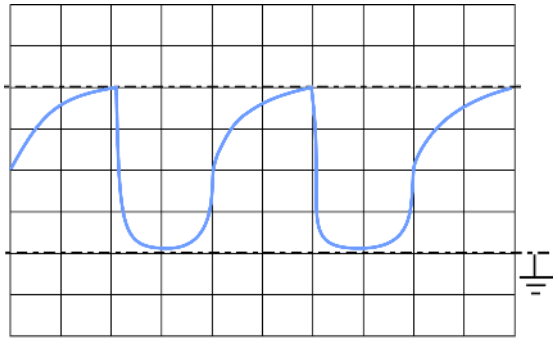
AVAILABLE FREQUENCY STABILITY vs OPERATING TEMPERATURE RANGE

Frequency Stability (ppm)		±0.5	±1.0	±1.5	±2.0	±2.5
Temperature Range (°C)	0 ~ +50	✓	✓	✓	✓	✓
	-10 ~ +60	✓	✓	✓	✓	✓
	-20 ~ +70	✓	✓	✓	✓	✓
	-30 ~ +75	ASK	✓	✓	✓	STD
	-40 ~ +85	ASK	ASK	✓	✓	✓

✓ = available, STD = standard, ASK = call Technical Sales

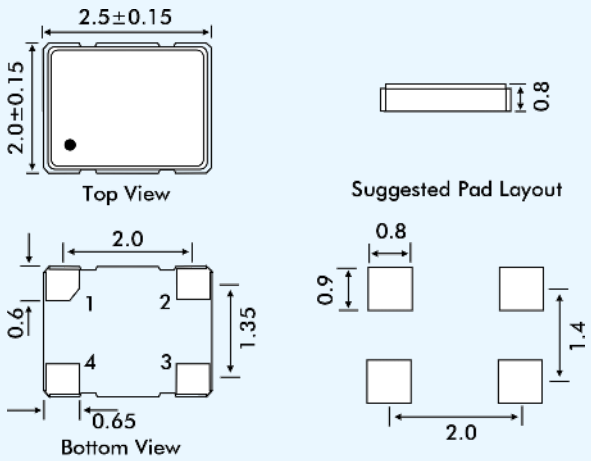
OUTPUT WAVEFORM

Waveform at Pin 3 - Clipped Sine Wave



Before AC-coupling capacitor

EM22S - OUTLINES AND DIMENSIONS



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ENVIRONMENTAL PERFORMANCE SPECIFICATION

Environmental Approvals:	RoHS Compliant, Pb (lead) free, Free of Cadmium, Hexavalent Chromium, Lead, Mercury, PBBs and PBDEs
Moisture Sensitivity Test:	MSL = 1 per IPC/JEDEC J-STD-020D.1
Humidity:	85% RH, 85°C, 48 hours
Hermeticity, Fine Leak:	MIL-STD-883, method 1014, condition A
Hermeticity, Gross Leak:	MIL-STD-883, method 1014, condition C
Solderability:	MIL-STD-202F, method 208E
Vibration:	MIL-STD-883, method 2007, condition A, 10~2000Hz, 1.52mm 20g, each axis for 4 hours
Mechanical Shock:	MIL-STD-883, method 2002, condition B, 1500g, 1/2 sine, 0.5ms, each axis 3 times
Resistance to Solvent:	MIL-STD-202, method 215
Resistance to Soldering Heat:	MIL-STD-202, method 210
Temperature Cycling:	MIL-STD-883, method 1010
Thermal Shock:	MIL-STD-883F, method 1011.9, Condition B -55~+125°C, 10 min soak time, 200 cycles
H.A.S.T. (Highly Accelerated Stress Test):	JESD22-A110
Storage Temperature Range:	-55° ~ +125°C
ESD Protection:	1.5kV min., human body model.
Solder Pad Surface Finish:	Gold (Au) (0.3~1.0µm) over nickel (Ni) (1.27~8.89µm)
Second Level Interconnect Category:	e4
Unit Weight:	0.12gm

PART NUMBERING PROCEDURE

Example: **EM22S 25 - 19.200 - 2.5/-30+85**

Series Description
TCXO = EM22S

Supply Voltage
18 = 1.8 VDC
25 = 2.5 VDC
30 = 3.0 VDC

Frequency (MHz)

Stability over OTR (±ppm)
(*See table for available stability*)

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