

HCMOS, 14 pin DIL, MHz Range

- 14 pin DIL industry-standard package
- Wide frequency range: 1.25MHz to 156.0MHz
- Supply voltage 2.8, 3.0, 3.3 or 5.0 Volts
- Frequency stability from ± 1 ppm over -30 to $+75^{\circ}\text{C}$

DESCRIPTION

EM14T series TCXOs are packaged in the industry-standard 14 pin DIL package. With squarewave (CMOS) output, tolerances are available from ± 1.0 ppm over -30° to $+75^{\circ}\text{C}$. The part has a $0.01\mu\text{F}$ decoupling capacitor built in.

SPECIFICATION

Product Series Code	TCXO: EM14T VCTCXO: VEM14T
Frequency Range:	1.25MHz to 156.0MHz
Output Waveform:	Squarewave, HCMOS
Initial Calibration Tolerance:	$< \pm 1.0$ ppm at $+25^{\circ}\pm 2^{\circ}\text{C}$
Standard Frequencies:	10.0, 12.8, 13.0, 14.4, 15.36, 16.384, 19.2, 19.440, 19.68, 25.0, 20.0, 27.0, 38.880, 40.0, 77.760, 125.0, 155.520 (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 (SMD type):	± 1.0 ppm max. for one reflow (Measured after 24 hours)
Mechanical Frequency Tuning:	± 3 ppm minimum
Supply Voltage:	+2.8, +3.0, +3.3 or +5.0V (See table)
Output Logic Levels:	Logic High: 90% Vdd min. Logic Low: 10% Vdd max.
Rise and Fall Times:	10ns max.
Duty Cycle:	50% $\pm 10\%$ standard, 50% $\pm 5\%$ option
Start-up Time:	5ms typical, 10ms max.
Current Consumption:	See table below
Output Load:	15pF
Storage Temperature:	$-55 \sim +125^{\circ}\text{C}$

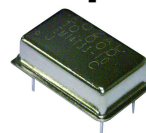
FREQUENCY STABILITY

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	✓

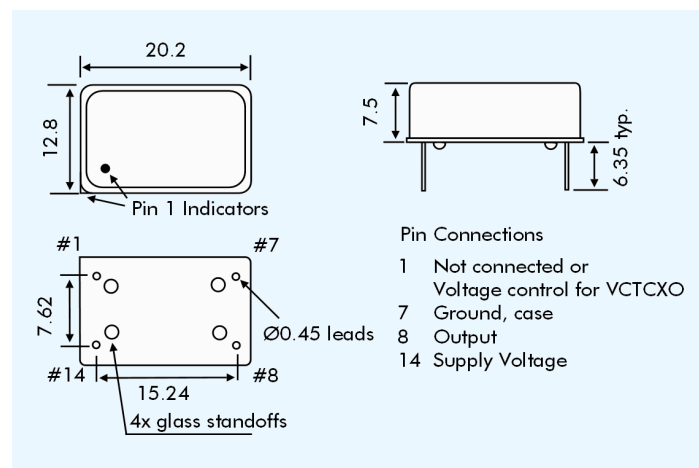
✓ = available, x = not available, ASK = call Technical Sales

VEM14T 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. (Vcon = $+4.5\text{V} \pm 1.0\text{V}$)
Slope Polarity:	Positive (increase of control voltage increases output frequency.)
Input Impedance:	50k Ω minimum
Modulation Bandwidth:	20kHz minimum
Linearity:	$\pm 10\%$ maximum



EM14T - OUTLINES AND DIMENSIONS



INPUT VOLTAGE & CURRENT CONSUMPTION

Input Voltage/ Frequency	+2.8V	+3.0	+3.3V	+5.0 V
8.192MHz	2mA	2mA	2mA	5mA
10.0MHz	3mA	4mA	4mA	7mA
77.760MHz	14mA	17mA	17mA	32mA
155.520MHz	26mA	35mA	35mA	50mA

SSB PHASE NOISE at 25°C

Offset	10Hz	100Hz	1kHz	10kHz	100kHz
Part = EM14T33					
at 10.0MHz (dBc/Hz)	-115	-135	-148	-152	-155
at 155.250MHz (dBc/Hz)	-72	-110	-125	-132	-125

PART NUMBERING SCHEDULE

Example: **EM14T33-38.880-2.5/-30+75**

Series Description
 TCXO = EM14T
 VCTCXO = VEM14T

Supply Voltage
 28 = 2.8VDC
 3 = 3.0VDC
 33 = 3.3 VDC
 5 = 5.0 VDC

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