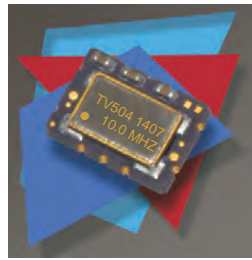


Telecom Performance 5x7mm TCXO / VCTCXO T / TV Series



Description:

Connor-Winfield's Txxx and TVxxx series are 5x7mm TCXO and VCTCXO products with exceptional frequency stability and low phase noise. Through the use of analog temperature compensation, these products are capable of holding Stratum 3 level temperature stabilities of ± 0.28 ppm over the commercial and industrial temperature ranges. Available in 4-pad or 10-pad surface mount footprints.



These products are designed for such applications as IEEE 1588 PTP and Synchronous Ethernet.

All models will meet ± 4.6 ppm accuracies for twenty years

Features:

- Frequency Stabilities Available:
 - ± 0.28 ppm (6.4 to 50 MHz) ✓ STRATUM 3
 - ± 0.50 ppm (6.4 to 50 MHz)
 - ± 1.00 ppm or ± 2.00 ppm (6.4 to 54 MHz)
- Temperature Ranges Available:
 - 0 to 85°C, 0 to 70°C, -40 to 85°C or -20 to 70°C
- Packages Available:
 - T - Series: 5 x 7mm - 10 Pad
 - TV - Series: 5 x 7mm - 4 Pad
- 3.3 Vdc Operation
- Output Logic: LVCMOS or Clipped Sinewave
- Fixed Frequency - TCXO
- Voltage Controlled - VCTCXO
- Low Jitter <0.50 ps RMS
- Low Phase Noise
- Tri-State Enable/Disable: (T Model Series Only)
- Tape and Reel Packaging
- RoHS Compliant / Lead Free ✓ RoHS

Applications:

- IEEE 1588 Applications
- Synchronous Ethernet slave clocks, ITU-T G.8262 EEC options 1 & 2
- Compliant to Stratum 3, GR-1244-CORE & GR-253-CORE
- Wireless Communications
- Small Cells
- Test and Measurement
- GPS

Standard Frequencies Available *

* 6.4, 9.72, 10, 10.24, 12.5, 12.8, 13.5, 19.2, 19.44, 20, 20.48, 25, 27, 38.88, 40 MHz
Available frequencies from the factory for small quantity orders or quick delivery.
Additional frequencies are available.

** Not all Models available at Digi-Key

Ordering Information

TV	5	0	4	- 010.0M
Type / Package TCXO / VCTCXO Series T = 5.0x7.0 mm 10 Pads TV = 5.0x7.0 mm 4 Pads	Temperature Range 3 = 0 to 85°C 5 = 0 to 70°C 6 = -40 to 85°C 7 = -20 to 70°C	Frequency Stability 0 = ± 0.28 ppm 1 = ± 0.50 ppm 2 = ± 1.00 ppm 3 = ± 2.00 ppm	Features 2 = TCXO, LVCMOS, 3.3 Vdc 3 = TCXO, Clipped Sinewave, 3.3 Vdc 4 = VCTCXO, LVCMOS, 3.3 Vdc 5 = VCTCXO, Clipped Sinewave, 3.3 Vdc	Output Frequency Frequency Format -xxx.xM Min -xxx.xxxxxM Max *Amount of numbers after the decimal point. M = MHz

Example: Part Number

TV504-010.0M = 5x7mm 4 pad package, ± 0.28 ppm, 0 to 70°C, 3.3 Vdc, LVCMOS Output, VCTCXO
T715-012.8M = 5x7mm 10 pad package, ± 0.50 ppm, -20 to 70°C, 3.3 Vdc, Clipped Sinewave Output, VCTCXO
T522-050.0M = 5x7mm 10 pad package, ± 1.0 ppm, 0 to 70°C, 3.3 Vdc, LVCMOS Output, TCXO
TV602-010.0M = 5x7mm 4 pad package, ± 0.28 ppm, -40 to 85°C, 3.3 Vdc, LVCMOS Output, TCXO

SHENZHEN YIJIN ELECTRONICS CO: LTD TEL: 0755-27876565

18924600166 QQ: 857950243 <http://www.vc-tcxo.com>



Absolute Maximum Ratings

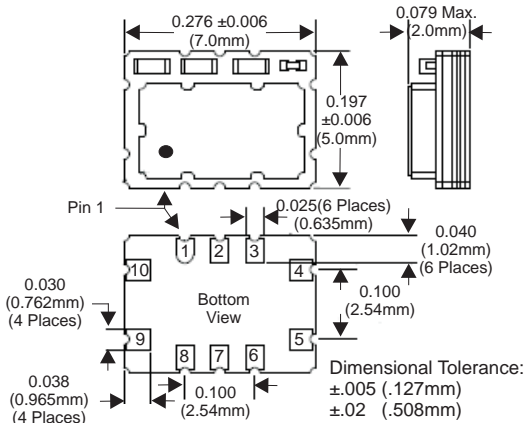
Parameter	Minimum	Nominal	Maximum	Units	Notes
Storage Temperature	-55	-	95	°C	
Supply Voltage (Vcc)	-0.5	-	6.0	Vdc	
Input Voltage	-0.5	-	Vcc + 0.5	Vdc	

Operating Specifications

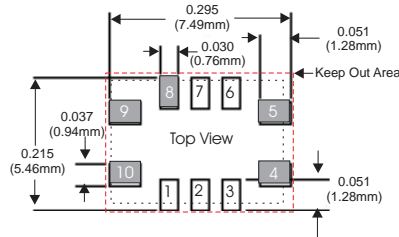
Parameter	Minimum	Nominal	Maximum	Units	Notes
Output Frequency (Fo)					
Models Tx0x, TVx0x	6.4	-	50	MHz	
Models Tx1x, TVx1x	6.4	-	50	MHz	
Models Tx2x, TVx2x	6.4	-	54	MHz	
Models Tx3x, TVx3x	6.4	-	54	MHz	
Operating Temperature Range	(See Ordering Information for full part number)				
Models T3xx, TV3xx	0	-	85	°C	
Models T5xx, TV5xx	0	-	70	°C	
Models T6xx, TV6xx	-40	-	85	°C	
Models T7xx, TV7xx	-20	-	70	°C	
Frequency Calibration @ 25 °C	-1.0	-	1.0	ppm	1
Frequency Stability (See Ordering Information for full part number) Per STRATUM 3 GR-1244-CORE					
Frequency Stability ±0.28 ppm is only available in the frequency range of 6.4 to 50 MHz.					
Models Tx0x, TVx0x	-0.28	-	0.28	ppm	2
Holdover Stability	-0.32	-	0.32	ppm	3
Constant Temperature Stability	-40	-	40	ppb	Over 24 Hrs.
Frequency Stability (See Ordering Information for full part number)					
Models Tx1x, TVx1x	-0.50	-	0.50	ppm	2
Models Tx2x, TVx2x	-1.00	-	1.00	ppm	2
Models Tx3x, TVx3x	-2.00	-	2.00	ppm	2
Frequency vs. Load Stability	-0.05	-	0.05	ppm	±5%
Frequency vs. Voltage Stability	-0.05	-	0.05	ppm	±5%
Static Temperature Hysteresis	-	-	0.40	ppm	4
Freq. shift after reflow soldering	-1.0	-	1.0	ppm	5
Long Term Stability	-1.0	-	1.0	ppm	6
Aging					
per Life (20 Years)	-3.0	-	3.0	ppm	
per Day	-40	-	40	ppb	
Total Frequency Tolerance	-4.6	-	4.6	ppm	7
Supply Voltage (Vcc)	3.135	3.30	3.465	Vdc	
Supply Current (Icc) LVCMOS	-	2.1	6.0	mA	
Clipped Sinewave	-	1.3	2.9	mA	
Jitter:					
Period Jitter	-	3.0	5.0	ps RMS	
Integrated Phase Jitter (12K to Fo/2)	-	0.3	1.0	ps RMS	8
Allan Deviation (1s)	-	1.0E-10	-		
Typical SSB Phase Noise					
For Fo	10.0 MHz	25.0 MHz	50.0 MHz		
@ 10 Hz offset	-98	-90	-73	dBc/Hz	
@ 100 Hz offset	-125	-120	-103	dBc/Hz	
@ 1 KHz offset	-143	-140	-134	dBc/Hz	
@ 10 KHz offset	-151	-151	-151	dBc/Hz	
@ 100 KHz offset	-152	-152	-152	dBc/Hz	
@ 1 MHz offset	-155	-154	-154	dBc/Hz	
Start-Up Time	-	-	10	ms	



T Series Package Outline



T Series Suggested Pad Layout

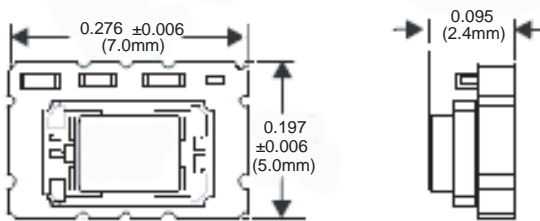


* Do not route any traces in the keep out area. It is recommended the next layer under the keep out area is to be ground plane.

T Series Pad Connections

- 1: Do Not Connect
- 2: Do Not Connect
- 3: Do Not Connect
- 4: Ground
- 5: Output
- 6: Do Not Connect
- 7: Do Not Connect
- 8: Enable / Disable (OE)
- 9: Supply Voltage (Vcc)
- 10: VCTCXO: Control Voltage (Vc)
TCXO: N/C

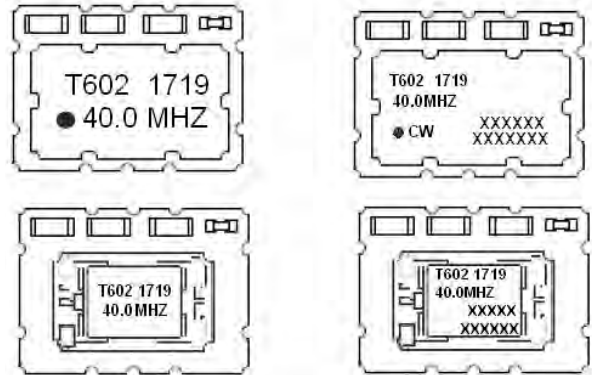
T Series Alternate Package Outline



Alternate package applies to some frequencies where a smaller crystal size is used. The differences are the top view crystal size, and the overall height. Bottom view, suggested pad layout, and pad connections all remain the same as above.

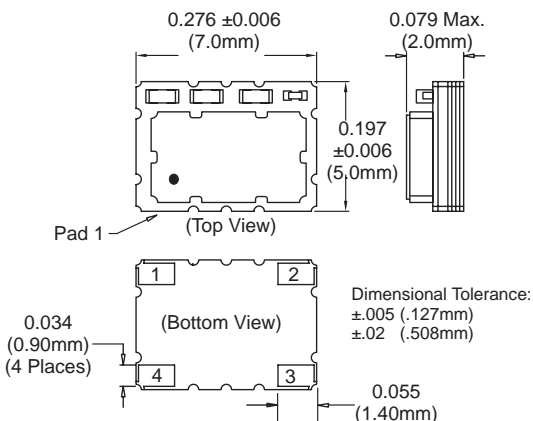
Marking Information

The following are examples of possible marking configurations

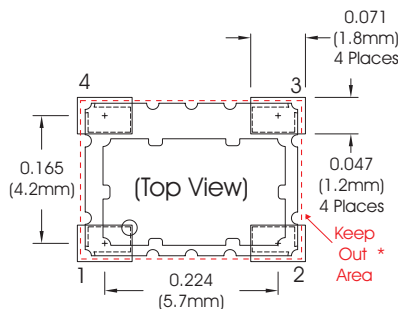


Note: The XXXXX represents crystal lot code information.

TV Series Package Outline



TV Series Suggested Pad Layout



* Do not route any traces in the keep out area. It is recommended the next layer under the keep out area is to be ground plane.

TV Series Pad Connections

- 1: VCTCXO: Voltage Control (Vc)
TCXO: N/C
- 2: Ground
- 3: Output
- 4: Supply (Vcc)