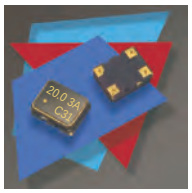
Ultra-Miniature Precision TCXO / VCTCXO Model Cxx Series

CONNOR WINFIELD

Description



The Connor-Winfield 2.5x3.2mm Temperature Compensated Crystal Oscillators and Voltage Controlled Temperature Compensated Crystal Oscillators are designed for use in GPS applications requiring tight frequency stability over the -30 to 70°C, -30 to 85°C or -40 to 85°C temperature range. Through the use of Analog Temperature Compensation, this device is capable of holding sub 1-ppm stabilities over the wide temperature range.

Features

- 1.8, 2.5, 2.8 or 3.3 Vdc Operation
- Clipped Sinewave Output Logic
- Ultra-Miniature 2.5x3.2mm SMT Package
- Frequency Stabilities Available:
- ±0.50ppm, ±1.00ppm, ±1.50ppm or ±2.00ppm
- Temperature Ranges Available:
  -20 to 70°C, -30 to 85°C or -40 to 85°C
- Low Power <2mA
- Low Jitter <1ps RMS
- Tape and Reel Packaging
- RoHS Compliant / Lead Free
- Recommended for new designs

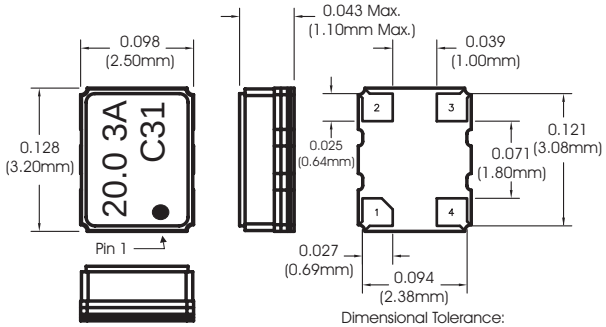
Pad Connections

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

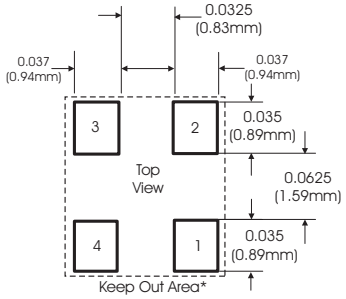
Applications

GPS Receivers

Package Layout



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.

Ordering Information

C	3	1	-020.0M
Oscillator Type Precision TCXO VCTCXO 2.5x3.2mm Package	**Features** 1 = TCXO, 2.5 Vdc, -30 to 85°C 2 = VCTCXO, 2.5 Vdc, -30 to 85°C 3 = TCXO, 3.3Vdc, -30 to 85°C 4 = VCTCXO, 3.3 Vdc, -30 to 85°C 9 = TCXO, 2.5 Vdc, -40 to 85°C 0 = VCTCXO, 2.5 Vdc, -40 to 85°C 7 = TCXO, 3.3Vdc, -40 to 85°C 8 = VCTCXO, 3.3 Vdc, -40 to 85°C A = TCXO, 2.8 Vdc, -30 to 85°C B = VCTCXO, 2.8 Vdc, -30 to 85°C C = TCXO, 2.8 Vdc, -40 to 85°C D = VCTCXO, 2.8 Vdc, -40 to 85°C E = TCXO, 1.8 Vdc, -30 to 85°C F = VCTCXO, 3.3Vdc, -30 to 85°C * G = VCTCXO, 2.8Vdc, -20 to 70°C *frequency stability relative to 25°C	**Frequency Stability** 1 = ±0.50 ppm 2 = ±1.00 ppm 3 = ±1.50 ppm 4 = ±2.00 ppm	**Output Frequency** Frequency Format -xxx.xM Min.* -xxx.xxxxxxM Max* *Min 1 and Max 6 digits after the decimal point. M = MHz

Example Part Numbers:

C31-020.0M =2.5x3.2mm package, TCXO, 3.3 Vdc -30 to 85°C, ±0.50 ppm, Clipped Sinewave Output with an Output Frequency of 20.0MHz
C21-026.0M =2.5x3.2mm package, VCTCXO, 2.5 Vdc -30 to 85°C, ±0.50 ppm, Clipped Sinewave Output with an Output Frequency of 26.0MHz

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Operating Specifications

Parameter	Minimum	Nominal	Maximum	Units	Notes
Center Frequency	10	-	40	MHz	
Frequency Calibration @ 25°C	-1.0	-	1.0	ppm	2
Supply Voltage Variation (Vcc±5%)	-0.025	-	0.025	ppm	
Load Coefficient (±5%)	-0.025	-	0.025	ppm	
Aging per year	-1.0	-	1.0	ppm	
Static Temperature Hysteresis	-0.4	-	0.4	ppm	3
Frequency shift after reflow soldering	-1.0	-	1.0	ppm	
Supply Voltage (Vcc)					
1.8 Vdc Models	1.710	1.800	1.890	Vdc	
2.5 Vdc Models	2.375	2.500	2.625	Vdc	
2.8 Vdc Models	2.660	2.800	2.940	Vdc	
3.3 Vdc Models	3.135	3.300	3.465	Vdc	
Supply Current (Icc)	-	-	2	mA	
Period Jitter	-	3	5	ps rms	
Integrated Phase Jitter (BW=12 Khz to 20 MHz)	-	0.3	1.0	ps rms	
Typical SSB Phase Noise for 26 MHz					
@ 10Hz offset	-	-80	-	dBc/Hz	
@ 100Hz offset	-	-110	-	dBc/Hz	
@ 1KHz offset	-	-130	-	dBc/Hz	
@ 10KHz offset	-	-145	-	dBc/Hz	
@ 100KHz offset	-	-150	-	dBc/Hz	
Start-up Time-	-		10	ms	

Control Voltage Characteristics

Parameter	Minimum	Nominal	Maximum	Units	Notes
Control Voltage (Vc)					
2.5 Vdc Models	0.2	1.2	2.2	V	
2.8 Vdc Models	0.4	1.4	2.4	V	
3.3 Vdc Models	0.5	1.5	2.5	V	
Frequency Pullability @ 25°C	±10	-	-	ppm	4
Control Slope		Positive Slope			
Monotonic Linearity	-	-	±5	%	
Input Impedance	50K	-	-	Ohm	
Modulation Bandwidth (3dB)	10	-	-	KHz	

Clipped Sinewave Output Characteristics

Parameter	Minimum	Nominal	Maximum	Units	Notes
Load		10pF // 10 KOhm			5, 6
Output Voltage	1.0	-	-	V peak to peak	7

Package Characteristics

Package	Hermetically sealed ceramic package and metal cover

Environmental Characteristics

Vibration:	Vibration per Mil Std 883E Method 2007.3 Test Condition A
Shock:	Mechanical Shock per Mil Std 883E Method 2002.4 Test Condition B.
Soldering Process;	RoHS compliant lead free. See soldering profile on page 4.