

Helping Customers Innovate, Improve & Grow



Features

- Radiation Tolerant
- Small footprint
- Frequency Range: 0.3 MHz to 150 MHz
- Previous Model: C2501

Applications

- Reference clock for space and satellite
- Military airborne and mobile systems

Performance Specifications

Parameter	Min	Typ	Max	Units	Condition
Frequency Stabilities¹					
vs. operating temperature range (referenced to +25°C)	-10		+10	ppm	-55... +105°C
	-4		+4	ppm	-40... +85°C
	-2		+2	ppm	-20... +70°C
	-1		+1	ppm	0... +50°C
vs. aging / 1 year	-1		+1	ppm	
vs. aging / 10 years	-5		+5	ppm	
Short Term Stability	-1		+1	ppb/sec	
Supply Voltage (Vs)					
Supply voltage	14.25	15.0	15.75	VDC	
Supply voltage	4.75	5.0	5.25	VDC	
Supply voltage	3.135	3.3	3.465	VDC	
Current			50 35	mA mA	ACMOS output Sinewave output
RF Output					
Signal	CMOS				
Duty Cycle	40		60	%	
Rise\Fall time			+5	ns	(10% to 90%) with 2CMOS Loads
Logic Level "0"			+0.5	V	
Logic Level "1"	Vcc -0.5V			V	

Performance Specifications

Parameter	Min	Typ	Max	Units	Condition
Signal	Sinewave				
Output Power	+7 +3			dBm dBm	standard
Harmonics			-20	dBc	(>75 MHz)
Sub-Harmonics			-20	dBc	(>75 MHz)
Spurious			-70	dBc	
Frequency Tuning (EFC)					
Tuning Slope	Sufficient to tune to nominal frequency for 10 years				
Additional Parameters					
Phase Noise (10MHz)			-95	dBc/Hz	10 Hz
			-125	dBc/Hz	100 Hz
			-145	dBc/Hz	1 KHz
			-150	dBc/Hz	10 KHz
			-150	dBc/Hz	100 KHz
Phase Noise (>75MHz)			-75	dBc/Hz	10 Hz
			-105	dBc/Hz	100 Hz
			-135	dBc/Hz	1 KHz
			-145	dBc/Hz	10 KHz
			-145	dBc/Hz	100 KHz
Weight			30	g	
Absolute Maximum Ratings					
Supply voltage (Vs)	-0.5		+7.0	V	(ACMOS)
	-0.5		+20	V	(Sinewave)
DC Input Current			+50	mA	
Lead Temperature (Soldering, 10 seconds)			300	°C	
Operable temperature range	-55		+125	°C	
Storage temperature range	-62		+125	°C	
Environmental Characteristics					
Sine Vibration	Mil-STD-202, Method 204, TC "D"				
Random Vibration	Mil-STD-202, Method 214 TC "I-K" (15 minutes per axis)				
Shock	Mil-STD-202, Method 213, TC "F"				
Acceleration	Mil-STD-883, Method 2001, TC "A"				
Altitude	50,000 feet minimum to deep space				
Radiation	Radiation testing is not performed at the oscillator level, but these TCXOs have been acceptable for use in environments of up to 100K rads total dose, by analysis of the components used. The TTL Output TCXOs are assembled with all bipolar semiconductors. The CMOS Output TCXOs are assembled with all bipolar semiconductors with the exception of the ACMOS chip used to provide the CMOS output. A CMOS chip that is from a radiation tested, certified wafer lot can be provided if specified on the Purchase Order. A copy of the parts list and materials can be provided for customer review.				

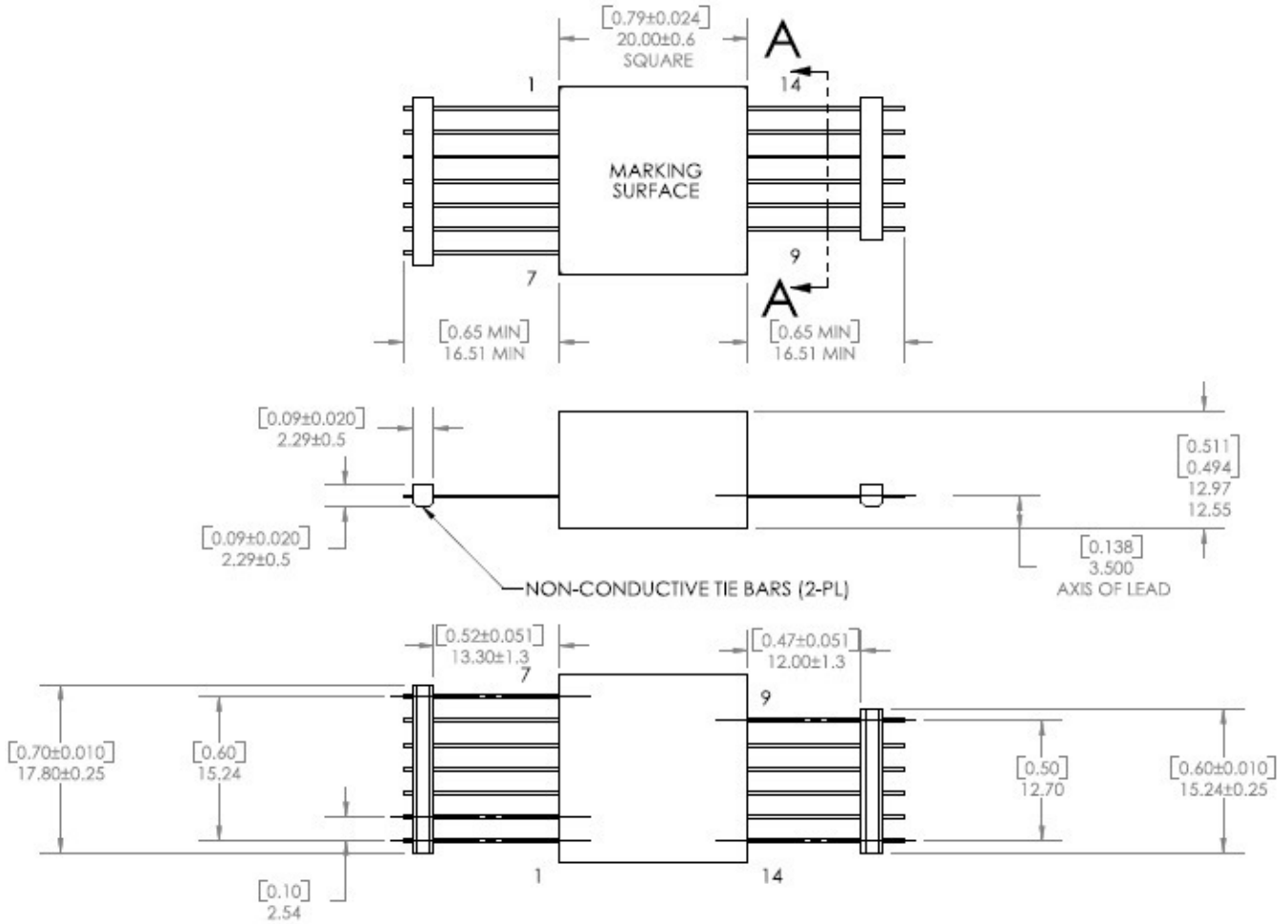
Performance Specifications

Parameter	Min	Typ	Max	Units	Condition
Manufacturing Information					
QUARTZ CRYSTAL					
For the flight models, swept quartz shall be used in the manufacture of the crystals. For the Engineering models, non-swept quartz shall be used.					
TRAVELLERS					
Travellers or Process Cards are used in the manufacturing and testing of all Hi-Rel TCXOs and are available for customer review. Copies of these Travellers can be provided with the TCXOs at time of shipment if so specified on the purchase order.					
TRACEABILITY and HOMOGENEOUS MATERIAL					
Option Codes 'S' & 'R' only					
Manufacturing lot and date code information shall be recorded, by TCXO serial number, of every component and all materials used in the manufacture of that TCXO. Also all semiconductors used in the manufacture of any given Production Lot of TCXOs, shall be from the wafer and have the same manufacturing lot date code. A Production Lot, as defined by Corning, is all oscillators that have been kitted and assembled as a single group. After the initial kitting and assembly, this Production Lot may be divided into multiple sublots to facilitate alignment and test capacity and may be sealed at multiple times within a 13 week window.					
TEST DATA					
All Test Data is recorded by TCXO serial number. Copies of this data can be provided with the TCXOs at time of shipment if so specified on the purchase order.					
REWORK					
All rework follows the requirements of Mil-PRF-55310 Class 'S' for Option Code 'S' and Class 'B' for Option Codes 'R', 'B' and 'C'. The only exception is the Select-At-Test components may be replaced up to four times.					

Performance Specifications

CONSTRUCTION, SCREENING & TESTING OPTIONS				
NOTE: For Engineering or Prototype TCXOs requiring basic electrical testing only and no Screening, or Groups 'A' and 'B' Testing, use the code letter 'E'.				
Operation \ Code	"S"	"R"	"C"	"B"
Design, Construction & Component Screen (see Mfging Section)	Mil-PRF-55310 Class 'S'	Mil-PRF-55310 Class 'B'	Mil-PRF-55310 Class 'B'	Mil-PRF-55310 Class 'B'
Workmanship	M883, Method 2017 for Class 'S'	M883, Method 2017 for Class 'B'	M883, Method 2017 for Class 'B'	M883, Method 2017 for Class 'B'
Screening	Mil-PRF-55310 Class 'S'	Mil-PRF-55310 Class 'S'	Mil-PRF-55310 Class 'B' modified	Mil-PRF-55310 Class 'B'
Non-Destruct Wire Bond Pull	100%	100%	N/A	N/A
Internal Visual	M883, Method 2017 for Class 'S'	M883, Method 2017 for Class 'B'	M883, Method 2017 for Class 'B'	M883, Method 2017 for Class 'B'
Stabilization Bake	48 hrs minimum @ +150°C	48 hrs minimum @ +150°C	48 hrs minimum @ +150°C	48 hrs minimum @ +150°C
Thermal Shock	M883, Method 1011, TC 'A'	M883, Method 1011, TC 'A'	N/A	N/A
Constant Acceleration	M883, Method 2001, TC 'A' (5000 gs, Y1 Axis only)	M883, Method 2001, TC 'A' (5000 gs, Y1 Axis only)	M883, Method 2001, TC 'A' (5000 gs, Y1 Axis only)	M883, Method 2001, TC 'A' (5000 gs, Y1 Axis only)
Seal Test (fine & gross)	100%	100%	100%	100%
PIND	M883, Method 2020, TC 'B'	M883, Method 2020, TC 'B'	M883, Method 2020, TC 'B'	N/A
Electrical Test Frequency, Output levels, Input Current	@ +25°C only	@ +25°C only	@ +25°C only	@ +25°C only
Burn-In (Powered with load)	+125°C for 240 hours	+125°C for 240 hours	+125°C for 160 hours	+125°C for 160 hours
Electrical Test Frequency, Output levels, Input Current	@ +25°C & Temp Extremes specified in Table II	@ +25°C & Temp Extremes specified in Table II	@ +25°C & Temp Extremes specified in Table II	@ +25°C & Temp Extremes specified in Table II
PDA	2% applies to Input Current @ +25°C	2% applies to Input Current @ +25°C	10% applies to Input Current @ +25°C	10% applies to Input Current @ +25°C
Radiographic	M883, Method 2012	M883, Method 2012	N/A	N/A
Group 'A'	100%	100%	Sample per Mil-PRF-55310	Sample per Mil-PRF-55310
Group 'B' (30 day Aging @ +70°C)	100%	100%	Sample per Mil-PRF-55310	Sample per Mil-PRF-55310

Outline Drawing / Enclosure



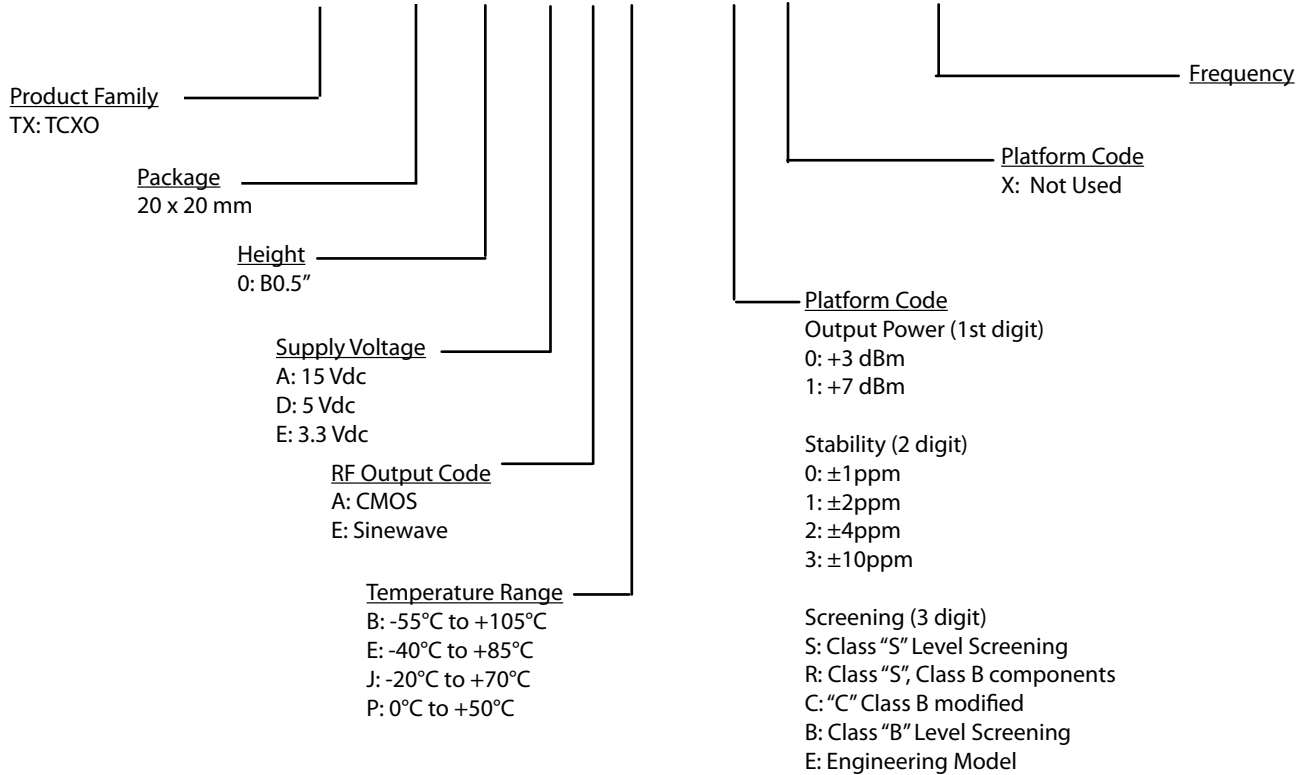
Dimensions in [inches] mm

Type B		
Code	Height "H"	Pin Length "L"
0	0.5"	0.65"

Pin Connections	
1,3,7,12,14	Ground
2	Supply
4,5,9,10,11	No Connection
6	External Frequency Control
13	RF Output

Ordering Information

TX - 309 0 - D E E - 13S X - 10M0000000



Notes:

1. Contact factory for improved stabilities or additional product options. Not all options and codes are available at all frequencies.
2. Unless other stated all values are valid after warm-up time and refer to typical conditions for supply voltage, frequency control voltage, load, temperature (25°C).
3. Phase noise degrades with increasing output frequency.
4. Subject to technical modification.
5. Contact factory for availability.

For Additional Information, Please Contact

USA:

Vectron International
267 Lowell Road
Hudson, NH 03051
Tel: 1.888.328.7661
Fax: 1.888.329.8328

Europe:

Vectron International
Landstrasse, D-74924
Neckarbischofsheim, Germany
Tel: +49 (0) 3328.4784.17
Fax: +49 (0) 3328.4784.30

Asia:

Vectron International
1F-2F, No 8 Workshop, No 308 Fenju Road
WaiGaoQiao Free Trade Zone
Pudong, Shanghai, China 200131
Tel: 86.21.5048.0777
Fax: 86.21.5048.1881

Disclaimer

Vectron International reserves the right to make changes to the product(s) and or information contained herein without notice. No liability is assumed as a result of their use or application. No rights under any patent accompany the sale of any such product(s) or information.

Rev: 2/23/2009 daf