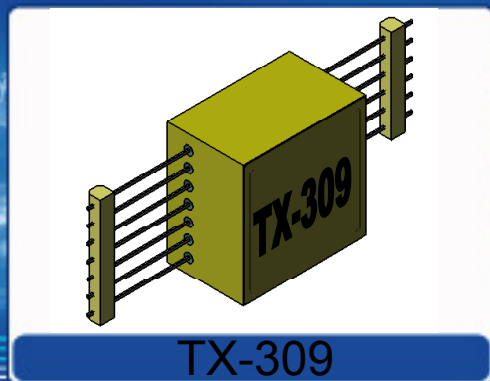


Helping Customers Innovate, Improve & Grow



Features

*Radiation Tolerant
Small footprint*

Typical Applications

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

Previous Vectron Model Numbers

C2501

Frequency Range

0.3 MHz – 150 MHz

Frequency stabilities¹

Parameter	Min	Typ	Max	Units	Operating temp range
vs. Temperature Stability (includes initial accuracy, Load±10% & Supply±5%)	-1		+1	ppm	0 ... +50°C
	-2		+2		-20 ... +70°C
	-4		+4		-40 ... +85°C
	-10		+10		-55 ... +105°C
Parameter	Min	Typ	Max	Units	Condition
vs aging / 1 year	-1		+1	ppm	
vs aging / 10 year	-5		+5	ppm	
Short Term Stability	-1		+1	ppb/sec	

Supply Voltage (Vs)

Parameter	Min	Typ	Max	Units	Condition
Supply voltage	4.75	5.0	5.25	VDC	
	3.135	3.3	3.465	VDC	
	14.25	15.0	15.75	VDC	
Current consumption			50	mA	ACMOS output
			35	mA	Sinewave output

RF Output

Parameter	Min	Typ	Max	Units	Condition
Signal	CMOS				
Duty Cycle	40		60	dBm	
Rise\Fall time			+5	ns	(10% to 90%) with 2CMOS Loads
Logic Level "0"			+0.5	V	
Logic Level "1"	Vcc-0.5V				
Signal	Sinewave				
Power	+3			dBm	
Power	+7			dBm	
Harmonics/Sub-Harmonics			-20	dBc	(>75 MHz)
Spurious			-70	dBc	

Frequency Tuning (EFC)

Parameter	Min	Typ	Max	Units	Condition
Tuning Range	Sufficient to tune to nominal frequency for 15 years				

Additional Parameters

Parameter	Min	Typ	Max	Units	Condition	
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 (>75 MHz)		-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		

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

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.

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.

Absolute Maximum Ratings:

Parameter	Min	Typ	Max	Units	Condition
Supply voltage (Vs)	-0.5 -0.5		+7.0 +20.0	V	(ACMOS) (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	

Configuration:

Type B		
Code	Height "H"	Length "L"
B1	0.5 "	0.65 "

The technical drawing illustrates the dimensions of the Type B B1 component. The top view shows a central 'MARKING SURFACE' with a width of $[0.79 \pm 0.024]$ inches (20.00 ± 0.6 mm) and a length of $[0.65 \text{ MIN}]$ inches (16.51 MIN mm). The side view shows a height of $[0.09 \pm 0.020]$ inches (2.29 ± 0.5 mm) and a length of $[0.511]$ inches (12.97 mm). The end view shows a width of $[0.60]$ inches (15.24 mm) and a length of $[0.10]$ inches (2.54 mm). The drawing also indicates 'NON-CONDUCTIVE TIE BARS (2-PL)' and 'AXIS OF LEAD'.

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

How to order this product:

Use this worksheet to forward the following information to your factory representative :										
Model	Height	-	Supply Voltage Code	RF Output Code	Temperature Range	-	Stability	Option	-	Frequency
TX-309	0	-	D	A	J	-	XXS	X	-	100M000000

Height:
0: 0.5 inch

Supply Voltage:
A: 15 V
D: 5 V
E: 3.3 V

RF Output Code:
A: CMOS
E: Sinewave

Temperature Range:
B: -55...+105°C
E: -40...+85°C
J: -20...+70°C
P: 0...+50°C

Options:
X: No Option

Stability Code(1st digit):
B: ±10ppm
0: ±4ppm
1: ±2ppm
2: ±1ppm

Enable (2 digit):
X: No Enable

Screening (3 digit):
S: Class "S" Level Screening
R: Class "S", Class B components
C: "C" Class B modified
B: Class "B" Level Screening

Notes:

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