

Helping Customers Innovate, Improve & Grow



VX-409

### Features

- Frequency Range: 10 MHz to 40 MHz
- Previous Model: C1794

### Applications

## Performance Specifications

Parameter	Min	Typ	Max	Units	Condition		
<b>Frequency Stabilities<sup>1</sup></b>							
vs. Temperature Stability (includes initial accuracy, Load $\pm$ 10% & Supply $\pm$ 5%)	-40		+40	ppm	-55... +105°C	Frequency Deviation	
	-30		+30	ppm	-40... +85°C	$\pm$ 85 ppm	
	-25		+25	ppm	-20... +70°C	$\pm$ 75 ppm	
	-20		+20	ppm	0... +50°C	$\pm$ 70 ppm	
Initial Accuracy	-20		+20	ppm	@+25 C, Control Voltage @ +2.50 VDC		
vs. aging / 1 year	-2		+2	ppm			10 to 25 MHz
vs. aging / year (following years)	-10		+10	ppm			10 to 25 MHz
vs. aging / 1 year	-3		+3	ppm			26 to 40 MHz
vs. aging / year (following years)	-15		+15	ppm	26 to 40 MHz		
<b>Supply Voltage (Vs)</b>							
Supply voltage	4.75	5.0	5.25	VDC			
Current consumption			25	mA			
<b>RF Output</b>							
Signal	CMOS						
Duty Cycle	40		60	%	measured at 50%		
Rise\Fall time			5	ns	(10% to 90%) with 2CMOS Loads		
Logic Level "0"			+0.5	V			
Logic Level "1"	+4.0			V			

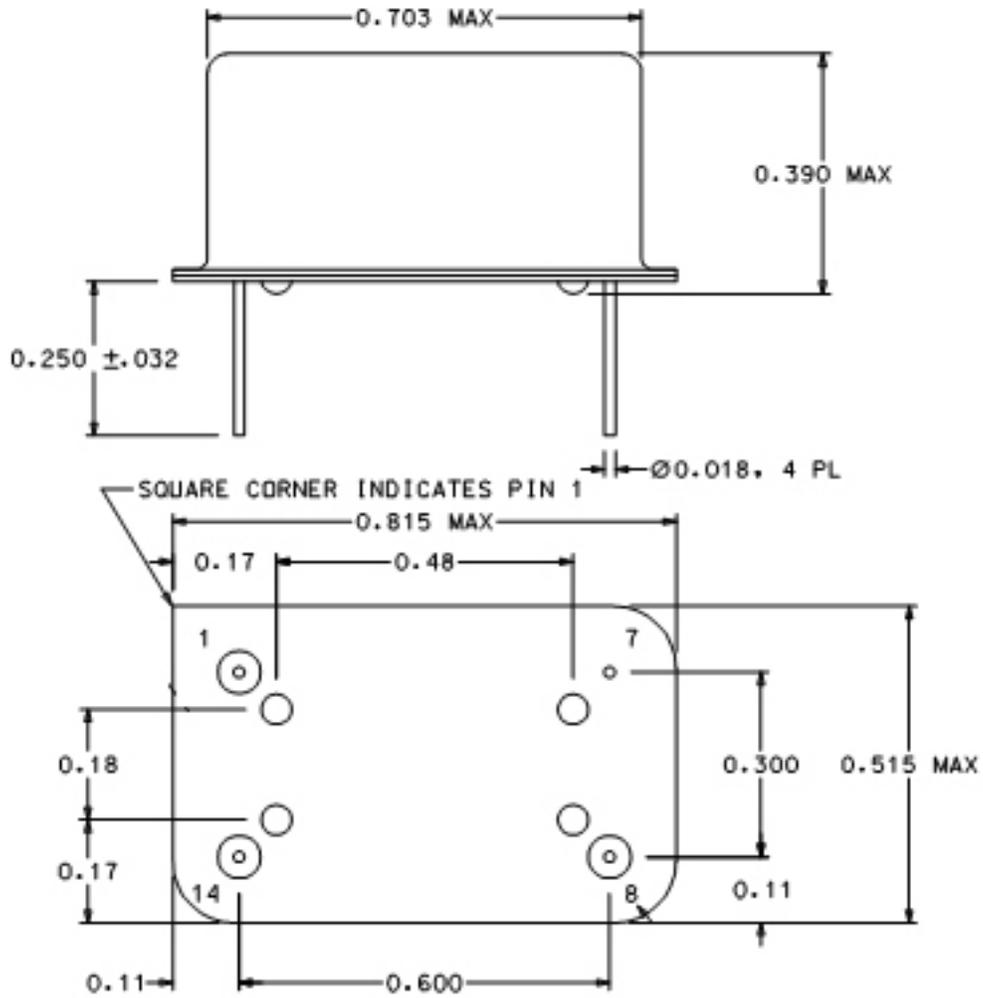
## Performance Specifications

Parameter	Min	Typ	Max	Units	Condition
<b>Frequency Tuning (EFC)</b>					
Tuning Range	+0.5		+4.5	VDC	
Linearity			+20	%	
Input Impedance			>10	kohm	
<b>Absolute Maximum Ratings</b>					
Supply voltage (Vs)	-0.5		+6.0	VDC	
DC Input Current			50	mA	
Lead Temperature (Soldering, 10 seconds)			300	°C	
Storage temperature range	-62		+125	°C	
<b>Environmental Characteristics</b>					
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, but these VCXOs have been acceptable for use in environments up to 100K rads by analysis of the components used. They are assembled with all bipolar semiconductors with the exception of the ACMOS chip used for the CMOS output which is purchased from a wafer that has been tested to a minimum of 100K rads total dose. A copy of the parts list and materials can be provided for review.				
<b>Manufacturing Information</b>					
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 of the 1794 Series VCXOs and are available for customer review. Copies of these Travellers can be provided with the VCXOs 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 VCXO serial number, of every component and all materials used in the manufacture of that VCXO. Also all semiconductors used in the manufacture of any given Production Lot of VCXOs, shall be from the wafer and have the same manufacturing lot date code. A Production Lot, as defined by Vectron, 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 VCXO serial number. Copies of this data can be provided with the VCXOs 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			
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



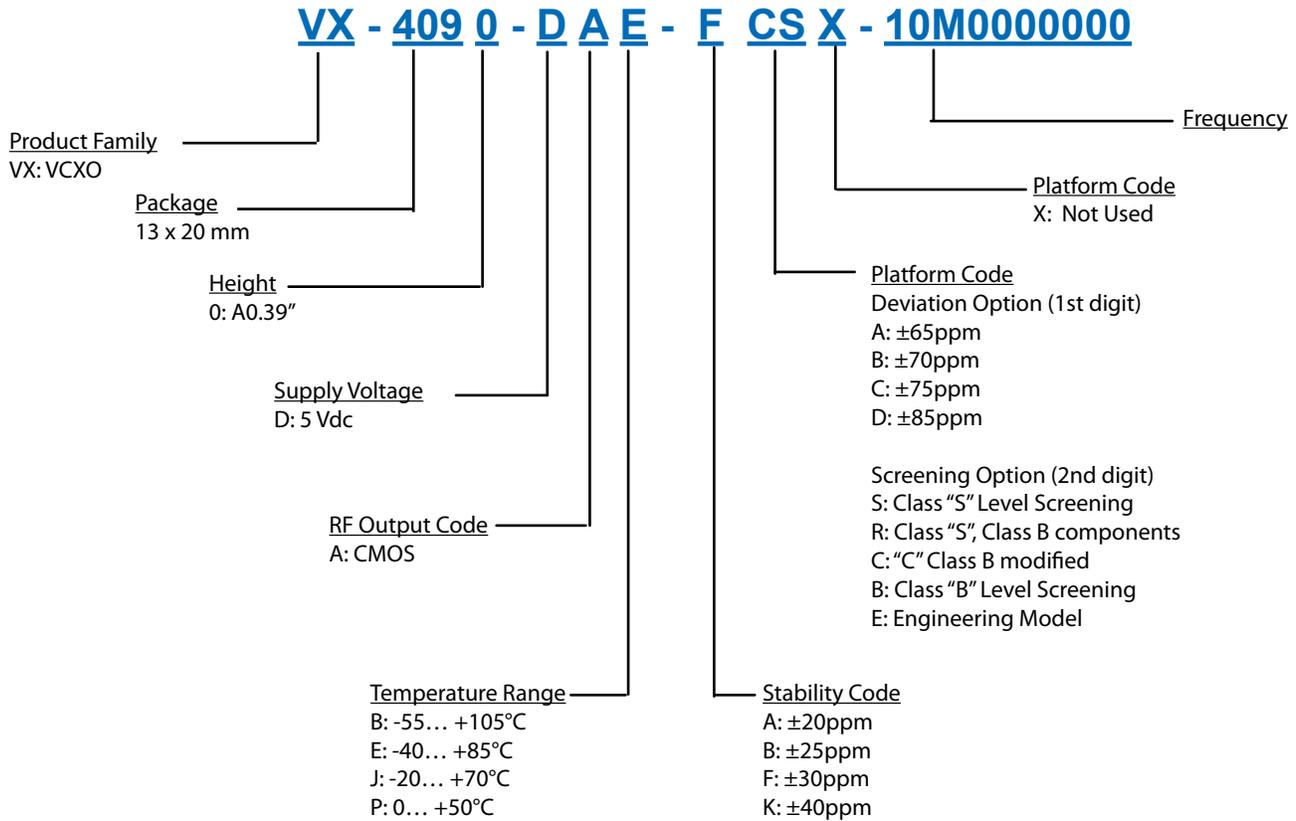
### Type A

Code	Height "H"	Pin Length
0	0.39"	0.25"

### Pin Connections

1	Electrical Adjust (EFC)
7	Ground (Case)
8	RF Output
14	Supply

## Ordering Information



**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

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