VX-400

High Temperature

Voltage Control Crystal Oscillator

Vectron offers a High Temperature Voltage Control Crystal Oscillator (VX-400) product platform for extreme environment applications. Typical operating temperature range is from -55°C to +200°C with an absolute pull range of +/- 25 ppm.

Vectron's vertical integration in the following technical areas ensures the ability to design and manufacture state of the art high temperature frequency control products:

- BAW & SAW Design & Fabrication to produce high quality resonators.
- RF Oscillator Circuit Design.
- Established 250°C High Temperature Electronics Packaging Expertise.
- Established 250°C High Temperature Electronics Assembly & Test Expertise.
- Environmental Screening.

Vectron's manufacturing processes, from quartz resonator fabrication to oscillator electronics assembly and test, are painstakingly controlled via ISO and SPC procedures. Vectron fabricates high temperature quartz resonators using proprietary manufacturing processes designed specifically for high temperature and harsh environment applications. In order to ensure high reliability in the field, critical electrode metallization and testing processes are conducted inside state-of-the-art Class 1K cleanrooms, while oscillator assembly is conducted in Class 10K cleanrooms. All high temperature oscillators are 100% tested before delivery.

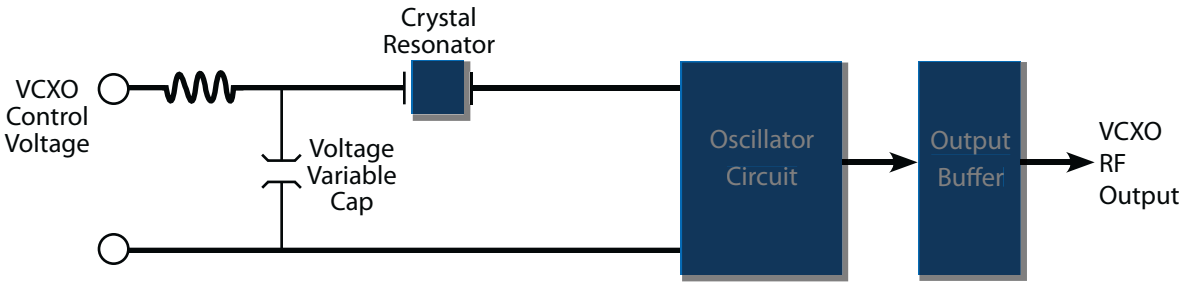
Features

- Continuous operating temperature range -55°C to 200°C
- Low jitter and phase noise
- 3.3Vdc or 5Vdc operation
- 4-Point crystal mount for Harsh Environment Applications
- High Shock and Vibration Survival
- Output frequency 1 MHz to 32.768 MHz standard
- Standard 4 pin DIP package
- RoHS Compliant
- Made in USA
- EAR99 • COO: USA

Applications

- Oil / Gas downhole tool
- High temperature industrial process control
- Extended temperature Military/Aerospace

Block Diagram



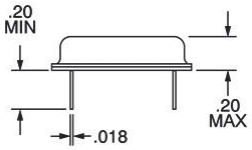
Performance Specifications

Specification Parameters	Values
Frequency Range	1 MHz to 32.768 MHz
Supply (Vdd)	+5.0Vdc ±5% (D) +3.3Vdc ±5% (E)
Current	12mA typical @ 25MHz
Level "0" & "1"	<0.4V / >Vdd - 0.5V
Output	HCMOS compatibility (A)
Rise & Fall Time	1ns typical / 3ns Max
Symmetry	40/60%
Operating Temperature	0°C to +150°C (1) -20°C to +180°C (Z) -55°C to +180°C (Y) 0°C to +200°C (2) -55°C to +200°C (5)
Jitter (12kHz - 20MHz)	<0.2ps
Phase Noise (Typical @ 25MHz, HCMOS, 5V)	10Hz -80 dBc/Hz 100Hz -110 dBc/Hz 1kHz -135 dBc/Hz 10kHz -150 dBc/Hz 100kHz -160 dBc/Hz 1MHz -160 dBc/Hz
VCXO Control Voltage	0V to Vdd
Absolute Pull Range (APR)	Over operating temperature range ±25ppm minimum (D) ±50ppm minimum (G)
Transfer Function	Positive
Linearity	±20%
Modulation Rate	dc - 1kHz
Package Size	0.5" x 0.8" x 0.2" 4 pin single DIP resistance welded
Shock	100g, 6ms
Vibration	20g. 10 to 2000Hz

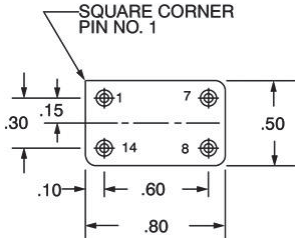
Enviromental Compliance

Environmental Compliance		
Vibration-Sine	20g to 2kHz Sine	MIL-STD-202 Method 204 Condition D
Vibration-Random	20grms to 2kHz Random	MIL-STD-202 Method 214 Condition I-F
Shock	100g, 6ms	MIL-STD-202 Method 213 Condition C & I
Seal Test	Fine	MIL-STD-883 Method 1014 Condition A2
Seal Test	Gross	MIL-STD-202 Method 112 Condition D
Temperature Cycling	10 Cycles minimum	MIL-STD-883 Method 1010 Condition B
Acceleration	5000g Y1 axis	MIL-STD-883 Method 2001 Condition A

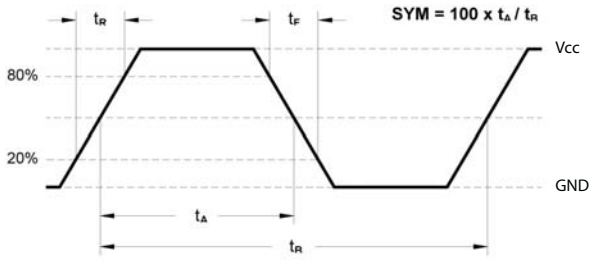
Physical Specifications



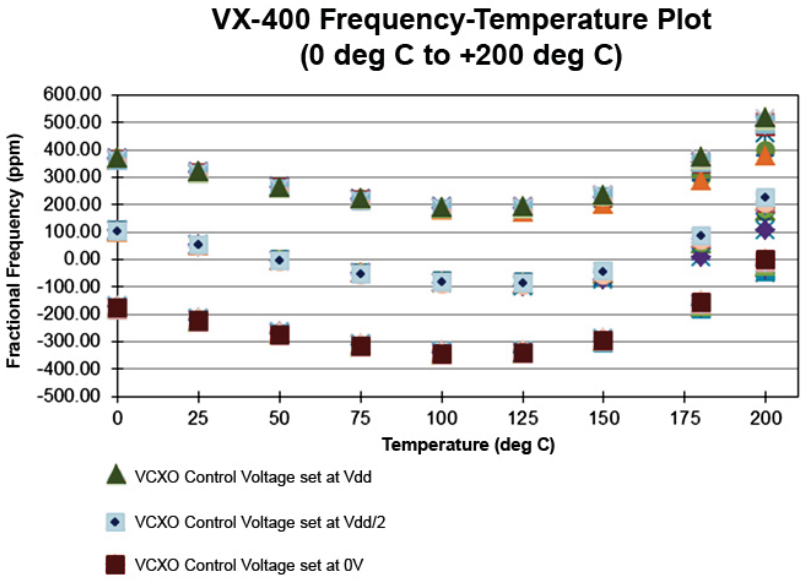
Pin	Function
1	VCXO Control Voltage
7	Case & Electrical Ground
8	VCXO RF Output
14	V_{CC} Power Supply Voltage



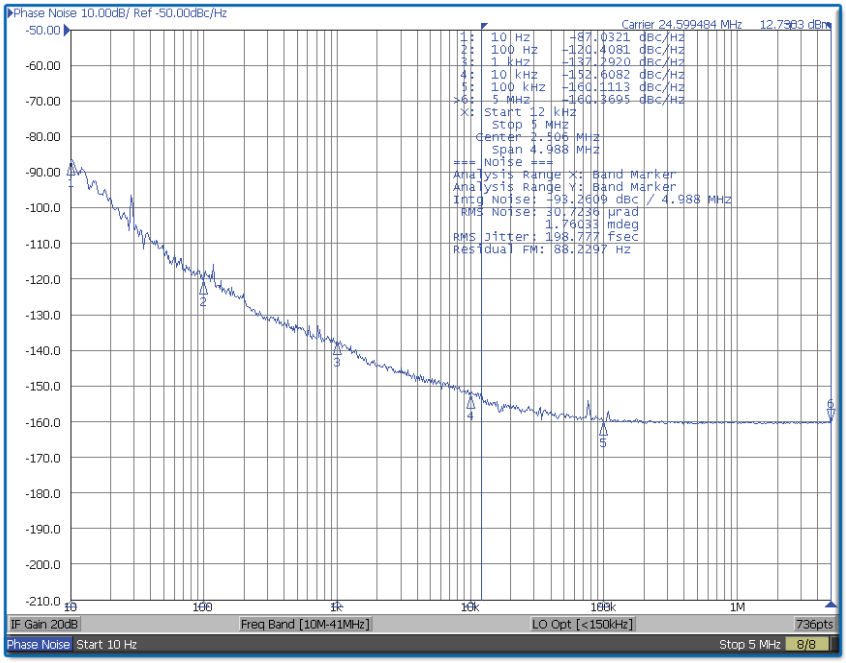
Dimensions in inches



Frequency - Temperature Performance (Typical)



Phase Noise Performance (Typical)



Standard Frequency List						
10.000MHz	16.000MHz	16.384MHz	20.000MHz	24.000MHz	24.576MHz	32.768MHz

Ordering Information

VX - 400 0 - D A Y - F X X X - 10M0000000

Product Family
VCXO

Package Type
400: 4 pin DIP

Factory Use

Supply Voltage
D: 5.0V ±5%
E: 3.3V ±5%

Output
A: HCMOS/ACMOS

Frequency

Factory Use

Factory Use

Factory Use

Absolute Pull Range (APR)
F: ±25ppm
K: ±50ppm

Temperature Range
1: 0°C to 150°C
Z: -20°C to 180°C
Y: -55°C to 180°C
2: 0°C to 200°C
5: -55°C to 200°C

**Note: not all combination of options are available.*
Other specifications may be available upon request.

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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