

Helping Customers Innovate, Improve & Grow



Vectron offers a High Temperature Voltage Control Crystal Oscillator (VX-708) product platform for extreme environment applications. Typical operating temperature range is from -55°C to +180°C with an absolute pull range of +/- 50 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

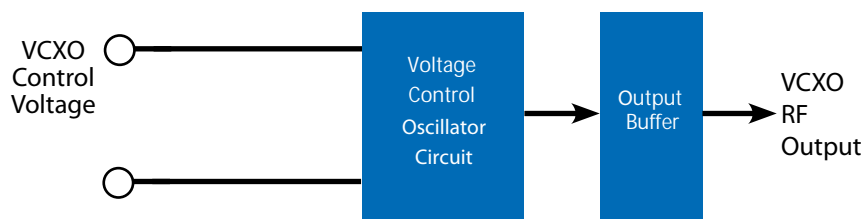
- Continuous operating temperature range -55°C to 180°C
- Low jitter and phase noise
- 3.3 Vdc operation
- 4-point crystal mount for Harsh Environment Applications
- High Shock and Vibration Survival
- Output frequency 2 MHz to 40 MHz
- Standard 5x7 mm SMD package
- RoHS compliant
- EAR99
- Made in USA

Applications

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



Block Diagram



Performance Specifications

Specification Parameter	Values
Frequency Range	2 MHz to 40 MHz
Supply (Vdd)	+3.30 VDC +/-5%
Current	3 mA max (typical @ 32 MHz)
Output	HCMOS compatibility
Load	15pF max
Signal Level (Vol)	0.3 VDC max
Signal Level (Voh)	3.0 VDC min
Rise & Fall Time	1ns typical / 3ns Max
Symmetry	40/60%
Operating Temperature	0 °C to +150 °C -20 °C to +180 °C -55 °C to + 180 °C
Jitter (12kHz - 20MHz)	<0.076ps
Phase Noise (@32MHz, HCMOS, 3.3V)	10 Hz - 75 dbc/ Hz 100 Hz - 105 dbc/ Hz 1 KHz - 130 dbc/ Hz 10 KHz - 150 dbc/ Hz 100 KHz - 155 dbc/ Hz 1 MHz - 160 dbc/ Hz
VCXO Control Voltage	0V to Vdd
Minimum Pull Range (Amount of VCXO pullability to offset freq. deviation over operating temp. range)	±25ppm minimum ±50ppm minimum
Transfer Function	Positive
Linearity	±20%
Modulation Rate	dc - 1KHz
Package Size	5 x 7 mm SMD
Shock	100g, 6ms
Vibration	20g (10 to 2000Hz)

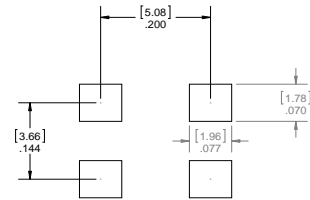
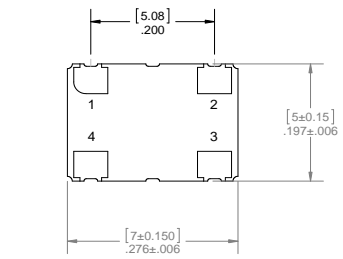
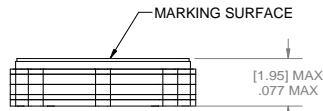
Environmental Compliance

Environmental Compliance		
Mechanical Shock	3000g	MIL-STD-883, Method 2002.5, Condition C
Random Vibration	36.6g	MIL-STD-883, Method 2026, Condition J
Sine Vibration	30g	MIL-STD-202, Method 204, Condition G
Seal Test	Fine	MIL-STD-883 Method 1014 Condition A2
Seal Test	Gross	MIL-STD-202 Method 112 Condition D
Temperature Cycling	1000 Cycles	MIL-STD-883 Method 1010 Condition B
Acceleration	5000g Y1 axis	MIL-STD-883 Method 2001 Condition A

Physical Specifications

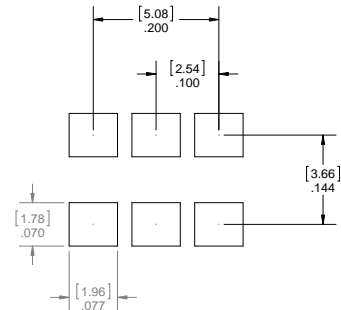
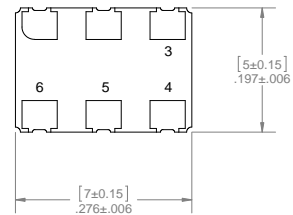
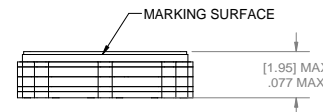
Pin Connections (4-Leads)	
1	Voltage Control
2	Case & Electrical Ground
3	RF Output
4	Vcc Power Supply Voltage

Dimensions in [mm]
inches

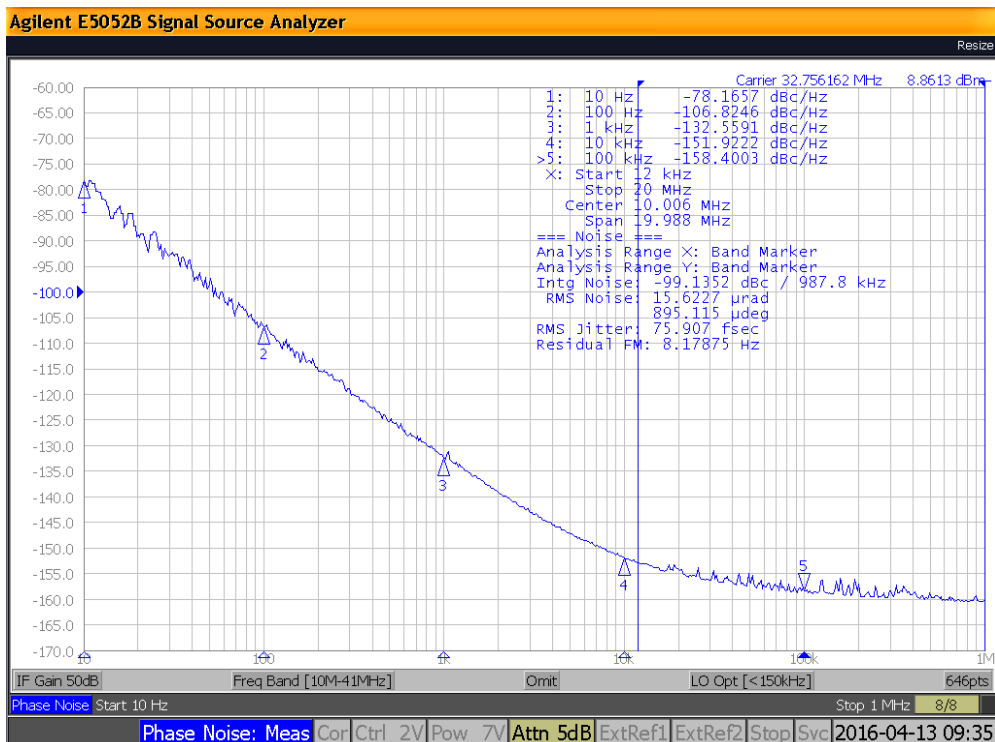


Pin Connections (6-Leads)	
1	Voltage Control
2	No Connection
3	Case & Electrical Ground
4	RF Output
5	No Connection
6	Vcc Power Supply Voltage

Dimensions in [mm]
inches



Phase Noise Performance



Ordering Information

VX - 708 0 - D A Y - F X X X - 10M0000000

Product Family

High temp products

Package Type

708: 5x7 mm

Package Code

0: 6 Pads

1: 4 Pads

Supply Voltage

E: 3.3V ±5%

Output

A: HCMOS/ACMOS

Frequency

Factory Use

Factory Use

Factory Use

Min. Pull Range

F: ±25ppm

K: ±50ppm

Temperature Range

1: 0°C to 150°C

Z: -20°C to 180°C

Y: -55°C to 180°C

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

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