

Helping Customers Innovate, Improve & Grow



Vectron offers a High Temperature Crystal Oscillator (PX-570) product platform for extreme environment applications. In addition to its wide operating temperature range, PX-570 HTXO is also ideal for high shock & vibration applications. PX-570's unique package design offers small ceramic package footprint, as well as providing both through-hole mounting and surface mount options.

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

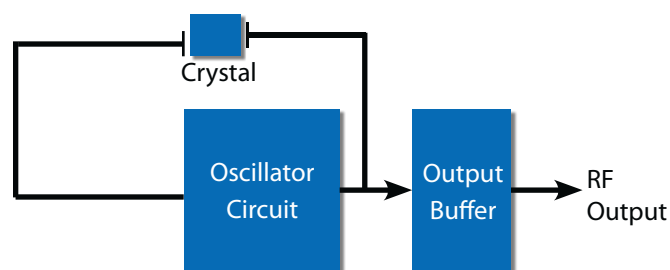
- Continuous operating temperature range -55°C to 230°C
- 1.8 Vdc, 2.5 Vdc, 3.3 Vdc or 5 Vdc operation
- 3 Lead options for Thru-hole and SMD
- 4-Point crystal mount for Harsh Environment Applications
- High Shock and Vibration Survival
- Output frequency 500 KHz to 40 MHz standard (see HT RTC XO datasheet for 32.768 KHz requirements)
- 8.0 mm x 8.5 mm x 2.9 mm ceramic leaded package
- 6 lead package standard (contact factory for 4 lead package requirements)
- RoHs Compliant
- Made in USA

Applications

- Oil / Gas downhole tool
- Geophysical services
- High temperature industrial process control
- Extended temperature Military/Aerospace
- Avionics
- Engine control



Block Diagram



Performance Specifications

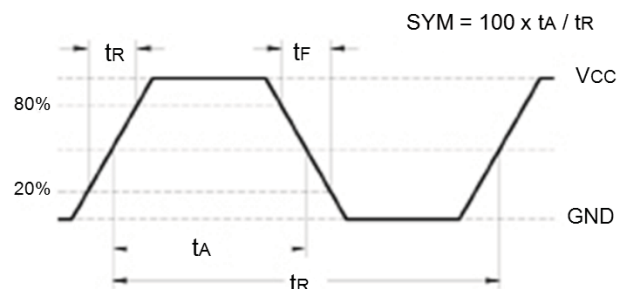
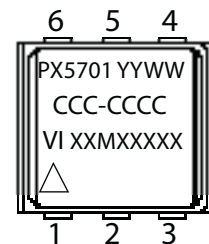
Specification Parameters	Values	
Frequency Range	500kHz to 40MHz (see HT RTCXO datasheet for 32.768KHz requirements)	
Supply (Vdd)	+5.0Vdc $\pm 5\%$ (D) +3.3Vdc $\pm 5\%$ (E)	+2.5Vdc $\pm 5\%$ (H) +1.8Vdc $\pm 5\%$ (J)
Current	5mA typical @ 20MHz, 3.3V (low current option is available, consult factory)	
Level "0" & "1"	<0.4V / >Vdd - 0.5V	
Output	HCMOS compatibility (A)	
Rise & Fall Time	1.5ns typical / 5ns Max (Typical @20MHz, HCMOS, 3.3V)	
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)	0°C to +230°C (3) -55°C to +230°C (6) (other custom temperature ranges are available, consult factory)
Jitter (12kHz - 20MHz)	<0.5ps	
Phase Noise (Typical @40MHz, HCMOS, 3.3V)	10Hz -70 dBc/Hz 100Hz -100 dBc/Hz 1kHz -128 dBc/Hz	10kHz -143 dBc/Hz 100kHz -150 dBc/Hz 1MHz -150 dBc/Hz
Temperature Stability	± 40 ppm (J) ± 100 ppm (S) ± 150 ppm (U)	± 200 ppm (V) ± 250 ppm (W) ± 350 ppm (Y)
Package Size (mm)	8.0 x 8.5 x 2.9 (Thru-Hole, Gull-Wing and Inward L Wing options)	
Storage Temperature	-55°C to +125°C	

Environmental Compliance

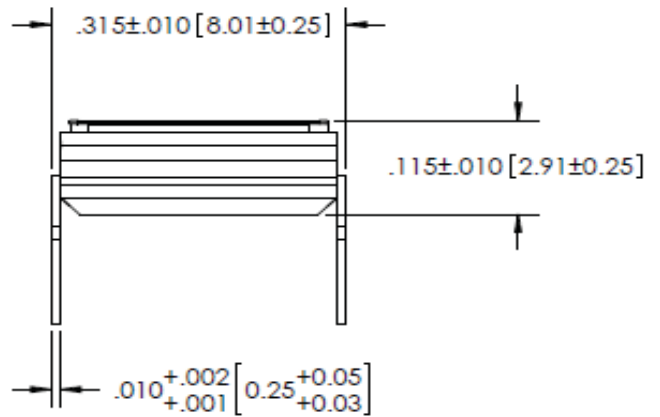
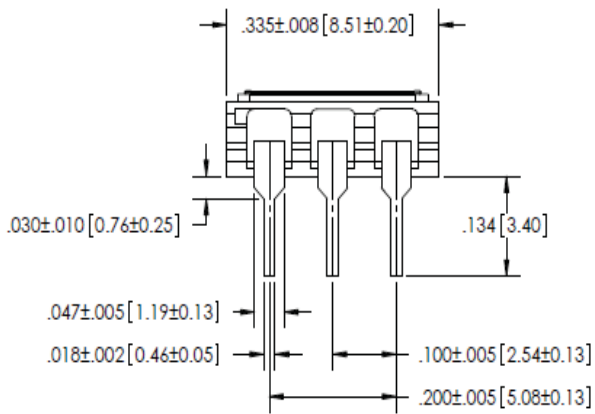
Vibration-Sine	20g, 10Hz to 2kHz Sine	MIL-STD-202 Method 204 Condition D
Vibration-Random	20grms, 10Hz to 2kHz Random	MIL-STD-202 Method 214 Condition I-F
Shock	1000g, 0.5ms	MIL-STD-202 Method 213 Condition E
Seal Test	Fine	MIL-STD-883 Method 1014 Condition A2
Seal Test	Gross	MIL-STD-202 Method 112 Condition 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 and Marking

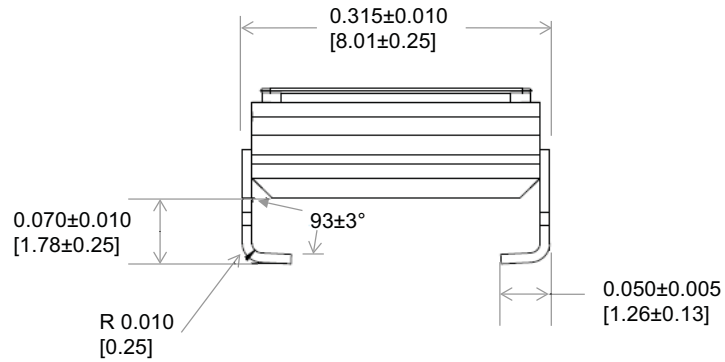
Pin	Function
1	Enable/Disable option
2	No Connection
3	Case & Electrical Ground
4	RF Output
5	No Connection
6	Vdd Power Supply Voltage



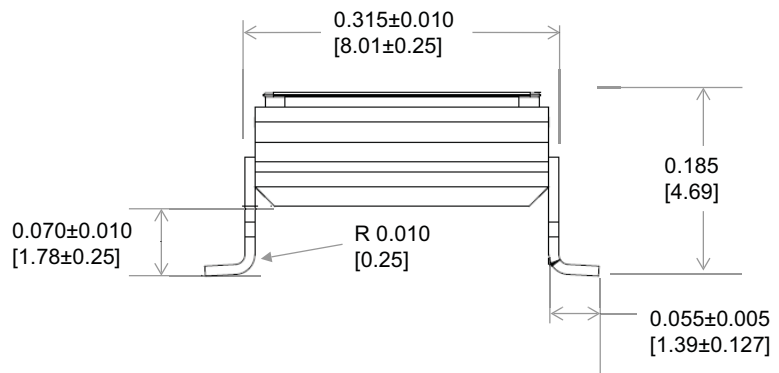
Thru-Hole option



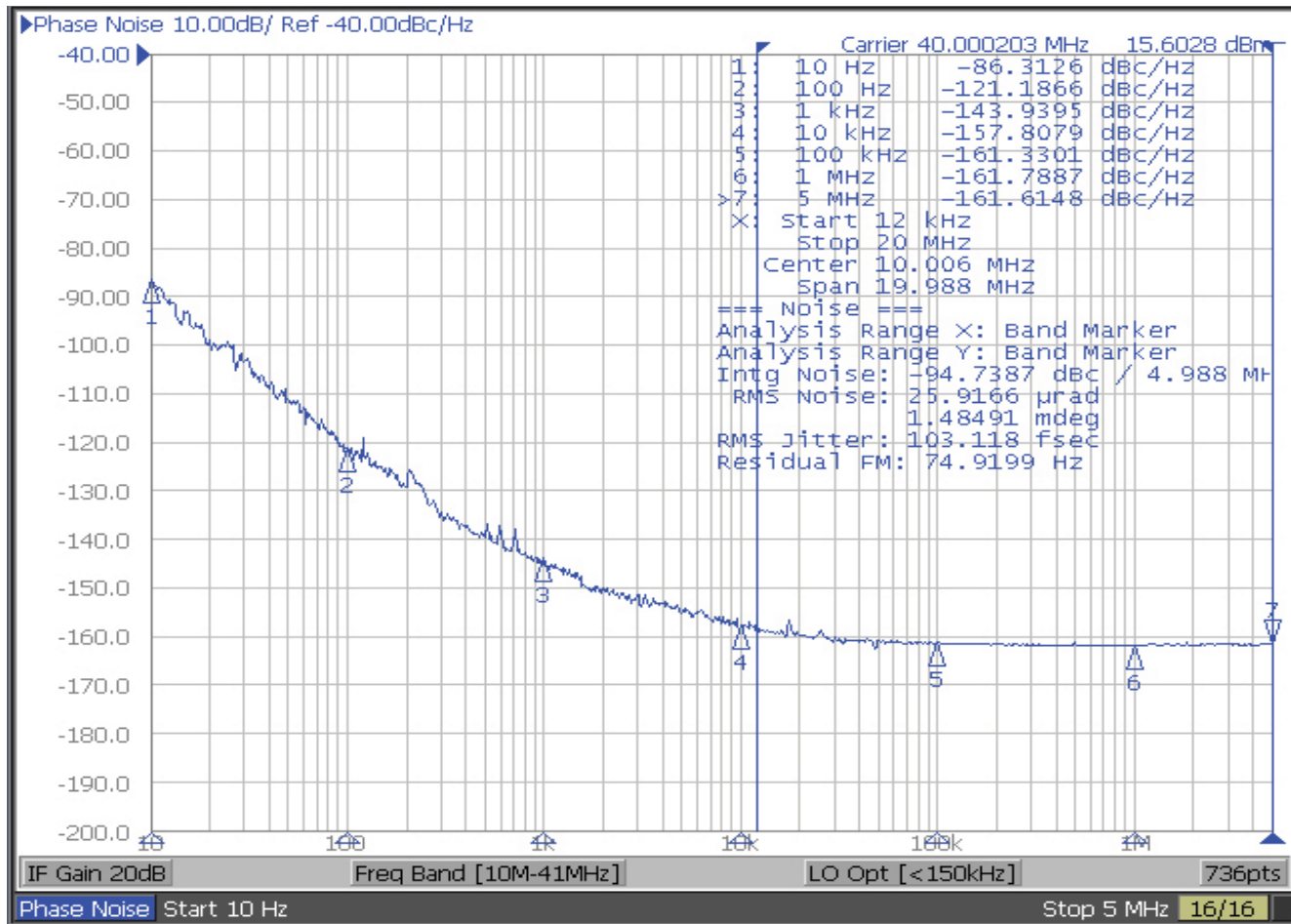
Inward L-Wing option



Gull-Wing option



Typical Phase Noise Performance



Standard Frequency List							
32.768KHz	512.000kHz	1.000MHz	1.024MHz	2.000MHz	2.048MHz	3.686MHz	4.000MHz
4.096MHz	5.000MHz	7.3728MHz	8.000MHz	8.192MHz	10.000MHz	12.000MHz	16.000MHz
16.384MHz	20.000MHz	24.000MHz	25.000MHz	26.000MHz	32.000MHz	32.768MHz	40.000MHz
48.000MHz							

*Refer to High Temperature Low Power Real Time Clock Oscillators datasheet for 32.768KHz frequency applications.

Ordering Information

PX - 570 1 - D A Y - V X X X - 10M0000000

Product Family
High Temp Products

Package Type
570: 8 x 9 mm

Lead Options
1: 6 lead Thru Hole
2: 6 lead Gull Wing
3: 6 lead Inward L

Supply Voltage
D: 5.0V $\pm 5\%$
E: 3.3V $\pm 5\%$
H: 2.5V $\pm 5\%$
J: 1.8V $\pm 5\%$

Output
A: HCMOS/ACMOS

Frequency

Factory Use

Factory Use

Enable

A: Enable Hi, Tristate
X: No Enable

Temp Stability (PX)

J: ± 40 ppm
S: ± 100 ppm
U: ± 150 ppm
V: ± 200 ppm
W: ± 250 ppm
Y: ± 350 ppm

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
3: 0°C to 230°C
6: -55°C to 230°C

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

Temperature Range and Stability Table		
Temp Range	Temp Stability	PX-570
1: 0°C to 150°C	J: ± 40 ppm	Tight Stability
	S: ± 100 ppm	Standard
	U: ± 150 ppm	Standard
	W: ± 250 ppm	Standard
Z: -20°C to 180°C	J: ± 40 ppm	Tight Stability
	S: ± 100 ppm	Tight Stability
	U: ± 150 ppm	Standard
	W: ± 250 ppm	Standard
Y: -55°C to 180°C	S: ± 100 ppm	Tight Stability
	U: ± 150 ppm	Standard
	W: ± 250 ppm	Standard
2: 0°C to 200°C	S: ± 100 ppm	Tight Stability
	U: ± 150 ppm	Tight Stability
	V: ± 200 ppm	Standard
	W: ± 250 ppm	Standard
5: -55°C to 200°C	S: ± 100 ppm	Tight Stability
	U: ± 150 ppm	Tight Stability
	V: ± 200 ppm	Standard
	W: ± 250 ppm	Standard
3: 0°C to 230°C	V: ± 200 ppm	Tight Stability
	W: ± 250 ppm	Tight Stability
	Y: ± 350 ppm	Standard
6: -55°C to 230°C	V: ± 200 ppm	Tight Stability
	W: ± 250 ppm	Tight Stability
	Y: ± 350 ppm	Standard

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