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

![Block Diagram](image)

VX-400

Vectron International • 267 Lowell Road, Unit 102, Hudson, NH 03051 • Tel: 1-88-VECTRON-1 • http://www.vectron.com
### Performance Specifications

<table>
<thead>
<tr>
<th>Specification Parameters</th>
<th>Values</th>
</tr>
</thead>
<tbody>
<tr>
<td>Frequency Range</td>
<td>1 MHz to 32.768 MHz</td>
</tr>
<tr>
<td>Supply (Vdd)</td>
<td>+5.0Vdc ±5% (D)</td>
</tr>
<tr>
<td></td>
<td>+3.3Vdc ±5% (E)</td>
</tr>
<tr>
<td>Current</td>
<td>12mA typical @ 25MHz</td>
</tr>
<tr>
<td>Level “0” &amp; “1”</td>
<td>&lt;0.4V / &gt;Vdd - 0.5V</td>
</tr>
<tr>
<td>Output</td>
<td>HCMOS compatibility (A)</td>
</tr>
<tr>
<td>Rise &amp; Fall Time</td>
<td>1ns typical / 3ns Max</td>
</tr>
<tr>
<td>Symmetry</td>
<td>40/60%</td>
</tr>
</tbody>
</table>

### Environmental Compliance

<table>
<thead>
<tr>
<th>Environmental Compliance</th>
<th>Specifications</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vibration-Sine</td>
<td>20g to 2kHz Sine</td>
</tr>
<tr>
<td>Vibration-Random</td>
<td>20grms to 2kHz Random</td>
</tr>
<tr>
<td>Shock</td>
<td>100g, 6ms</td>
</tr>
<tr>
<td>Seal Test</td>
<td>Fine</td>
</tr>
<tr>
<td>Seal Test</td>
<td>Gross</td>
</tr>
<tr>
<td>Temperature Cycling</td>
<td>10 Cycles minimum</td>
</tr>
<tr>
<td>Acceleration</td>
<td>5000g Y1 axis</td>
</tr>
</tbody>
</table>
Physical Specifications

<table>
<thead>
<tr>
<th>Pin</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>VCXO Control Voltage</td>
</tr>
<tr>
<td>7</td>
<td>Case &amp; Electrical Ground</td>
</tr>
<tr>
<td>8</td>
<td>VCXO RF Output</td>
</tr>
<tr>
<td>14</td>
<td>VCC Power Supply Voltage</td>
</tr>
</tbody>
</table>

Dimensions in inches

Frequency - Temperature Performance (Typical)

VX-400 Frequency-Temperature Plot
(0 deg C to +200 deg C)

Phase Noise Performance (Typical)
### Standard Frequency List

<table>
<thead>
<tr>
<th>Frequency</th>
<th>10.000MHz</th>
<th>16.000MHz</th>
<th>16.384MHz</th>
<th>20.000MHz</th>
<th>24.000MHz</th>
<th>24.576MHz</th>
<th>32.768MHz</th>
</tr>
</thead>
</table>

### Ordering Information

**VX - 400 0 - DAY - FX X - 10M000000**

**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**

**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 200°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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