OE-XBFXXXX-X Series  
HF/UHF TCVCXO  
Ultra Low Phase Noise

**Description:** The OE-XBFXXXX Series of temperature compensated, voltage controlled crystal oscillators (TCVCXO), provides High and Ultra High Frequency with excellent temperature stability, extremely low phase noise and jitter with a variety of different output types in a standard Europack.

### Features
- Standard “Europack”
- Very Low Phase Jitter and Phase Noise
- Excellent Frequency Stability
- Ultra High Frequency – up to 2.0 GHz
- Sine-Wave output
- Stratum3 available
- COTS/Dual use

#### Creating a Part Number

**Package Code**  
OE 5 Pin 36x27mm

**Supply Voltage**

<table>
<thead>
<tr>
<th>Code</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>5V ±5%</td>
</tr>
<tr>
<td>A</td>
<td>3.3V ±5%</td>
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</table>

**TCXO/TCVCXO Option**

<table>
<thead>
<tr>
<th>Code</th>
<th>Specification</th>
</tr>
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<tbody>
<tr>
<td>X</td>
<td>No V. Control</td>
</tr>
<tr>
<td>V</td>
<td>W/ V. Control</td>
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</table>

- Not all combinations available – consult factory

**Output Type**

<table>
<thead>
<tr>
<th>Code</th>
<th>Specification</th>
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<tbody>
<tr>
<td>S</td>
<td>Sine-wave</td>
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</table>

**Temp. Frequency Stability**

<table>
<thead>
<tr>
<th>Code</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>±1.0 ppm</td>
</tr>
<tr>
<td>2</td>
<td>±2.5 ppm</td>
</tr>
<tr>
<td>3</td>
<td>±0.28 ppm</td>
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**Environmental**

<table>
<thead>
<tr>
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<th>Specification</th>
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</thead>
<tbody>
<tr>
<td>L</td>
<td>Contains a level of lead that is in excess of RoHS directive and is not designed for reflow</td>
</tr>
<tr>
<td>R</td>
<td>RoHS compliant, not designed for reflow</td>
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</tbody>
</table>

**Temperature Range**

<table>
<thead>
<tr>
<th>Code</th>
<th>Specification</th>
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<tbody>
<tr>
<td>E</td>
<td>-10°C to 60°C</td>
</tr>
<tr>
<td>B</td>
<td>0°C to 70°C</td>
</tr>
<tr>
<td>C</td>
<td>-20°C to 70°C</td>
</tr>
<tr>
<td>D</td>
<td>-40°C to 85°C</td>
</tr>
</tbody>
</table>
## OE-XBFXXXX-X Series
### HF/UHF SMD TCVCXO

### Specifications (1)

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Condition</th>
<th>Min</th>
<th>Typ</th>
<th>Max</th>
<th>Unit</th>
<th>Note</th>
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<tr>
<td><strong>Electrical</strong></td>
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</tr>
<tr>
<td>Frequency Range</td>
<td></td>
<td>30</td>
<td>2,000</td>
<td>MHz</td>
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<tr>
<td>Input Voltage</td>
<td>Vcc</td>
<td>3.135</td>
<td>3.30</td>
<td>3.65</td>
<td>V</td>
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<td>4.75</td>
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<td>Input Current</td>
<td>Icc</td>
<td>30</td>
<td>100</td>
<td>140</td>
<td>mA</td>
<td></td>
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<td></td>
<td>@100MHz, 3.3V</td>
<td></td>
</tr>
<tr>
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<td>@622MHz, 3.3V</td>
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<td>@1000MHz, 3.3V</td>
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<tr>
<td>Frequency Stab.</td>
<td>ΔF/F</td>
<td>Overall, available</td>
<td>±4.6</td>
<td>ppm</td>
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<tr>
<td>Frequency Stability</td>
<td>ΔF/F vs. Temperature vs. Vcc aging</td>
<td>±0.5</td>
<td>±1</td>
<td>ppm</td>
<td>See chart</td>
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<tr>
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<td>±0.1</td>
<td>ppm/V</td>
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<td></td>
<td></td>
<td>±1</td>
<td>ppm/year</td>
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<td></td>
<td></td>
<td>±3.5</td>
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<td>±0.5</td>
<td>±1</td>
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<td>Load</td>
<td>CMOS, Sine, PECL, LVDS</td>
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<tr>
<td>Output power (2)</td>
<td>P Sine-wave Into 50 Ohms &lt;=400MHz</td>
<td>0</td>
<td>3</td>
<td>7</td>
<td>dBm</td>
<td>3.3V</td>
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<td>4</td>
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<td>&gt;400MHz</td>
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<td>3.3V</td>
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<tr>
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<td>5</td>
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<td>5.0V</td>
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<td>Start up time</td>
<td>Ts</td>
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<td>10</td>
<td>ms</td>
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<tr>
<td>Phase Jitter</td>
<td>1σ</td>
<td>0.4</td>
<td>1</td>
<td>ps</td>
<td>100Hz to 20MHz</td>
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<td>0.2</td>
<td>0.4</td>
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<td>12KHz to 20MHz</td>
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<td>Subharmonics</td>
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<td>-80</td>
<td>-40</td>
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<td>-25</td>
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<td>SSB Phase Noise</td>
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<td>10</td>
<td>dBc/Hz</td>
<td>@100MHz</td>
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<td>25</td>
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<tr>
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<td>PECL, Sine</td>
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<td>PECL, LVDS</td>
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<td>CMOS, Sine</td>
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<td>PECL, Sine</td>
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<td>CMOS, Sine</td>
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<tr>
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<td>PECL, LVDS</td>
<td>-100</td>
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<td>100</td>
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</tr>
<tr>
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<td>CMOS, Sine</td>
<td>-105</td>
<td>0</td>
<td>105</td>
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<tr>
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<td>PECL, Sine</td>
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<td>110</td>
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<tr>
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<td>PECL, LVDS</td>
<td>-115</td>
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<td>115</td>
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<td>CMOS, Sine</td>
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<td>120</td>
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<td>PECL, Sine</td>
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<td>PECL, LVDS</td>
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<td>130</td>
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</tr>
<tr>
<td></td>
<td>CMOS, Sine</td>
<td>-135</td>
<td>0</td>
<td>135</td>
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</tbody>
</table>
OE-XBFXXXX-X Series
HF/UHF SMD TCVCXO

**Electrical (continued)**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Symb</th>
<th>Condition</th>
<th>Min</th>
<th>Typ</th>
<th>Max</th>
<th>Unit</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>Input Impedance</td>
<td></td>
<td></td>
<td>&gt; 10KΩ</td>
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<tr>
<td>Control voltage</td>
<td>Vc</td>
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<td>0</td>
<td>3.3</td>
<td>V</td>
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<td>Modulation bandwidth</td>
<td>MB</td>
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<td>100 Hz</td>
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<td>Contact Factory for wider MB</td>
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<tr>
<td>Deviation</td>
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<td></td>
<td>±5</td>
<td>±7</td>
<td>ppm</td>
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</tbody>
</table>

Note 1) All parameters, unless otherwise specified, are at nominal conditions, ie: T=25°C, Nominal Vcc & Nominal Load
2) Higher output power available – consult factory (current consumption may increase)

**Absolute Maximum Ratings**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Symb</th>
<th>Condition</th>
<th>Min</th>
<th>Typ</th>
<th>Max</th>
<th>Unit</th>
<th>Note</th>
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<tbody>
<tr>
<td>Input Break Down Voltage</td>
<td>Vcc</td>
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<td>-0.5</td>
<td>5.5</td>
<td>V</td>
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</tr>
<tr>
<td>Storage temp.</td>
<td>Ts</td>
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<td>-40</td>
<td>105</td>
<td>°C</td>
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<tr>
<td>Contr. Voltage</td>
<td>Vc</td>
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<td>-1</td>
<td>9</td>
<td>V</td>
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**Environmental and Mechanical**

| Operating temp. range     | 0°C to 70°C, -40°C to 85°C, see chart, page 1 |
| Mechanical Shock          | Per MIL-STD-202, Method 213, Cond. E |
| Thermal Shock             | Per MIL-STD-883, Method 1011, Cond. A |
| Vibration                 | Per MIL-STD-883, Method 2007, Cond. A |
| Soldering Conditions      | 260°C 10 seconds, leads only |
| Hermetic Seal             | Leak rate less than 1x10^-8 atm. cc/s of helium (crystal only) |

**Electrical Connections**

| Pin Out                    | Pin #1-Vc; Pin#2 – Vref; Pin #3 – Vcc; Pin #4- Output ; Pin #5- GND; |