**Low Jitter & High Frequency VCXOs**

- **Features:**
  - 3.3V
  - 5.0 x 3.2
  - ±100ppm
  - LVPECL
  - HCMOS
  - 7.0 x 5.0
  - ±75ppm
  - 12.5 - 200
  - ±35ppm
  - <5ps
  - HCMOS/TTL
  - <1ps
  - LVPECL
  - 150fs
  - 100 - 250
  - 9.0 x 14.0
  - 200fs
  - LVDS
  - 3.3V
  - 19 - 200
  - 3.3V
  - 100 - 250
  - 200 - 1,000
  - 19.44 - 200
  - ±50ppm
  - 9.0 x 14.0
  - ±50ppm
  - 100 - 170
  - LVPECL
  - ±50ppm
  - ±100ppm
  - <1ps
  - LVDS
  - 2.5V
  - 7.0 x 5.0
  - HCMOS
  - 19.44 - 212.5
  - <1ps
  - 500fs
  - Low Jitter
  - -55°C - 125°C
  - Wide Pull Range Option
  - 3.3V
  - High Frequency
  - 1.0 - 80
  - 2.5V
  - HCMOS/TTL
  - HCMOS/TTL
  - 38 - 800
  - 7.0 x 5.0
  - 7.0 x 5.0
  - 1.5 - 80,
  - 500fs
  - Low Jitter
  - Extra-Wide Pull
  - HCMOS/TTL
  - <1ps
  - 3.3V
  - LVPECL
  - 1.0 - 80
  - 1.54 - 160

- **Stability & Temperature Range:**
  - ±20ppm standard ranges -10°C to +60°C; 0°C to +70°C or -20°C to +70°C
  - ±35ppm
  - ±50ppm extended range -40°C to +85°C

- **Model:**
  - Ultra-Low Jitter Tri-State Control
  - Modulation Sin 24kHz Hz
  - 70.5 ± 5.0
  - X: HCMOS
  - 1.0 - 170
  - ±100ppm
  - 3.3V

- **Output Logic:**
  - HCMOS
  - LVDS
  - HCMOS

- **Package Size:**
  - 9.0 x 14.0

- **Frequency Range:**
  - 19 - 200

- **Phase Jitter (Max):**
  - ±100ppm

- **Absolute Full Range:**
  - ±100ppm

- **Supply Voltage:**
  - 3.3V

**General Purpose VCXOs**

- **Package Type:**
  - Leadless Ceramic, SMD (5G2, 705G).
  - Lead Ceramic, SMD (9G0 x 14Gmm)

- **Stability & Temperature Range:**
  - ±20ppm standard ranges 0°C to +70°C; -20°C to +70°C
  - ±50ppm
  - ±100ppm
  - ±25, ±30, ±50ppm extended range -40°C to +85°C

- **Model:**
  - Low Jitter Output Enable
  - 70.5 ± 5.0
  - X: HCMDS/FTL
  - 1.5 - 80,
  - ±100ppm
  - 3.3V

- **Output Logic:**
  - LVPECL

- **Package Size:**
  - 9.0 x 14.0

- **Frequency Range:**
  - ±100ppm

- **Phase Jitter (Max):**
  - ±100ppm

- **Absolute Full Range:**
  - ±100ppm

- **Supply Voltage:**
  - 3.3V

**High Reliability/High Temp Range/Military Grade VCXOs**

- **Package Type:**
  - Leadless Ceramic, SMD (5G2, 705G).
  - Lead Ceramic, SMD (9G0 x 14Gmm)

- **Output Logic:**
  - HCMOS/FTL

- **Input Voltage:**
  - 3.3V or 5V, VFH5070 and VFH570.
  - 5V, MF5065

- **Stability & Temperature Range:**
  - ±20ppm standard ranges -55°C to +175°C
  - ±50ppm
  - ±100ppm
  - ±50ppm
  - ±25, ±30, ±50ppm extended range -55°C to +175°C

- **Model:**
  - High Reliability
  - HCMOS
  - 5.0V
  - 1.9 ± 0.4
  - ±100ppm
  - 3.3V

- **Output Logic:**
  - LVDS

- **Package Size:**
  - 5.0 x 3.2

- **Frequency Range:**
  - ±100ppm

- **Phase Jitter (Max):**
  - ±100ppm

- **Absolute Full Range:**
  - ±100ppm

- **Supply Voltage:**
  - 3.3V

- **Model:**
  - Hi Rel Military Grade
  - HCMOS
  - 5.0V
  - 1.9 ± 0.4
  - ±100ppm
  - 3.3V

- **Output Logic:**
  - LVDS

- **Package Size:**
  - 5.0 x 3.2

- **Frequency Range:**
  - ±100ppm

- **Phase Jitter (Max):**
  - ±100ppm

- **Absolute Full Range:**
  - ±100ppm

- **Supply Voltage:**
  - 3.3V

- **Model:**
  - Hi Rel Military Grade
  - HCMOS
  - 5.0V
  - 1.9 ± 0.4
  - ±100ppm
  - 3.3V

- **Output Logic:**
  - LVDS

- **Package Size:**
  - 5.0 x 3.2

- **Frequency Range:**
  - ±100ppm

- **Phase Jitter (Max):**
  - ±100ppm

- **Absolute Full Range:**
  - ±100ppm

- **Supply Voltage:**
  - 3.3V

- **Model:**
  - Hi Rel Military Grade
  - HCMOS
  - 5.0V
  - 1.9 ± 0.4
  - ±100ppm
  - 3.3V

- **Output Logic:**
  - LVDS

- **Package Size:**
  - 5.0 x 3.2

- **Frequency Range:**
  - ±100ppm

- **Phase Jitter (Max):**
  - ±100ppm

- **Absolute Full Range:**
  - ±100ppm

- **Supply Voltage:**
  - 3.3V

- **Model:**
  - Hi Rel Military Grade
  - HCMOS
  - 5.0V
  - 1.9 ± 0.4
  - ±100ppm
  - 3.3V

- **Output Logic:**
  - LVDS

- **Package Size:**
  - 5.0 x 3.2

- **Frequency Range:**
  - ±100ppm

- **Phase Jitter (Max):**
  - ±100ppm

- **Absolute Full Range:**
  - ±100ppm

- **Supply Voltage:**
  - 3.3V

- **Model:**
  - Hi Rel Military Grade
  - HCMOS
  - 5.0V
  - 1.9 ± 0.4
  - ±100ppm
  - 3.3V

- **Output Logic:**
  - LVDS

- **Package Size:**
  - 5.0 x 3.2

- **Frequency Range:**
  - ±100ppm

- **Phase Jitter (Max):**
  - ±100ppm

- **Absolute Full Range:**
  - ±100ppm

- **Supply Voltage:**
  - 3.3V

- **General Purpose VCXOs**

- **Model:**
  - Low Jitter Output Enable
  - 70.5 ± 5.0
  - X: HCMDS/FTL
  - 1.5 - 80,
  - ±100ppm
  - 3.3V

- **Output Logic:**
  - LVPECL

- **Package Size:**
  - 9.0 x 14.0

- **Frequency Range:**
  - ±100ppm

- **Phase Jitter (Max):**
  - ±100ppm

- **Absolute Full Range:**
  - ±100ppm

- **Supply Voltage:**
  - 3.3V

- **Model:**
  - Low Jitter Output Enable
  - 70.5 ± 5.0
  - X: HCMDS/FTL
  - 1.5 - 80,
  - ±100ppm
  - 3.3V

- **Output Logic:**
  - LVPECL

- **Package Size:**
  - 9.0 x 14.0

- **Frequency Range:**
  - ±100ppm

- **Phase Jitter (Max):**
  - ±100ppm

- **Absolute Full Range:**
  - ±100ppm

- **Supply Voltage:**
  - 3.3V

- **Model:**
  - Low Jitter Output Enable
  - 70.5 ± 5.0
  - X: HCMDS/FTL
  - 1.5 - 80,
  - ±100ppm
  - 3.3V

- **Output Logic:**
  - LVPECL

- **Package Size:**
  - 9.0 x 14.0

- **Frequency Range:**
  - ±100ppm

- **Phase Jitter (Max):**
  - ±100ppm

- **Absolute Full Range:**
  - ±100ppm

- **Supply Voltage:**
  - 3.3V
**VXCO**

CTS’ broad portfolio of Voltage Controlled Oscillators (VXCOs) provides solutions with tight stability, superior phase noise and phase jitter performance, frequencies to 1GHz and multiple package size options. Our designs employ high frequency fundamental mode crystals, hermetically sealed or FR4 based packages and support PECL, LVPECL, LVDS and HCMOS outputs. Predominantly used within a phase locked loop (PLL) device, a VXCO provides the tuning function that synchronizes a transceiver output to an input source, maintaining phase lock, cleaning noisy signals with high jitter levels, yielding a signal that keeps data integrity intact.

### Low Jitter & High Frequency VXCOs

<table>
<thead>
<tr>
<th>Model</th>
<th>Features</th>
<th>Package Size (mm)</th>
<th>Output Logic</th>
<th>Frequency Range (MHz)</th>
<th>Phase Jitter (Max)</th>
<th>Absolute Pull Range</th>
<th>Supply Voltage</th>
</tr>
</thead>
<tbody>
<tr>
<td>VF594-T</td>
<td>Low Jitter &amp; High Frequency</td>
<td>7.0 x 5.0</td>
<td>PECL</td>
<td>0.15 - 160</td>
<td>&lt;1ps</td>
<td>±50ppm</td>
<td>3.3V</td>
</tr>
<tr>
<td>VF596-C</td>
<td>Low Jitter &amp; High Frequency</td>
<td>7.0 x 5.0</td>
<td>PECL</td>
<td>0.15 - 160</td>
<td>&lt;1ps</td>
<td>±50ppm</td>
<td>3.3V</td>
</tr>
<tr>
<td>VF596-E</td>
<td>Low Jitter &amp; High Frequency</td>
<td>7.0 x 5.0</td>
<td>PECL</td>
<td>0.15 - 160</td>
<td>&lt;1ps</td>
<td>±50ppm</td>
<td>3.3V</td>
</tr>
<tr>
<td>VF596-F</td>
<td>Low Jitter &amp; High Frequency</td>
<td>7.0 x 5.0</td>
<td>PECL</td>
<td>0.15 - 160</td>
<td>&lt;1ps</td>
<td>±50ppm</td>
<td>3.3V</td>
</tr>
</tbody>
</table>

**General Purpose VXCOs**

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<tr>
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<tbody>
<tr>
<td>VF590</td>
<td>Low Jitter</td>
<td>7.0 x 5.0</td>
<td>PECL</td>
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**High Reliability/High Temp Range/Military Grade VXCOs**

<table>
<thead>
<tr>
<th>Model</th>
<th>Features</th>
<th>Package Size (mm)</th>
<th>Output Logic</th>
<th>Frequency Range (MHz)</th>
<th>Phase Jitter (Max)</th>
<th>Absolute Pull Range</th>
<th>Total Stability</th>
<th>Temperature Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>VF5925T00</td>
<td>Low Jitter</td>
<td>7.0 x 5.0</td>
<td>PECL</td>
<td>0.15 - 160</td>
<td>&lt;1ps</td>
<td>±50ppm</td>
<td>3.3V</td>
<td>-55°C - 125°C</td>
</tr>
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**General Purpose VXCOs**

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### VCOX

CTS’ broad portfolio of Voltage Controlled Oscillators (VCOX) provides solutions with tight tolerances, superior phase noise and phase jitter performance, frequencies to 6GHz and multiple package size options. Our designs employ high frequency fundamental mode crystals, hermetically sealed or FR4 based packages and support PECL, LVPECL, LVDS and HCMOS outputs. Predominately used within a phase-locked loop (PLL) device, a VCO provides the tuning function that synchronizes a transmitter output to an input source, maintaining phase lock, clearing noisy signals with high jitter levels, yielding a signal that keeps data integrity intact.

#### Low Jitter & High Frequency

CTS high frequency voltage controlled crystal oscillators (VCOX), highlight unique design techniques that allow our VCOXs to achieve the best jitter performance in the market, even at frequencies reaching 6GHz. Customers may design their own PLL circuits or work with our engineers to customize a design to fit specific application needs.

#### General Purpose

CTS also offers a wide array of VCOX solutions for applications that function with less stringent performance requirements. These products provide our customers options for low cost designs, good phase noise and jitter performance, wide pull range options and support for differential PECL, LVPECL and LVDS outputs or single-end HCMOS output.

#### High Reliability/High Temperature/Military Grade

CTS’ high reliability timing devices are designed to function in extreme environmental conditions such as operating temperatures of -40°C to +125°C, shock up to 1500G and vibration tolerance up to 20G.

### General Purpose VCOXs

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<tr>
<th>Model</th>
<th>Features</th>
<th>Package</th>
<th>Frequency Range (MHz)</th>
<th>Phase Jitter (Max)</th>
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<tbody>
<tr>
<td>VCOX10</td>
<td>Low Jitter</td>
<td>7.0 x 5.0</td>
<td>100 - 150</td>
<td>±50ppm</td>
<td>±50ppm to 3.3V</td>
<td>3.3V</td>
</tr>
<tr>
<td>VCOX30</td>
<td>Low Jitter</td>
<td>9.0 x 14.0</td>
<td>200 - 1,000</td>
<td>±50ppm</td>
<td>±50ppm to 3.3V</td>
<td>3.3V</td>
</tr>
<tr>
<td>VCOX50</td>
<td>Negative Output Enable</td>
<td>9.0 x 14.0</td>
<td>15 - 200</td>
<td>±50ppm</td>
<td>±50ppm</td>
<td>3.3V</td>
</tr>
<tr>
<td>VCOX150</td>
<td>Negative Output Enable</td>
<td>19.0 x 200</td>
<td>500 - 10,000</td>
<td>±50ppm</td>
<td>±50ppm</td>
<td>3.3V</td>
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### High Reliability/High Temp Range/Military Grade VCOXs

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### Low Jitter & High Frequency VCOXs

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<td>VCOX50</td>
<td>Negative Output Enable</td>
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<td>15 - 200</td>
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<tr>
<td>VCOX150</td>
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<td>±50ppm</td>
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### General Purpose

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<tbody>
<tr>
<td>VCOX10</td>
<td>Low Jitter</td>
<td>7.0 x 5.0</td>
<td>LVPECL/PECL</td>
<td>100 - 150</td>
<td>±50ppm</td>
<td>±50ppm</td>
<td>3.3V</td>
</tr>
<tr>
<td>VCOX30</td>
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<td>±50ppm</td>
<td>±50ppm</td>
<td>3.3V</td>
</tr>
</tbody>
</table>

### High Reliability/High Temperature/Military Grade

<table>
<thead>
<tr>
<th>Model</th>
<th>Features</th>
<th>Package</th>
<th>Frequency Range (MHz)</th>
<th>Phase Jitter (Max)</th>
<th>Absolute Pull Range</th>
<th>Total Stability</th>
<th>Temperature Range</th>
</tr>
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<tbody>
<tr>
<td>VCOX10</td>
<td>Low Jitter</td>
<td>7.0 x 5.0</td>
<td>100 - 150</td>
<td>±50ppm</td>
<td>±50ppm</td>
<td>200%</td>
<td>-55°C - 125°C</td>
</tr>
<tr>
<td>VCOX30</td>
<td>Low Jitter</td>
<td>9.0 x 14.0</td>
<td>200 - 1,000</td>
<td>±50ppm</td>
<td>±50ppm</td>
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<td>VCOX50</td>
<td>Negative Output Enable</td>
<td>9.0 x 14.0</td>
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### Low Jitter & High Frequency VCOXs

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<td>9.0 x 14.0</td>
<td>LVPECL/PECL</td>
<td>200 - 1,000</td>
<td>±50ppm</td>
<td>±50ppm to 3.3V</td>
</tr>
<tr>
<td>VCOX50</td>
<td>Negative Output Enable</td>
<td>9.0 x 14.0</td>
<td>LVPECL/PECL</td>
<td>15 - 200</td>
<td>±50ppm</td>
<td>±50ppm</td>
</tr>
<tr>
<td>VCOX150</td>
<td>Negative Output Enable</td>
<td>19.0 x 200</td>
<td>LVPECL/PECL</td>
<td>500 - 10,000</td>
<td>±50ppm</td>
<td>±50ppm</td>
</tr>
</tbody>
</table>