Features
- Surface Mount FR4 based package
- Reflow Process Compatible
- Low Phase Noise and Jitter
- Tight Stabilities
- Frequency Range 10 - 1200MHz
- Standard Frequencies: 10; 16,384; 30,72; 38,88; 44,8; 52; 61.44; 68.736; 76.8; 77.76; 81.92; 92.16; 100; 112; 122.88; 125; 134.4; 153.6; 155.52; 160; 179.2; 184.32; 195; 208; 245.76; 320; 368.64; 400; 448; 471.8592; 491.52; 622.08; 640; 672; 737.28; 800; 832; 1000; 1040; 1200 MHz
- Previous Model Number: C5310

Applications
- Communication
- Test & Measurement
- Medical
- Military

Performance Specifications

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Min</th>
<th>Typical</th>
<th>Max</th>
<th>Units</th>
<th>Condition</th>
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<tbody>
<tr>
<td>vs. operating temperature range (referenced to +25°C)</td>
<td>-15</td>
<td>+15</td>
<td>ppm</td>
<td>-20 to +70°C</td>
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<td>Initial tolerance vs. supply voltage change</td>
<td>-10</td>
<td>+10</td>
<td>ppm</td>
<td>@Vc=Vs/2</td>
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<tr>
<td>vs. load change</td>
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<td>+3</td>
<td>ppm</td>
<td>Vs ±5% Load ±10%</td>
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<tr>
<td>vs. aging / 1st Year</td>
<td>-2</td>
<td>+2</td>
<td>ppm</td>
<td></td>
<td></td>
</tr>
<tr>
<td>vs. aging (following years)</td>
<td>-1</td>
<td>+1</td>
<td>ppm</td>
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</tr>
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</table>

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Min</th>
<th>Typical</th>
<th>Max</th>
<th>Units</th>
<th>Condition</th>
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<tr>
<td>Initial tolerance vs. supply voltage change</td>
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<td>+15</td>
<td>ppm</td>
<td>@Vc=Vs/2</td>
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</tr>
<tr>
<td>vs. load change</td>
<td>-3</td>
<td>+3</td>
<td>ppm</td>
<td>Vs ±5% Load ±10%</td>
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<tr>
<td>vs. aging / 1st Year</td>
<td>-2</td>
<td>+2</td>
<td>ppm</td>
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<tr>
<td>vs. aging (following years)</td>
<td>-1</td>
<td>+1</td>
<td>ppm</td>
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</table>
## Performance Specifications

### Supply Voltage (Vs)

<table>
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<th>Max</th>
<th>Units</th>
<th>Condition^2</th>
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<tbody>
<tr>
<td>Supply voltage (standard)</td>
<td>3.135</td>
<td>3.3</td>
<td>3.465</td>
<td>VDC</td>
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<tr>
<td>Current consumption</td>
<td>40 mA</td>
<td>@ HCMOS, Sinewave</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Supply voltage (standard)</td>
<td>4.75</td>
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<td>5.25</td>
<td>VDC</td>
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<tr>
<td>Current consumption</td>
<td>30 mA</td>
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<tr>
<td>Current consumption</td>
<td>80 mA</td>
<td>@ PECL, LVDS</td>
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</table>

### RF Output

**Signal HCMOS**
- Load: 15 pF
- Rise and Fall time: 5 ns @ 15 pF 10 to 90%
- Duty cycle: 40 % @ Vs / 2

**Signal PECL**
- Load: 50 Ω
- Rise and Fall time: 1 ns 20 to 80%
- Duty cycle: 45 %

**Signal LVDS**
- Load: 100 Ω
- Rise and Fall time: 1 ns 10 to 90%
- Duty cycle: 40 %

**Signal Sinewave**
- Load: 50 Ω
- Output Power: -3 to 3 dBm

### Frequency Tuning (EFC)

**Tuning Range**
- ±65.0 ppm
- ±90 ppm
- ±200.0 ppm

**Linearity**
- 10 %

**Tuning Slope**
- Positive

**Control Voltage Range**

<table>
<thead>
<tr>
<th>Control Voltage</th>
<th>VDC</th>
<th>VDC</th>
<th>with Vs = 3.3V</th>
<th>with Vs = 5V</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>0.5</td>
<td>1.65</td>
<td>3.3</td>
<td>4.5</td>
</tr>
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</table>

**Frequency Control Input Impedance**
- 100 kΩ

### Additional Parameters

#### Phase Noise

<table>
<thead>
<tr>
<th>Frequency</th>
<th>HCMOS</th>
<th>LVCMOS 3.3V</th>
<th>PECL 3.3V</th>
<th>PEC 3.3V</th>
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</thead>
<tbody>
<tr>
<td>10 Hz</td>
<td>dBC/Hz</td>
<td>10 Hz</td>
<td>1 kHz</td>
<td>1 kHz</td>
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<tr>
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<tr>
<td>12 kHz</td>
<td>ps RMS</td>
<td>@ 12kHz .. 20MHz</td>
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<td></td>
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#### Jitter

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</thead>
<tbody>
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<td>ps RMS</td>
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<td>1 kHz</td>
<td>1 kHz</td>
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<tr>
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</table>
Performance Specifications

<table>
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<tr>
<th>Additional Parameters</th>
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</thead>
<tbody>
<tr>
<td>Subharmonics</td>
<td>-40</td>
<td>dBc</td>
<td>For f &gt; 200 MHz</td>
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<td>Weight</td>
<td>2.0 g</td>
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<tr>
<td>Processing &amp; Packing</td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Absolute Maximum Ratings</td>
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</tr>
<tr>
<td>Supply voltage (Vs)</td>
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<td>V</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Operable Temperature Range</td>
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</tr>
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<td>Storage Temperature Range</td>
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<td>+95</td>
<td>°C</td>
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Typical Phase Noise and Jitter

**Phase Noise**

VX-501 @ 100 MHz LVCMOS

![Phase Noise](image1)

VX-501 @ 153.6 MHz LVPECL

![Phase Noise](image2)

VX-501 @ 300 MHz LVDS

![Phase Noise](image3)

VX-501 @ 491.52 MHz LVPECL

![Phase Noise](image4)
### Package Codes

<table>
<thead>
<tr>
<th>Type</th>
<th>Height “H”</th>
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</thead>
<tbody>
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<td>G223B</td>
<td>5.9</td>
</tr>
<tr>
<td>G218B</td>
<td>5.9</td>
</tr>
<tr>
<td>G218E</td>
<td>4.7</td>
</tr>
<tr>
<td>G218C</td>
<td>2.8</td>
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</table>

### Pin Connections

<table>
<thead>
<tr>
<th>Pin</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Control Voltage (Vc)</td>
</tr>
<tr>
<td>2</td>
<td>Ground</td>
</tr>
<tr>
<td>3</td>
<td>RF Output</td>
</tr>
<tr>
<td>4</td>
<td>Supply Voltage Input (Vs)</td>
</tr>
<tr>
<td>5</td>
<td>RF Output complementary (PECL / LVDS) N.C. (CMOS)</td>
</tr>
</tbody>
</table>

### Marking

- **VX-501-xxxx**
- **Frequency**: AYYWW

### Enable true table (optional)

<table>
<thead>
<tr>
<th>Pin</th>
<th>HCMOS</th>
<th>LVPECL / LVDS</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>High</td>
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</tr>
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<td>3</td>
<td>Open</td>
<td>N.C.</td>
</tr>
<tr>
<td>4</td>
<td>Low</td>
<td>N.C.</td>
</tr>
<tr>
<td>5</td>
<td>High Tristate</td>
<td>N.C.</td>
</tr>
</tbody>
</table>

#### Enable true table (optional)

- **HCMOS**
  - Pin 2: High Data
  - Pin 3: N.C.
  - Pin 4: No Data
  - Pin 5: No Data

- **LVPECL / LVDS**
  - Pin 2: N.C.
  - Pin 3: Data
  - Pin 4: Compl. Data
  - Pin 5: Compl. Data
Standard Shipping Method

**Recommended Reflow Profile**

TP: max 250°C (@ solder joint, customer board level)

Tₚ: max: 10…30 sec

Additional Information:

This SMD oscillator has been designed for pick and place reflow soldering

SMD oscillators must be on the top side of the PCB during the reflow process.
Ordering Information

**Model Code**

**VX-501**

- **Height**
  - 0: 5.9 mm (G218B)
  - 1: 4.7 mm (G218E)
  - 2: 2.8 mm (G218C)
  - 3: 5.9 mm (G223B)

- **Supply Voltage**
  - D: 5V
  - E: 3.3V

- **RF Output Code**
  - A: HCMOS
  - C: PECL
  - D: LVDS
  - E: Sinewave

- **Temperature Range**
  - E: -40°C to +85°C
  - J: -20°C to +70°C

- **Enable**
  - 0: No Enable
  - 1: Enable

- **Stability Code**
  - 305: ±30ppm
  - 155: ±15ppm (only -20...70°C)

**Notes:**

1. Contact factory for improved stabilities or additional product options. Not all options and codes are available at all frequencies.
2. Unless otherwise 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.

---

**Contact Information**

**USA:**

100 Watts Street
Mt Holly Springs, PA 17065
Tel: 1.717.486.3411
Fax: 1.717.486.5920

**Europe:**

Landstrasse
74924 Neckarbischofsheim
Germany
Tel: +49 (0) 7268.801.0
Fax: +49 (0) 7268.801.281

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