# ECS-PEC25/PEC33 SMD PECL Oscillator

ECS-PEC25 (2.5V) and ECS-PEC33 (3.3V) miniature SMD PECL oscillators. Ideal for low jitter applications.

## OPERATING CONDITIONS / ELECTRICAL CHARACTERISTICS

<table>
<thead>
<tr>
<th>Parameters</th>
<th>Conditions</th>
<th>ECS-PEC25 (+2.5V)</th>
<th>ECS-PEC33 (+3.3V)</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>MIN</td>
<td>TYP</td>
<td>MAX</td>
</tr>
<tr>
<td>Frequency Range</td>
<td>Standard</td>
<td>40.0</td>
<td>300.0</td>
<td>40.0</td>
</tr>
<tr>
<td></td>
<td>Extended (N Option)</td>
<td>-40</td>
<td>+85</td>
<td>-40</td>
</tr>
<tr>
<td>Operating Temperature</td>
<td></td>
<td>0</td>
<td>+70</td>
<td>0</td>
</tr>
<tr>
<td>Storage Temperature</td>
<td></td>
<td>-50</td>
<td>+125</td>
<td>-50</td>
</tr>
<tr>
<td>Supply Voltage</td>
<td>VDD</td>
<td>+2.375</td>
<td>2.5</td>
<td>+2.625</td>
</tr>
<tr>
<td>Frequency Stability*</td>
<td>Option A</td>
<td>±100</td>
<td>±100</td>
<td>PPM</td>
</tr>
<tr>
<td></td>
<td>Option B</td>
<td>±50</td>
<td>±50</td>
<td>PPM</td>
</tr>
<tr>
<td></td>
<td>Option C</td>
<td>±25</td>
<td>±25</td>
<td>PPM</td>
</tr>
<tr>
<td>Input Current</td>
<td>Pin 1 Open or VIH</td>
<td>90</td>
<td>90</td>
<td>mA</td>
</tr>
<tr>
<td>Stand-by Current</td>
<td>Pin 1 = VIL</td>
<td>30</td>
<td>30</td>
<td>μA</td>
</tr>
<tr>
<td>Output Symmetry</td>
<td>@ 50% VDD Level</td>
<td>40/60</td>
<td>45/55</td>
<td>%</td>
</tr>
<tr>
<td>Rise and Fall Times</td>
<td>20% VDD to 80% Level</td>
<td>1</td>
<td>1</td>
<td>ns</td>
</tr>
<tr>
<td>“0” Level</td>
<td>VOL</td>
<td>+1.195</td>
<td>+1.415</td>
<td>+2.215</td>
</tr>
<tr>
<td>“1” Level</td>
<td>VOH</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Output Load</td>
<td>50Ω into VDD -2V</td>
<td>200</td>
<td>200</td>
<td>ns</td>
</tr>
<tr>
<td>Disable Delay Time</td>
<td></td>
<td>10</td>
<td>10</td>
<td>ms</td>
</tr>
<tr>
<td>Enable/Startup Time</td>
<td></td>
<td>1</td>
<td>1</td>
<td>ps</td>
</tr>
<tr>
<td>RMS Jitter</td>
<td>12 KHz to 20 MHz band</td>
<td>±5</td>
<td>±5</td>
<td>PPM</td>
</tr>
<tr>
<td>Aging</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

## Part Numbering Guide: Example ECS-PEC33-1000-B-N-TR

<table>
<thead>
<tr>
<th>ECS</th>
<th>Series</th>
<th>Frequency Abbreviations</th>
<th>Stability</th>
<th>Temperature</th>
<th>Packaging</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>PEC25 = +2.5V</td>
<td>PEC33 = +3.3V</td>
<td>A = ±100 ppm</td>
<td>Blank = -20 ~ +70°C</td>
<td>TR = Tape &amp; Reel 500/Reel</td>
</tr>
<tr>
<td></td>
<td>1000 = 100 MHz</td>
<td></td>
<td>B = ±50 ppm</td>
<td>M = -20 ~ +70°C</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>C = ±25 ppm</td>
<td>N = -40 ~ +85°C</td>
<td></td>
</tr>
</tbody>
</table>
Package Dimensions (mm)

Figure 1) Top, Side, and Bottom views

<table>
<thead>
<tr>
<th>Pin Connections</th>
</tr>
</thead>
<tbody>
<tr>
<td>#1  Tri-State</td>
</tr>
<tr>
<td>#2  N.C.</td>
</tr>
<tr>
<td>#3  Ground</td>
</tr>
<tr>
<td>#4  Output</td>
</tr>
<tr>
<td>#5  C-Output</td>
</tr>
<tr>
<td>#6  VDD</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Tri-State Control Voltage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pad 1</td>
</tr>
<tr>
<td>Pad 4 &amp; 5</td>
</tr>
<tr>
<td>Open</td>
</tr>
<tr>
<td>Oscillation</td>
</tr>
<tr>
<td>VIH 70% VDD Min</td>
</tr>
<tr>
<td>Oscillation</td>
</tr>
<tr>
<td>VIL 30% VDD Max</td>
</tr>
<tr>
<td>No Oscillation</td>
</tr>
</tbody>
</table>

Note: Internal crystal oscillation to be halted (Pin1 = VIL)

Frequency Abbreviations

<table>
<thead>
<tr>
<th>FREQUENCY MHz</th>
<th>CODE</th>
</tr>
</thead>
<tbody>
<tr>
<td>100.000</td>
<td>1000</td>
</tr>
<tr>
<td>106.250</td>
<td>1062.5</td>
</tr>
<tr>
<td>125.000</td>
<td>1250</td>
</tr>
<tr>
<td>155.520</td>
<td>1555.2</td>
</tr>
<tr>
<td>156.250</td>
<td>1562.5</td>
</tr>
</tbody>
</table>

Figure 2) Land Pattern

Figure 3) Suggested Reflow Profile
**Figure 4)** Test Circuit 1

**Figure 5)** Test Circuit 2

**Figure 6)** Output Waveform 1

**Figure 7)** Output Waveform 2

**Figure 8)** Pocket Tape Dimensions

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**Tape Dimensions (mm)**

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lid</td>
<td>Metal</td>
</tr>
<tr>
<td>Base</td>
<td>Ceramic</td>
</tr>
<tr>
<td>Sealing</td>
<td>Seam</td>
</tr>
<tr>
<td>Terminal</td>
<td>Tungsten (Metalized)</td>
</tr>
<tr>
<td>Plating</td>
<td>Gold/Nickel (Surface)/Under</td>
</tr>
<tr>
<td>RoHS</td>
<td>Compliant (PbFree)</td>
</tr>
</tbody>
</table>

**Package Data**

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>7.5</td>
</tr>
<tr>
<td>B</td>
<td>5.5</td>
</tr>
<tr>
<td>C</td>
<td>16.0</td>
</tr>
<tr>
<td>D</td>
<td>7.5</td>
</tr>
<tr>
<td>F</td>
<td>8.0</td>
</tr>
<tr>
<td>J</td>
<td>2.0</td>
</tr>
<tr>
<td>L</td>
<td>0.3</td>
</tr>
<tr>
<td>M</td>
<td>2.2</td>
</tr>
<tr>
<td>Reel Dia.</td>
<td>245</td>
</tr>
<tr>
<td>Qty/Reel</td>
<td>500pcs</td>
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