Crystek’s Model CCHD-957 HCMOS CLOCK oscillator family has been designed specifically for High Definition Audio (HD Audio). It features a typical low close-in phase noise of -100 dBc/Hz @ 10 Hz offset, and a noise floor of -169 dBc/Hz. With this extreme low phase noise performance, you will “Hear the Difference”. It also features a “Standby Function”, that is, when placed in disable mode, the internal oscillator is completely shut down in addition to its output buffer being placed in Tri-State. This family is housed in a 9x14 mm SMT package and operates with a +3.3V power supply.

Applications include:
- Digital Audio Broadcasting (DAB)
- Professional CD audio equipment
- DACs and ADCs for HD audio
CCHD-957
Ultra-Low Phase Noise Oscillator with Standby Mode

**CCHD-957 Model**

- **Frequency Range:** 10 MHz to 50 MHz
- **Temperature Range:**
  - 0°C to +70°C (Option M)
  - -20°C to +70°C (Option X)
- **Storage:** -45°C to 90°C
- **Input Voltage:** 3.3V ±0.3V
- **Input Current:** 15mA Typical, 25mA Max
- **Input Current (Disabled Mode):** 1.5mA Max
- **Output:** HCMOS
  - **Symmetry:** 45/55% Max @ 50%Vcc
  - **Rise/Fall Time:** 3ns Max @ 20% to 80% Vcc
  - **Logic:**
    - “0” = 10% Vcc Max
    - “1” = 90% Vcc Min
  - **Load:** 15pF
  - **Output Current:** ±24mA Max
- **Disable Time:** 200ns Max
- **Start-up Time:** 1ms Typical, 2ms Max
- **Pin 1 Disable Current:** -350µA Max
- **Phase Noise:** -100 dBc/Hz Typical, -95 dBc/Hz Max at 10Hz offset
- **Phase Noise Floor:** -169 dBc/Hz Typical, -165 dBc/Hz Max
- **Sub-harmonics:** None
- **Aging:** <3ppm 1st year, <1ppm thereafter

**CCHD-957 Options:**

- **Temperature Range:**
  - 0°C to +70°C (±20ppm, ±25ppm, ±50ppm)
  - -20°C to +70°C (±25ppm, ±50ppm)
  - -40°C to +85°C (±25ppm, ±50ppm)

**Part Number Example:**

CCHD-957X-25-49.152 = 3.3V, 45/55, -40°C to +85°C (±25ppm), 49.152 MHz

**Mechanical:**

- **Shock:** MIL-STD-883, Method 2002, Condition B
- **Solderability:** MIL-STD-883, Method 2003
- **Vibration:** MIL-STD-883, Method 2007, Condition A
- **Solvent Resistance:** MIL-STD-202, Method 215
- **Resistance to Soldering Heat:** MIL-STD-202, Method 210, Condition I or J

**Environmental:**

- **Thermal Shock:** MIL-STD-883, Method 1011, Condition A
- **Moisture Resistance:** MIL-STD-883, Method 1004

**Developed Frequencies**

<table>
<thead>
<tr>
<th>Frequency (MHz)</th>
<th>Typical</th>
<th>Max</th>
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<tbody>
<tr>
<td>10.000 MHz</td>
<td>24.576 MHz</td>
<td>40.000 MHz</td>
</tr>
<tr>
<td>20.000MHz</td>
<td>25.000 MHz</td>
<td>45.1584 MHz</td>
</tr>
<tr>
<td>22.5792 MHz</td>
<td>27.000 MHz</td>
<td>49.152 MHz</td>
</tr>
<tr>
<td>24.000 MHz</td>
<td>28.000 MHz</td>
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**SUGGESTED PAD LAYOUT**

<table>
<thead>
<tr>
<th>Pad</th>
<th>Connection</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>E/D</td>
</tr>
<tr>
<td>2</td>
<td>GND</td>
</tr>
<tr>
<td>3</td>
<td>OUT</td>
</tr>
<tr>
<td>4</td>
<td>Vcc</td>
</tr>
</tbody>
</table>

**RECOMMENDED REFLOW SOLDERING PROFILE**

900034 (See App Note listed on website)


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