Model CCSO-914X is a SAW (surface acoustic wave) Clock Oscillator (CCSO). SAW crystal technology provides low-noise and low-jitter performance with true sinewave output. Features include -145 dBC/Hz phase noise at 10 kHz offset at 1 GHz, 3.3V & 5V input voltage available, -40°C to +85°C operating temperature, FR5 PCB and 9×14 mm SMT package. The oscillator has no sub-harmonic and the second harmonic is typically -20 dBC.

Applications include:
Analog to Digital Converters (A/D Converters), System Clock for Network Clock Generator/Synchronizer, Clock for DDS, Test and Measurement, Avionics, Point-to-Point Radios, and Multi-point Radios.
**CCSO-914X**  
**True SineWave**  
**SAW Based Clock Oscillator**  
*9×14mm SMD 3.3 & 5.0 Volt*

- **Frequency Range:** 245.760 MHz to 1500 MHz  
- **Temperature Range:** -40°C to +85°C  
- **Storage:** -45°C to 90°C  
- **Input Voltage:**  
  - (option 3) 3.3V ± 0.165V  
  - (standard) 5.0V ±0.25V  
- **Frequency vs Temperature (Typical):** ±200ppm (-40/85) ±150ppm (0/70)  
- **Input Current:** 25mA Typical, 35mA Max  
- **Output:** True SineWave  
- **Output Power:**  
  - (3.3V) +5dBm Min into 50 Ω Load  
  - (5.0V) +8dBm Min into 50 Ω Load  
- **Start-Up Time:** 2ms Typical, 10ms Max  
- **2nd Harmonic:** -20dBc Typical, -15dBc Max  
- **Sub-Harmonics:** None

**Phase Noise Typical @ 1 GHz:**

<table>
<thead>
<tr>
<th>Frequency</th>
<th>Phase Noise (dBc)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1kHz</td>
<td>-116 dBc/Hz</td>
</tr>
<tr>
<td>10kHz</td>
<td>-145 dBc/Hz</td>
</tr>
<tr>
<td>100kHz</td>
<td>-168 dBc/Hz</td>
</tr>
<tr>
<td>1MHz</td>
<td>-170 dBc/Hz</td>
</tr>
<tr>
<td>10MHz</td>
<td>-170 dBc/Hz</td>
</tr>
</tbody>
</table>

**G-sensitivity:** 0.9×10^-9 per g

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**Suggested Pad Layout**

**PAD FINISH:** Immersion Gold (ENIG); 5 micro inches maximum

<table>
<thead>
<tr>
<th>Pad</th>
<th>Connection</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>N/C</td>
</tr>
<tr>
<td>2</td>
<td>GND</td>
</tr>
<tr>
<td>3</td>
<td>Output</td>
</tr>
<tr>
<td>4</td>
<td>Vdd</td>
</tr>
</tbody>
</table>

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**Package Height Options**

<table>
<thead>
<tr>
<th>Inches</th>
<th>mm</th>
</tr>
</thead>
<tbody>
<tr>
<td>Standard</td>
<td>0.210</td>
</tr>
<tr>
<td>Option L</td>
<td>0.135</td>
</tr>
</tbody>
</table>

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**Date:** 11-May-2020

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**Rev:** X
RECOMMENDED REFLOW SOLDERING PROFILE

TEMPERATURE

260°C
217°C
200°C
150°C

Ramp Up
3°C/Sec Max.

Critical Temperature Zone

Ramp Down
8°C/Sec.

Preheat
180 Secs. Max.

8 Minutes Max.

260°C for
10 Secs. Max.

NOTE: Reflow Profile with 240°C peak also acceptable.

Parameter | Conditions
--- | ---
Mechanical Vibration | MIL-STD-883, Method 2007, Condition A
Solderability | MIL-STD-883, Method 2003
Solvent Resistance | MIL-STD-202, Method 215
Resistance to Soldering Heat | MIL-STD-202, Method 210, Condition I or J
Thermal Shock | MIL-STD-883, Method 1011, Condition A
Moisture Resistance | MIL-STD-883, Method 1004

Available Frequencies (MHz):
- 245.760
- 250.000
- 622.080
- 1000.000
- 1433.920
- 800.000
- 1500.000

Custom Frequencies Available with NRE Fee

Similar Product in 5x7.5mm Package
Click Here

Crystek Part Number Guide

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Conditions</th>
</tr>
</thead>
<tbody>
<tr>
<td>#1</td>
<td>Crystek Saw Osc.</td>
</tr>
<tr>
<td>#2</td>
<td>Model 914 with -40/85°C Temperature Range</td>
</tr>
<tr>
<td>#3</td>
<td>(3 = 3.3 Volts) (Blank = 5 Volts)</td>
</tr>
<tr>
<td>#4</td>
<td>Height (L = 0.135&quot;) (Blank = 0.210&quot;)</td>
</tr>
<tr>
<td>#5</td>
<td>Frequency in MHz: 3 or 6 decimal places</td>
</tr>
</tbody>
</table>

Frequency vs Temperature

Rev: X
Date: 11-May-2020
Page 3 of 5
CCSO-914X
True SineWave
SAW Based Clock Oscillator
9x14mm SMD
3.3 & 5.0 Volt

Agilent E5052A Signal Source Analyzer
CCSO-914X-245.760

[Graph showing phase noise from 1 Hz to 20 MHz]

Agilent E5052A Signal Source Analyzer
CCSO-914X-433.920

[Graph showing phase noise from 1 Hz to 20 MHz]