

# High Frequency SineWave Crystal Oscillator

**CCO-983/985 Model**  
9×14 mm SMD, 3.3V/5V, SineWave



|                                                                    |                                                                       |
|--------------------------------------------------------------------|-----------------------------------------------------------------------|
| <b>Frequency Range:</b>                                            | 50 MHz to 500 MHz                                                     |
| <b>Temperature Range:</b><br>(Option X)                            | ±25ppm, 0°C to 70°C<br>±50ppm, -40°C to 85°C                          |
| <b>Storage:</b>                                                    | -45°C to 90°C                                                         |
| <b>Input Voltage:</b>                                              | 3.3V ±0.3V<br>5.0V ±0.5V                                              |
| <b>Input Current:</b>                                              | 30mA Max @ 3.3V<br>50mA Max @ 5.0V                                    |
| <b>Output:</b>                                                     | True SineWave                                                         |
| Output Power:                                                      | 0 dBm Min                                                             |
| Start-up time:                                                     | 2ms Typical, 10ms Max                                                 |
| Load:                                                              | 50 Ω                                                                  |
| <b>2nd Harmonic:</b>                                               | -20 dBc Max                                                           |
| <b>Sub-Harmonics:</b><br>(50 MHz ~ 170 MHz)<br>(171 MHz ~ 500 MHz) | None<br>-40 dBc Typical, -35 dBc Max                                  |
| <b>Period Jitter:</b> (20,000 periods)                             | <5ps RMS (1-sigma) Max                                                |
| <b>Phase Jitter:</b> 12 kHz~20 MHz<br>50 kHz~80 MHz                | <1ps RMS (1-sigma) Max<br><1ps RMS (1-sigma) Max                      |
| <b>Phase Noise Typical:</b> 10 Hz<br>(@311.04 MHz)                 | -50 dBc/Hz<br>-80 dBc/Hz<br>-110 dBc/Hz<br>-135 dBc/Hz<br>-145 dBc/Hz |
| <b>Aging:</b>                                                      | <3ppm 1 <sup>st</sup> year, <2ppm every year thereafter               |



**Applications:**

10 Gigabit Ethernet  
OC48: Forward Error Correction  
Broadband Networks  
SONET/SDH/DWD  
ATM  
Network/switch  
Telecom

Designed using FR5 PCB & HFF crystal technology to provide a Low Noise, Low Jitter Crystal Oscillator with True Sinewave Output.

|                   |
|-------------------|
| Rev: K            |
| Date: 19-Sep-2017 |
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Specifications subject to change without notice.

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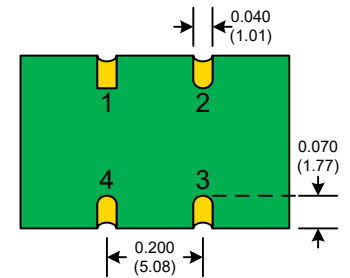
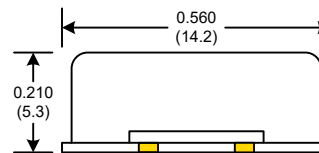
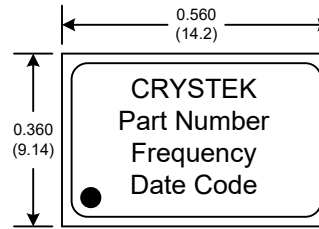
## Crystek Part Number Guide

**CCO-983 X-500.000**

#1 #2 #3 #4

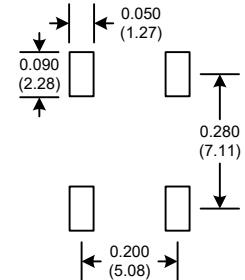
#1 Crystek 9x14 SMD SineWave Oscillator  
#2 Model 983 = 983=3.3V 985=5.0V  
#3 Temp. Range: Blank = 0/70°C, X=-40/85°C  
#4 Frequency in MHz: 3 or 6 decimal places

Example:  
CCO-983X-500.000 = 3.3V, -40/85°C, 500.000 MHz



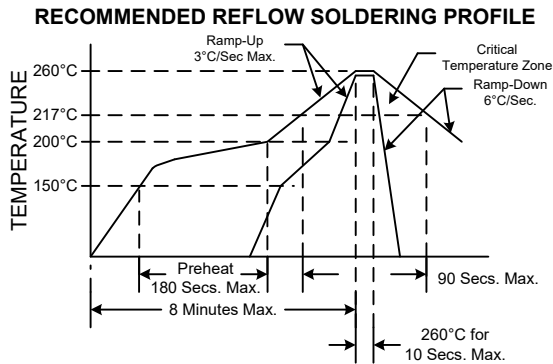
**PAD FINISH:** Immersion Gold (ENIG); 5 micro inches maximum

## SUGGESTED PAD LAYOUT



| Pad | Connection |
|-----|------------|
| 1   | N/C        |
| 2   | GND        |
| 3   | OUT        |
| 4   | Vdd        |

| Standard Frequencies MHz |          |
|--------------------------|----------|
| 77.7600                  | 167.3317 |
| 155.5200                 | 212.5000 |
| 156.2500                 | 250.0000 |
| 161.1328                 | 311.0400 |
| 166.6286                 |          |



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

### 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

### Packaging:

Tape/Reel: 100ea, 250ea, 500ea 24mm Tape

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