



**CRYSTEK**  
CRYSTALS  
A DIVISION OF CRYSTEK CORPORATION

## CCO-983/985 Model

9×14 mm SMD, 3.3V/5V, SineWave



# High Frequency SineWave Crystal Oscillator



|                                         |                                                         |
|-----------------------------------------|---------------------------------------------------------|
| <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 Typical                                         |
| <b>Sub-Harmonics:</b>                   |                                                         |
| (50 MHz ~ 170 MHz)                      | None                                                    |
| (171 MHz ~ 500 MHz)                     | -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      | <1ps RMS (1-sigma) Max                                  |
| 50 kHz~80 MHz                           | <1ps RMS (1-sigma) Max                                  |
| <b>Phase Noise Typical:</b>             |                                                         |
| (@311.04 MHz) 10 Hz                     | -50 dBc/Hz                                              |
| 100 Hz                                  | -80 dBc/Hz                                              |
| 1 kHz                                   | -110 dBc/Hz                                             |
| 10 kHz                                  | -135 dBc/Hz                                             |
| 100 kHz                                 | -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.

Crystek Corporation reserves the right to make changes to its products and/or information contained herein without notice.  
No liability is assumed as a result of its use or application.

Rev: M  
Date: 04-Apr-2019  
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### Crystek Part Number Guide

CCO-983 X-500.000

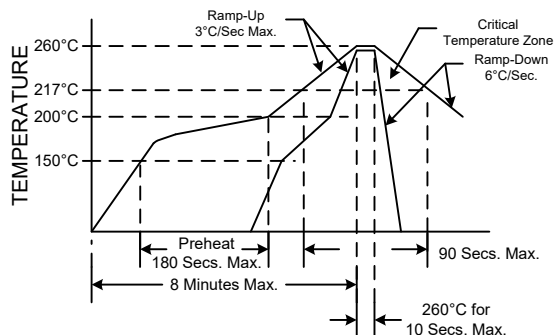
#1 #2 #3 #4

#1 Crystek 9×14 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

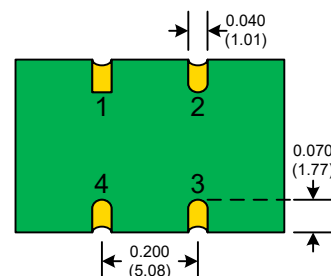
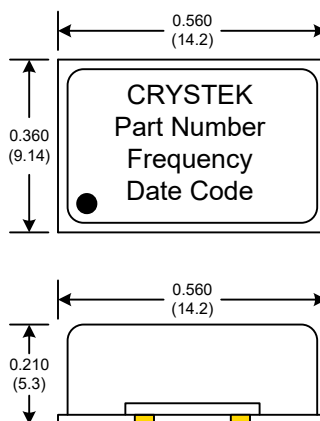
Example:

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

### RECOMMENDED REFLOW SOLDERING PROFILE

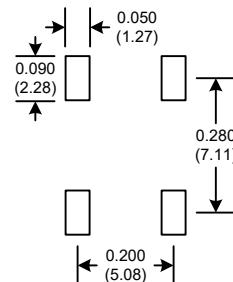


NOTE: Reflow Profile with 240°C peak also acceptable.



**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                 |          |

### Mechanical:

Shock:

Solderability:

Vibration:

Solvent Resistance:

Resistance to Soldering Heat:

MIL-STD-883, Method 2002, Condition B

MIL-STD-883, Method 2003

MIL-STD-883, Method 2007, Condition A

MIL-STD-202, Method 215

MIL-STD-202, Method 210, Condition I or J

### Environmental:

Thermal Shock:

Moisture Resistance:

MIL-STD-883, Method 1011, Condition A

MIL-STD-883, Method 1004

### Packaging:

Tape/Reel:

100ea, 250ea, 500ea 24mm Tape

Rev: M

Date: 04-Apr-2019

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**CRYSTEK**  
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[CCO-983-100.000](#) [CCO-983-200.000](#)