

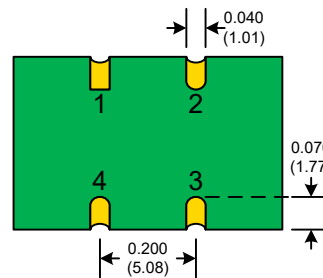
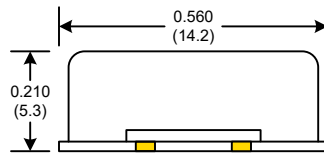
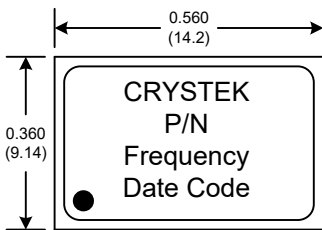
# Low Jitter, High Pull Voltage Controlled Crystal Oscillator

## CVHD-965 Model 9×14 mm SMD, 5V, HCMOS

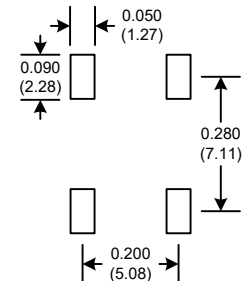
|                             |   |
|-----------------------------|---|
| <b>Frequency Range:</b>     | 14 MHz to 49.152 MHz                                    |
| <b>Frequency Stability:</b> | ±30ppm  |
| <b>Frequency Pulling:</b>   | (Blank) ±100ppm Min (Std)                               |
|                             | (Option A) ±150ppm Min                                  |
|                             | (Option B) ±200ppm Min                                  |
| <b>Temperature Range:</b>   | 0°C to 70°C   |
|                             | (Option M) -20°C to 70°C                                |
|                             | (Option X) -40°C to 85°C                                |
| <b>Storage:</b>             | -45°C to 90°C   |
| <b>Input Voltage:</b>       | 5V ±0.5V  |
| <b>Control Voltage:</b>     | 2.5V ±2.0V  |
| <b>Input Current:</b>       | 30mA Typical, 50mA Max                                  |
| <b>Output:</b>              | HCMOS   |
|                             | Symmetry: 45/55% Max @ 50% Vdd                          |
|                             | Rise/Fall Time: 3ns Max @ 20% to 80% Vdd                |
|                             | Linearity: ±10% Max                                     |
|                             | Logic: "0" = 10% Vdd Max                                |
|                             | "1" = 90% Vdd Min                                       |
|                             | Load: 30pF  |
| <b>Jitter:</b>              | 12kHz to 80MHz<br>0.5psec Typical, 1psec RMS Max        |
| <b>Phase Noise Floor:</b>   | -160 dBc/Hz Typical, -155 dBc/Hz Max Guaranteed         |
| <b>Sub-Harmonics:</b>       | None  |
| <b>Aging:</b>               | <3ppm 1 <sup>st</sup> year, <1ppm every year thereafter |



Designed using fundamental UM-1 crystal to achieve Low Jitter and High Pull performance. Perfect for any application requiring high pull but extremely low jitter. Available in 3.3 Volt version, see CVHD-960 Model.

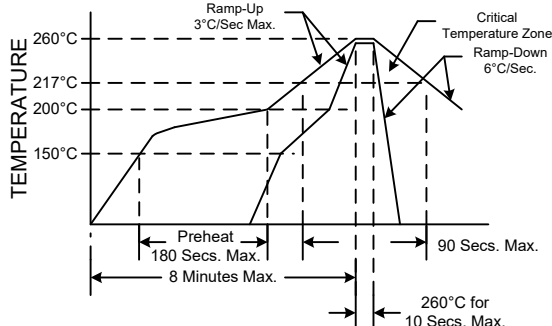


### SUGGESTED PAD LAYOUT



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

### RECOMMENDED REFLOW SOLDERING PROFILE



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

| PIN | Function   |
|-----|------------|
| 1   | Volt Cont. |
| 2   | GND        |
| 3   | OUT        |
| 4   | Vdd        |

### Crystek Part Number Guide

CVHD - 965 - X - X - 16.384

#1 #2 #3 #4 #5

#1 Crystek SMD HCMOS Osc.  
#2 Model 965 = 9×14mm smd 4pad 5.0V  
#3 Temp. Range: Blank = 0/70°C, M= -20/70°C, X= -40/85°C  
#4 Frequency Pulling: (see Table 1)  
#5 Frequency in MHz: 3 or 6 decimal places

#### Frequency Pulling

|             |          |
|-------------|----------|
| Blank (std) | ± 100ppm |
| A           | ± 150ppm |
| B           | ± 200ppm |

Table 1

Examples:

CVHD-965B-49.152 = 5.0V, 45/55, 0/70°C, 200ppm, 16.384 MHz  
CVHD-965MA-49.152 = 5.0V, 45/55, -20/70°C, 150ppm, 16.384 MHz

Rev: H

Date: 14-Sep-2017

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Specifications subject to change without notice.