

**OH-X8FXXXXX Series**  
**HF/UHF OCXO Low Power SMD**

Rev. A

**Description:** OH-X8FXXXXX Series of Oven Controlled Crystal Oscillators (OCXO) provides High and Ultra High Frequency with SC-cut stability performance, extremely low phase noise and power consumption, with variety of different output types in a miniature SMD package

**Features**

- Very Low Power Consumption
- Very Low Phase Noise
- Excellent SC-cut Frequency Stability
- Ultra High Frequency – up to 1 GHz
- CMOS, Sine-Wave, PECL, LVDS outputs available
- Stratum3E available



**Creating a Part Number**

**OH - X 8F X X XX X**

**Package Code**  
 OH 7 pad 25x22mm SMD

**Supply Voltage**

| Code | Specification |
|------|---------------|
| 0    | 5V ±5%        |
| A    | 3.3V ±5%      |

**OCXO/OCVCXO Option**

| Code | Specification |
|------|---------------|
| X    | No V. Control |
| V    | W/ V. Control |

**Output Type**

| Code | Specification |
|------|---------------|
| C    | CMOS          |
| S    | Sine-wave     |
| L    | LVDS          |
| P    | PECL          |

**Temperature Range**

| Code | Specification |
|------|---------------|
| A    | 0°C to 50°C   |
| B    | -10°C to 60°C |
| C    | 0°C to 70°C   |
| D    | -20°C to 70°C |
| E    | -30°C to 70°C |
| F    | -40°C to 80°C |

**Temperature Stability**

| Code | Specification      |
|------|--------------------|
| 17   | 1x10 <sup>-7</sup> |
| 58   | 5x10 <sup>-8</sup> |
| 28   | 2x10 <sup>-8</sup> |
| 18   | 1x10 <sup>-8</sup> |
| YZ   | Yx10 <sup>-Z</sup> |

# CRYSTAL OSCILLATORS

Data Sheet 0635C

OH-X8FXXXXX Series HF/UHF OCXO Low Power SMD

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## Specifications

| Parameter | Symb | Condition | Min | Typ | Max | Unit | Note |
|-----------|------|-----------|-----|-----|-----|------|------|
|-----------|------|-----------|-----|-----|-----|------|------|

### Absolute Maximum Ratings

|                          |                 |  |      |  |     |    |  |
|--------------------------|-----------------|--|------|--|-----|----|--|
| Input Break Down Voltage | V <sub>cc</sub> |  | -0.5 |  | 5.5 | V  |  |
| Storage temp.            | T <sub>s</sub>  |  | -40  |  | 85  | °C |  |
| Contr. Voltage           | V <sub>c</sub>  |  | -1   |  | 9   | V  |  |

### Electrical

|                      |                 |   |                       |                           |   |                                 |   |
|----------------------|-----------------|---|-----------------------|---------------------------|---|---------------------------------|---|
| Frequency Range      | F               | CMOS<br>Sine-wave<br>PECL, LVDS                 | 30<br>30<br>30        |                           | 200<br>1,000<br>1,000   | MHz                             |   |
| Input Voltage        | V <sub>cc</sub> |   | 3.135<br>4.75         | 3.30<br>5.0               | 3.465<br>5.25   | V                               | 3<br>5                                  |
| Input Current        | I <sub>cc</sub> | At room, steady state                           |                       |                           | 90<br>160   | mA                              | @ 100 MHz, 3.3V<br>@ 622 MHz, 3.3V      |
| Frequency Stability  | ΔF/F            | vs. Temperature<br>vs. V <sub>cc</sub><br>aging |                       | ±50<br>±2<br>±0.1<br>±0.5 |   | ppb<br>ppb/V<br>ppm/year<br>ppm | See chart<br><br>First Year<br>15 years |
| Calibration          | ΔF/F            | As shipped, 25°C                                |                       | ±0.1                      |   | ppm                             |   |
| Load                 |                 | CMOS<br>Sine<br>PECL<br>LVDS                    |                       |                           | 15pF/10KOhm<br>Internally AC-coupled 50 Ohm<br>50 Ohm to V <sub>cc</sub> -2V or Thevenin equivalent<br>100 Ohm between the outputs, receiving end |                                 |   |
| Duty cycle           |                 | @50%  | 45                    | 50                        | 55  | %                               | CMOS, PECL, LVDS                        |
| Rise/Fall time       | Tr/Tf           | 20 to 80 %                                      |                       | 3<br>0.35                 |   | ns                              | CMOS<br>PECL, LVDS                      |
| Logic "1" level      | V <sub>oh</sub> | CMOS  | 0.9V <sub>cc</sub>    |                           |   | V                               |   |
| Logic "0" level      | V <sub>ol</sub> | CMOS  |                       |                           | 0.1V <sub>cc</sub>  | V                               |   |
| Logic "1" level      | V <sub>oh</sub> | PECL  | V <sub>cc</sub> -0.96 |                           | V <sub>cc</sub> -0.81   | V                               | 100K available                          |
| Logic "0" level      | V <sub>ol</sub> | PECL  | V <sub>cc</sub> -1.85 |                           | V <sub>cc</sub> -1.65   | V                               | 100K available                          |
| Output Levels, LVDS  | V <sub>od</sub> | Differential amplitude                          | 247                   | 330                       | 454   | mV                              |   |
|                      |                 | Amplitude error                                 |                       |                           | 50  | mV                              |   |
|                      | V <sub>of</sub> | Offset voltage                                  | 1.125                 | 1.25                      | 1.375   | V                               |   |
|                      |                 | Offset error                                    |                       |                           | 50  | mV                              |   |
| Output power         | P               | Sinewave Into 50 Ohm                            | 0<br>4                | 3<br>7                    |   | dBm                             | 3.3V<br>5.0V                            |
| Start up time        | T <sub>s</sub>  |   |                       | 2                         | 10  | ms                              |   |
| Phase jitter         |                 | 1σ  |                       | 0.4<br>0.2                | 1<br>0.4  | ps                              | 100 Hz to 20 MHz<br>12 KHz to 20 MHz    |
| Subharmonics         |                 | Sine, PECL, LVDS<br>CMOS, Sine                  |                       | -45                       | -40<br>none   | dBc                             | F>250MHz<br>F< 250 MHz                  |
| Spurious             |                 |   |                       |                           | -60   | dBc                             |   |
| Harmonics            |                 | Sine-wave                                       |                       | -30                       | -25   | dBc                             |   |
| SSB Phase Noise      |                 | @ 10 Hz   |                       | -100                      |   | dBc/Hz                          | @ 100 MHz, CMOS, Sine                   |
|                      |                 | @ 100 Hz  |                       | -125                      |   |                                 |   |
|                      |                 | @ 1 KHz   |                       | -140                      |   |                                 |   |
|                      |                 | @ 10 KHz  |                       | -160                      |   |                                 |   |
|                      |                 | @ 100 KHz                                       |                       | -165                      |   |                                 |   |
| SSB Phase Noise      |                 | @ 10 Hz   |                       | -80                       |   | dBc/Hz                          | @ 622 MHz;<br>Sine/PECL, LVDS           |
|                      |                 | @ 100 Hz  |                       | -100                      |   |                                 |   |
|                      |                 | @ 1 KHz   |                       | -120                      |   |                                 |   |
|                      |                 | @ 10 KHz  |                       | -145/-140                 |   |                                 |   |
|                      |                 | @ 100 KHz                                       |                       | -150/-145                 |   |                                 |   |
| Input Impedance      |                 |   |                       | > 10KOhm                  |   |                                 |   |
| Control voltage      | V <sub>c</sub>  |   | 0                     |                           | 3.3   | V                               |   |
| Modulation bandwidth | MB              |   | 100 Hz                |                           |   |                                 | Contact Factory for wider MB            |
| Deviation            |                 | V <sub>c</sub> =0V to 3.3V, 25°C                | ±0.5                  | ±1.0                      |   | ppm                             |   |



**FREQUENCY  
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## OH-X8FXXXXX Series HF/UHF OCXO Low Power SMD

Rev. A

*Environmental and Mechanical*

|                              |   |
|------------------------------|---|
| <b>Operating temp. range</b> | 0°C to 70°C , -40°C to 85°C, see chart, page 1            |
| <b>Mechanical Shock</b>      | Per MIL-STD-202, Method 213, Cond. E                      |
| <b>Thermal Shock</b>         | Per MIL-STD-883, Method 1011, Cond. A                     |
| <b>Vibration</b>             | Per MIL-STD-883, Method 2007, Cond. A                     |
| <b>Soldering Conditions</b>  | 260°C for 10 s leads only                                 |
| <b>Hermetic Seal</b>         | Leak rate less than $5 \times 10^{-8}$ atm.cc/s of helium |

*Electrical Connections*

|                |  |
|----------------|--|
| <b>Pin Out</b> | Pin #1- Voltage Control ; Pin #2 – N/C ; Pin #3 – Vcc; Pin#4 – Output, CMOS or Sine; Pin#5 – PECL/LVDS Output; Pin#6 – PECL/LVDS Complementary Out; Pin #7 – GND |
|----------------|--|

### Maximum solder reflow profile

