

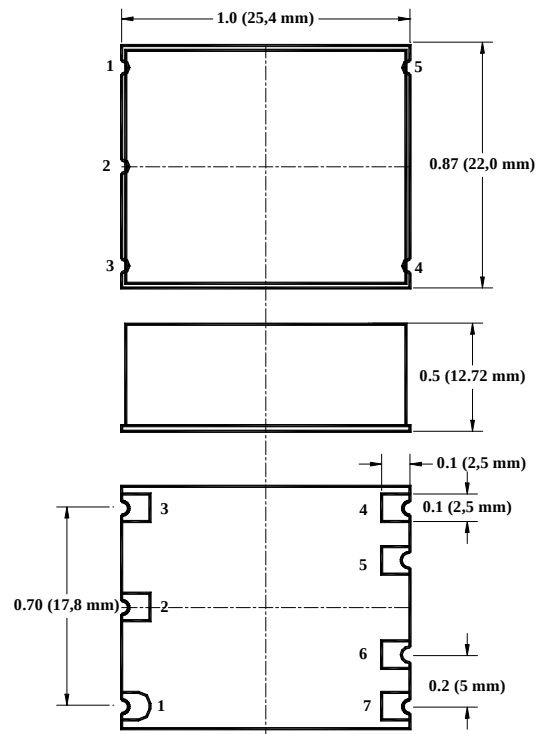
## OH-X8FXXXXX Series HF/UHF OCXO Low Power SMD

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

Package Code

OH 7 pad 25x22mm SMD

Supply Voltage

| Code | Specification |
|------|---------------|
| 0    | 5V $\pm$ 5%   |
| A    | 3.3V $\pm$ 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 Stability

| Code | Specification      |
|------|--------------------|
| 17   | $1 \times 10^{-7}$ |
| 58   | $5 \times 10^{-8}$ |
| 28   | $2 \times 10^{-8}$ |
| 18   | $1 \times 10^{-8}$ |
| YZ   | $Y \times 10^{-Z}$ |

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 |



**FREQUENCY  
CONTROLS, INC.**

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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>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<br>none                                   | -40<br>none           | dBc                             | F>250MHz<br>F< 250 MHz               |
| Spurious             |                 |                                                    |                                                                                                                                                   |                                               | -60                   | dBc                             |                                      |
| Harmonics            |                 | Sine-wave                                          |                                                                                                                                                   | -30                                           | -25                   | dBc                             |                                      |
| SSB Phase Noise      |                 | @10 Hz<br>@100 Hz<br>@1 KHz<br>@10 KHz<br>@100 KHz |                                                                                                                                                   | -100<br>-125<br>-140<br>-160<br>-165          |                       | dBc/Hz                          | @100 MHz, CMOS, Sine                 |
| SSB Phase Noise      |                 | @10 Hz<br>@100 Hz<br>@1 KHz<br>@10 KHz<br>@100 KHz |                                                                                                                                                   | -80<br>-100<br>-120<br>-145/-140<br>-150/-145 |                       | dBc/Hz                          | @622 MHz;<br>Sine/PECL, LVDS         |
| 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                             |                                      |



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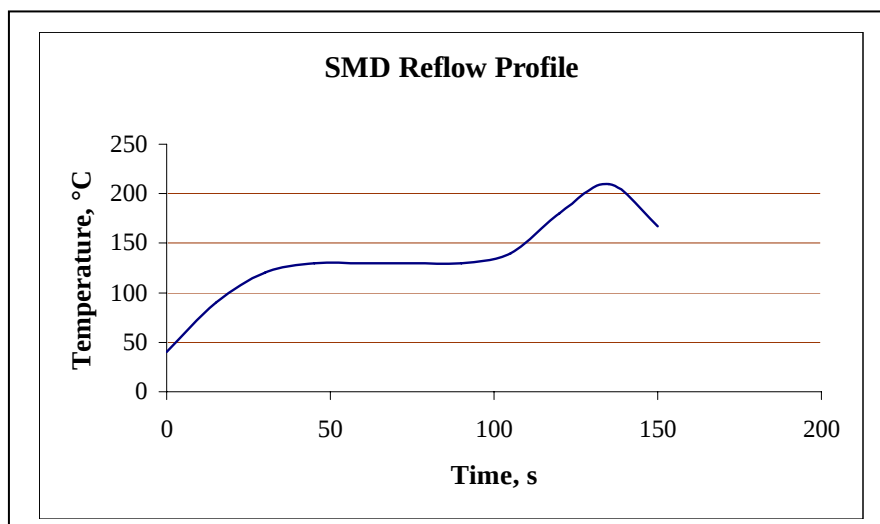
Rev. A

*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**

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