



OX-046

VHF low g-Sensitivity
Oven Controlled Crystal Oscillator

Helping Customers Innovate, Improve & Grow



OX-046

Features

- Ultra Low G-Sensitivity
- Low Phase Noise
- Very High Frequency
- Frequency Range: 50 MHz to 250 MHz
- Standard Frequency: 100 MHz
- Vibration Compensation

Applications

- Military Avionics
- Airborne Radar
- Test Equipment
- Frequency Synthesizers
- Position Location
- Satellite Communications

Performance Specifications

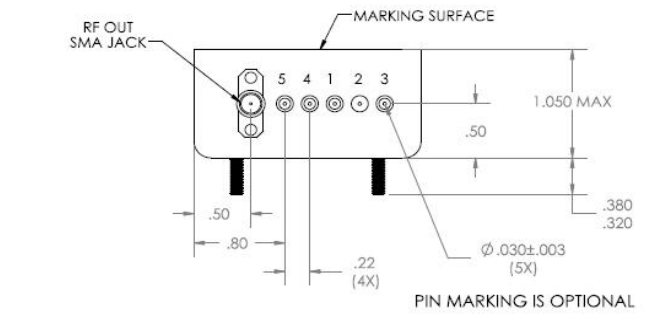
| Parameter | Min | Typ | Max | Units | Condition |
|---|-----------------------------|-----|-----------------------------|--------------------------|--|
| Available Frequencies | | | | | |
| Frequency Range | 50 | | 250 | MHz | |
| G-Sensitivity Performance | | | | | |
| standard crystal | | | 1.5 | ppb/g | |
| g-Sensitivity w\ Low g-Crystal | | | 0.5 | ppb/g | |
| g-Sensitivity w\ Low g-Crystal & Vibration compensation | | | 0.05 | ppb/g | Degrades to 0.5 ppb/g above 250 Hz |
| (No mechanical resonances out to 2KHz) | | | | | G sensitivity specified per axis |
| For oscillators with 0.2 ppb/g out to 2 KHz please contact factory. | | | | | |
| Frequency Stabilities ¹ | | | | | |
| (Stabilities listed for 100 MHz. For Stabilities above 100 MHz values may degrade. Please contact factory.) | | | | | |
| vs. Operating Temperature Range (referenced to +25°C) | -200 -150 -100 -50 | | +200 +150 +100 +50 | ppb ppb ppb ppb | -40... +85°C -40... +70°C -20... +70°C 0... +70°C |
| Initial Tolerance | -500 | | +500 | ppb | at time of shipment, nominal EFC |
| vs. Supply Voltage Change | -10 | | +10 | ppb | Vs ± 5% |
| vs. Load Change | -10 | | +10 | ppb | Load ± 5% |
| vs. Aging / Daily | -5 | | +5 | ppb | after 30 days operation |
| vs. Aging / 1 st Year | -200 | | +200 | ppb | after 30 days operation |
| vs. Aging / 10 Year | -1.5 | | +1.5 | ppm | after 30 days operation |
| Retrace ² | -200 | | +200 | ppb | |
| Warm-up Time | | | 5 | minutes | to ± 100ppb of final frequency (2 hour reading) @ +25°C |

Performance Specifications

| Parameter | Min | Typ | Max | Units | Condition |
|---|----------|------|-------|--------|--|
| Supply Voltage (Vs) | | | | | |
| Supply voltage | 14.25 | 15.0 | 15.75 | VDC | ordering code A |
| | 11.4 | 12.0 | 12.6 | VDC | oredering code B |
| Oven Power Consumption | | | 10.0 | Watts | during warm-up all temperatures |
| | | | 3.5 | Watts | steady state @ +25°C |
| | | | 7.0 | Watts | steady state @ -40°C |
| | | | 1.0 | Watts | steady state @ +70°C |
| RF Output | | | | | |
| Start Time | | 1 | 2 | s | time required to achieve 90% of amplitude |
| Signal | Sinewave | | | | |
| Load | | 50 | | Ohm | |
| Output Power | +7.0 | +10 | +13 | dBm | |
| Harmonics | | | -30 | dBc | |
| Subharmonics | | | -30 | dBc | for oscillator with output frequency > 120 MHz |
| Frequency Tuning (EFC) | | | | | |
| Tuning Range | ±1.5 | | ±3.0 | ppm | Electronic frequency control |
| Linearity | | | 20 | % | |
| Tuning Slope | Positive | | | | |
| Control Voltage Range | 0.0 | +4.0 | +8.0 | VDC | |
| Input Impedance | 20 | | | kOhm | |
| Modulation Bandwidth | 150 | | | Hz | |
| Mechanical Trim (Internal) | | | | | |
| Tuning Range | ±1.5 | | ±3.0 | ppm | Internal Mechanical |
| Phase Noise | | | | | |
| Phase Noise ³ (@ 100 MHZ) (under static conditions - no vibration) | | | -100 | dBc/Hz | 10 Hz |
| | | | -130 | dBc/Hz | 100 Hz |
| | | | -150 | dBc/Hz | 1 KHz |
| | | | -165 | dBc/Hz | 10 KHz |
| | | | -175 | dBc/Hz | 100 KHz |
| Phase Noise ³ (@ 200 MHZ) (under static conditions - no vibration) | | | -90 | dBc/Hz | 10 Hz |
| | | | -120 | dBc/Hz | 100 Hz |
| | | | -140 | dBc/Hz | 1 KHz |
| | | | -155 | dBc/Hz | 10 KHz |
| | | | -165 | dBc/Hz | 100 KHz |

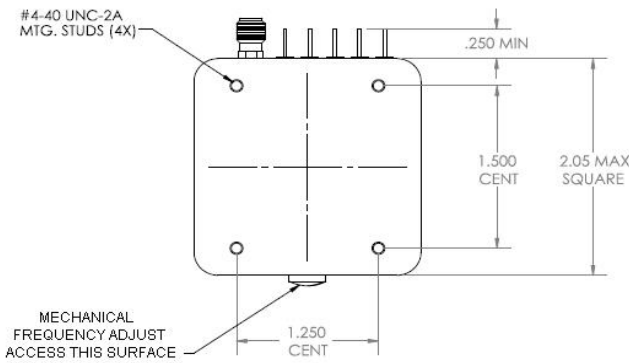
| Parameter | Min | Typ | Max | Units | Condition |
|--|---|-----|------|-------|-----------|
| Additional Parameters¹ | | | | | |
| Weight | | | 150 | g | |
| Absolute Maximum Ratings | | | | | |
| Supply voltage (Vs) | | | 28 | V | |
| Output Load | 25 | | open | ohm | |
| Operable Temperature Range | -55 | | +85 | °C | |
| Environmental Specifications | | | | | |
| Shock (Operating) | MIL-STD-202, Method 213, Condition J, 30G, 11ms, half sine | | | | |
| Shock (Endurance) | Mil-STD-202, Method 213, Condition C, 100G, 6ms, half sine | | | | |
| Sine Vibration (Operating) | Mil-STD-202, Method 204, Condition C, 10 G | | | | |
| Sine Vibration (Endurance) | Mil-STD-202, Method 204, Condition D, 20 G | | | | |
| Random Vibration (Operating) | Mil-STD-202, Method 214, Condition I-C, 9.26 Grms, 3-5min/axis (without vibe comp) Mil-STD-202, Method 214, Condition I-A, 5.35 Grms, 3-5min/axis (with vibe comp) | | | | |
| Random Vibration (Endurance) | Mil-STD-202, Method 214, Condition I-D, 11.95 Grms, 3hrs/axis | | | | |
| Seal | Nonhermetic - Mil-STD-202, Method 112, Condition D available only as custom part number - please contact factory | | | | |
| Humidity | MIL-STD-202, Method 103, Condition B, 90% rh | | | | |
| Altitude | MIL-STD-202, Method 105, sea level to 30,000 ft | | | | |
| Resistance to Soldering Heat | MIL-STD-202, Method 210, Condition A,B,C | | | | |
| RoHS | not RoHS compliant | | | | |
| Terminal Strength | MIL-STD-202, Method 211, Condition C (5 bends at 45°, 2 lbs) | | | | |
| Moisture Sensitivity Level | 1 | | | | |
| Storage Temperature Range | -55 | | +125 | °C | |

Outline Drawing / Enclosure

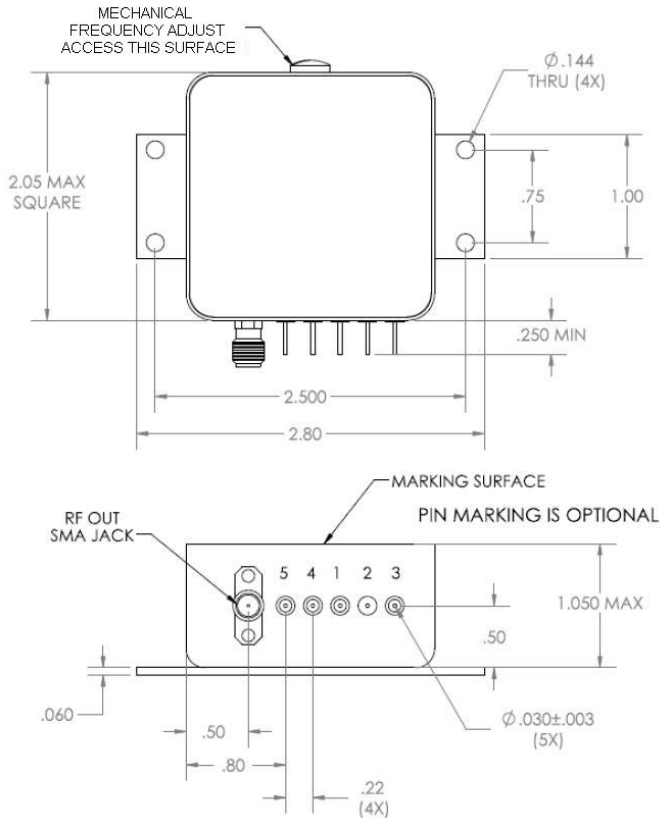


Dimensions in inches

| Package configuration A | | |
|-------------------------|------------|--|
| ordering code | Height "H" | |
| 5 | 0.80 | |
| 0 | 1.05 | |



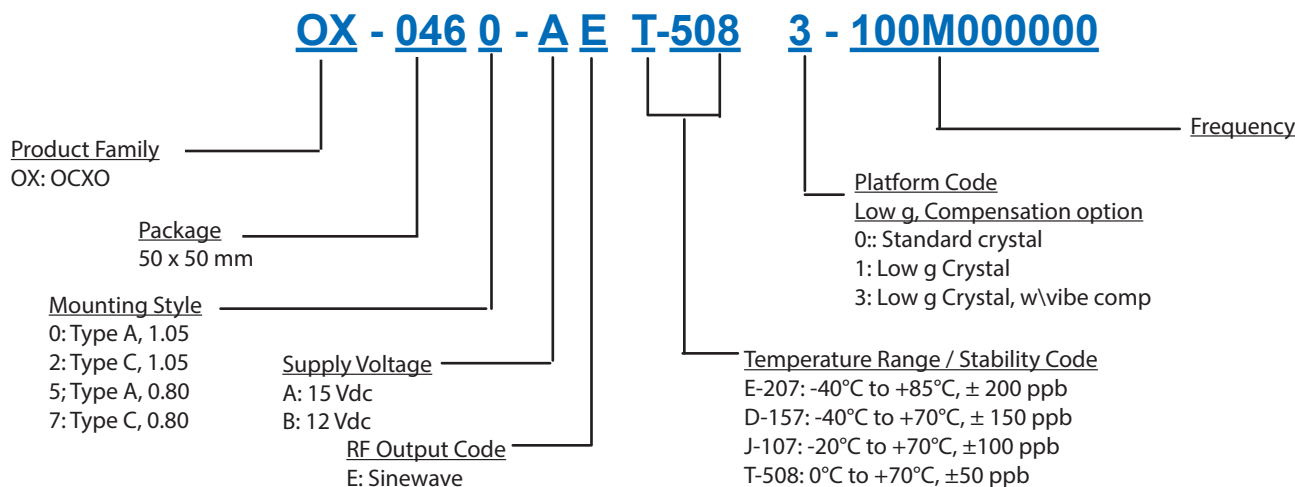
| Pin Connections | |
|-----------------|------------------------------------|
| 1 | Electronic Frequency Control (EFC) |
| 2 | Ground (Case) |
| 3 | Supply Voltage |
| 4 | Vectron Internal Use Only / NC |
| 5 | Vectron Internal Use Only / NC |
| | |
| | |



| Package configuration C | | |
|-------------------------|------------|--|
| ordering code | Height "H" | |
| 7 | 0.80 | |
| 2 | 1.05 | |

| Pin Connections | |
|-----------------|------------------------------------|
| 1 | Electronic Frequency Control (EFC) |
| 2 | Ground (Case) |
| 3 | Supply Voltage |
| 4 | Vectron Internal Use Only / NC |
| 5 | Vectron Internal Use Only / NC |
| | |
| | |

Ordering Information⁴



Additional Ordering Options

Additional ordering options available include custom temperature ranges, custom temperature stabilities, custom phase noise requirements, low profile, custom supply voltage, hermetic option and improved g-sensitivity. These modifications require a custom dash number - please contact the factory for additional information.

Design Tools

| |
|--|
| Vectron stocks the following items for small orders and prototype development: |
| OX-0467-AEE-2073-100M00000 |
| Vectron stocks the following evaluation board for this product: |
| None |
| Application Notes: |
| None |

Notes:

1. Unless otherwise stated, all values are valid after warm-up time and refer to typical conditions for supply voltage, frequency control voltage, load, and temperature (25°C).
2. Retrace is defined as the frequency difference between the end of two 24 hour on power periods with a 24 hour off period in between while at a constant temperature.
3. Phase noise degrades with increasing output frequency.
4. Not all options and codes available at all frequencies.

For Additional Information, Please Contact

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