



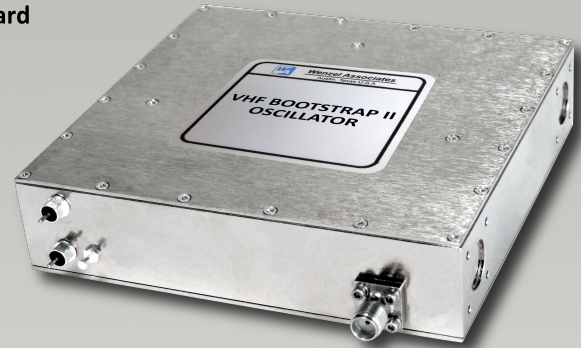
Low Noise Crystal Oscillators > VHF Bootstrap II

Features:

- Frequencies from 25 MHz to 256 MHz, fixed
- Ruggedized for Dynamic Environments
- Ultra Low Phase Noise
- Effective G-Sensitivity to $\leq 2E-11/g$ per axis
- Externally Vibration Isolated Version Available with Effective G-Sensitivity to $2E-12/g$

Applications:

- Military Applications
- Airborne, Ground, Shipboard
- Radar Systems
- Tactical Radio
- Vehicular Communication



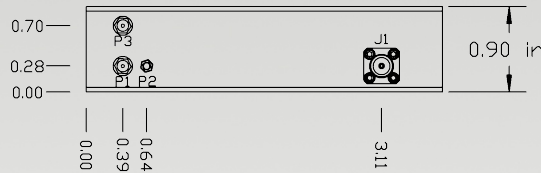
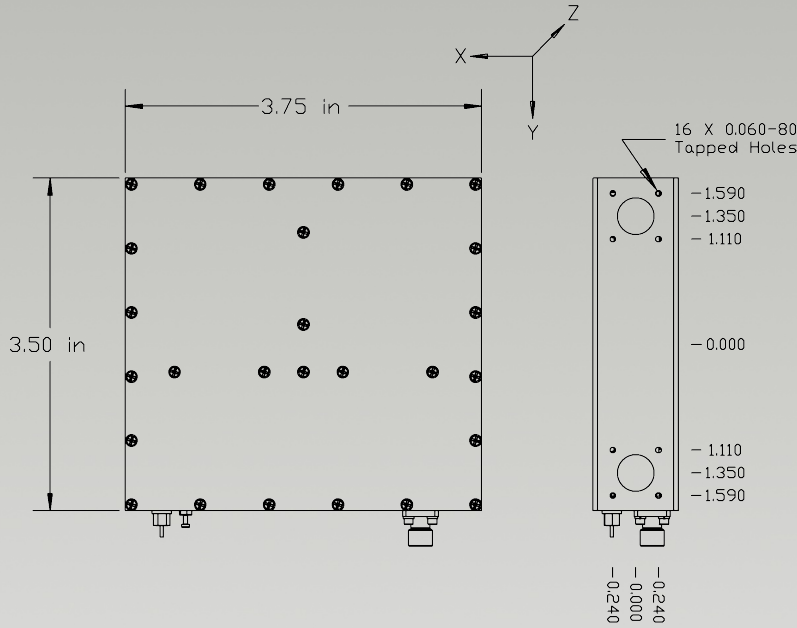
| Electrical Specifications | |
|--|---|
| Output Frequency (fixed; specify within range) | 25 MHz to 256 MHz |
| Output Level | +13 dBm ± 2 dB into 50 ohms |
| Aging | (100 MHz model, typical) |
| Per day after 30 days operating, typical | 5×10^{-9} |
| Second year, typical | 5×10^{-7} |
| Per year thereafter, typical | 3×10^{-7} |
| Temperature Stability (consult factory for other ranges) | (100 MHz model, typical) |
| Range E: 0 to +50°C (Ref: +25°C) | $\leq \pm 2 \times 10^{-7}$ |
| Range F: -20 to +70°C (Ref: +25°C) | $\leq \pm 5 \times 10^{-7}$ |
| Range G: -55 to +85°C (Ref: +25°C) | $\leq \pm 2 \times 10^{-6}$ |
| Phase Noise | (Frequency Dependent: See Standard Specification and Part Numbers table below for details) |
| Harmonics | ≤ -30 dBc |
| Sub-Harmonics | N/A |
| PLL Products (Phase Lock models only) | ≤ -60 dBc |
| Spurious | ≤ -80 dBc |
| Natural Mount Resonant Frequency | ~ 30 Hz (Vibe Iso Model Only) |
| Tuning | |
| - Electrical Tuning | Tuning A: 0 to +10 VDC |
| | Tuning B: ± 5 VDC |
| | Slope: Positive |
| Supply Voltage | +15 VDC $\pm 5\%$ or +12 VDC $\pm 5\%$ |
| Warm-up | ≤ 10 Watts for 5 minutes at +25°C |
| Total | ≤ 7 Watts at +25°C |
| Crystal Type | SC-cut |
| Acceleration Sensitivity | Effective G-Sensitivity to $2 \times 10^{-11}/g$ at offsets from 5 Hz to ~ 500 Hz Effective G-Sensitivity to $2 \times 10^{-12}/g$, isolated |
| Mechanical | |
| Packaging | Nickel Plated Machined Aluminum Case (Standard) or Nickel Plated Steel Case (for EMI and/or Vibe Iso) |
| Dimensions | 3.75 x 3.5 x 0.9" |
| Weight | ≤ 0.5 lbs (aluminum case) ≤ 2 lbs (steel case) |
| Connectors / Mounting | SMA(f) and Solder Pins on side Threaded Inserts, #2-56, 0.150" deep, 8 places |

Description:

At VHF frequencies, the Bootstrap oscillator provides unprecedented low-g sensitivity to $2E-11/g$. The standard Bootstrap oscillator consists of two rugged OCXOs of the same frequency, which can be any fixed frequency between 25 MHz and 128 MHz, and all necessary components to phase lock the two oscillators together. Special compensation techniques are used to minimize vibration induced phase noise including positioning the two oscillators mechanically in two axes to offset vibration sensitivity as well as adjusting the electrical tuning of both oscillators with a properly scaled compensation voltage. The Bootstrap oscillator assembly is an ideal solution for the most demanding airborne, mobile and shipboard applications requiring greatly improved dynamic phase noise performance with effective acceleration sensitivity performance approaching $2E-11/g$ per axis. Effective acceleration sensitivity to $2E-12/g$ can be realized with the addition of an external vibration isolation system, assuming a typical natural mount resonant frequency around ~ 30 Hz. The assembly is housed in a 3.75" x 3.5" x 0.9" machined aluminum case. An internal voltage regulator is provided for excellent power supply line rejection. Please consult the factory if you need any specifications to be modified to better suit your application.



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| Connector | Function |
|-----------|-------------------|
| P1 | Supply Voltage |
| P2 | Ground, Case |
| P3 | Electrical Tuning |
| J1 | RF Output |

