



MtronPTI 100MHz Sinewave Electronically Vibration Compensated OCXO

MtronPTI P/N: XO5503-100MHz

In high reliability communications and radar applications, maintaining performance comes first. The communication link must stay up; the picture must be clear even when conditions are less than ideal. Radars and satellite tuners use high performance crystal oscillators to keep frequencies quiet for clear pictures and exact for good channel lock but it's often a difficult tradeoff: size, weight and power constraints versus ultimate noise performance when looking for small slow moving targets from shaking platforms. The MtronPTI XO5503 Series incorporates a SC-cut quartz resonator and electronic vibration compensation resulting in 0.02 ppb/g g-sensitivity. The XO5503 Series OCXO replaces bulkier references, raising system performance while lowering size and weight.



Key Features: Small Size 2.0"x1.5"x0.8", no mechanical degradation during the dynamic phase i.e no moving parts, No effects of temperature

Applications: Airborne and shipboard radar, Airborne Satellite communications

Electrical Specifications:

| Parameter | Symbol | Min. | Typ. | Max. | Units | Conditions |
|------------------------------|------------|------------------|------------|------|----------|-------------------------------------|
| Nominal Frequency | F_o | | 100.000000 | | MHz | |
| Frequency Stability | | | | | | |
| Over Temperature Range | | -100 | | +100 | ppb | Over operating temp(-40C to +85C) |
| vs Supply Voltage Change | | | | +15 | ppb | ±5% change in V_s |
| vs Load Change | | | | +15 | ppb | ±5% change in Load |
| Aging | | | | ±250 | ppb | 1 st year |
| [After 30 days of operation] | | | | ±200 | ppb | Per year after 1 st year |
| RF Output | | | | | | |
| Output Type | | Sinewave | | | | |
| Output Level | | +5.0 | +7.0 | +9.0 | dBm | Into a nominal 50Ω load |
| Output Load | | 50 | | | Ω | ±5% |
| Harmonics | | | | -30 | dBc | |
| Frequency Adjustment | | | | | | |
| Adjustment Method | | External Voltage | | | | |
| Tuning Voltage | V_{TUNE} | 0 | | +5.0 | V_{DC} | |
| Tuning Range | | | ±2.5 | | ppm | |
| Input Impedance | | 50 | | | KΩ | |
| Tuning Slope | | Positive | | | | |
| Phase Noise | | | | | | |
| SSB Phase Noise – Static | | | | -97 | dBc/Hz | @ 10Hz Offset |
| | | | | -127 | | @ 100Hz Offset |
| | | | | -150 | | @ 1kHz Offset |
| | | | | -162 | | @ 10kHz Offset; |
| | | | | -165 | | @ 100kHz Offset; |

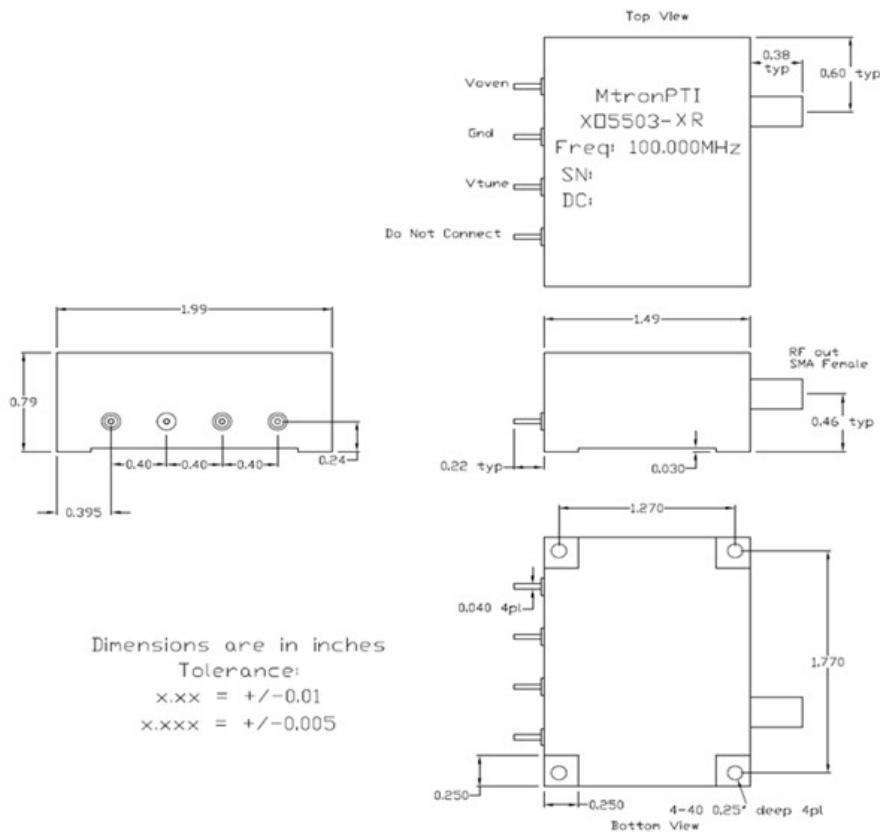


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| | | | | | | |
|--|----------------|------|---------|------|--------------------|----------------------|
| SSB Phase Noise – With Random Vibration (operational) (any axis) | | | | -97 | dBc/Hz | @ 10Hz Offset |
| | | | | -127 | | @ 100Hz Offset |
| | | | | -150 | | @ 1kHz Offset |
| | | | | -153 | | @ 2kHz Offset |
| | | | | -162 | | @ 10kHz Offset |
| | | | | -165 | | @ 100kHz Offset |
| Random Vibration (operational) | | | | | | |
| Power Spectral Density | | | 0.012 | | g ² /Hz | @ 10Hz |
| | | | 0.012 | | | @ 40Hz |
| | | | 0.020 | | | @ 52Hz |
| | | | 0.020 | | | @ 500Hz |
| | | | 0.00126 | | | @ 2000Hz |
| Additional Parameters | | | | | | |
| Supply Voltage | V _S | 11.4 | 12.0 | 12.6 | V _{DC} | |
| Power Consumption | | | | 5 | Watts | @ Start-up |
| | | | | 2 | Watts | @ +25°C Steady State |
| Operating Temperature | | -40 | | +85 | °C | |

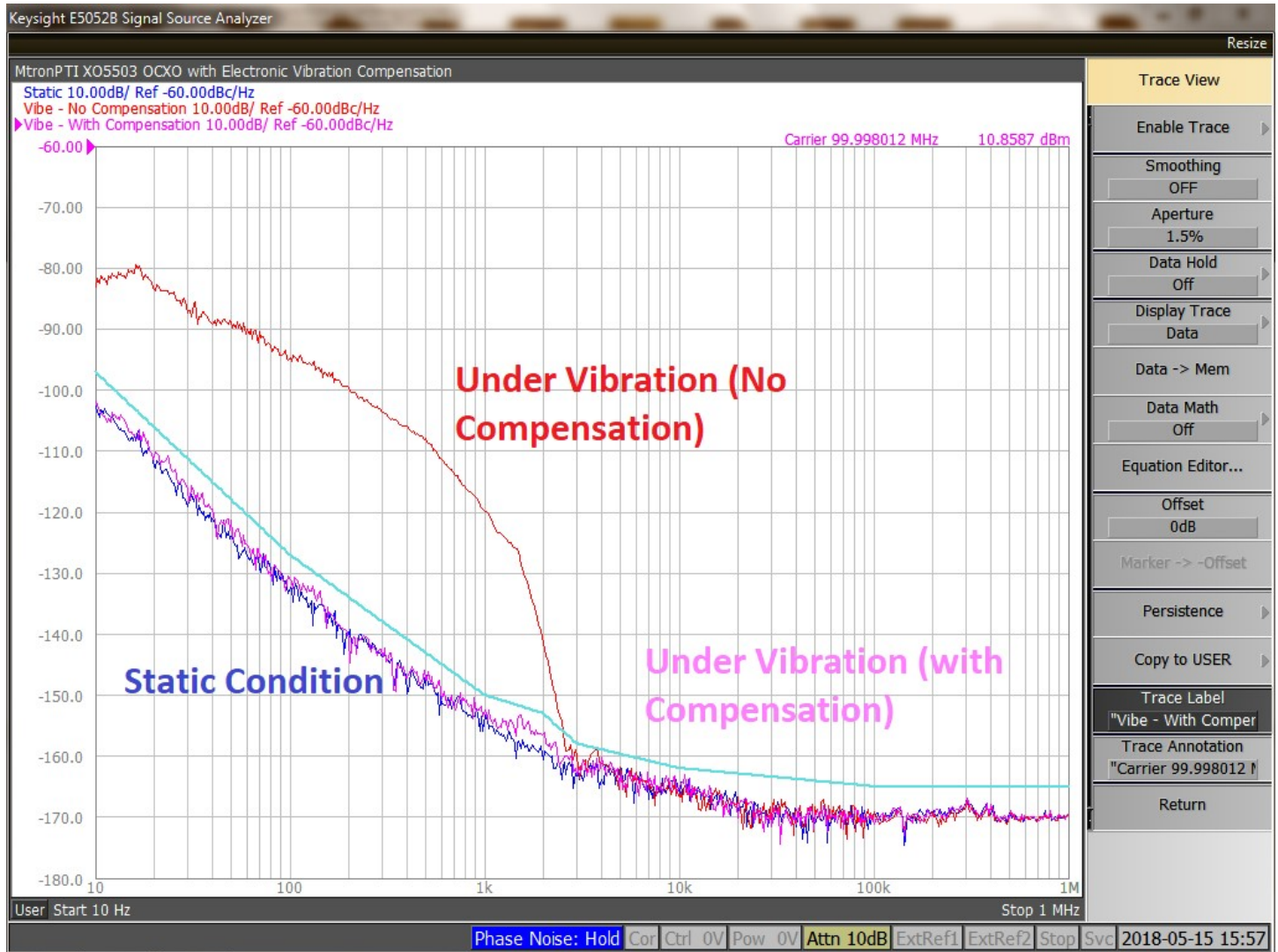
Mechanical and Pin out:





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Representative Phase Noise Performance (worst case axis):



Data Sheet Revision Table:

| Date | Rev. | Author | Details of Revision |
|----------|------|---------|---------------------|
| 05-16-18 | A | MWM/DPD | Preliminary release |