MTI
MTI-MILLIREN TECHNOLOGIES, INC.

270 Series Rubidium Rival OCXO

Applications

* Stratum II and IIIe+ Telephony
* Atomic Standard Replacement
* GPS Receivers
* Test and Measurement
* TDMA Base Stations
* PCS Base Stations
* Quasi-Synchronous Radio

Description

The 270 series Double Oven Controlled Crystal Oscillator drops into a standard European CO-08 footprint and is available with an output frequency between 4.8 to 26 MHz. Utilizing a full-size TO-8 quartz resonator, the oscillator performs to the stability required for Stratum II and IIIe, GPS, and TDMA PCS applications. Specifications include thermal stability performance of 2.0E-10 to 5.0E-09 over a -30°C to +70°C ambient temperature range, steady-state power consumption of 1.7W from a nominal +12 VDC supply at 25°C ambient, warm-up power of 5.5 W typical, and frequency stability of 2.0E-08 after approximately 10 minutes. Typical RF output is +9 dBm ±2 dB sinewave (into a 50W load) with < -30 dBc harmonics and -80 dBc spurious levels. Short-term stability at 1 sec is 7E-12.

The typical 5 MHz aging performance is 5E-10 per day and 5E-08 per year. The 270 series is an ideal solution for phase noise related issues. It delivers -100 dBc/Hz at a 1 Hz offset and -155 dBc/Hz at 10 kHz offset. Additionally, the supply voltage sensitivity and load sensitivity is 5E-11 for a 5 % change in voltage or load impedance. The electrical tuning range for a 5 MHz SC-cut third-overtone oscillator is specified as 4.0E-007 to 8.0E-007. An added feature is a 4.7 to 5.3 VDC high stability reference voltage output with a source resistance of 100 Ohms.

The units have been designed for high volume production and are 100 percent tested for:

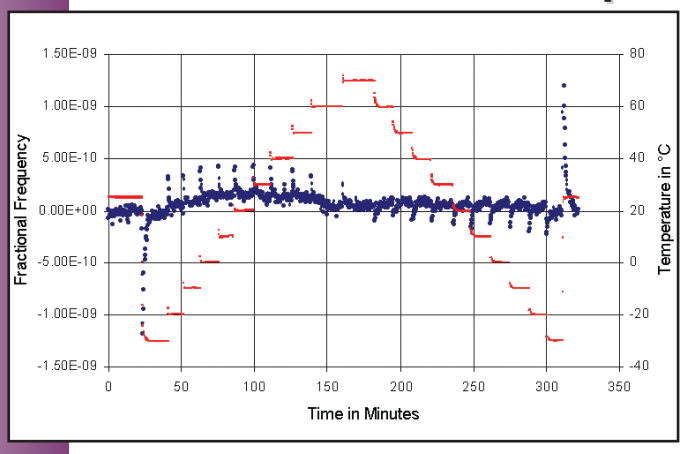
Thermal Stability	Phase Noise
Aging	Short Term Stability
Output Level	Reference Voltage
Spectral Purity	Electric Tuning Range

Housed in a hermetically sealed 1.423" × 1.071" × 0.765" (36.14 mm × 27.20 mm × 19.42 mm) package, these units occupy less than one-fifth the volume of the smallest high stability frequency reference currently available.

Custom frequency outputs and specifications available upon request.

(over)

Performance vs. Temp



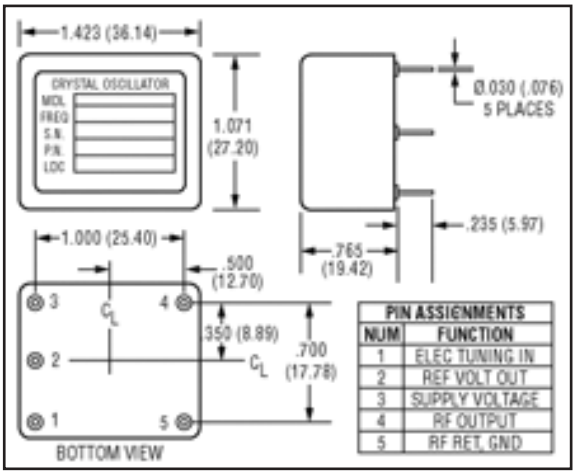
Specifications

Frequency	1.00000000E+007 Hz
Initial Tolerance	± 0.0E+000
Crystal Cut	SC
OT	3
Thermal Stability	2.0E-010
Temperature Range	
Minimum	-30°C
Maximum	70°C
Aging	
Per Day	5.0E-010
Per Month	0.0E+000
Per Year	5.0E-008
Output Type	+9 dBm ±2 dB Sine
Sine	
Nominal	9.000 dBm
Minimum	7.000 dBm
Maximum	11.000 dBm
Harmonics	-30 dBc
Subharmonics	-0 dBc
Spurious	-80 dBc
Phase Noise @ Offsets of	
1 Hz	-90 dBc/Hz
10 Hz	-120 dBc/Hz
100 Hz	-140 dBc/Hz
1000 Hz	-150 dBc/Hz
10000 Hz	-155 dBc/Hz
100000 Hz	-155 dBc/Hz
Short Term Stability	
1 Sec	7.0E-012
10 Sec	0.0E+000
Supply Voltage Sensitivity (± 5%)	
dF/dV	1.0E-010
Load Sensitivity (± 5%)	
dF/dL	1.0E-010
g-Sensitivity	
dF/dG	0.0E+000

Warm Up	
Time	10.0 Mins
DF/F	2.0E-008
Reference Time	60.0 Mins
Retrace	5.0E-009
Time Off	24.0 Hrs
Time On	2.0 Hrs
Warm Up Power	
Typical	5.500 W
Minimum	4.950 W
Maximum	6.050 W
Continuous Power	
Typical	1.700 W
Minimum	1.300 W
Maximum	2.100 W
Supply Voltage	
Nominal	12.00 V
Minimum	11.40 V
Maximum	12.60 V
Reference Voltage	
Minimum	4.7 V
Maximum	5.3 V
Source Resistance	1.000E+002 Ω
Tuning Voltage	
Minimum	0.0 V
Maximum	5.0 V
Tuning Slope	Positive
Tuning Input	
Resistance	5.000E+004 Ω
Bandwidth	4.000E+002 Hz
Tuning Linearity	10%
Electrical Tuning	
Minimum	± 1.2E-006
Maximum	± 3.6E-006
Mechanical Tuning	
Minimum	± 0.0E+000
Maximum	± 0.0E+000

Model #270-0225

Interface Control Drawing



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