9600QT

Compact High-Performance 5 MHz Space-Qualified OCXO

Key Features

- **Short lead time** space qualified parts
  - 4 weeks engineering models
  - 12 weeks flight models
- Standard 12V power supply
- Standard 5 MHz sine wave output frequency
- -140 dBc/Hz phase noise (@10 Hz)
- Excellent STS (2 E-12 @1 sec)
- Low power consumption: ≤1.5W @25° C (in vacuum)
- Panel mounted/compact size - 2.54" x 2.08" x 1.21"

Application

The 9600QT is a quick-turn high-performance OCXO that is ideal for space qualified applications where fast delivery (as short as 4 weeks) is critical to the program's success. It is based on our proven 9600 series design, that builds on the strong (40 years) space flight heritage of Microsemi®. The 9600QT has been analyzed for worst case circuit effects, radiation, thermal and structural analysis, derating and reliability. This standard configuration enables industry-leading delivery times, for space qualified parts, and is suitable for a wide variety of space-borne applications including satellite clock references, transmission, tracking and guidance.

Product Description

This off-the-shelf 5MHz OCXO is available with a standard feature set and is designed to perform as specified when exposed to a total dose radiation of up to 100krads (Si) and can sustain up to 2200g pyrotechnic shock. The use of class K qualified hybrid circuitry that is manufactured at facilities qualified to MIL-PRF-38534, allows for the greatest possible reduction in size without compromises in performance or reliability. Assembly is performed by skilled operators certified to the J-STD-001 Space Addendum Workmanship Standard. The 9600QT features a 3rd overtone SC-cut class S quartz resonator and sustaining electronics that are controlled at a precise temperature to achieve temperature-insensitive performance, excellent short term stability, phase noise, and aging characteristics. This allows it to meet the demands of space specifications for time and frequency, even under the most adverse environmental conditions.

9600QT

Specifications

ELECTRICAL SPECIFICATIONS

• Frequency	5 MHz	
• Initial accuracy	⩽ ± 5.0 E-8	
• Power consumption		
Supply voltage:	+ 12 V dc ± 2%	
Warm-up:	⩽ 7 W	
Steady state (in vacuum)	@ -30° C	⩽ 2.5 W
	@ 25° C	⩽ 1.5 W
	@ 65° C	⩽ 0.7 W
• Output		
Level:	+ 7 dBm ± 1 dB into 50 ohms	
Waveform:	sine	
Harmonics:	⩽ -25 dBc	
Spurious:	⩽ -90 dBc (1 kHz to 1 MHz)	

PERFORMANCE PARAMETERS

• Frequency stability	
vs Temperature	⩽ ± 5 E-9
vs Supply voltage variation	⩽ ± 1 E-9
Aging	⩽ ± 1 E-10 per day
• Phase noise	
1 Hz	⩽ -112 dBc/Hz
10 Hz	⩽ -140 dBc/Hz
100 Hz	⩽ -150 dBc/Hz
1 K Hz	⩽ -157 dBc/Hz
⩽ 10 KHz	⩽ -160 dBc/Hz
Short term stability @ 1 sec tau	⩽ 2 E-12
Short term stability @ 10 sec tau	⩽ 2 E-12
• Warm-up time:	⩽ 10 minutes
• Vibration sensitivity	⩽ 4 E-9/G worst case axis
• Frequency retrace (after 24 hrs off)	⩽ ± 1 E-8

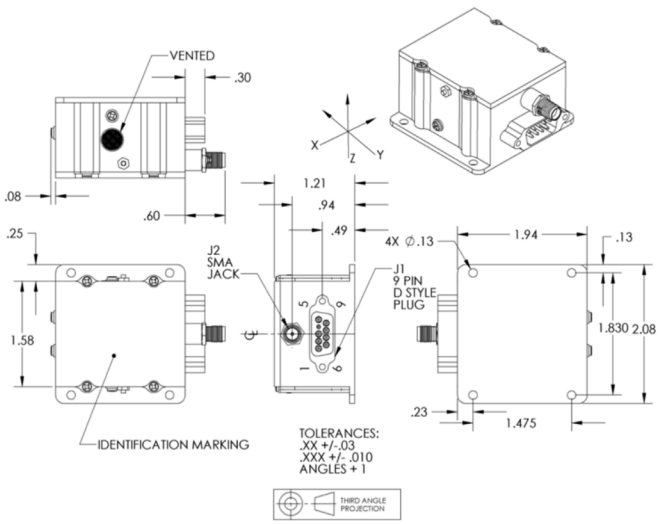
ENVIRONMENTAL & PHYSICAL SPECIFICATIONS

• Size:	Per outline drawing below.
• Temperature range:	-30° C to +65° C

Part (Ordering) Number:

090-00965-000 - Flight Model (FM)
090-00967-000 - Engineering Model (EM)

9600QT Outline Drawing



9600QT Pin Connection

Pin Number	Description
J1-1	+12 Vdc
J1-2	N/C
J1-3	N/C
J1-4	Ground/Chassis Ground
J1-5	Over Monitor
J1-6	Ground/Chassis Ground
J1-7	+12 Vdc
J1-8	N/C
J1-9	Over Monitor
J2-1	5 MHz Output with Ground Shield

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