9635QT

Ultra-Stable 10 MHz Miniaturized Oscillator

Key Features

- Short lead time
  4 weeks ARO
- Compact Size: 1.33" x 1.33" x 1.33"
- Standard 12V Power Supply
- Standard 10MHz Sine Wave Output
- Short term stability (Allan Deviation) of <4E-12 @ TAU = 1 sec
- <-125 dBc/Hz phase noise @ 10 Hz

Microsemi's 9635QT is a quick-turn ultra-stable miniature oscillator designed to provide a high stability output for a variety of Aerospace applications. The potential for low-SWaP and high performance, at a relatively low cost, makes the 9635B very attractive for low-earth orbit (LEO) applications.

The 9635QT uses an SC-cut quartz resonator and sustaining electronics that are controlled at a precise temperature to achieve temperature-insensitive performance. Key performance features are excellent short term stability (Allan Deviation), phase noise performance, and a temperature coefficient of <± 2e-8 from -30° C to +60° C. In addition to high levels of performance, the 9635QT is available in a compact 1.3"x1.3"x1.3" pcb mounting configuration.

The 9635QT has Electronic Frequency Control Input so that it can be phase locked to a higher stability source. If a fixed frequency is desired, the unit also has a very stable +9V DC output. A resistor divider can be connected from this DC voltage to ground to provide a fixed voltage for the EFC Input.

In addition to providing high performance at an affordable cost, the 9635QT standard 10MHz Sine Wave Output configuration is available "Off-The-Shelf" in as short as 4 weeks ARO.

9635QT Specifications

ELECTRICAL SPECIFICATIONS

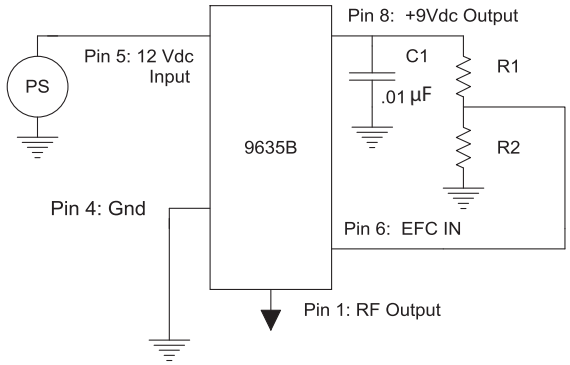
• Output Frequency Range	10 MHz
• Format	Sine wave
• Amplitude	7.0 dBm ±1 dB
• Harmonic distortion	<–30 dBc
• Non-harmonic distortion	<–90 dBc
• Load impedance	50 Ω
• VSWR	1.5:1

PERFORMANCE PARAMETERS

• SSB phase noise (static)	
1 Hz	<–95 dBc/Hz
10 Hz	<–125 dBc/Hz
100 Hz	<–145 dBc/Hz
1 kHz	<–150 dBc/Hz
10 kHz	<–155 dBc/Hz
100 kHz	<–155 dBc/Hz
• Aging	
Per day:	<3E-10
• Short Term Stability:	
@ 1 second	<4E-12
@ 10 seconds	<1E-11
@ 100 seconds	<5E-11
• Frequency Retrace (after up to 24 hrs. off and 1 hour on at 25° C):	±1.0E-8
• Acceleration sensitivity Per g, total gamma:	<3E-10
• Frequency change vs. Temperature -30° C to +60° C:	±2E-8
• Warm-up time from +25° C:	≤10 minutes to within 2.0E-8 of final frequency
• Input Voltage	
Range:	+12 Vdc ±2%
Sensitivity:	<1.0E-8 for ±2% voltage change
• Steady-state power consumption at 25° C:	<2.4 W
• Warm-up power consumption:	<11 W
• Electronic Frequency Control (EFC) Range:	±2E-7 minimum
EFC Input	0 to ±6 Vdc Negative Transfer Function
EFC Linearity	10% typical
• Load change sensitivity:	±1.0E-8 for ±5% load change
• Stable Regulated Voltage Output:	+9±0.5 Vdc

Intended as a bias generator for Customers who require a fixed frequency with two external resistors tied between the +9V and GND, a voltage can be applied to the EFC input to produce a frequency offset. The resistor values should be selected to limit the current draw to <1mA.

BLOCK DIAGRAM



9635B Biased for a Fixed Frequency
(R1, R2 and C1 are External Components)

ENVIRONMENTAL & PHYSICAL SPECIFICATIONS

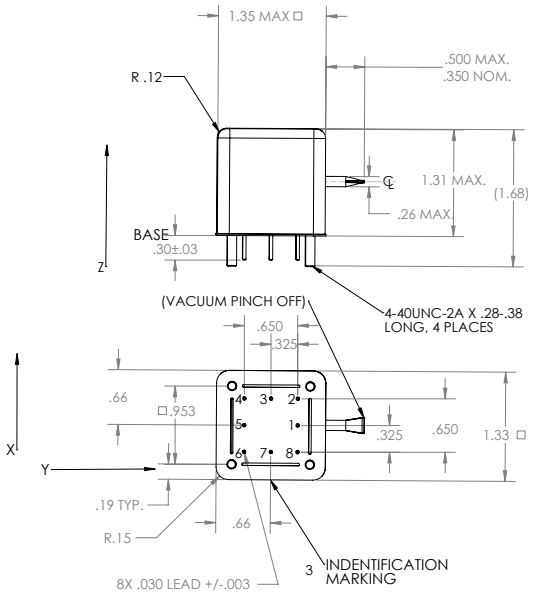
• Operating Temperature:	-30° C to +60° C
• Storage temperature:	-55° C to +100° C
• Random vibration Operating (endurance):	25 g rms
• Pyrotechnic shock:	1500 g
• EEE Parts Screening Level:	COTS
• Weight:	≤0.10 kg

ORDERING INFORMATION

090-02660-000

9635B OUTLINE DRAWING

QT Plug-in STYLE



TOLERANCES:
XXX = +/- .005
XX = +/- .02

THIRD ANGLE PROJECTION

CONNECTION DESCRIPTIONS

PIN NO.	FUNCTION
1	RF OUPUT
2	Not Used
3	Not Used
4	Case Ground
5	+12 VDC
6	EFC TUNING VOLTAGE INPUT
7	Not Used
8	+9VDC Ref Voltage Output

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