

1000C

Ultra High Performance Crystal Oscillator



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Key Features

- Low aging, 5.0E-11 per day typical
- Low phase noise, -130 dBc at 1 Hz
-160 dBc at 100 kHz (Ultra High Performance version)
- Four 5 Mhz independently buffered and transformer isolated outputs
- Short term stability:
0.1s to 100s <2.0E-13 (Ultra High Performance version)
- Linearized electronic frequency control
- Fast warm-up, 15 minutes to 2.0E-8
- 0°C to 55°C operating temperature range
- Electronic tuning input of 0V to 10V
- Tuning range is typically 6.0E-7

The 1000C Ultra High Performance Crystal Oscillator by Microsemi® achieves low phase noise, excellent short term stability and low aging rates by utilizing state-of-the-art SC-cut quartz crystal resonators. The specified aging is reached within 30 days of continuous operation, and typically continues to improve. Several users of the same oscillator family report observed aging rates as low as 1E-12 per day after years of continuous operation.

A dewar-insulated oven provides superior temperature stability over the full temperature range. The maximum frequency change over the operating temperature range is <5.0E-9. An oven temperature indicator (10 mV per degree C) is provided at the power connector. The product is offered in two versions—High Performance and Ultra High Performance. The Ultra High Performance version provides signals with ultra low phase noise -130/-160 dBc at 1 Hz/100 kHz offsets and is stable to 2E-13 from .1 to 100 seconds. The High Performance version provides signals with very low phase noise -120/-160 dBc at 1 Hz/100 kHz offsets and is stable to 3E-13 from .1 to 100 seconds.

Low noise, high isolation buffer amplifiers provide four independent 5 MHz outputs. The buffer amplifiers isolate outputs from load variations. An internal voltage regulator minimizes fluctuations due to power supply ripple.

Linearized electronic frequency control allows the use of servo loop techniques for fine frequency tuning. Linearity is better than 5% over the specified tuning range. The 1000C Ultra-High Performance Crystal Oscillator meets the demands of a wide range of applications for military and industrial environments. The oscillator is found in precision frequency counters and synthesizers, GPS receivers, microwave multiplier chains, phase noise calibration test equipment, Stratum II telecommunications applications, radar and tactical communications systems, secure communications systems, satellite ground terminals and space flight systems.

1000C

Specifications

ELECTRICAL SPECIFICATIONS

- Frequency: (4) 5 MHz
- Amplitude of outputs: (2) 1Vrms, (2) 0.5 Vrms
- Harmonic distortion: <-40 dBc
- Spurious signals: <-80 dBc
- Short term stability: <3.0E-13
0.1st through 100s
High Performance version <2.0E-13
Ultra High Performance version <5.0E-9 over operating range
- Aging per day (see note 1) (after 30 days of operation) <5.0E-9 over operating range
- Phase noise

Frequency	High Performance	Ultra High Performance
1 Hz	-120 dBc	-130 dBc
10 Hz	-145 dBc	-150 dBc
100 Hz	-156 dBc	-157 dBc
1 kHz	-160 dBc	-160 dBc
10 kHz	-160 dBc	-160 dBc
100 kHz	-160 dBc	-160 dBc
- Temperature coefficient: <5.0E-9 over operating range
- Frequency adjustment range
Tuning slope: Positive
Control range: 0 to 10 V
- Load change (50Ω ± 10%) <5.0E-11
- Input voltage
Oven supply: 18 to 30 VDC
Electronics supply: 18 to 30 VDC

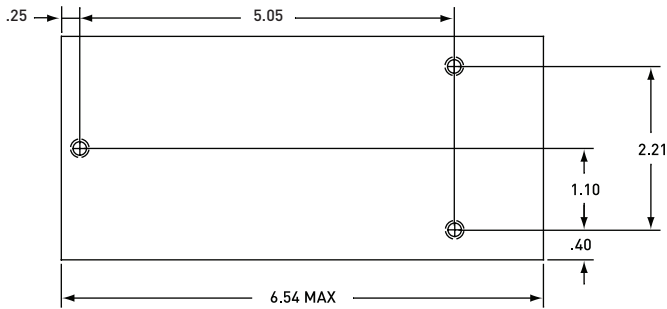
ENVIRONMENT & PHYSICAL SPECIFICATIONS

- Supply sensitivity
1% change in input <1.0E-11
- EMI susceptibility (side bands)
0.1 Vrms on power supply inputs
10 Hz to 104 Hz <-100 dBc
- Temperature
Operating: 0°C to 55°C
Non-operating: -40°C to 85°C
- Power requirements
Warm-up: <13 W
Operating at 25°C <3.5 W
- Warm-up to 2.0E-8 of final frequency <15 minutes
- Oven monitors temperature: 10 mV/degree C
- Dimensions: 3.0"W x 6.54"D x 3.0"H
- Weight: <1.5 lbs (0.67 kg)
- Connectors
RF (J1 - J4) SMA
Power (J5): 9 pin D-subminiature

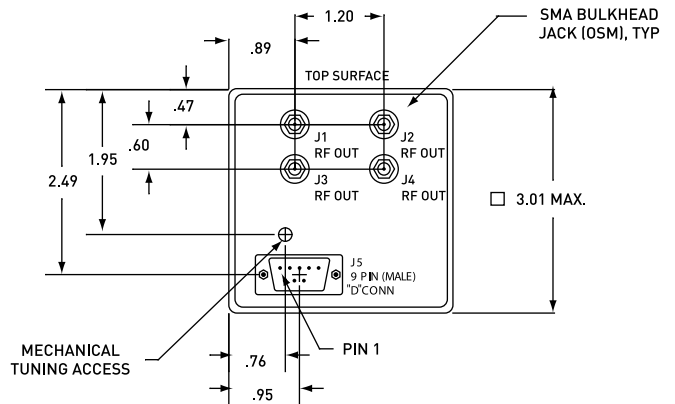
ORDERING INFORMATION

Part No.	
1000C	
High Performance Version	05818-123
1000C	
Ultra High Performance Version	05818-127

Note 1: Aging typically improves to a level of parts in 1.0E-11 per day (1.0E-8/year). After years of unperturbed operation, some users of the same oscillator family have observed aging rates as low as 1.0E-12.



Bottom View



Front View



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