

OCXO 8607 10 times better than any other OCXO

Oven Controlled Crystal Oscillator

The 8607-B series is the second generation of OCXO's developed by Oscilloquartz using the technique of housing a state-of-the-art BVA SC-cut crystal resonator and its associated oscillator components in double oven technology. This has resulted in a significant improvement in overall frequency stability corresponding to more than 10 times better performances than any other OCXO's available on the market. The BVA itself consists of an electrodeless, SC-cut, 3rd overtone quartz crystal resonator, decoupled from its mounting structure by four rigid bridges.

This unique design has resulted in substantial features by eliminating:

1. *The perturbing surface contacts between electrodes and resonator*
2. *The contamination problems linked to ion migration in the resonator*
3. *The constraints in the mounting connections*

Based on the production and delivery of more than 10'000 units in BVA technology, the 8607-B features enhanced performances it comes with different versions to suit a wide variety of applications.

Furthermore, the 8607-B BVA quartz crystal oscillator represents an excellent alternative to compact atomic standards.

Features

- Ultra high long term stability
- Excellent frequency stability over temperature range.
- Ultra low phase noise and outstanding short term stability
- Excellent static "g" sensitivity

Benefits

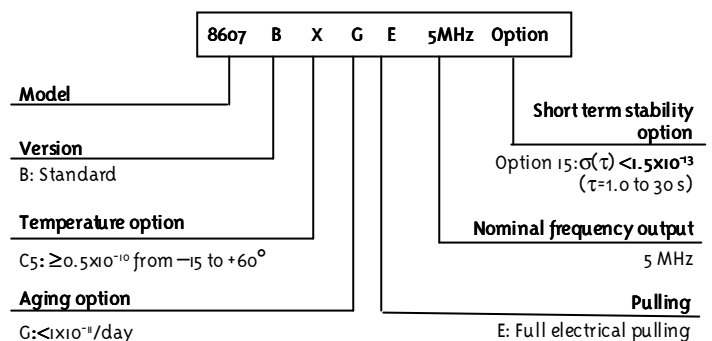
- Ideal as a stand-alone reference clock with reduced calibration intervals
- Excellent immunity to temperature gradients
- Ultra-clean signal generation for frequency multiplication
- Reduced effects on phase noise characteristics
- Compatible with CCITT level 2 recommendations and ITU Stratum 2 requirements

Applications

- Synchronization of digital networks and switching equipment
- Frequency distribution systems for satellite ground stations
- Radio navigation and positioning equipment
- GPS and Loran-C receivers
- Atomic fountain, Cesium and Hydrogen atomic frequency standards
- Measuring and calibration equipment
- Frequency synthesizers
- Satellite communications
- Very Long Base Interferometry (VLBI)

Phase noise (BW = 1 Hz)				
Frequencies	5 MHz		10 MHz	
	Standard	Option L	Standard	Option L
Standard / Option L				
Phase noise 1 Hz	-125 dBc	-130 dBc	-118 dBc	-122 dBc
10 Hz	-145 dBc	-145 dBc	-137 dBc	-137 dBc
100 Hz	-153 dBc	-153 dBc	-143 dBc	-143 dBc
1'000 Hz	-156 dBc	-156 dBc	-145 dBc	-145 dBc
10'000 Hz	-156 dBc	-156 dBc	-145 dBc	-145 dBc

Ordering Information

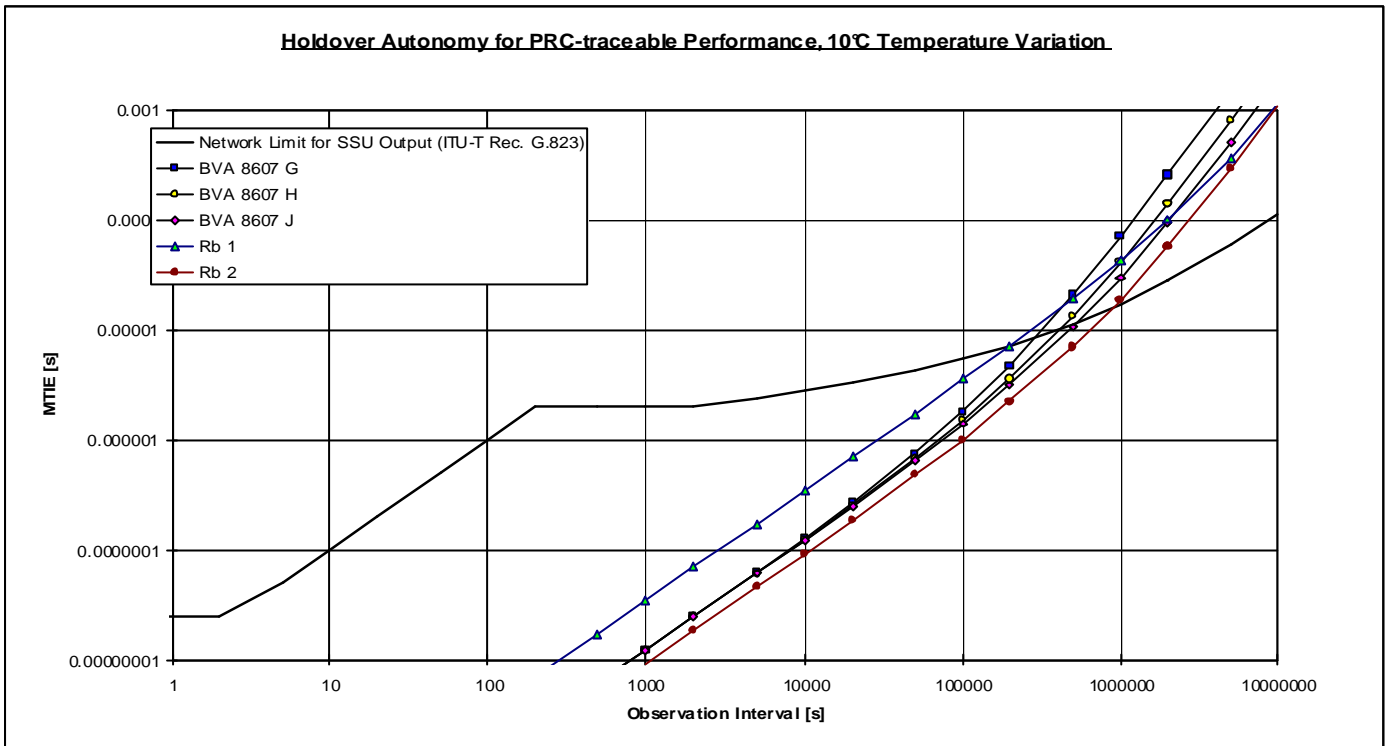
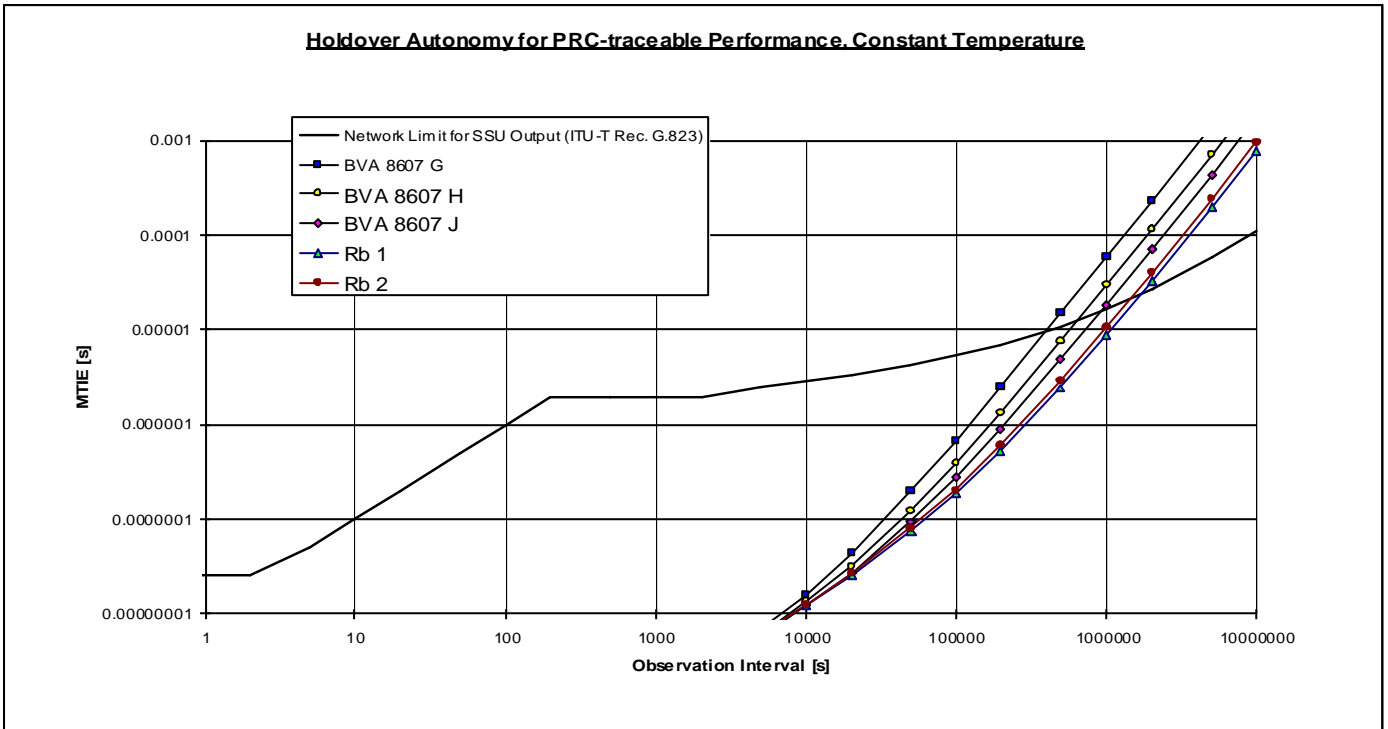


Version	B	Option
	Standard	
Crystal resonator	SC Cut BVA technology	
Standard frequencies	5 MHz	
Optional frequency	10 MHz	
Operating temperature range (X)	-30°C to +60°C	See table
Frequency stability (Δ f/f)		
Long term stability (aging after 30 days of continuous operation)	2x10 ⁻¹¹ /day 5x10 ⁻¹⁰ /month 4x10 ⁻⁹ /year	G: 1x10 ⁻¹¹ /day H: 5x10 ⁻¹² /day J: 3x10 ⁻¹² /day See table
Over temperature range(γ)	≤ 2x10 ⁻¹⁰ peak to peak	See table
Versus power supply	5x10 ⁻¹¹ (Vcc ±10%)	
Versus load changes	2x10 ⁻¹¹ (50Ω ±10%)	
Short term stability σ (τ)	5x10 ⁻¹³ (0.2-30s)	Lower value : see table
g sensitivity	< 5x10 ⁻¹⁰ / g	
Frequency control range	Standard : E Full Electrical	Option : M Mechanical
Fine adjustment option E	>± 1x10 ⁻⁷ <± 1.5x10 ⁻⁷ by external control voltage 0 to +10 Volts	
Coarse adjustment option M	>=± 1x10 ⁻⁷ by built-in 10 turn pot. with external control voltage at +5 Volts	
Fine adjustment option M	>± 2x10 ⁻⁸ by external control voltage 0 to +10Volts (with built-in potentiometer centered for nominal frequency at +5 Volts)	
Output specifications	On both SMA connectors	
Wave form	Sine	
Level / Impedance	7 dBm ± 1/50Ω	
Phase noise at 5 MHz & 10MHz (Bw=1Hz)	See table page 1	
Harmonics	< -40 dBc	
Spurious	< -70 dBc	
Power supply		
Input voltage range (DC)	+24V DC ± 10%	
Power consumption	< 3W after warm-up at 25°C, < 10W during warm-up	
Environment		
Storage temperature	-30°C to 85°C	
Vibration	MIL STD 167-1	
Shock	30g, 11ms, 3 shocks in each direction of the main axis	
Size (LxWxH)	138 x 73 x 88 mm	
Weight	900 g	
Outline & electrical connections	See drawing page 4	

Short term stability option	Tau = 0.2 S	Tau = 1.0 S	Tau = 3.0s — 30s	Option
Sigma Tau < 0.8 x 10 ⁻¹³ .(option valid only @ 5 MHz)	1,5 x 10 ⁻¹³	1,3 x 10 ⁻¹³	8 x 10 ⁻¹⁴	Option 08

Short term stability option	Tau = 0.2 S	Tau = 0.4 S	Tau = 1.0 S — 30s	Option
Sigma Tau < 2.5 x 10 ⁻¹³	4.0 x 10 ⁻¹³	3.0 x 10 ⁻¹³	2.5 x 10 ⁻¹³	Option 25
Sigma Tau < 2.0 x 10 ⁻¹³	3.5 x 10 ⁻¹³	2.5 x 10 ⁻¹³	2.0 x 10 ⁻¹³	Option 20
Sigma Tau < 1.5 x 10 ⁻¹³	3.0 x 10 ⁻¹³	2.0 x 10 ⁻¹³	1.5 x 10 ⁻¹³	Option 15
Sigma Tau < 1.0 x 10 ⁻¹³	2.5 x 10 ⁻¹³	1.5 x 10 ⁻¹³	1.0 x 10 ⁻¹³	Option 10

Oscilloquartz SA reserves the right to change all specifications contained herein at any time without prior notice.



Aging				
Standard / Option	Standard	Option G	Option H	Option J
Aging per day	2×10^{-11} pp	1×10^{-11} pp	5×10^{-12} pp	3×10^{-12} pp
Aging per year	4×10^{-9} pp	3×10^{-9} pp	2×10^{-9} pp	1×10^{-9} pp
After continuous operation of	30 days	60 days	90 days	90 days

Frequency option over temperature range	Option
1×10^{-10} peak to peak from -30°C to $+60^{\circ}\text{C}$	Option B1
1×10^{-10} peak to peak from -15°C to $+60^{\circ}\text{C}$	Option C
0.5×10^{-10} peak to peak from -15°C to $+60^{\circ}\text{C}$	Option C5

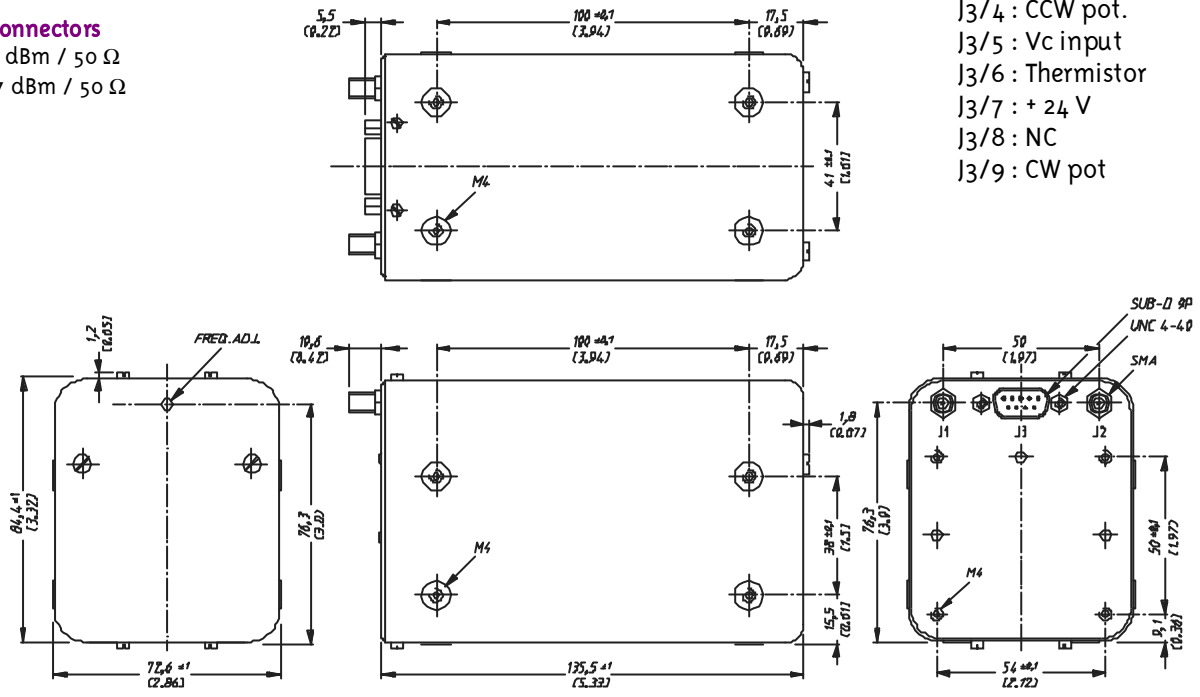
Outline and electrical connections (all dimensions in mm & inches)

SMA connectors

- J1 : = 7 dBm / 50 Ω
- J2 : = 7 dBm / 50 Ω

SUB D connector

- J3/1 : Thermistor
- J3/2 : 0V (GND)
- J3/3 : Ground
- J3/4 : CCW pot.
- J3/5 : Vc input
- J3/6 : Thermistor
- J3/7 : + 24 V
- J3/8 : NC
- J3/9 : CW pot



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