

ISSUE 2; January 2021

Description

- The IQRB-4 rubidium oscillator is a sub-miniature atomic clock in a 65cc OCXO style package, running on a 5V supply
- Features:
 - 10MHz CMOS output
 - 50.8 x 50.8 x 25 mm (2" x 2" x 1") form factor
 - 4.5E-12 Short Term Stability
 - Low power consumption
- Applications:
 - Stand-alone frequency source. Ideal for synchronisation of or as reference for satellite & secure communications, navigation systems in financial, utility, security and communications timing applications



Frequency Parameters

- Frequency: 10.0MHz
- Frequency Tolerance: ± 0.05 ppb
- Tolerance Condition: @ 25°C
- Ageing:
 - Day: 0.005ppb
 - Month: 0.05ppb
- Temperature Stability:
 - 10 to 60°C ± 0.08 ppb typ, ± 0.8 ppb max
- Retrace: ± 0.02 ppb max
- Magnetic Field Sensitivity, DC (± 2 Gauss): $< \pm 0.04$ ppb/Gauss max

Electrical Parameters

- Supply Voltage: 5.0V $\pm 3\%$
- Input Power
 - Warm Up (@ 25°C): 18W @ 5V, 3.6A max
 - Steady State: 6W, 1.2A max, 800mA typ
- Warm Up Time: 7mins to lock @ 25°C
- Lock Monitor: Pin 2 is high (5V) when out of lock and low (0V) when locked

Frequency Adjustment

- Pulling: ± 3 ppb typ ± 5 ppb max
- Control Voltage: 0V to 3.3V
- Input Impedance: 10k Ω min
- Linearity: Positive slope
- Control Voltage Input Current (Pin 1 swept from 0V to 3.3V): 40uA typ
- Control Voltage Input Capacitance (Pin 1): 5pF typ
- Note if no voltage is applied to the control voltage (pin1) it will be internally set. If a voltage is applied (even GND) to Pin 1, the oscillator will accept the external control voltage input.

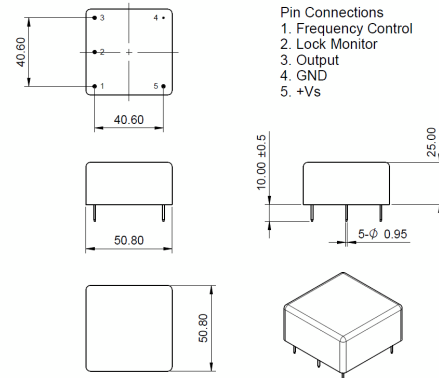
Operating Temperature Ranges

- -10 to 60°C

Output Details

- Output Compatibility: CMOS
- Drive Capability: 15pF
- Rise and Fall time: 11ns typ
- Duty cycle: 49% typ
- Note: Sinewave output available on request

Outline (mm)



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Noise Parameters

- Short Term Stability (ADEV) typical:
 - 1s 5.0E-11
 - 10s 9.0E-12
 - 100s 4.5E-12
- Phase Noise (typ):
 - 67dBc/Hz @ 1Hz
 - 95dBc/Hz @ 10Hz
 - 127dBc/Hz @ 100Hz
 - 140dBc/Hz @ 1kHz
 - 148dBc/Hz @ 10kHz
 - 148dBc/Hz @ 100kHz

Environmental Parameters

- Storage Temperature Range: -55 to 95°C
- Base Plate Temperature: -30 to 85°C
- Case Temperature (after 1hr, ambient temp 25°C, no ventilation): 55°C typ
- Mechanical Shock: IEC 60068-2-27, Test Ea: Acceleration of 50G peak amplitude for 11ms duration
- Vibration: IEC 60068-2-06, Test Fc: 10Hz-55Hz 1.5mm displacement, 55Hz-500Hz 10G acceleration
- Atmospheric Pressure: -60m to 4000m: 1E-13 mbar max
- EMI: Compliant to FCC Part 15, Class B

Manufacturing Details

- These products need to maintain thermal stability to obtain optimum performance. Large copper plates should be avoided under the device, or mount the device with 1mm clearance from the PCB. Avoid airflow and do not attempt to mount heat sink to the device.
- The oscillator base plate runs hot: be aware that this may cause damage to other components in close proximity.
- RoHS Terminations Pin material is Kovar with Au plating.

Compliance

- RoHS Status (2015/863/EU) Compliant
- REACH Status Compliant
- MSL Rating (JDEC-STD-033): Not Applicable

Packaging Details

- Pack Style: Bulk Bulk pack
- Pack Size: 1

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