The IQRB-1 rubidium oscillator is a sub-miniature atomic clock in a 65cc OCXO style package.

**Description**

- **Model**: IQRB-1
- **Model Issue number**: 5

**Frequency Parameters**

- **Frequency**: 10.0MHz
- **Frequency Stability**: ±1.50ppb
- **Operating Temperature Range**: -30.00 to 65.00°C
- **Ageing**: Day 0.005ppb, Month 0.05ppb
- **Frequency Stability (Temperature varied across the operating temperature range, measurement referenced to frequency observed with fref=(Δfmax, fmin)/2)**: ±0.5ppb typical
- **Retrace**: ±0.02ppb max
- **Magnetic Field Sensitivity, DC (±2 Gauss)**: ±0.04ppb/Gauss max

**Electrical Parameters**

- **Supply Voltage**: 12.0V
- **Note**: The device will operate over the Supply Voltage Range 12V to 18V
- **Start-up Current (Vs=12V, @25°C)**: 1.7A max
- **Initial Spike**: 2.5A max for 10ms max
- **Warm up time**: 5mins to lock status, 10mins to optimum frequency and power performance
- **Steady State Current**: (Vs = 12V, 25°C ambient): 0.5A max
- **Lock Monitor**: Pin 2 is high (5V) when out of lock and low (0V) when locked

**Frequency Adjustment**

- **Pulling**: ±5ppb min
- **Control Voltage**: 0V to 5V
- **Input Impedance**: 10kΩ min
- **Pulling** is sufficient to allow ±5ppb after the initial frequency offset is removed
- **Control Voltage Input Current (Pin 1 swept from 0V to 5V)**: 40μA typ
- **Control Voltage Input Capacitance (Pin 1)**: 5pF typ
- **Note**: If no voltage is applied to the control voltage (Pin 1), it will be internally set to 2.5V. If a voltage is applied (even GND) to Pin 1, the oscillator will accept the external control voltage input.

**Output Details**

- **Output Compatibility**: Sine
- **Drive Capability**: 50Ω
- **Output Levels**: 7dBm min, 11dBm typ, 13dBm max

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Customer Part:

**Noise Parameters**
- Short Term Stability (ADEV) Typical:
  - 1s: 8E-11
  - 10s: 2E-11
  - 100s: 6E-12
- Phase Noise (typ):
  - -87dBc/Hz @ 1Hz
  - -95dBc/Hz @ 10Hz
  - -127dBc/Hz @ 100Hz
  - -140dBc/Hz @ 1kHz
  - -148dBc/Hz @ 10kHz
  - -150dBc/Hz @ 100kHz
- Harmonics: -40dBm max

**Environmental Parameters**
- Storage Temperature Range: -55 to 85°C
- Base Plate Temperature: -30 to 85°C
- Case Temperature (after 1hr, ambient temperature 25°C, no ventilation): 60°C typ
- Mechanical Shock: IEC 60068-2-27, Test Ea: Acceleration of 50G peak amplitude for 11ms duration
- Vibration: IEC 60068-2-6, 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.

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

**Packaging Details**
- Pack Style: Bulk
- Pack Size: 1
- Alternative packing option available