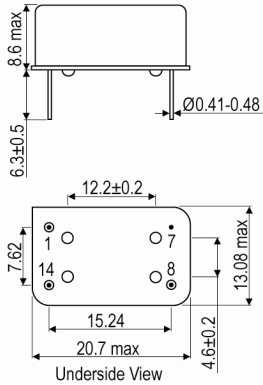


ISSUE 1; January 2016

### Outline (mm)

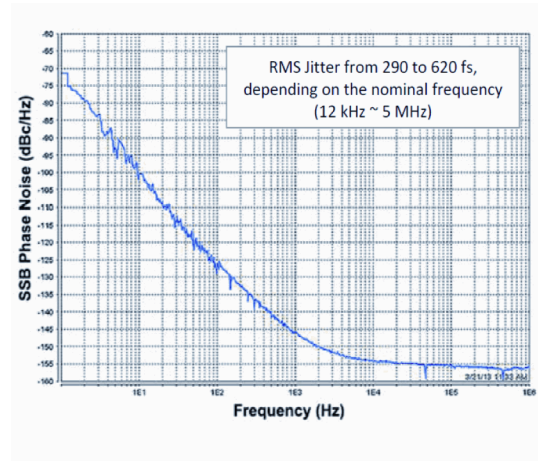


Pin Connections

- 1. Do not connect
- 7. GND
- 8. Output
- 14. +Vs



### Example Phase Noise @ 12.80MHz



### Description

- The IQOV-74 Oven Controlled Crystal Oscillator (OCXO) is from the world's first ASIC-based OCXO family using patented ASIC technology. This Stratum 3 compliant oscillator delivers stability as low as ±10ppb over -20 to 70°C and is capable of short-term ageing typically less than ±2ppb/day. The highly integrated oven ensures short warm-up times and low power consumption of typically 350mW at room temperature. The ASIC architecture delivers 1000x reliability improvement compared to traditional OCXOs and is available in a 14pin-DIL package.  
For specific enquiries please contact one of IQD's Sales Offices where we can tailor a unique specification to meet your needs.
- Features:
  - Frequency stability over temperature as low as ±10ppb over -20 to 70°C.
  - Low power consumption.
  - High reliability.
- Applications:
  - Stratum 3
  - Small Cells
  - Switches and Routers
  - Time and Frequency References
  - SyncE and IEEE1588
- Standard Frequencies: 10.0MHz, 12.80MHz, 19.20MHz, 19.440MHz, 20.0MHz, 24.5760MHz, 25.0MHz & 26.0MHz.

### Sales Office Contact Details:

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**Frequency Parameters**

- Frequency 10.0MHz to 26.0MHz
- Frequency Tolerance  $\pm 500.00\text{ppb}$
- Tolerance Condition @ 25°C  $\pm 2^\circ\text{C}$
- Frequency Stability:  $\pm 10\text{ppb}$  to  $\pm 100\text{ppb}$   
TA varied over operating temperature range in still air, measurement referenced to frequency observed with  $F_{\text{ref}} = (F_{\text{max}} + F_{\text{min}})/2$ , nominal voltage and load.
- Ageing:
  - < $\pm 2\text{ppb}$  typ per day (after 30 days of continuous operation)
  - $\pm 1\text{ppm}$  typ in 1st year
  - $\pm 3\text{ppm}$  typ over 10 years
- Frequency Slope (measured in still air at a maximum rate of 1°C/minute within the operating temperature range):  $\pm 0.5$  to  $\pm 2\text{ppb}/^\circ\text{C}$
- Holdover Drift (24hrs, temperature variation  $\leq 1^\circ\text{C}$  - after 30 days continuous operation):  $< \pm 2.5$  to  $\pm 4\text{ppb}$  typ
- Root Allan Variance (20MHz, @ 25°C,  $\tau = 1\text{s}$ ):  $7 \times 10^{-11}$  typ
- Acceleration Sensitivity (gamma vector of all 3 axes from 30 to 1500Hz): Typically 2ppb/G max
- Supply Voltage Variation ( $\pm 5\%$  change @ 25°C, frequencies  $\leq 26\text{MHz}$ ):  $\pm 10\text{ppb}$  typ
- Load Variation ( $\pm 5\text{pF}$  or  $\pm 10\%$  change @ 25°C, frequencies  $\leq 26\text{MHz}$ ):  $\pm 10\text{ppb}$  typ
- Reflow Variation (after reflow soldering and 1hr recovery @ 25°C):  $\pm 1\text{ppm}$  max
- Free-run Accuracy (all causes, 20yrs life, reference to nominal frequency):  $\pm 4.6\text{ppm}$  typ
- Wander Compliance (Loop Bandwidth 3MHz min): MTIE compliant with GR-1244 Fig 5-5 and G.812 Type 111 Fig 1 ( $\leq 100\text{ns}$ ), TDEV compliant with GR-1244 Fig 5-4 and G.812 Type 111 Fig 2 ( $\leq 10\text{ns}$ ), oscillator stabilised 24hrs at constant temperature ( $\pm 1^\circ\text{C}$ , still air), data collected over 10000secs at 1sec intervals (-3dB cut-off, 2nd order high pass loop filter).
- Note:
  - Parts should be shielded from drafts causing unexpected thermal gradients. Temperature changes due to ambient air currents can lead to short term frequency drift.
  - The characteristics of the component may be temporarily affected by the processes of assembly and soldering. The frequency specifications apply 48hrs after assembly. Nominal conditions apply unless otherwise stated.

**Electrical Parameters**

- Supply Voltage Range Options: 2.7V to 5.5V ( $\pm 5\%$ )
- Power Consumption (-40 to 85°C devices):
  - Warm Up: 1000mW typ
  - Steady State (@ 25°C in still air): 400mW max
- Warm Up Time @ 25°C (time needed for frequency to be within  $\pm 20\text{ppb}$  reference to frequency after 1hr @ 25°C - this parameter is frequency, assembly and operating history dependent): Typically 3mins max

**Operating Temperature Ranges**

- -40 to 85°C

**Output Details**

- Output Compatibility HCMOS/Clipped Sine
- HCMOS Output:
  - Voltage Output Low (VoL): 10%Vs max
  - Voltage Output High (VoH): 90%Vs min
  - Duty Cycle: 45/55% max
  - R/F Times (10 to 90%): 4ns max
  - Load: 15pF typ, 30pF max
- Clipped Sine Output (@ minimum Vs and load=10k $\Omega$ //10pF): 0.8V pk-pk min, 1.1V pk-pk typ

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### Environmental Parameters

- Storage Temperature Range: -55 to 125°C
- Mechanical Shock: IEC 60068-2-27, Test Ea: 1000m/s<sup>2</sup> (100G) acceleration for 6ms, half sine pulse, 3 shocks in each direction along 3 mutually perpendicular planes (18 shocks total).
- Vibration: IEC 60068-2-06, Test Fc: 10 to 60Hz 0.75mm displacement, 60 to 500Hz 100m/s<sup>2</sup> (10G) acceleration, 30mins in each of 3 mutually perpendicular planes @ 1oct/min.
- Thermal Shock: IEC 60068-2-14, Test Nc: 15 cycles, -55°C to 125°C.
- Resistance to Solder Shock (for through-hole mounted devices): JESD22-B106-D:  
Solder Bath Temperatures:  
SnPb Solders: 260°C ±5°C  
Pb-free Solders: 270°C ±5°C  
Dwell Time: 10 to 12secs
- Solderability: IEC 60068-2-20, Test Ta: Precondition 16hrs @ 155°C, solder dip 3secs @ 245°C.
- Temperature Cycling: IEC 60068-2-14, Test Na: 400 cycles, -40°C to 125°C.
- Cold Power Cycle: 1000 cycles @ -45°C, 10mins power on, 20mins power off.
- Humidity: EIA/JEDEC22-A101: 85°C/85% R.H., 1000hrs.
- Hermeticity, Gross Leak: IEC 60068-2-17, Test Qc: 30secs immersion @ 125°C.
- Hermeticity, Fine Leak: IEC 60068-2-17, Test Qk: 1x10<sup>-8</sup>cc/s max of Helium.
- Lead Integrity: MIL-STD- 883, Method 2004 B2: 3 bends

### Manufacturing Details

- Note: This through-hole component is suitable for assembly using both wave soldering and hand soldering, but the part has not been qualified for assembly with a reflow soldering process.

### 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: 10

### Electrical Specification - maximum limiting values

Frequency Min	Frequency Max	Temperature Range	Stability Min	Current Draw	Rise and Fall Time	Duty Cycle
		°C	ppb	mA	ns	%
10.0MHz	26.0MHz	-40 to 85	-	-	-	-

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[Click to view latest version on our website.](#)

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Chipset Approval Table

IQD Model	Ref No.	Frequency	Chipset Type	IC Supplier	
IQOV-74-1	M5860LF	12.8MHz	BCM560xx, BCM561xx, BCM562xx, BCM563xx, BCM564xx, BCM56440, BCM565xx, BCM566xx, BCM567xx, BCM56750, BCM568xx, BCM56851	Broadcom	
IQOV-74-2	M5861LF	25MHz	BCM560xx, BCM561xx, BCM562xx, BCM563xx, BCM564xx, BCM56440, BCM565xx, BCM566xx, BCM567xx, BCM56750, BCM568xx, BCM56852	Broadcom	
IQOV-74-3	M5950LF	50MHz	BCM560xx, BCM561xx, BCM562xx, BCM563xx, BCM564xx, BCM56440, BCM565xx, BCM566xx, BCM567xx, BCM56750, BCM568xx, BCM56854	Broadcom	
IQOV-74-4	M6329LF	30.72MHz	CNF71xx	Cavium	

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