



## Description

- Oven controlled crystal oscillator (OCXO) with voltage control on a FR4 base with a metal lid.
- Model IQOV-162-3
- Model Issue number 2

## Frequency Parameters

- Frequency 20.0MHz
- Frequency Tolerance  $\pm 500.00\text{ppb}$
- Frequency Stability  $\pm 20.00\text{ppb}$
- Operating Temperature Range  $-40.00$  to  $85.00^\circ\text{C}$
- Ageing  $\pm 5\text{ppb}$  max per day,  $\pm 500\text{ppb}$  max per year
- Frequency Tolerance (measurement referenced to frequency observed with  $T_A=25^\circ\text{C}$ ,  $V_s=3.3\text{V}$ ,  $V_C=1.65\text{V}$  and after 15 minutes of operation, within 30 days after ex-works):  $\pm 500\text{ppb}$
- Frequency Stability: TA varied over temperature, measurement referenced to frequency observed with  $f_{\text{ref}}=(f_{\text{max}}+f_{\text{min}})/2$ ,  $V_s=3.3\text{V}$ ,  $V_C=1.65\text{V}$ , load= $15\text{pF}$ , temperature variable speed less than  $2^\circ\text{C}$  per minute.
- Ageing:  $V_s$ ,  $V_C$ ,  $T_A$  constant measurement referenced to frequency observed with  $T_A=25^\circ\text{C}$ ,  $V_s=3.3\text{V}$ ,  $V_C=1.65\text{V}$  and after 30 days of operation.
- Supply Voltage Variation (measurement referenced to frequency observed with  $T_A=25^\circ\text{C}$ ,  $V_s$  varied from  $3.13\text{V}$  to  $3.47\text{V}$ ,  $V_C=1.65\text{V}$  and load= $15\text{pF}$ ):  $\pm 10\text{ppb}$  max
- Load Variation (5% load change measurement referenced to frequency observed with  $T_A=25^\circ\text{C}$ ,  $V_s=3.3\text{V}$ ,  $V_C=1.65\text{V}$  and load= $15\text{pF}$ ):  $\pm 10\text{ppb}$  max
- Short Term Stability - Allan Variance (temperature stability, no EMI/EMC or other interference) test after power for 1hr ref. to  $25^\circ\text{C}$ ; 1s, using PN9000 equipment):  $0.1\text{ppb}$  max / 1sec

## Electrical Parameters

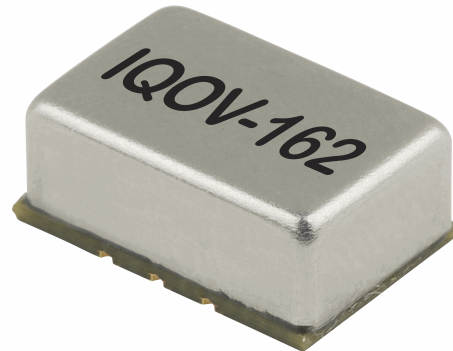
- Supply Voltage  $3.3\text{V} \pm 5\%$
- Current Draw:  
Warm up:  $600\text{mA}$  max  
Steady state (@  $25^\circ\text{C}$ ):  $300\text{mA}$  max
- Warm-Up Time (@  $25^\circ\text{C}$ ,  $F < \pm 100\text{ppb}$  of final frequency): 5mins max

## Frequency Adjustment

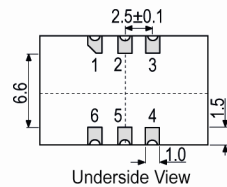
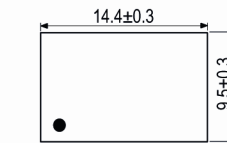
- Pulling  $\pm 3\text{ppm}$  to  $\pm 8\text{ppm}$
- Control Voltage  $1.65\text{V} \pm 1.65\text{V}$
- Input Impedance  $100\text{k}\Omega$  min
- Linearity:  $\pm 10\%$  max
- Slope: Positive

## Output Details

- Output Compatibility HCMOS
- Drive Capability  $15\text{pF}$
- Rise and Fall Time  $8.0\text{ns}$  max
- Duty Cycle  $45/55\%$
- Output Low (@  $V_s=3.3\text{V}$ , load= $15\text{pF}$ ):  $0.4\text{V}$  max
- Output High (@  $V_s=3.3\text{V}$ , load= $15\text{pF}$ ):  $2.4\text{V}$  min

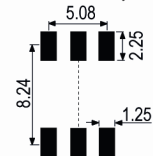


## Outline (mm)



- Pad Connections
1. Voltage Control
  2. N/C
  3. GND
  4. Output
  5. N/C
  6. +Vs

## Solder Pad Layout



## Sales Office Contact Details:

UK: +44 (0)1460 270200  
Germany: 0800 1808 443

France: 0800 901 383  
USA: +1.760.318.2824

Email: [info@iqdfrequencyproducts.com](mailto:info@iqdfrequencyproducts.com)  
Web: [www.iqdfrequencyproducts.com](http://www.iqdfrequencyproducts.com)

**Noise Parameters**

- Phase Noise (@ 10MHz typ):
  - 100dBc/Hz @ 10Hz
  - 130dBc/Hz @ 100Hz
  - 150dBc/Hz @ 1kHz
  - 150dBc/Hz @ 10kHz
  - 150dBc/Hz @ 100kHz
  - 155dBc/Hz @ 1MHz

**Environmental Parameters**

- Operable Temperature Range: -40 to 85°C
- Storage Temperature Range: -55 to 105°C
- ESD Level:
  - HBM, Class 2: 2000V to 4000V, JEDEC JS-001-2010
  - Machine Model, Class B: 200V to 400V, JEDEC JS-001-2010
- Shock: IEC 60068-2-27, Test Ea, Severity 50A: 50G, 11ms duration,  
1/2 sine wave, 3 times in each of 3 mutually perpendicular planes
- Vibration: IEC 60068-2-06, Test Fc: 10Hz-500Hz, 0.75mm displacement, 10G acceleration, one cycle per 30mins, 3 times in each of 3 mutually perpendicular planes, test 2hrs

**Manufacturing Details**

- Maximum Reflow Temperature: 260°C (30secs max)

**Compliance**

- RoHS Status (2011/65/EU)      Compliant
- REACH Status                      Compliant
- MSL Rating (JDEC-STD-033):    2

**Packaging Details**

- Pack Style: Bulk      Loose in bulk pack  
Pack Size: 1
- Alternative packing option available*

**Sales Office Contact Details:**

UK: +44 (0)1460 270200  
Germany: 0800 1808 443

France: 0800 901 383  
USA: +1.760.318.2824

Email: [info@iqdfrequencyproducts.com](mailto:info@iqdfrequencyproducts.com)  
Web: [www.iqdfrequencyproducts.com](http://www.iqdfrequencyproducts.com)