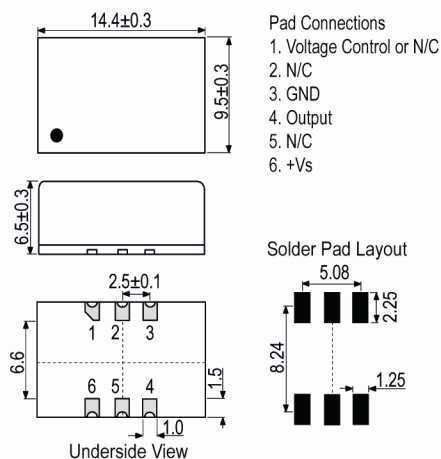




### Outline (mm)



### Description

- Oven Controlled Crystal Oscillator on a FR4 base with a metal lid, available with or without voltage control.  
Please note: This document is intended to illustrate the general capability and versatility of IQD's design. For specific enquiries please contact one of IQD's Sales Offices where we can tailor a unique specification to meet your needs.

#### Model Options:

- IQOV-162-1 HCMOS output, no pulling
- IQOV-162-2 Sinewave output, no pulling
- IQOV-162-3 HCMOS output,  $\pm 3\text{ppm}$  to  $\pm 8\text{ppm}$  pulling
- IQOV-162-4 Sinewave output,  $\pm 3\text{ppm}$  to  $\pm 8\text{ppm}$  pulling

- Standard Frequencies for both HCMOS and Sine output: 19.2MHz, 20.0MHz, 25.6MHz, 30.72MHz, 38.88MHz, 40.0MHz, 50.0MHz and 100.0MHz

### Frequency Parameters

- Frequency 10.0MHz to 100.0MHz
- Frequency Tolerance  $\pm 500.00\text{ppb}$
- Tolerance Condition @ 25°C, 3.3V, VC=1.65V after 15mins warm-up
- Frequency Stability  $\pm 10.00\text{ppb}$  to  $\pm 100.00\text{ppb}$
- Ageing  $\pm 5\text{ppb}$  max per day,  $\pm 500\text{ppb}$  max per year
- Frequency Tolerance (measurement referenced to frequency observed with TA=25°C, Vs=3.3V, VC=1.65V/NC 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  $f_{\text{ref}} = (f_{\text{max}} + f_{\text{min}}) / 2$ , Vs=3.3V, VC=1.65V/NC, load=50Ω/15pF, temperature variable speed less than 2°C per minute.
- Ageing: Vs, VC, TA constant measurement referenced to frequency observed with TA=25°C, Vs= 3.3V, VC=1.65V/NC, load=50Ω/15pF and after 30 days of operation.
- Supply Voltage Variation (measurement referenced to frequency observed with TA=25°C, Vs varied from 3.13V to 3.47V, VC = 1.65V/NC and load=50Ω/15pF):  $\pm 10\text{ppb}$  max
- Load Variation (5% load change measurement referenced to frequency observed with TA=25°C, Vs=3.3V, VC = 1.65V/NC and load=50Ω/15pF):  $\pm 10\text{ppb}$  max
- Short Term Stability - Allan Variance (temperature stability, no EMI/EMC or other interference test after power for 1hr ref. to 25°C; 1s, using PN9000 equipment): 0.1ppb max / 1sec
- Standard Frequencies: 10.0MHz, 12.80MHz, 19.20MHz, 20.0MHz, 25.0MHz 38.880MHz, 40.0MHz

### Sales Office Contact Details:

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USA: +1.760.318.2824

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

#### Electrical Parameters

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

#### Frequency Adjustment

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

#### Operating Temperature Ranges

- -20 to 70°C
- -30 to 75°C
- -40 to 85°C

#### Output Details

- Output Compatibility HCMOS/Sinewave
- Duty Cycle (HCMOS): 45/55%
- Rise/Fall Time (HCMOS): 8ns max
- Output Levels (HCMOS):
  - Low (@  $V_s = 3.3$ V, load=15pF): 0.4V max
  - High (@  $V_s = 3.3$ V, load=15pF): 2.4V min
- Output Levels (Sinewave):
  - 6dBm min, 10dBm max

#### Noise Parameters

- Phase Noise (@ 10MHz typ):
  - 100dBc/Hz @ 10Hz
  - 130dBc/Hz @ 100Hz
  - 150dBc/Hz @ 1kHz
  - 150dBc/Hz @ 10kHz
  - 150dBc/Hz @ 100kHz
  - 155dBc/Hz @ 1MHz
- Phase Noise (@ 100MHz typ):
  - 85dBc/Hz @ 10Hz
  - 118dBc/Hz @ 100Hz
  - 140dBc/Hz @ 1kHz
  - 145dBc/Hz @ 10kHz
  - 145dBc/Hz @ 100kHz
  - 150dBc/Hz @ 1MHz
- Harmonic Suppression (Sinewave): -30dBc max
- Spurious Suppression (Sinewave): -60dBc max

#### 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

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#### Manufacturing Details

- Moisture Sensitivity Level: 2
- Maximum Reflow Temperature: 260°C (30secs max)

#### Ordering Information

- Frequency\*
- Model Option\*
- Output Type\*
- Frequency Stability (over operating temperature range)\*
- Operating Temperature Range\*
- Supply Voltage
- Pulling\*
- (\*minimum required)
- Example
- 10.0MHz IQOV-162-3
- HCMOS ±20ppb -40 to 85C 3.3V ±3ppm to ±8ppm

#### Compliance

- RoHS Status (2015/863/EU)      Compliant
- REACH Status                      Compliant
- MSL Rating (JDEC-STD-033):    2

#### Packaging Details

- Pack Style: Reel      Tape & reel in accordance with EIA-481-D
- Pack Size: 500
- Pack Style: Bulk      Loose in bulk pack
- Pack Size: 1

#### Electrical Specification - maximum limiting values 3.3V ±5%

Frequency Min	Frequency Max	Temperature Range	Stability (Min)	Current Draw	Rise and Fall Time	Duty Cycle
		°C	ppb	mA	ns	%
10.0MHz	100.0MHz	-20 to 70	±10.0	-	-	-
		-30 to 75	±10.0	-	-	-
		-40 to 85	±10.0	-	-	-

*This document was correct at the time of printing; please contact your local sales office for the latest version.*

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

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