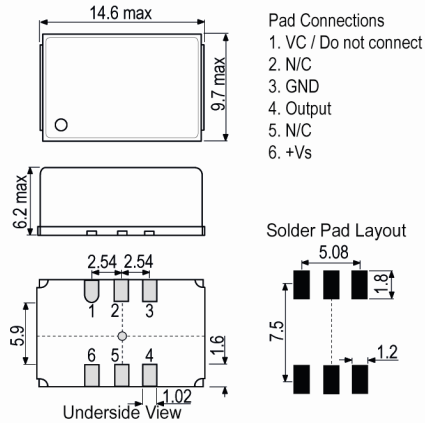


ISSUE 1; April 2022

Outline (mm)



Description

- A miniature, highly integrated oven controlled crystal oscillator providing comparable stability to traditional OCXOs but in a small SMD package. Manufactured for us by Rakon.
- Features:
 - Small form factor
 - Frequency stability over temperature as low as $\pm 10\text{ppb}$ over -20 to 70°C
 - Low power consumption
 - High reliability
- Applications:
 - Base Stations
 - Broadcasting
 - Instrumentation
 - Time & Frequency Reference

Frequency Parameters

- Frequency: 5.0MHz to 50.0MHz
- Frequency Tolerance: $\pm 500.00\text{ppb}$
- Tolerance Condition: @ $25^\circ\text{C} \pm 2^\circ\text{C}$
- Frequency Stability: $\pm 10.00\text{ppb}$ to $\pm 100.00\text{ppb}$
- Ageing (after 30 days of continuous operation):
 - Typically $\pm 2\text{ppb}$ max per day
 - $\pm 1\text{ppm}$ max in 1st year
 - $\pm 3\text{ppm}$ max over 10yrs
- Frequency Stability: TA varied over operating temperature range in still air, measurement referenced to frequency observed with $F_{\text{ref}} = (F_{\text{max}} + F_{\text{min}}) / 2$.
- Frequency Slope (TA varied over operating temperature range @ $1^\circ\text{C}/\text{min}$): $\pm 2\text{ppb}/^\circ\text{C}$ max
- Root Allan Variance (@ 20MHz, $\tau = 1\text{sec}$): 0.07ppb typ
- Acceleration Sensitivity (gamma vector of all 3 axes from 30 to 1500Hz): Typically $2\text{ppb}/\text{G}$ max
- Supply Voltage Variation (@ 26MHz max, $\pm 5\%$ change): $\pm 10\text{ppb}$ typ
- Load Variation (@ 26MHz max, $\pm 5\text{pF} / \pm 10\%$ change): $\pm 10\text{ppb}$ typ
- Reflow Variation (pre to post reflow ΔF , measured after 1hr recovery @ 25°C): $\pm 1\text{ppm}$ max

Sales Office Contact Details:

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USA: +1 760 668 8935

Email: info@iqdfrequencyproducts.com

Web: www.iqdfrequencyproducts.com

Electrical Parameters

- Supply Voltage Operable Range: 2.7V to 5.5V
The oscillator will continue to function over this range but may not meet specified performance.
Standard available nominal supply voltages are 3.3V and 5.0V, other nominal supply voltages may be available upon request, please contact an IQD Sales Office.
- Power Consumption (-20 to 70°C device):
Warm Up (@ 25°C): 0.8W typ
Steady State (in still air @ 25°C): 0.35W max
- Power Consumption (-40 to 85°C device):
Warm Up (@ 25°C): 1.0W typ
Steady State (in still air @ 25°C): 0.4W max

Frequency Adjustment

- Frequency Adjustment (optional):
Pulling: ± 5 ppm typ (referenced to frequency @ VC = 1.5V)
Control Voltage: 1.5V ± 1.0 V
Input Impedance: 80k Ω min
Linearity (deviation from straight line curve fit): 1% max
Frequency Tuning Slope: +8ppm/V typ
Modulation Bandwidth: 3.5kHz typ
Note: The GND of the control voltage needs to be connected directly to pad 2 as ground lead impedance may cause performance degradation.
- No Control Voltage: Fixed frequency

Operating Temperature Ranges

- -20 to 70°C
- -40 to 85°C

Output Details

- Output Compatibility HCMOS/Clipped Sine
- HCMOS Output Details:
Output Voltage Levels:
Output Low (VoL): 10%Vs max
Output High (VoH): 90%Vs min
Load: 15pF typ, 30pF max
Rise/Fall Time (10-90%): 4ns max
Duty Cycle (@ 50% level): 45/55% max
- Clipped Sine Output Details:
Output Voltage Level (@ TA=25°C, Vs min and load=10k Ω /10pF): 0.8V pk-pk min, 1.1V pk-pk typ
- Warm Up Time @ 25°C (time needed for frequency to be within ± 20 ppb reference to frequency after 1hr @ 25°C – this parameter is frequency, assembly and operating history dependent): Typically 3mins max

Noise Parameters

- Phase Noise @ 25°C (F=12.8MHz, typ):
-70dBc/Hz @ 1Hz
-95dBc/Hz @ 10Hz
-120dBc/Hz @ 100Hz
-145dBc/Hz @ 1kHz
-157dBc/Hz @ 10kHz
-163dBc/Hz @ 100kHz
-165dBc/Hz @ 1MHz

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Ordering Information

- Frequency*
Model*
Output*
Frequency Stability*
Operating Temperature Range*
Supply Voltage*
Frequency Adjustment*
(*minimum required)
- Example
10.0MHz IQOV-72-1
HCMOS ±10ppb -20+70°C 3.3V ±5ppm
- Note: Stability / Temperature Range options other than those listed may be available upon request, please contact an IQD Sales Office.
- Note: For stability/temperature combinations of ±10ppb over -20 to 70°C and ±20ppb over -40 to 85°C, please contact an IQD Sales Office for availability.

Compliance

- RoHS Status (2015/863/EU) Compliant
- REACH Status Compliant
- MSL Rating (JDEC-STD-033): 1

Packaging Details

- Pack Style: Reel Tape & reel in accordance with EIA-481-D
Pack Size: 100
- Pack Style: Bulk Loose in bulk pack
Pack Size: 10

Electrical Specification - maximum limiting values Vs ±5%

Frequency Min	Frequency Max	Temperature Range	Stability (Min)	Current Draw	Rise and Fall Time	Duty Cycle
		°C	ppb	mA	ns	%
5.0MHz	50.0MHz	-20 to 70 -40 to 85	±10.0 ±20.0	- -	- -	- -

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.](#)

Chipset Approval Table

IQD Model	Ref No.	Frequency	Chipset Type	IC Supplier	
IQOV-72-3	M6153LF	12.8MHz	IDT8V97051	IDT	

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