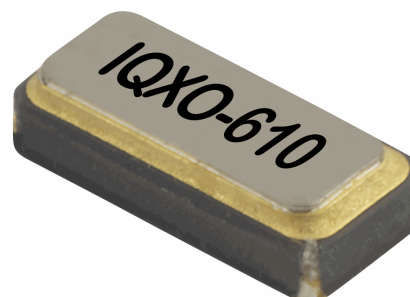


ISSUE 3; June 2019

### Description

- 32.768kHz output crystal oscillator in a ceramic package with a sealed metal lid and capable of operating over a wide supply voltage range.
- This device uses compensation of the frequency/temperature characteristics of a 32.768kHz crystal to provide superior stability performance while achieving an ultra low current draw.
- Applications:
  - Real time clocks
  - Smart meters
  - IoT
  - Wearable devices
  - Precision timing devices
  - Event data recorders



### Frequency Parameters

- Frequency: 32.768kHz
- Frequency Tolerance:  $\pm 3.00\text{ppm}$
- Tolerance Condition: @ 25°C & Vs=3.3V
- Frequency Stability:  $\pm 5.00\text{ppm}$  to  $\pm 50.00\text{ppm}$
- Ageing:  $\pm 3\text{ppm}$  max in 1st year (@ 25°C and Vs=3.3V)
- Supply Voltage Variation:  $\pm 1\text{ppm/V}$  max

### Electrical Parameters

- Supply Voltage: 2.0V to 5.5V
- Note: This device will operate with a supply voltage in the range of 1.3V to 5.5V, however the frequency stability condition is only achieved over a supply voltage range of 2.0V to 5.5V
- Current Draw (@ no load):
  - @ 3.3V: 1 $\mu\text{A}$  typ, 2 $\mu\text{A}$  max
  - @ 3.3V and during start-up: 2.5 $\mu\text{A}$  max
  - @ 5.0V: 1.5 $\mu\text{A}$  typ, 3 $\mu\text{A}$  max
- Current Draw (@ 85°C and 15pF load):
  - @ 3.3V: 2.7 $\mu\text{A}$  typ
  - @ 5.5V: 4 $\mu\text{A}$  typ
- Absolute Maximum Ratings:
  - Supply Voltage: -0.3V to 6.5V
  - Input Voltage: -0.3V to Vs+0.3V
  - Output Voltage: -0.3V to Vs+0.3V

### Operating Temperature Ranges

- -40 to 85°C

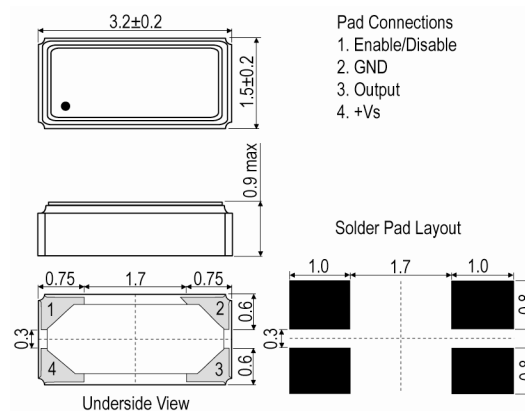
### Output Details

- Output Compatibility: CMOS
- Drive Capability: 15pF max
- Output Low Vol: 0.4V max
- Output High Voh: Vs-0.4V min
- Start-Up Time (@ 25°C and 3.3V): 0.5 seconds max

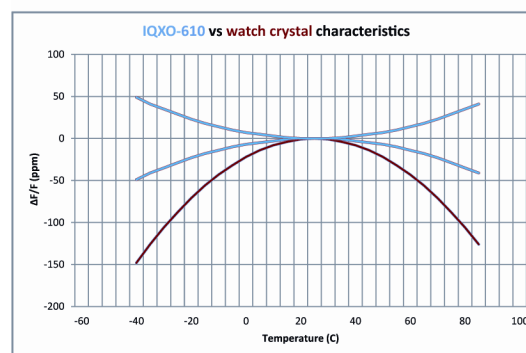
### Output Control

- Logic '1' (80%Vs min) to pad 1 enables oscillator output.
- Logic '0' (20%Vs max) to pad 1 disables oscillator output. output goes to high impedance state. (note, device does not have built in pull-up resistor).
- Current draw in disable mode: 0.6 $\mu\text{A}$  typ, 1.5 $\mu\text{A}$  max

### Outline (mm)



### Temperature Characteristics



### Sales Office Contact Details:

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Web: [www.iqdfrequencyproducts.com](http://www.iqdfrequencyproducts.com)

### Environmental Parameters

- Storage Temperature Range: -55 to 125°C
- Shock: Natural free drop (3 times) from the height of 200cm onto a hardwood board.
- Vibration: 1.5mm amplitude, frequency 10~60Hz, 2~3 minutes cycle in 3 perpendicular plains, 2 hours duration in each plain.

### Manufacturing Details

- Note: please mount a ceramic-chip capacitor of 0.1μF min between +Vs and GND.
- RoHS Terminations                      Au over Ni
- RoHS Reflow                                260°C max for 10s max (2 times)

### Ordering Information

- Frequency Stability/Temperature range options:  
±5ppm over -40+85°C  
±50ppm over -40+85°C
- \*Minimum ordering information required  
Frequency  
Model\*  
Output  
Frequency Stability\*  
Operating Temperature Range\*  
Supply Voltage
- Example  
32.768kHz IQXO-610  
CMOS ±50ppm -40 to 85C 3.3V

### Compliance

- RoHS Status (2011/65/EU)            Compliant
- REACH Status                            Compliant
- MSL Rating (JDEC-STD-033):        Not Applicable

### Packaging Details

- Pack Style: Cutt                      In tape, cut from a reel  
Pack Size: 100
- Pack Style: RL3K                      Tape & reel in accordance with EIA-481-D  
Pack Size: 3,000

### Electrical Specification - maximum limiting values

Frequency Min	Temperature Range	Stability (Min)	Current Draw	Rise and Fall Time (20-80%)	Duty Cycle
	°C	ppm	mA	ns	%
32.768kHz	-40 to 85	±5.00	-	50	40/60%

*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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