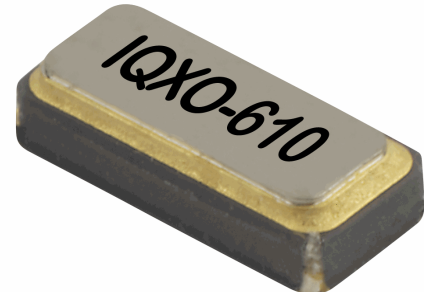


ISSUE 1; January 2018

### 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
- Note: please mount a ceramic-chip capacitor of 0.1µF min between +Vs and GND.



### Frequency Parameters

- Frequency: 32.768kHz
- Frequency Tolerance: ±3.00ppm
- Tolerance Condition: @ 25°C & Vs=3.3V
- Frequency Stability: ±20.00ppm to ±50.00ppm
- Ageing: ±3ppm max in 1st year (@ 25°C and Vs=3.3V)
- Supply Voltage Variation: ±1ppm/V

### Electrical Parameters

- Supply Voltage: 2.0V to 5.5V
- Supply Voltage: this device will operate with a supply voltage in the range of 1.3V to 5.5V. Note however that the frequency stability condition is only achieved over a supply voltage range of 2.0V to 5.5V
- Current Draw:
  - @ 3.3V and no-load: 1µA typ, 2µA max
  - @ 3.3V and no-load during start-up: 2.5µA max
  - @ 5.0V and no-load: 1.5µA typ, 3µA max
- 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

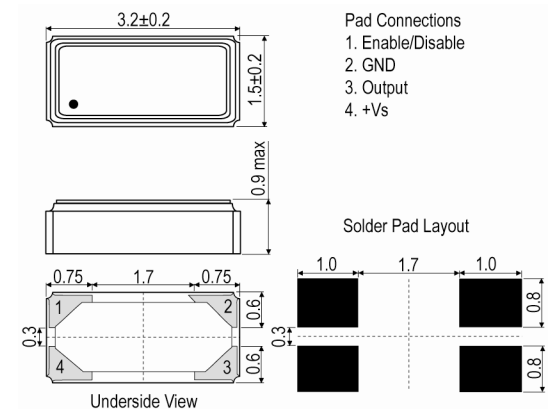
### Operating Temperature Ranges

- 0 to 50°C
- -10 to 60°C
- -20 to 70°C
- -40 to 85°C

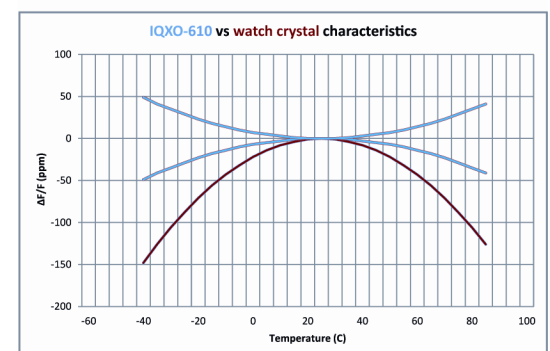
### Output Details

- Output Compatibility: CMOS
- Drive Capability: 15pF max
- Output Low Vol (@ Vs=2.0V and Iol=0.4mA): 0.4V max
- Output High Voh (@ Vs=2.0V and Ioh=-0.4mA): Vs-0.4V min
- Start-Up Time (@ 25°C): 0.5 seconds max

### Outline (mm)



### Temperature Characteristics



### Sales Office Contact Details:

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### 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: 0.6µA typ, 1.5µA max

### 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

- RoHS Terminations                      Au over Ni
- RoHS Reflow                                260degC max for10s max

### Ordering Information

- \*minimum 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: Reel                      Tape & reel in accordance with EIA-481-D  
Pack Size: 1,000
- Pack Style: Cutt                      In tape, cut from a reel  
Pack Size: 100

### 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	±50.00	-	50	40/60%
	-20 to 70	±40.00	-	50	40/60%
	-10 to 60	±30.00	-	50	40/60%
	0 to 50	±20.00	-	50	40/60%

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

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