



## **IQXO-40x**

**32.768kHz miniature 2 x 1.6mm crystal oscillator in an hermetically sealed ceramic package with a seam sealed metal lid.**

<b>Model Name</b>	<b>Description</b>
<b>IQXO-402</b>	<b>A 3.3V version</b>
<b>IQXO-403</b>	<b>A 2.5V version</b>
<b>IQXO-404</b>	<b>A 1.8V version</b>

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### Description

- 32.768kHz miniature 2 x 1.6mm crystal oscillator in an hermetically sealed ceramic package with a seam sealed metal lid.



### Frequency Parameters

- Frequency: 32.768kHz
- Frequency Stability:  $\pm 25.00\text{ppm}$  to  $\pm 100.00\text{ppm}$
- Ageing:  $\pm 3\text{ppm}$  max per year @ 25°C

### Electrical Parameters

- Supply Voltage: 3.3V  $\pm 10\%$

### Operating Temperature Ranges

- 20 to 70°C
- 40 to 85°C
- 40 to 125°C

### Output Details

- Output Compatibility: CMOS
- Drive Capability: 15pF

### Output Control

- E/D Operation:
  - Logic '1' ( $\geq 70\%V_s$ ) to pad 1 enables oscillator output
  - Logic '0' ( $\leq 30\%V_s$ ) to pad 1 disables oscillator output; when disabled the oscillator output goes to the high impedance state.
  - No connection to pad 1 enables oscillator output.
- Standby Current (pad 1 at logic '0'):
  - 10 $\mu\text{A}$  max @ -40+85°C
  - 20 $\mu\text{A}$  max @ -40+125°C

### Environmental Parameters

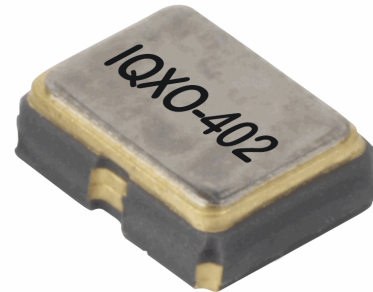
- Storage Temperature Range: -55 to 125°C
- Shock : 1500G, 0.5ms, 3 times for each surface, total 18 times.
- Vibration: Frequency range: 20~2000Hz, peak to peak amplitude 1.52mm, peak acceleration: 20G (196m/s<sup>2</sup>), 3 directions (X, Y, Z), each cycle: 20min, 4 cycles for each direction.

### Ordering Information

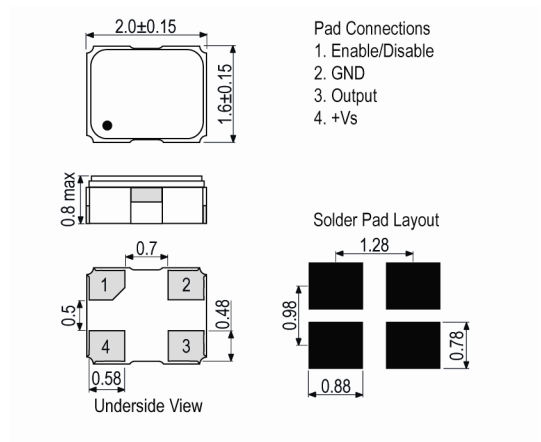
- Frequency
  - Model\*
  - Output
  - Frequency Stability\*
  - Operating Temperature Range\*
  - Supply Voltage
  - (\*minimum required)
- Example
  - 32.768kHz IQXO-402
  - CMOS  $\pm 30\text{ppm}$  -20 to 70C 3.3V

### Compliance

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



### Outline (mm)



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### Packaging Details

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

### Electrical Specification - maximum limiting values 3.30V $\pm$ 10%

Frequency	Temperature Range	Stability (Min)	Current Draw	Rise and Fall Time	Duty Cycle
	°C	ppm	mA	ns	%
32.768kHz	-40 to 85	$\pm$ 30.00	0.2	100	40/60%
	-40 to 125	$\pm$ 100.00	0.2	100	40/60%
	-20 to 70	$\pm$ 25.00	0.2	100	40/60%

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### Description

- 32.768kHz miniature 2 x 1.6mm crystal oscillator in an hermetically sealed ceramic package with a seam sealed metal lid.



### Frequency Parameters

- Frequency: 32.768kHz
- Frequency Stability:  $\pm 25.00\text{ppm}$  to  $\pm 100.00\text{ppm}$
- Ageing:  $\pm 3\text{ppm}$  max per year @ 25°C

### Electrical Parameters

- Supply Voltage: 2.5V  $\pm 5\%$

### Operating Temperature Ranges

- 20 to 70°C
- 40 to 85°C
- 40 to 125°C

### Output Details

- Output Compatibility: CMOS
- Drive Capability: 15pF

### Output Control

- E/D Operation:
  - Logic '1' ( $\geq 70\%V_s$ ) to pad 1 enables oscillator output
  - Logic '0' ( $\leq 30\%V_s$ ) to pad 1 disables oscillator output; when disabled the oscillator output goes to the high impedance state.
  - No connection to pad 1 enables oscillator output.
- Standby Current (pad 1 at logic '0'):
  - 10 $\mu\text{A}$  max @ -40+85°C
  - 20 $\mu\text{A}$  max @ -40+125°C

### Environmental Parameters

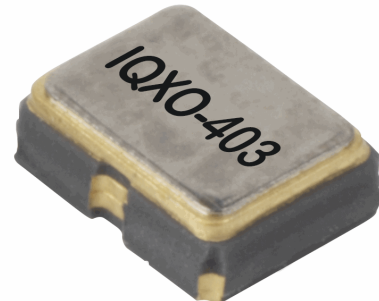
- Storage Temperature Range: -55 to 125°C
- Shock: 1500G, 0.5ms, 3 times for each surface, total 18 times.
- Vibration: Frequency range: 20~2000Hz, peak to peak amplitude 1.52mm, peak acceleration: 20G (196m/s<sup>2</sup>), 3 directions (X, Y, Z), each cycle: 20min, 4 cycles for each direction.

### Ordering Information

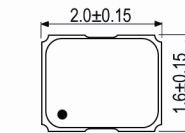
- Frequency
  - Model\*
  - Output
  - Frequency Stability\*
  - Operating Temperature Range\*
  - Supply Voltage
  - (\*minimum required)
- Example
  - 32.768kHz IQXO-403
  - CMOS  $\pm 30\text{ppm}$  -20 to 70C 2.5V

### Compliance

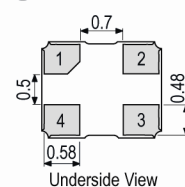
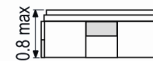
- RoHS Status (2011/65/EU): Compliant
- REACH Status: Compliant
- MSL Rating (JDEC-STD-033): Not Applicable



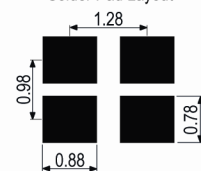
### Outline (mm)



- Pad Connections
1. Enable/Disable
  2. GND
  3. Output
  4. +Vs



### Solder Pad Layout



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### Packaging Details

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

### Electrical Specification - maximum limiting values 2.50V $\pm$ 5%

Frequency	Temperature Range	Stability (Min)	Current Draw	Rise and Fall Time	Duty Cycle
	°C	ppm	mA	ns	%
32.768kHz	-40 to 85	$\pm$ 30.00	0.2	100	40/60%
	-40 to 125	$\pm$ 100.00	0.2	100	40/60%
	-20 to 70	$\pm$ 25.00	0.2	100	40/60%

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### Description

- 32.768kHz miniature 2 x 1.6mm crystal oscillator in an hermetically sealed ceramic package with a seam sealed metal lid.



### Frequency Parameters

- Frequency: 32.768kHz
- Frequency Stability:  $\pm 25.00\text{ppm}$  to  $\pm 100.00\text{ppm}$
- Ageing:  $\pm 3\text{ppm}$  max per year @ 25°C

### Electrical Parameters

- Supply Voltage: 1.8V  $\pm 5\%$

### Operating Temperature Ranges

- 20 to 70°C
- 40 to 85°C
- 40 to 125°C

### Output Details

- Output Compatibility: CMOS
- Drive Capability: 15pF

### Output Control

- E/D Operation:
  - Logic '1' ( $\geq 70\%V_s$ ) to pad 1 enables oscillator output
  - Logic '0' ( $\leq 30\%V_s$ ) to pad 1 disables oscillator output; when disabled the oscillator output goes to the high impedance state.
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  - 20 $\mu\text{A}$  max @ -40+125°C

### Environmental Parameters

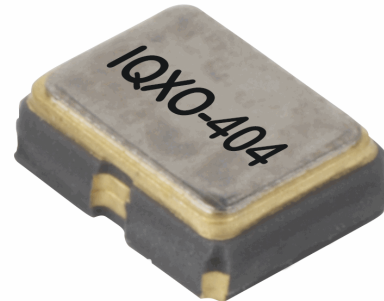
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### Ordering Information

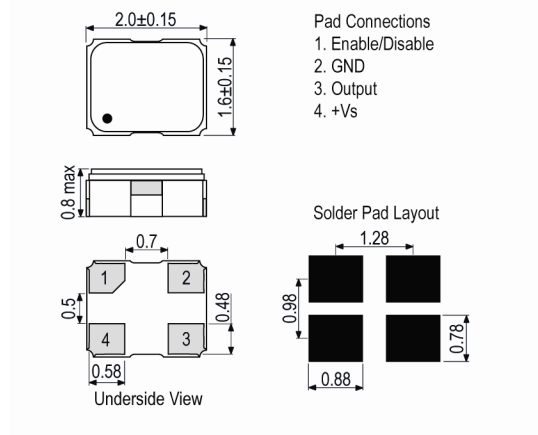
- Frequency
  - Model\*
  - Output
  - Frequency Stability\*
  - Operating Temperature Range\*
  - Supply Voltage
  - (\*minimum required)
- Example
  - 32.768kHz IQXO-404
  - CMOS  $\pm 30\text{ppm}$  -20 to 70C 1.8V

### Compliance

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### Outline (mm)



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### Packaging Details

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

### Electrical Specification - maximum limiting values 1.80V $\pm$ 5%

Frequency	Temperature Range	Stability (Min)	Current Draw	Rise and Fall Time	Duty Cycle
	°C	ppm	mA	ns	%
32.768kHz	-40 to 85	$\pm$ 30.00	0.2	100	40/60%
	-40 to 125	$\pm$ 100.00	0.2	100	40/60%
	-20 to 70	$\pm$ 25.00	0.2	100	40/60%

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