



CXOLAT

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The CXOLAT 32.768kHz surface-mount oscillator achieves the low power comparable with a tuning fork design and the fast start-up and tight frequency stability attained by an AT cut crystal design. Designed for applications requiring ultra-low current (15µA), fast start-up time (15ms) and a tight frequency stability (± 30 ppm to ± 100 ppm) over a wide temperature range (-55°C to +125°C). These oscillators are

| Model Name | Description |
|-------------|--------------|
| CXOLAT 1.8V | 1.8V Version |
| CXOLAT 2.5V | 2.5V Version |
| CXOLAT 3.0V | 3.0V Version |
| CXOLAT 3.3V | 3.3V Version |
| | |

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Description

- This product is designed and manufactured by Statek Corporation in California, USA and distributed by IQD. The CXOLAT 32.768kHz surface-mount oscillator achieves the low power comparable with a tuning fork design and the fast start-up and tight frequency stability attained by an AT cut crystal design. Designed for applications requiring ultra-low current (15µA), fast start-up time (15ms) and a tight frequency stability (±30 ppm to ±100 ppm) over a wide temperature range (-55°C to +125°C). These oscillators are also capable of withstanding significantly higher shock than a standard tuning fork design.
- SM1 Gold Plated (RoHS)
- SM4 Solder Plated (RoHS)
- SM5 Solder Dipped (RoHS)
- FEATURES:
 - Ultra low current (typical 15µA)
 - Fast start-up (typical 15ms)
 - Tight tolerance
 - High shock resistance
 - Low ageing
 - CMOS output
 - Optional Output Enable/Disable with Tri-State
 - Hermetically sealed ceramic package
- APPLICATIONS:
 - Aerospace & Avionics -
 - Communications
 - Navigation
 - GPS
 - Industrial, Computer & Communications -
 - Handheld instrumentation
 - Transponder/Animal migration
- Please note that all data is only valid at 25°C unless otherwise stated.

Frequency Parameters

- Frequency 32.768kHz
- Frequency Tolerance ±25.00ppm
- Tolerance Condition @ 25°C
- Frequency Stability ±10.00ppm to ±100.00ppm
- Ageing ±5ppm max in 1st year @ 25°C
- Frequency Stability does not include Frequency Tolerance @ 25°C
- All parameters are measured at 25°C with a 10MΩ and 15pF load at 3.3V
- Note: Other Frequency Tolerances and Stabilities are available - please contact an IQD Sales Office

Electrical Parameters

- Supply Voltage 1.8V ±10%
- Supply Current: 15µA typ
- Supply Voltage (absolute maximum rating): -0.5V to 5.0V

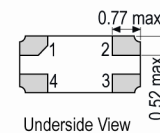
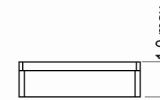
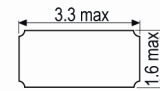
Operating Temperature Ranges

- 10 to 70°C
- 40 to 85°C
- 55 to 125°C

Output Details

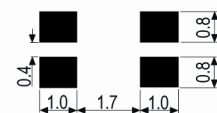
- Output Compatibility CMOS
- Drive Capability 15pF
- Output Level High Voh: 90%Vs min
Output Level Low Vol: 10%Vs max
- Rise Time (10%-90%): 2.8ns typ, 10ns max
Fall Time (90%-10%): 2.4ns typ, 10ns max

Outline (mm) SM1 = Gold Plated (RoHS)



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

Solder Pad Layout





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Output Control

- Start-Up Time: 15ms typ

Environmental Parameters

- Shock: 5000G, 0.3ms, 1/2 sine
- Vibration: MIL-STD-202G, Method 204D, Condition D: 20G, 10Hz-2000Hz swept sine
- Note: Random Vibration test is also available - please contact an IQD Sales Office
- Storage Temperature Range: -55 to 125°C

Manufacturing Details

- Maximum Process Temperature: 260°C for 20sec max

Ordering Information

- Frequency*
- Model*
- Termination Variant*
- Output
- Frequency Tolerance (@ 25°C)*
- Frequency Stability (over operating temperature range)*
- Operating Temperature Range*
- Pad 3 Function* (minimum required*)
- Termination Variants:
 - SM1 = Gold Plated
 - SM4 = Solder Plated
 - SM5 = Solder Dipped
 (Note: Non-RoHS compliant terminations also available - please contact an IQD Sales Office)
- Pad 3 Function Options:
 - EN = Enable/Disable
 - NC = No connection
- Example
32.768kHz CXOLAT 1.8V SM1
CMOS ±25ppm ±100ppm -40 to 85C NC

Compliance

- RoHS Status (2015/863/EU) Optional
- REACH Status Compliant
- MSL Rating (JDEC-STD-033): Not Applicable

Packaging Details

- Pack Style: Tray Supplied on a tray
Pack Size: 1
- Pack Style: Reel Tape & reel in accordance with EIA-481
Pack Size: 1,000

Electrical Specification - maximum limiting values 1.80V ±10%

| Frequency Min | Temperature Range | Stability (Min) | Current Draw | Rise and Fall Time | Duty Cycle |
|---------------|-------------------|-----------------|--------------|--------------------|------------|
| | °C | ppm | mA | ns | % |
| 32.768kHz | -55 to 125 | ±50.00 | - | - | 45/55% |
| | -40 to 85 | ±20.00 | - | - | 45/55% |
| | -10 to 70 | ±10.00 | - | - | 45/55% |

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Description

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- SM4 Solder Plated (RoHS)
- SM5 Solder Dipped (RoHS)
- FEATURES:
 - Ultra low current (typical 15µA)
 - Fast start-up (typical 15ms)
 - Tight tolerance
 - High shock resistance
 - Low ageing
 - CMOS output
 - Optional Output Enable/Disable with Tri-State
 - Hermetically sealed ceramic package
- APPLICATIONS:
 - Aerospace & Avionics -
 - Communications
 - Navigation
 - GPS
 - Industrial, Computer & Communications -
 - Handheld instrumentation
 - Transponder/Animal migration
- Please note that all data is only valid at 25°C unless otherwise stated.

Frequency Parameters

- Frequency 32.768kHz
- Frequency Tolerance ± 25.00 ppm
- Tolerance Condition @ 25°C
- Frequency Stability ± 10.00 ppm to ± 100.00 ppm
- Ageing ± 5 ppm max in 1st year @ 25°C
- Frequency Stability does not include Frequency Tolerance @ 25°C
- All parameters are measured at 25°C with a 10MΩ and 15pF load at 3.3V
- Note: Other Frequency Tolerances and Stabilities are available - please contact an IQD Sales Office

Electrical Parameters

- Supply Voltage 2.5V $\pm 10\%$
- Supply Current: 15µA typ
- Supply Voltage (absolute maximum rating): -0.5V to 5.0V

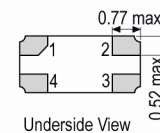
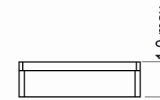
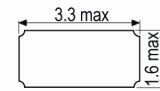
Operating Temperature Ranges

- -10 to 70°C
- -40 to 85°C
- -55 to 125°C

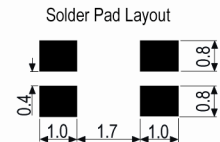
Output Details

- Output Compatibility CMOS
- Drive Capability 15pF
- Output Level High Voh: 90%Vs min
Output Level Low Vol: 10%Vs max
- Rise Time (10%-90%): 2.8ns typ, 10ns max
Fall Time (90%-10%): 2.4ns typ, 10ns max

Outline (mm) SM1 = Gold Plated (RoHS)



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





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Output Control

- Start-Up Time: 15ms typ

Environmental Parameters

- Shock: 5000G, 0.3ms, 1/2 sine
- Vibration: MIL-STD-202G, Method 204D, Condition D: 20G, 10Hz-2000Hz swept sine
- Note: Random Vibration test is also available - please contact an IQD Sales Office
- Storage Temperature Range: -55 to 125°C

Manufacturing Details

- Maximum Process Temperature: 260°C for 20sec max

Ordering Information

- Frequency*
- Model*
- Termination Variant*
- Output
- Frequency Tolerance (@ 25°C)*
- Frequency Stability (over operating temperature range)*
- Operating Temperature Range*
- Pad 3 Function* (minimum required*)
- Termination Variants:
 - SM1 = Gold Plated
 - SM4 = Solder Plated
 - SM5 = Solder Dipped
 (Note: Non-RoHS compliant terminations also available - please contact an IQD Sales Office)
- Pad 3 Function Options:
 - EN = Enable/Disable
 - NC = No connection
- Example
32.768kHz CXOLAT 2.5V SM1
CMOS ±25ppm ±100ppm -40 to 85C NC

Compliance

- RoHS Status (2015/863/EU) Optional
- REACH Status Compliant
- MSL Rating (JDEC-STD-033): Not Applicable

Packaging Details

- Pack Style: Tray Supplied on a tray
Pack Size: 1
- Pack Style: Reel Tape & reel in accordance with EIA-481
Pack Size: 1,000

Electrical Specification - maximum limiting values 2.50V ±10%

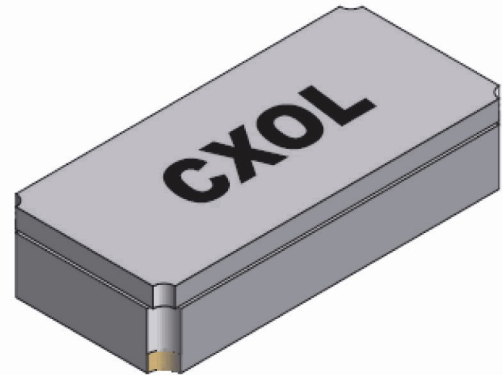
| Frequency Min | Temperature Range | Stability (Min) | Current Draw | Rise and Fall Time | Duty Cycle |
|---------------|-------------------|-----------------|--------------|--------------------|------------|
| | °C | ppm | mA | ns | % |
| 32.768kHz | -55 to 125 | ±50.00 | - | - | 45/55% |
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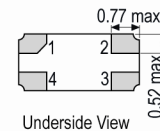
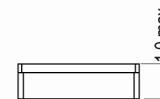
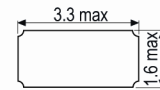
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Description

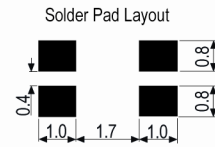
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- SM4 Solder Plated (RoHS)
- SM5 Solder Dipped (RoHS)
- FEATURES:
 - Ultra low current (typical 15µA)
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 - Tight tolerance
 - High shock resistance
 - Low ageing
 - CMOS output
 - Optional Output Enable/Disable with Tri-State
 - Hermetically sealed ceramic package
- APPLICATIONS:
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 - Transponder/Animal migration
- Please note that all data is only valid at 25°C unless otherwise stated.



Outline (mm) SM1 = Gold Plated (RoHS)



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



Frequency Parameters

- Frequency 32.768kHz
- Frequency Tolerance ± 25.00 ppm
- Tolerance Condition @ 25°C
- Frequency Stability ± 10.00 ppm to ± 100.00 ppm
- Ageing ± 5 ppm max in 1st year @ 25°C
- Frequency Stability does not include Frequency Tolerance @ 25°C
- All parameters are measured at 25°C with a 10MΩ and 15pF load at 3.3V
- Note: Other Frequency Tolerances and Stabilities are available - please contact an IQD Sales Office

Electrical Parameters

- Supply Voltage 3.0V $\pm 10\%$
- Supply Current: 15µA typ
- Supply Voltage (absolute maximum rating): -0.5V to 5.0V

Operating Temperature Ranges

- -10 to 70°C
- -40 to 85°C
- -55 to 125°C

Output Details

- Output Compatibility CMOS
- Drive Capability 15pF
- Output Level High Voh: 90%Vs min
- Output Level Low Vol: 10%Vs max
- Rise Time (10%-90%): 2.8ns typ, 10ns max
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Output Control

- Start-Up Time: 15ms typ

Environmental Parameters

- Shock: 5000G, 0.3ms, 1/2 sine
- Vibration: MIL-STD-202G, Method 204D, Condition D: 20G, 10Hz-2000Hz swept sine
- Note: Random Vibration test is also available - please contact an IQD Sales Office
- Storage Temperature Range: -55 to 125°C

Manufacturing Details

- Maximum Process Temperature: 260°C for 20sec max

Ordering Information

- Frequency*
- Model*
- Termination Variant*
- Output
- Frequency Tolerance (@ 25°C)*
- Frequency Stability (over operating temperature range)*
- Operating Temperature Range*
- Pad 3 Function* (minimum required*)
- Termination Variants:
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 (Note: Non-RoHS compliant terminations also available - please contact an IQD Sales Office)
- Pad 3 Function Options:
 - EN = Enable/Disable
 - NC = No connection
- Example
 - 32.768kHz CXOLAT 3.0V SM1
 - CMOS ±25ppm ±100ppm -40 to 85C NC

Compliance

- RoHS Status (2015/863/EU) Optional
- REACH Status Compliant
- MSL Rating (JDEC-STD-033): Not Applicable

Packaging Details

- Pack Style: Reel Tape & reel in accordance with EIA-481
Pack Size: 1,000
- Pack Style: Tray Supplied on a tray
Pack Size: 1

Electrical Specification - maximum limiting values 3.00V ±10%

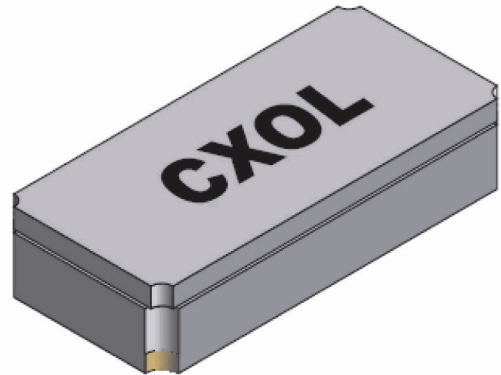
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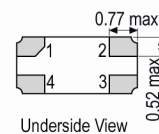
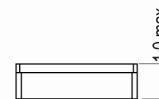
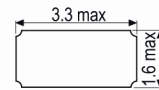
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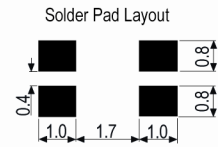
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Outline (mm) SM1 = Gold Plated (RoHS)



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Operating Temperature Ranges

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Output Control

- Start-Up Time: 15ms typ

Environmental Parameters

- Shock: 5000G, 0.3ms, 1/2 sine
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CMOS ±25ppm ±100ppm -40 to 85C NC

Compliance

- RoHS Status (2015/863/EU) Optional
- REACH Status Compliant
- MSL Rating (JDEC-STD-033): Not Applicable

Packaging Details

- Pack Style: Reel Tape & reel in accordance with EIA-481
Pack Size: 1,000
- Pack Style: Tray Supplied on a tray
Pack Size: 1

Electrical Specification - maximum limiting values 3.30V ±10%

| Frequency Min | Temperature Range | Stability (Min) | Current Draw | Rise and Fall Time | Duty Cycle |
|---------------|-------------------|-----------------|--------------|--------------------|------------|
| | °C | ppm | mA | ns | % |
| 32.768kHz | -55 to 125 | ±50.00 | - | - | 45/55% |
| | -40 to 85 | ±20.00 | - | - | 45/55% |
| | -10 to 70 | ±10.00 | - | - | 45/55% |

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Courtesy of Statek Corporation

Crystal Clock Oscillator Specification
CXOLAT 3.3V

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UK: +44 (0)1460 270200

USA: +1 760 668 8935

Email: info@iqdfrequencyproducts.com

Web: www.iqdfrequencyproducts.com
