



CXOLAT

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 (15 μ A), fast start-up time (15ms) and a tight frequency stability (\pm 30 ppm to \pm 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

ISSUE 1; October 2018

Description

- 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 ± 25.00 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 1.8V $\pm 10\%$
- Supply Current: 15µA typ
- Supply Voltage (absolute maximum rating): -0.5V to 5.0V

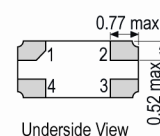
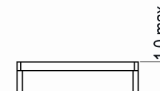
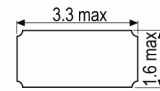
Operating Temperature Ranges

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

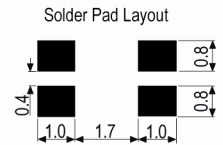
Output Details

- 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



ISSUE 1; October 2018

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 (2011/65/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-D
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%

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.](#)

ISSUE 1; October 2018

Description

- 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 ± 25.00 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

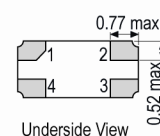
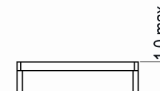
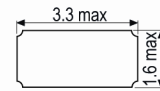
Operating Temperature Ranges

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

Output Details

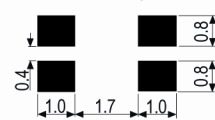
- Output Compatibility CMOS
- Drive Capability 15pF
- Output Level High Voh: 90%Vs min
Output Level Low Vol: 10%Vs max
- Rise Time (10%-90%): 2.8ns typ, 10ns max
Fall Time (90%-10%): 2.4ns typ, 10ns max

Outline (mm) SM1 = Gold Plated (RoHS)



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

Solder Pad Layout



ISSUE 1; October 2018

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 (2011/65/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-D
- 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%
	-40 to 85	±20.00	-	-	45/55%
	-10 to 70	±10.00	-	-	45/55%

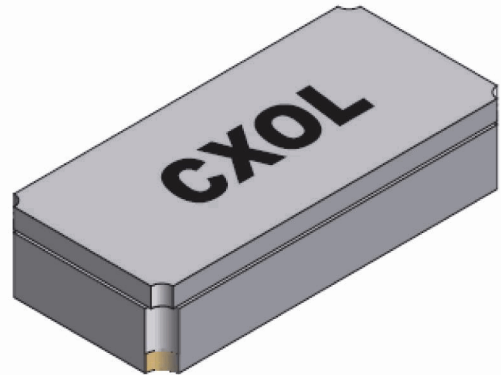
This document was correct at the time of printing; please contact your local sales office for the latest version.

[Click to view latest version on our website.](#)

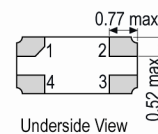
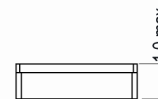
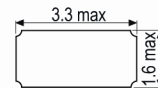
ISSUE 1; October 2018

Description

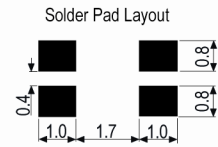
- The CXOLAT 32.768kHz surface-mount oscillator achieves the low power comparable with a tuning fork design and the fast start-up and tight frequency stability attained by an AT cut crystal design. Designed for applications requiring ultra-low current (15µA), fast start-up time (15ms) and a tight frequency 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.



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
Fall Time (90%-10%): 2.4ns typ, 10ns max

ISSUE 1; October 2018

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 3.0V SM1
CMOS ±25ppm ±100ppm -40 to 85C NC

Compliance

- RoHS Status (2011/65/EU) Optional
- 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: Tray Supplied on a tray
Pack Size: 1

Electrical Specification - maximum limiting values 3.00V ±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%

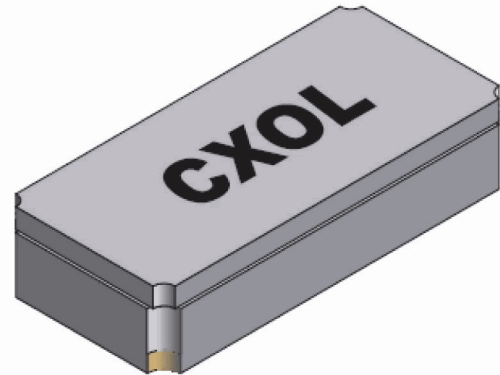
This document was correct at the time of printing; please contact your local sales office for the latest version.

[Click to view latest version on our website.](#)

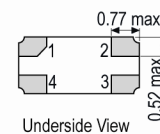
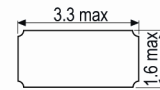
ISSUE 1; October 2018

Description

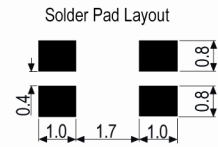
- The CXOLAT 32.768kHz surface-mount oscillator achieves the low power comparable with a tuning fork design and the fast start-up and tight frequency stability attained by an AT cut crystal design. Designed for applications requiring ultra-low current (15µA), fast start-up time (15ms) and a tight frequency 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.



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 3.3V $\pm 10\%$
- 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

ISSUE 1; October 2018

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 3.3V SM1
 - CMOS ±25ppm ±100ppm -40 to 85C NC

Compliance

- RoHS Status (2011/65/EU) Optional
- 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: 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%

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.](#)



Crystal Clock Oscillator Specification
CXOLAT 3.3V

ISSUE 1; October 2018

UK: +44 (0)1460 270200
Germany: 0800 1808 443

France: 0800 901 383
USA: +1.760.318.2824

Email: info@iqdfrequencyproducts.com
Web: www.iqdfrequencyproducts.com
