CXOXULP

The CXOXULP 32.7680kHz 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 (±30ppm to ±100ppm) over a wide temperature range (-55°C to +125°C). These oscillators are also

Model Name	Description
CXOXULP 1.8V	A 1.8V Version
CXOXULP 2.5V	A 2.5V Version
CXOXULP 3.0V	A 3.0V Version
CXOXULP 3.3V	A 3.3V Version

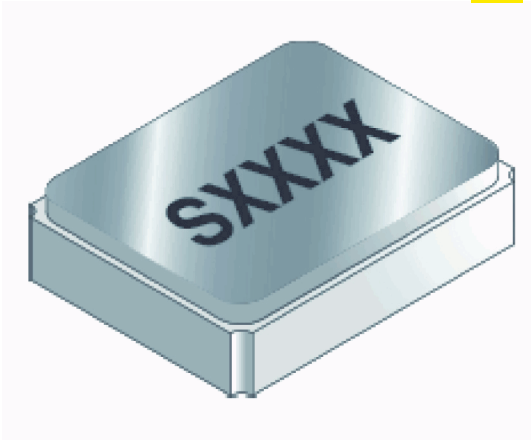
IQD Frequency Products Ltd □ Station Road □ Crewkerne □ Somerset □ TA18 8AR □ United Kingdom
Tel: +44 (0)1460 270200 □ Fax: +44 (0)1460 72578 □ Email: info@iqdfrequencyproducts.com
Registered in England No: 06478545 □ VAT Registration No: GB932 4502 45

Crystal Clock Oscillator Specification
CXOXULP 1.8V

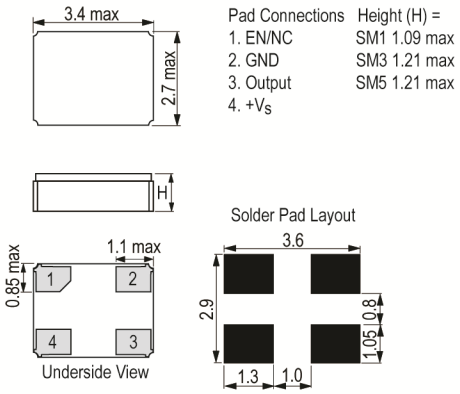
ISSUE 1; October 2018

Description

- The CXOXULP 32.7680kHz 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 (±30ppm to ±100ppm) 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)
- 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
  Low EMI emission
  Hermetically sealed ceramic package
- APPLICATIONS:
  Aerospace & Avionics
  Communications
  Navigation
  GPS
  Industrial, Computer & Communications
  Miniature clock oscillator
  Handheld instrumentation
  Transponder/Animal migration
  Medical
  Test & diagnostic equipment
  Handheld devices
- Please note that all data is only valid at 25°C unless otherwise stated.



Outline (mm) SM1 = Gold Plated (RoHS)



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

- Frequency Stability does not include Frequency Tolerance @ 25°C
- All parameters are measured at ambient temperature with a 10MΩ, 15pF load
- Note: Other Frequency Tolerances and Stabilities are available - please contact an IQD Sales Office

Electrical Parameters

- Supply Voltage 1.8V ±10%
- Supply Current (typical): 15µA
- Supply Voltage (absolute maximum rating): -0.3V to 5.0V

Operating Temperature Ranges

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

Crystal Clock Oscillator Specification
CXOXULP 1.8V

ISSUE 1; October 2018

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%): 85ns typ, 160ns max
  Fall Time (90%-10%): 45ns typ, 100ns max

Output Control

- Start Up Time: 15ms typ

Environmental Parameters

- Shock: 5000G, 0.3ms, 1/2 sine
  (Note: Higher Shock versions are available - please contact an IQD Sales Office)
- 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

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

Ordering Information

- Frequency*
  Model*
  Termination Variant*
  Output
  Frequency Tolerance (@ 25°C)*
  Frequency Stability*
  Operating Temperature Range*
  Pad 1 Function*
  (minimum required*)
- Termination Variants:
  SM1 = Gold Plated
  SM5 = Solder Dipped
  (Note: Non-RoHS compliant terminations also available - please contact an IQD Sales Office)
- Pad 1 Function Options:
  EN = Enable/Disable
  NC = No connection
- Example
  32.768kHz CXOXULP 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

Crystal Clock Oscillator Specification
CXOXULP 1.8V

ISSUE 1; October 2018

Electrical Specification - maximum limiting values 1.80V ±10%

Frequency	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%

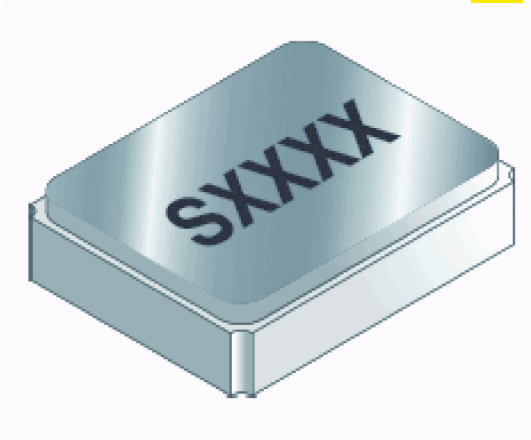
This document was correct at the time of printing; please contact your local sales office for the latest version.
Click to view latest version on our website.

Crystal Clock Oscillator Specification
CXOXULP 2.5V

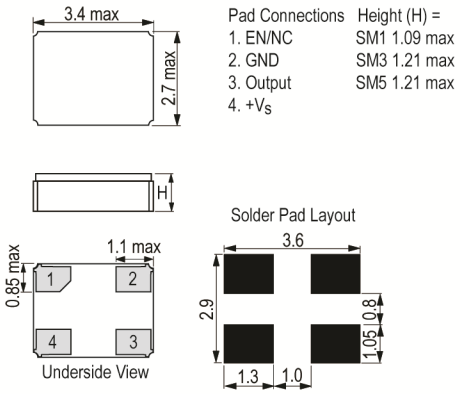
ISSUE 1; October 2018

Description

- The CXOXULP 32.7680kHz 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 (±30ppm to ±100ppm) 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)
- 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
  Low EMI emission
  Hermetically sealed ceramic package
- APPLICATIONS:
  Aerospace & Avionics
  Communications
  Navigation
  GPS
  Industrial, Computer & Communications
  Miniature clock oscillator
  Handheld instrumentation
  Transponder/Animal migration
  Medical
  Test & diagnostic equipment
  Handheld devices
- Please note that all data is only valid at 25°C unless otherwise stated.



Outline (mm) SM1 = Gold Plated (RoHS)



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
- Frequency Stability does not include Frequency Tolerance @ 25°C
- All parameters are measured at ambient temperature with a 10MΩ, 15pF load
- Note: Other Frequency Tolerances and Stabilities are available - please contact an IQD Sales Office

Electrical Parameters

- Supply Voltage 2.5V ±10%
- Supply Current (typical): 15µA
- Supply Voltage (absolute maximum rating): -0.3V to 5.0V

Operating Temperature Ranges

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

Crystal Clock Oscillator Specification
CXOXULP 2.5V

ISSUE 1; October 2018

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%): 85ns typ, 160ns max
  Fall Time (90%-10%): 45ns typ, 100ns max

Output Control

- Start Up Time: 15ms typ

Environmental Parameters

- Shock: 5000G, 0.3ms, 1/2 sine
  (Note: Higher Shock versions are available - please contact an IQD Sales Office)
- 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

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

Ordering Information

- Frequency*
  Model*
  Termination Variant*
  Output
  Frequency Tolerance (@ 25°C)*
  Frequency Stability*
  Operating Temperature Range*
  Pad 1 Function*
  (minimum required*)
- Termination Variants:
  SM1 = Gold Plated
  SM5 = Solder Dipped
  (Note: Non-RoHS compliant terminations also available - please contact an IQD Sales Office)
- Pad 1 Function Options:
  EN = Enable/Disable
  NC = No connection
- Example
  32.768kHz CXOXULP 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: Reel Tape & reel in accordance with EIA-481-D
  Pack Size: 1,000
- Pack Style: Tray Supplied on a tray
  Pack Size: 1

Crystal Clock Oscillator Specification
CXOXULP 2.5V

ISSUE 1; October 2018

Electrical Specification - maximum limiting values 2.50V ±10%

Frequency	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%

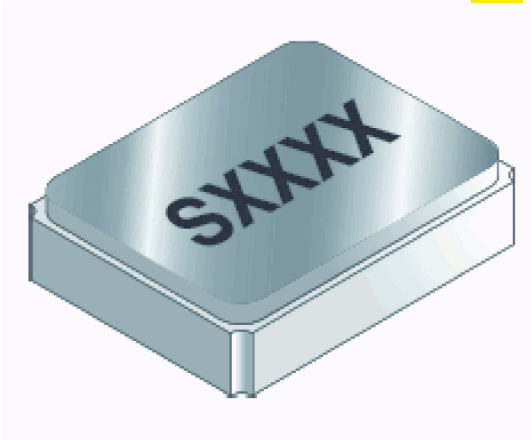
This document was correct at the time of printing; please contact your local sales office for the latest version.
Click to view latest version on our website.

Crystal Clock Oscillator Specification
CXOXULP 3.0V

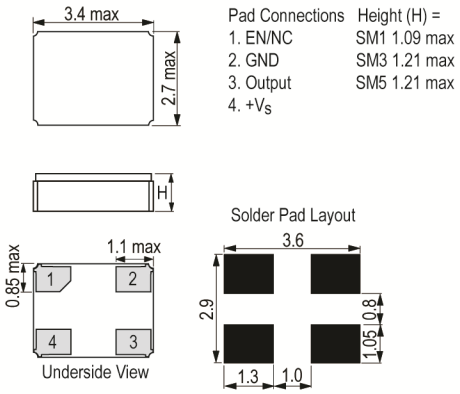
ISSUE 1; October 2018

Description

- The CXOXULP 32.7680kHz 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 (±30ppm to ±100ppm) 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)
- 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
  Low EMI emission
  Hermetically sealed ceramic package
- APPLICATIONS:
  Aerospace & Avionics
  Communications
  Navigation
  GPS
  Industrial, Computer & Communications
  Miniature clock oscillator
  Handheld instrumentation
  Transponder/Animal migration
  Medical
  Test & diagnostic equipment
  Handheld devices
- Please note that all data is only valid at 25°C unless otherwise stated.



Outline (mm) SM1 = Gold Plated (RoHS)



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
- Frequency Stability does not include Frequency Tolerance @ 25°C
- All parameters are measured at ambient temperature with a 10MΩ, 15pF load
- Note: Other Frequency Tolerances and Stabilities are available - please contact an IQD Sales Office

Electrical Parameters

- Supply Voltage 3.0V ±10%
- Supply Current (typical): 15µA
- Supply Voltage (absolute maximum rating): -0.3V to 5.0V

Operating Temperature Ranges

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

Crystal Clock Oscillator Specification
CXOXULP 3.0V

ISSUE 1; October 2018

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%): 85ns typ, 160ns max
  Fall Time (90%-10%): 45ns typ, 100ns max

Output Control

- Start Up Time: 15ms typ

Environmental Parameters

- Shock: 5000G, 0.3ms, 1/2 sine
  (Note: Higher Shock versions are available - please contact an IQD Sales Office)
- 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

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

Ordering Information

- Frequency*
  Model*
  Termination Variant*
  Output
  Frequency Tolerance (@ 25°C)*
  Frequency Stability*
  Operating Temperature Range*
  Pad 1 Function*
  (minimum required*)
- Termination Variants:
  SM1 = Gold Plated
  SM5 = Solder Dipped
  (Note: Non-RoHS compliant terminations also available - please contact an IQD Sales Office)
- Pad 1 Function Options:
  EN = Enable/Disable
  NC = No connection
- Example
  32.768kHz CXOXULP 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: Tray Supplied on a tray
  Pack Size: 1
- Pack Style: Reel Tape & reel in accordance with EIA-481-D
  Pack Size: 1,000

Crystal Clock Oscillator Specification
CXOXULP 3.0V

ISSUE 1; October 2018

Electrical Specification - maximum limiting values 3.00V ±10%

Frequency	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%

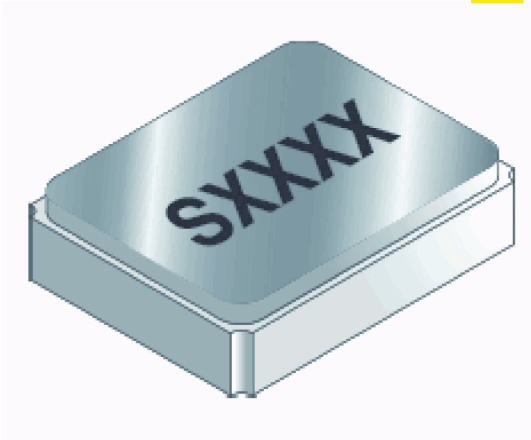
This document was correct at the time of printing; please contact your local sales office for the latest version.
Click to view latest version on our website.

Crystal Clock Oscillator Specification
CXOXULP 3.3V

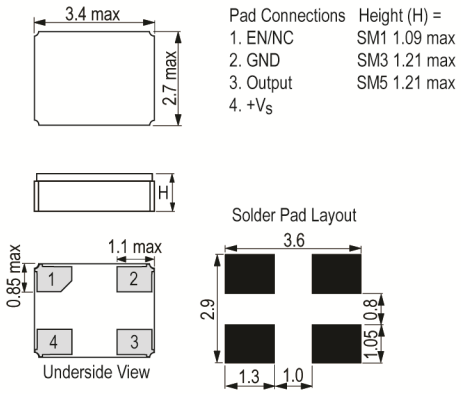
ISSUE 1; October 2018

Description

- The CXOXULP 32.7680kHz 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 (±30ppm to ±100ppm) 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)
- 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
  Low EMI emission
  Hermetically sealed ceramic package
- APPLICATIONS:
  Aerospace & Avionics
  Communications
  Navigation
  GPS
  Industrial, Computer & Communications
  Miniature clock oscillator
  Handheld instrumentation
  Transponder/Animal migration
  Medical
  Test & diagnostic equipment
  Handheld devices
- Please note that all data is only valid at 25°C unless otherwise stated.



Outline (mm) SM1 = Gold Plated (RoHS)



Pad Connections	Height (H) =
1. EN/NC	SM1 1.09 max
2. GND	SM3 1.21 max
3. Output	SM5 1.21 max
4. $+V_S$	

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

- Frequency Stability does not include Frequency Tolerance @ 25°C
- All parameters are measured at ambient temperature with a 10MΩ, 15pF load
- Note: Other Frequency Tolerances and Stabilities are available - please contact an IQD Sales Office

Electrical Parameters

Supply Voltage	3.3V ±10%

- Supply Current (typical): 15µA
- Supply Voltage (absolute maximum rating): -0.3V to 5.0V

Operating Temperature Ranges

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

Crystal Clock Oscillator Specification
CXOXULP 3.3V

ISSUE 1; October 2018

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%): 85ns typ, 160ns max
  Fall Time (90%-10%): 45ns typ, 100ns max

Output Control

- Start Up Time: 15ms typ

Environmental Parameters

- Shock: 5000G, 0.3ms, 1/2 sine
- Note: Higher Shock versions are available - please contact an IQD Sales Office
- 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

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

Ordering Information

- Frequency*
  Model*
  Termination Variant*
  Output
  Frequency Tolerance (@ 25°C)*
  Frequency Stability*
  Operating Temperature Range*
  Pad 1 Function*
  (minimum required*)
- Termination Variants:
  SM1 = Gold Plated
  SM5 = Solder Dipped
  (Note: Non-RoHS compliant terminations also available - please contact an IQD Sales Office)
- Pad 1 Function Options:
  EN = Enable/Disable
  NC = No connection
- Example
  32.768kHz CXOXULP 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

ISSUE 1; October 2018

Electrical Specification - maximum limiting values 3.30V ±10%

Frequency	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.

Sales Office Contact Details:
UK: +44 (0)1460 270200
France: 0800 901 383
Email: info@iqdfrequencyproducts.com
Germany: 0800 1808 443
USA: +1.760.318.2824
Web: www.iqdfrequencyproducts.com