



CXOXULP

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

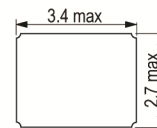
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Description

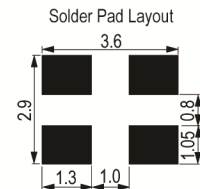
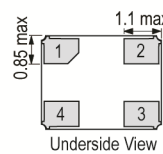
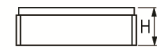
- This product is designed and manufactured by Statek Corporation in California, USA and distributed by IQD. The CXOXULP 32.7680kHz oscillator achieves the low power comparable with a tuning fork design and the fast start up and tight frequency stability attained by an AT-cut crystal design. Designed for applications requiring ultra low current (15µA), fast start up time (15ms) and a tight frequency stability ($\pm 30\text{ppm}$ to $\pm 100\text{ppm}$) over a wide temperature range (-55°C to $+125^{\circ}\text{C}$). 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. +Vs	



Frequency Parameters

- Frequency: 32.768kHz
- Frequency Tolerance: $\pm 25.00\text{ppm}$
- Tolerance Condition: @ 25°C
- Frequency Stability: $\pm 10.00\text{ppm}$ to $\pm 100.00\text{ppm}$
- Ageing: $\pm 5\text{ppm}$ 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 $\pm 10\%$
- 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

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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 (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-D
Pack Size: 1,000



Crystal Clock Oscillator Specification CXOXULP 1.8V

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Electrical Specification - maximum limiting values 1.80V \pm 10%

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

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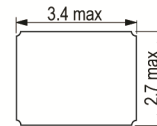
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Description

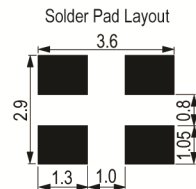
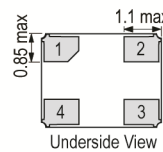
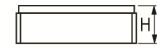
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- SM1 Gold Plated (RoHS)
- SM5 Solder Dipped (RoHS)
- FEATURES:
 - Ultra low current (typical 15µA)
 - Fast start up (typical 15ms)
 - Tight tolerance
 - High shock resistance
 - Low ageing
 - CMOS output
 - Optional Output Enable/Disable with Tri-State
 - Low EMI emission
 - Hermetically sealed ceramic package
- APPLICATIONS:
 - Aerospace & Avionics
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 - 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. +Vs	



Frequency Parameters

- Frequency: 32.768kHz
- Frequency Tolerance: $\pm 25.00\text{ppm}$
- Tolerance Condition: @ 25°C
- Frequency Stability: $\pm 10.00\text{ppm}$ to $\pm 100.00\text{ppm}$
- Ageing: $\pm 5\text{ppm}$ 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 $\pm 10\%$
- 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

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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 (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-D
Pack Size: 1,000
- Pack Style: Tray Supplied on a tray
Pack Size: 1



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Electrical Specification - maximum limiting values 2.50V \pm 10%

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

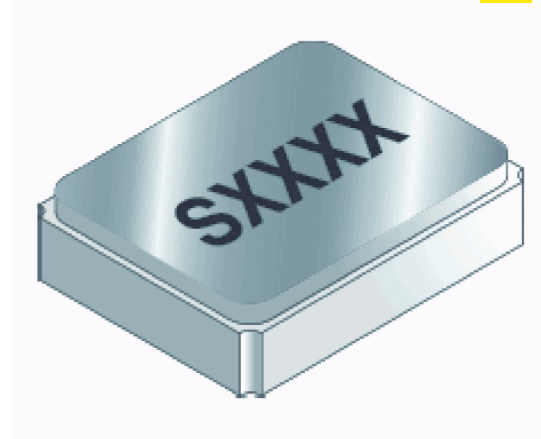
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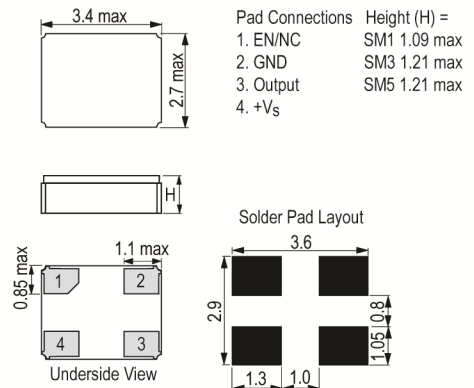
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Description

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- 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 $\pm 25.00\text{ppm}$
- Tolerance Condition @ 25°C
- Frequency Stability $\pm 10.00\text{ppm}$ to $\pm 100.00\text{ppm}$
- Ageing $\pm 5\text{ppm}$ 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 $\pm 10\%$
- 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

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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 (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-D
Pack Size: 1,000



Crystal Clock Oscillator Specification CXOXULP 3.0V

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Electrical Specification - maximum limiting values 3.00V \pm 10%

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

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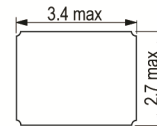
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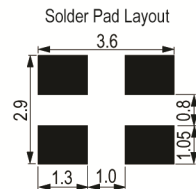
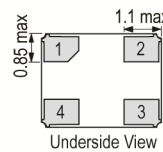
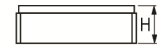
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- SM5 Solder Dipped (RoHS)
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 - Tight tolerance
 - High shock resistance
 - Low ageing
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 - Medical
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 - 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. +Vs	



Frequency Parameters

- Frequency: 32.768kHz
- Frequency Tolerance: $\pm 25.00\text{ppm}$
- Tolerance Condition: @ 25°C
- Frequency Stability: $\pm 10.00\text{ppm}$ to $\pm 100.00\text{ppm}$
- Ageing: $\pm 5\text{ppm}$ 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 $\pm 10\%$
- 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

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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
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EN = Enable/Disable
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- Example
32.768kHz CXOXULP 3.3V 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-D
Pack Size: 1,000
- Pack Style: Tray Supplied on a tray
Pack Size: 1

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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	-55 to 125	\pm 50.00	-	-	45/55%
	-40 to 85	\pm 20.00	-	-	45/55%
	-10 to 70	\pm 10.00	-	-	45/55%

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