



## CXOXULP

### 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 (15 $\mu$ 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

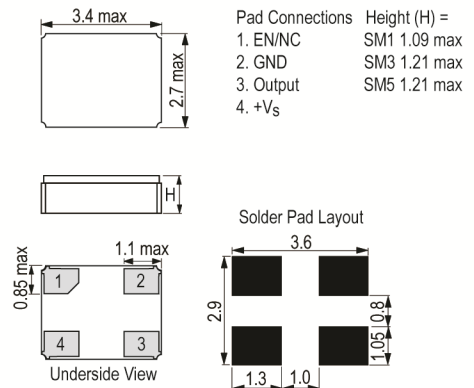
ISSUE 1; June 2019

### 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 ( $-55^\circ\text{C}$  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  $25^\circ\text{C}$  unless otherwise stated.



Outline (mm) SM1 = Gold Plated (RoHS)



### Frequency Parameters

- Frequency: 32.768kHz
- Frequency Tolerance:  $\pm 25.00\text{ppm}$
- Tolerance Condition: @  $25^\circ\text{C}$
- 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 @  $25^\circ\text{C}$
- All parameters are measured at ambient temperature with a  $10\text{M}\Omega$ ,  $15\text{pF}$  load
- Note: Other Frequency Tolerances and Stabilities are available - please contact an IQD Sales Office

### Electrical Parameters

- Supply Voltage:  $1.8\text{V} \pm 10\%$
- Supply Current (typical):  $15\mu\text{A}$
- Supply Voltage (absolute maximum rating):  $-0.3\text{V}$  to  $5.0\text{V}$

### Operating Temperature Ranges

- $-10$  to  $70^\circ\text{C}$
- $-40$  to  $85^\circ\text{C}$
- $-55$  to  $125^\circ\text{C}$



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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  
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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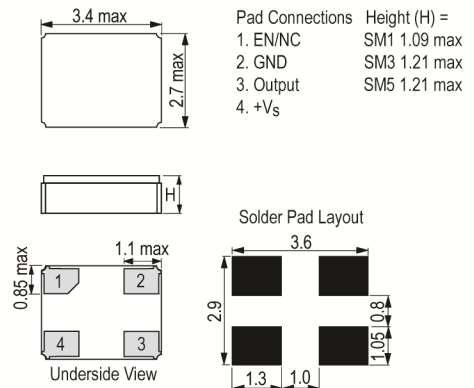
ISSUE 1; June 2019

### Description

- This product is designed and manufactured by Statek Corporation in California, USA and distributed by IQD. The CXOXULP 32.768kHz 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 ( $-55^\circ\text{C}$  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  $25^\circ\text{C}$  unless otherwise stated.



Outline (mm) SM1 = Gold Plated (RoHS)



### Frequency Parameters

- Frequency: 32.768kHz
- Frequency Tolerance:  $\pm 25.00\text{ppm}$
- Tolerance Condition: @  $25^\circ\text{C}$
- 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 @  $25^\circ\text{C}$
- 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  $70^\circ\text{C}$
- -40 to  $85^\circ\text{C}$
- -55 to  $125^\circ\text{C}$

**ISSUE 1; June 2019****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  
Pack Size: 1,000
- Pack Style: Tray Supplied on a tray  
Pack Size: 1



# Crystal Clock Oscillator Specification CXOXULP 2.5V

ISSUE 1; June 2019

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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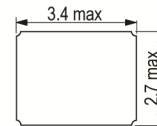
ISSUE 1; July 2020

### Description

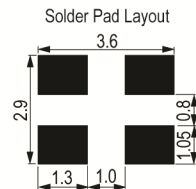
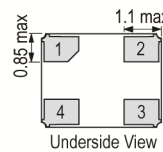
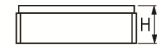
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- SM1 Gold Plated (RoHS)
- SM5 Solder Dipped (RoHS)
- FEATURES:
  - Ultra low current (typical 15µA)
  - Fast start up (typical 15ms)
  - Tight tolerance
  - High shock resistance
  - Low ageing
  - CMOS output
  - Optional Output Enable/Disable with 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  $25^{\circ}\text{C}$  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: @  $25^{\circ}\text{C}$
- 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 @  $25^{\circ}\text{C}$
- All parameters are measured at ambient temperature with a  $10\text{M}\Omega$ ,  $15\text{pF}$  load
- Note: Other Frequency Tolerances and Stabilities are available - please contact an IQD Sales Office

### Electrical Parameters

- Supply Voltage:  $3.0\text{V} \pm 10\%$
- Supply Current (typical):  $15\mu\text{A}$
- Supply Voltage (absolute maximum rating):  $-0.3\text{V}$  to  $5.0\text{V}$

### Operating Temperature Ranges

- $-10$  to  $70^{\circ}\text{C}$
- $-40$  to  $85^{\circ}\text{C}$
- $-55$  to  $125^{\circ}\text{C}$





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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  
Pack Size: 1,000



# Crystal Clock Oscillator Specification CXOXULP 3.0V

ISSUE 1; July 2020

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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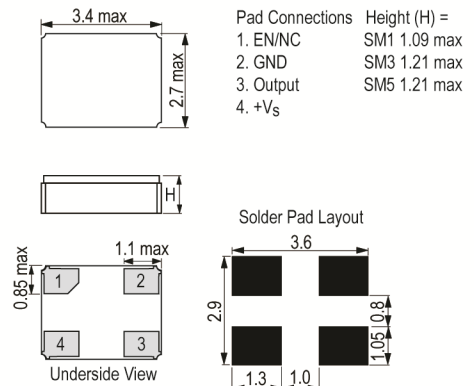
ISSUE 1; June 2019

### 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  $25^\circ\text{C}$  unless otherwise stated.



Outline (mm) SM1 = Gold Plated (RoHS)



### Frequency Parameters

- Frequency: 32.768kHz
- Frequency Tolerance:  $\pm 25.00\text{ppm}$
- Tolerance Condition: @  $25^\circ\text{C}$
- 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 @  $25^\circ\text{C}$
- 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  $70^\circ\text{C}$
- -40 to  $85^\circ\text{C}$
- -55 to  $125^\circ\text{C}$

**ISSUE 1; June 2019****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 (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

ISSUE 1; June 2019

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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