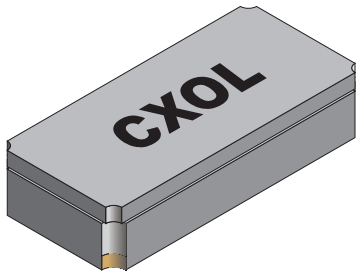
CXOLAT OSCILLATOR

32.768 kHz

Ultra-Low Power/Fast Start-Up/Ultra-Miniature

DESCRIPTION

The CXOXLAT 32.768 kHz 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 µA), fast start-up time (15 ms), 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.



FEATURES

- **Ultra-low current (typical 15 µA)**
- **Fast start-up (typical 15 ms)**
- **Tight tolerance**
- **High shock resistance**
- Low aging
- CMOS output
- Optional Output Enable/Disable with Tri-State
- Hermetically sealed ceramic package
- Full military testing available
- Designed and manufactured in the USA

APPLICATIONS

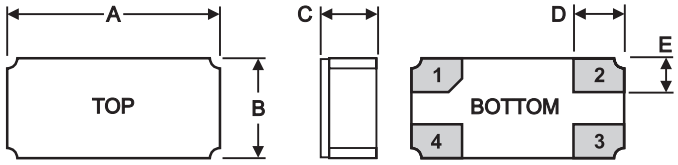
Military, Aerospace & Avionics

- Communications
- Navigation
- GPS

Industrial, Computer & Communications

- Handheld instrumentation
- Transponder/Animal migration

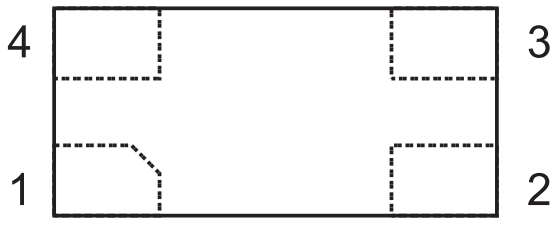
DIMENSIONS



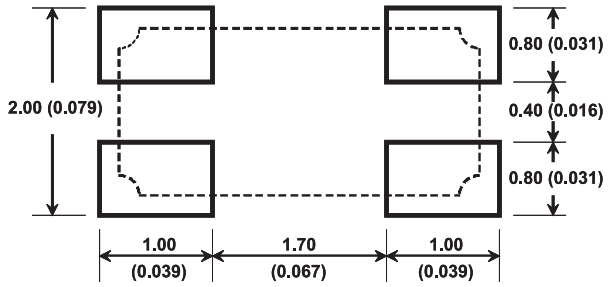
	TYPICAL		MAXIMUM	
DIM	inches	mm	inches	mm
A	0.126	3.20	0.130	3.30
B	0.059	1.50	0.063	1.60
C (SM1)	0.037	0.95	0.039	1.00
D	0.029	0.75	0.030	0.77
E	0.020	0.50	0.021	0.52

PIN CONNECTIONS

1. Output
2. Ground
3. Output Enable/Disable (E) or no connection (N)
4. V_{DD}



SUGGESTED LAND PATTERN



mm (inches)

STATEK CORPORATION 512 N. MAIN ST., ORANGE, CA 92868 714-639-7810 FAX: 714-997-1256 **www.statek.com**

SPECIFICATIONS

Specifications are typical at 25°C unless otherwise noted. Specifications are subject to change without notice. Tighter specifications available (contact factory).

Supply Voltage	1.8 V to 3.3 V ±10%
Calibration Tolerance[1]	±25 ppm
Frequency Stability Over Temperature[2]	±10 to ±50 ppm for Commercial ±20 to ±100 ppm for Industrial ±50 to ±100 ppm for Military
Output Load (CMOS)	15 pF
Aging, first year	5 ppm
Shock	5,000 g, 0.3 ms, ½ sine
Vibration[3]	20 g, 10-2,000 Hz swept sine
Operating Temp. Range	-10°C to 70°C (Commercial) -40°C to 85°C (Industrial) -55°C to 125°C (Military)

1. Other tolerances available.
2. Does not include calibration tolerance. Other tolerances available.
3. Per MIL-STD-202G, Method 204D, Condition D. Random vibration testing also available.

ELECTRICAL CHARACTERISTICS

CXOLAT 32.768 kHz

All parameters are measured at 25°C with a 10MΩ and 15pF load with V_{DD} 3.3 V.

SYMBOL	PARAMETER	MIN	TYP	MAX	UNIT
V_{OH}	Output Voltage High	$0.9V_{DD}$			V
V_{OL}	Output Voltage Low			$0.1V_{DD}$	V
$t_{startup}$	Start-up Time		15		ms
t_r	Rise Time (10%-90%)		2.8	10	ns
t_f	Fall Time (10%-90%)		2.4	10	ns
	Duty Cycle	45	50	55	%
I_{DD}	Current Consumption		15		µA

ABSOLUTE MAXIMUM RATINGS

Supply Voltage V_{DD}	-0.5 V to 5.0 V
Storage Temperature	-55°C to 125°C
Maximum Process Temperature	260°C for 20 seconds

ENABLE/DISABLE OPTIONS (E/N)

For the 32.768 kHz CXOLAT, Statek offers two enable/disable options: E and N. The E-version has a Tri-State output and stops oscillating internally when the output is put into the high Z state. The N-version does not have PIN 3 connected internally and so has no enable/disable capability. The following table summarizes the Enable/Disable option E.

ENABLE/DISABLE OPTION E FUNCTION TABLE

	Enable (Pin 3 High*)	Disable (Pin 3 Low)
Output	Frequency Output	High Z State
Oscillator	Oscillates	Stops
Current	15µA	Less than 1µA at 25°C

*When PIN 1 is allowed to float, it is held high by an internal pull-up resistor.

PACKAGING OPTIONS

CXOLAT
- Tray Pack
- 12 mm tape, 7" or 13" reels (Per EIA 481)

HOW TO ORDER CXOLAT 32.768 kHz SURFACE MOUNT CRYSTAL OSCILLATORS

CXOLAT **4** **S** **N** **SM3** , — **32.768k** / **50** / **50** / — / **I**

- **4** — Supply Voltage: 1 = 1.8 V, 2 = 2.5 V, 3 = 3.0 V, 4 = 3.3 V
- **S** — "S" if special or custom design. Blank if Std.
- **N** — Enable/Disable Option: E or N
- **SM3** — Terminations: Blank = SM1 = Gold Plated (Lead Free); SM2 = Solder Plated; SM3 = Solder Dipped; SM4 = Solder Plated; SM5 = Solder Dipped (Lead Free)
- **32.768k** — Frequency: k = kHz
- **50** — Calibration Tolerance @ 25°C (in ppm)
- **50** — Frequency Stability over Temp. Range (in ppm)
- **I** — Temp. Range: C = -10°C to +70°C; I = -40°C to +85°C; M = -55°C to +125°C; S = Customer Specified

OR

— / — / **50** / **I**

- **50** — Total Frequency Tolerance (in ppm)
- **I** — Temp. Range: C = -10°C to +70°C; I = -40°C to +85°C; M = -55°C to +125°C; S = Customer Specified

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