HIGH TEMPERATURE OSCILLATORS

32.768 kHz

High Stability/Fast Start-up/High Shock

DESCRIPTION

For **high temperature**, high stability and fast start-up applications, Statek offers the AT crystal-based 32.768 kHz CXOMKHT and CXOXHT oscillators. These oscillators are designed to operate at temperatures up to 200°C. A high-shock version is also offered that features 10,000 g shock survivability. Other features include fast start-up time (0.8 ms typical) and low current operation (500 µA at 25°C.)

FEATURES

- High temperature operation up to 200°C
- Overall 5 times improvement in total frequency stability when compared to a typical tuning fork design
- A High-Shock version that features 10,000 g shock survivability is also offered
- Excellent stability over temperature
- Fast start-up
- CMOS and TTL compatible
- Optional output enable/disable
- Low current
- Hermetically sealed ceramic package
- Full military testing available

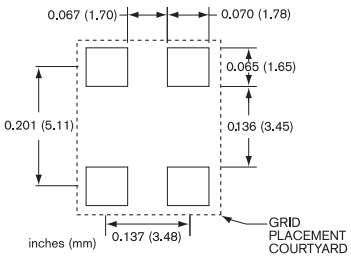
APPLICATIONS

Industrial

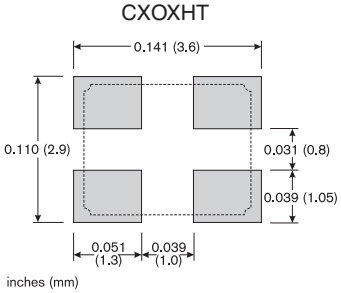
- Downhole instrumentation
- Rotary shaft sensors
- Underground boring tools

SUGGESTED LAND PATTERN

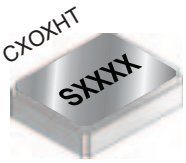
CXOMKHT



CXOXHT

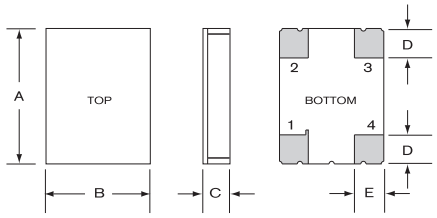




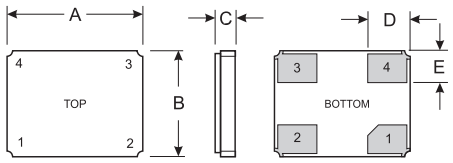


PACKAGE DIMENSIONS

CXOMKHT



CXOXHT



	CXOXHT MAXIMUM		CXOMKHT MAXIMUM	
DIM	inches	mm	inches	mm
A	0.136	3.40	0.263	6.68
B	0.107	2.70	0.204	5.18
C (SM1)	0.043	1.09	0.060	1.52
C (SM3/SM5)	0.048	1.21	0.065	1.65
D	0.041	1.10	0.065	1.65
E	0.031	0.85	0.070	1.78

PIN CONNECTIONS

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

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. Please contact factory.

Supply Voltage	3.3 V ± 10%
Calibration Tolerance	± 100 ppm, or tighter as required
Frequency Stability over Temperature	± 100 ppm for 25°C to 150°C ± 150 ppm for 25°C to 175°C ± 175 ppm for 25°C to 200°C
Total Tolerance[1]	± 200 ppm for 25°C to 200°C
Supply Current (Typical)	500 µA
Output Load (CMOS)	15 pF
Start-up Time	0.8 ms typical
Rise/Fall Time	85 ns/ 45 ns
Duty Cycle	40% MIN, 60% MAX
Aging, first year	10 ppm MAX at 25°C
Aging, 1,000 Hrs	100 ppm MAX at 200°C
Shock, survival	CXOXHT Std: 5,000 g, 0.3 ms, ½ sine CXOMKHT Std: 3,000 g, 0.3 ms, ½ sine
CXOMK & CXOX	HG: 10,000 g, 0.3 ms, ½ sine
Vibration, survival[2]	20 g, 10-2,000 Hz swept sine
Operating Temp Range[3]	-55°C up to 200°C

1. Includes calibration tolerance. Other tolerances available.
2. Per MIL-STD-202G, Method 204D, Condition D. Random vibration testing available.

Note: All parameters are measured at ambient temperature with a 10 MΩ, 15 pF load.

3. Expected life at 200°C is in excess of 1,500 hours.

ABSOLUTE MAXIMUM RATINGS

Supply Voltage V_{DD}	-0.3 V to 5.0 V
Storage Temperature	-55°C to 125°C
Maximum Process Temperature	260°C, 20 seconds

ENABLE/DISABLE OPTIONS (E/N)

For the 32.768 kHz CXOXHT and CXOMKHT, 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 1 connected internally and so has no enable/disable capability. The following table describes the Enable/Disable option E.

ENABLE/DISABLE OPTION E FUNCTION TABLE

	Enable (Pin 1 High*)	Disable (Pin 1 Low)
Output	Frequency output	High Z State
Oscillator	Oscillates	Stops
Current	500 µA at 25°C	3.2 µA at 25°C

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

PACKAGING OPTIONS

CXOXHT, CXOMKHT - Tray Pack

- 16 mm tape, 7" or 13" reels

Per EIA 481 (see Tape and Reel data sheet # 10109)

HOW TO ORDER 32.768 kHz CXOMKHT and CXOXHT OSCILLATORS

CXOMKHT / 4 / S / — / E / SM1 / 32.768 kHz, / — / — / 200 / H

- CXOMKHT: CXOMKHT CXOXHT
- 4: Supply Voltage 4 = 3.3 V
- S: "S" if special or custom design. Blank if Std.
- —: HG = High Shock otherwise leave blank.
- E: Enable/Disable Option E or N
- SM1: Termination Blank = SM1 Gold Plated (Lead Free) SM5 = Solder Dipped (Lead Free)
- 32.768 kHz,: Frequency K = kHz
- —: Calibration Tolerance @ 25°C (in ppm)
- —: Frequency Stability over Temp. Range (in ppm)
- 200: Total Frequency Tolerance (in ppm)[1]
- H: Temp. Range: H = 25°C to 200°C S = Customer Specified Temp. Range

OR

50 / 175 / — / H

- 50: Calibration Tolerance @ 25°C (in ppm)
- 175: Frequency Stability over Temp. Range (in ppm)
- —: Total Frequency Tolerance (in ppm)
- H: Temp. Range: H = 25°C to 200°C S = Customer Specified Temp. Range

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