

DESCRIPTION

The CXOXULPHT 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 (55 μ A), fast start-up time (2 ms), and a tight frequency stability (200 ppm) for high temperature operation up to +200°C. These oscillators are also capable of withstanding significantly higher shock than a standard tuning fork design.

FEATURES

- High temperature operation up to +200°C
- Ultra-low current (typical 55 μ A)
- Fast start-up (typical 2 ms)
- High shock resistance up to 10,000 g
- Low aging
- CMOS output
- Optional Output Enable/Disable with Tri-State
- Low EMI emission
- Hermetically sealed ceramic package
- Full military testing available
- Designed and manufactured in the USA

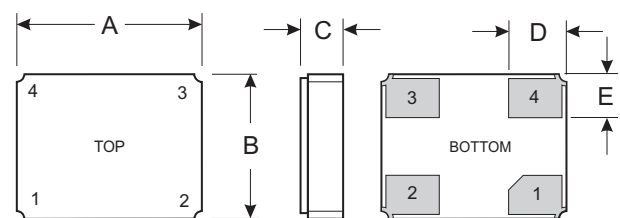
APPLICATIONS

Industrial

- Downhole instrumentation
- Rotary shaft sensors
- Underground boring tools



DIMENSIONS

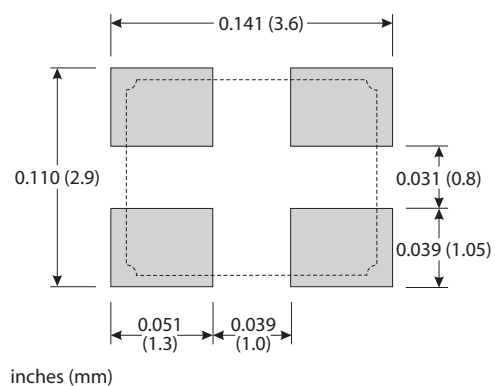


DIM	TYPICAL		MAXIMUM	
	inches	mm	inches	mm
A	0.126	3.20	0.136	3.40
B	0.099	2.50	0.107	2.70
C (SM1)	0.039	1.00	0.043	1.09
C (SM3/SM5)	0.044	1.12	0.048	1.21
D	0.040	1.00	0.041	1.10
E	0.030	0.75	0.031	0.85

PIN CONNECTIONS

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

SUGGESTED LAND PATTERN



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	3.3 V ±10%
Calibration Tolerance ²	±100 ppm
Frequency Stability Over Temperature ³	±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	±200 ppm for 25°C to 200°C
Output Load (CMOS)	15 pF
Aging, first year	10 ppm max at +25°C
Aging, 1,000 hours	100 ppm max at +200°C
Shock ⁴	Std: 5,000 g, 0.3 ms, ½ sine HG: 10,000 g, 0.3 ms, ½ sine
Vibration ⁵	20 g, 10-2,000 Hz swept sine
Operating Temp. Range ⁶	-55°C up to 200°C

Electrical characteristics:⁷

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		2.0		ms
t _r	Rise Time (10%-90%)		4.0		ns
t _f	Fall Time (10%-90%)		5.0		ns
	Duty Cycle	45	50	55	%
I _{DD}	Input Current		55µA		

- Other voltages available. Contact factory.
- Other tolerances available.
- Does not include calibration tolerance. Other tolerances available.
- Shock at room temperature. Contact factory for requirements above 10,000 g.
- Per MIL-STD-202G, Method 204D, Condition D at room temperature. Random vibration testing also available.
- Expected life at 200°C is in excess of 1,500 hours.
- All parameters are measured at 25°C with a 10 MΩ and 15 pF load with V_{DD} = 3.3 V.

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 for 20 seconds

ENABLE/DISABLE OPTIONS (E/N)

For the 32.768 kHz CXOXULPHT, 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 summarizes the Enable/Disable option E.

ENABLE/DISABLE OPTION E/N FUNCTION TABLE

	Enable (Pin 1 High*)	Disable (Pin 1 Low)
Output	Frequency Output	High Z State
Oscillator	Oscillates	Stops

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

PACKAGING OPTIONS

- CXOXULPHT - Tray Pack
 - 12 mm tape, 7" or 13" reels
 Per EIA 481 (see Tape and Reel data sheet #10109)

HOW TO ORDER CXOXULPHT 32.768 kHz SURFACE MOUNT CRYSTAL OSCILLATORS

