

# **CXOL OSCILLATOR**

32 kHz - 100 kHz

Ultra-Low Current, Miniature Quartz Crystal Oscillator

## **DESCRIPTION**

CXOL is an ultra-miniature ( $3.2 \times 1.5$ mm), ultra-low current quartz crystal oscillator with a typical start-up time of 200ms. Hermetically sealed in a highly reliable ceramic housing, this oscillator is available over a wide range of input voltages (1.2 V - 5.0 V).

### **FEATURES**

- Ultra-low current consumption
- Typical start-up time of 200ms
- Typical rise and fall times of 25ns
- Hermetically sealed ceramic package
- Optional output enable/disable with Tri-State
- Full military testing per MIL-PRF-55310 available
- Designed, manufactured, and tested in the USA

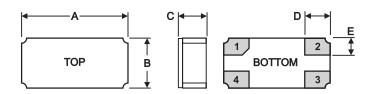
# **APPLICATIONS**

## Medical

- Implantable pacemakers
- Implantable defibrillators
- Implantable neuro devices
- Other implantable and external medical devices
- Military
- Industrial

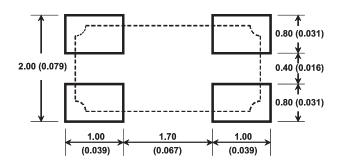


### **DIMENSIONS**



	TYPI	CAL	MAXI	MUM
DIM	inches	mm	inches	mm
Α	0.126	3.20	0.130	3.30
В	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
Е	0.020	0.50	0.021	0.52

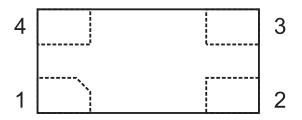
## SUGGESTED LAND PATTERN



mm (inches)

# PIN CONNECTIONS

- 1. Output
- 2. Ground
- 3. Output Enable/Disable (T) or no connection (N)
- 4. V<sub>DD</sub>



10205 Rev A



#### SPECIFICATIONS: CXOL

Specifications are typical at 25°C unless otherwise noted. Specifications are subject to change without notice.

Supply Voltage 1.2 V - 5.0 V ± 10% 32.768 kHz (2.8 µA)1 Current Consumption 32.768 kHz (0.4 µA)<sup>2</sup> 100.0 kHz  $(8.0 \,\mu\text{A})^1$ 

Calibration Tolerance<sup>3</sup> ± 20 ppm, ± 50 ppm or ± 100 ppm

Voltage Coefficient ± 1 ppm/V Output load (CMOS)4 10 pF Aging, first year ±2 ppm

Shock, survival 5000 g peak, 0.3 ms, 1/2 sine Vibration, survival 20 g, 10-2000 Hz swept sine

200 ms Startup Time

Operating Temperature -10°C to +70°C (Commercial)

> -40°C to +85°C (Industrial)  $-55^{\circ}$ C to  $+125^{\circ}$ C (Military)

 $V_{DD} = 3.3V$  and 10 pF load.

2.  $V_{DD} = 3.3V$ , 10 pF load and OE is low.

3. Tighter calibration tolerances available. Please contact factory.

4. Other loads available. Please contact factory.

### ABSOLUTE MAXIMUM RATINGS

-0.5V to 7V Supply Voltage VDD -55°C to +125°C Storage Temperature 260°C, 2 min. Process Temperature

### PACKAGING OPTIONS

CXOL -Tray Pack

-12 mm carrier tape, 7" or 13" reels

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

#### **ELECTRICAL CHARACTERISTICS**

CXOL 32.768 kHz

All parameters are measured at 25°C with a  $10M\Omega$  and 10pF load with VDD 3.3 V.

SYMBOL	PARAMETER	MIN.	TYP.	MAX.	UNIT
$V_{OH}$	Output Voltage Hi	$V_{DD}$ -0.4	$V_{\text{DD}}$		V
V <sub>OL</sub>	Output Voltage Lo		0	0.4	V
SYM	Duty Cycle	45	50	55	%
t <sub>r</sub>	Rise Time (10%-90%)		50	nsec.	
$t_f$	Fall Time (10%-90%)			50	nsec.

### PIN CONNECTIONS

Pin Connection Output 1 9 Ground

3 Output Enable (T) or NC

4  $V_{DD}$ 

## TRISTATE/DISABLE OPTIONS (T/N)

Statek offers two enable/disable options: T and N. The Tversion has a Tri-State output and continues 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 Tri-State/Disable capability. The following table describes the Tri-State/Disable option T.

### TRISTATE/DISABLE OPTION T **FUNCTION TABLE**

	Tri-State (Pin 3 High*)	Disable (Pin 3 Low)		
Output	Frequency Output	High Z State		
Internal Osc.	Oscillates	Oscillates		
Current	Normal	Lower than Normal		

<sup>\*</sup>When PIN 3 is allowed to float, it is held high by an internal pull-up resistor.

# HOW TO ORDER CXOL SURFACE MOUNT CRYSTAL OSCILLATORS

