



CXOU OSCILLATOR

32.768 kHz - 100.000 kHz
Ultra-Low Current, Miniature Quartz Crystal Oscillator

DESCRIPTION

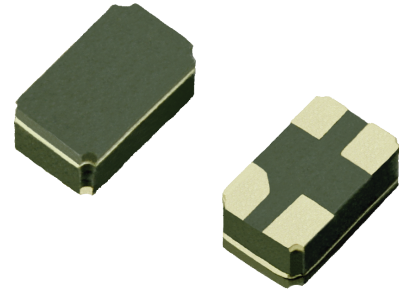
CXOU is an ultra-miniature (2.0 x 1.2 mm), ultra-low current quartz crystal oscillator developed for high reliability applications. Hermetically sealed in a highly reliable ceramic housing, this oscillator is available at start-up voltages in the range of 0.9 V - 5.0 V.

FEATURES

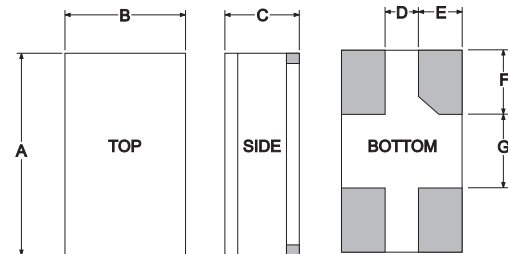
- Ultra-low current consumption
- Helium impermeable ceramic package and lid
- Non-magnetic
- Typical start-up time of 200 ms
- Typical rise and fall times of 30 ns
- Optional output enable/disable with Tri-State
- Full military testing per MIL-PRF-55310 available
- Designed, manufactured, and tested in the USA

APPLICATIONS

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



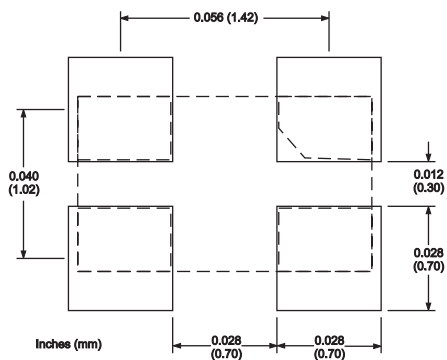
DIMENSIONS



TYPICAL

DIM	inches	mm
A	0.079	2.00
B	0.047	1.20
C (SM1)	0.030	0.76
D	0.025	0.64
E	0.017	0.43

SUGGESTED LAND PATTERN



PIN CONNECTIONS

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



10224 Rev A



SPECIFICATIONS: CXOU

Specifications are typical at 25°C 1.7 V unless otherwise noted. Specifications are subject to change without notice.

Current Consumption	32.768 kHz (1.75 μ A) ¹ 32.768 kHz (0.4 μ A) ² 100.0 kHz (3.9 μ A) ¹ 100.0 kHz (0.5 μ A) ²
Calibration Tolerance ³	\pm 20 ppm, \pm 50 ppm or \pm 100 ppm
Voltage Coefficient	\pm 1 ppm/V
Output load (CMOS) ⁴	10 pF
Aging, first year	\pm 2 ppm
Shock, survival	5000 g peak, 0.3 ms, 1/2 sine
Vibration, survival	20 g, 10 - 2000 Hz swept sine
Startup Time	200 ms
Operating Temperature	-10°C to +70°C (Commercial) -40°C to +85°C (Industrial) -55°C to +125°C (Military)

1. V_{DD} = 1.7 V and 10 pF load.
2. V_{DD} = 1.7 V, 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

Supply Voltage V_{DD}	-0.5V to 6.0 V
Storage Temperature	-55°C to +150°C
Process Temperature	260°C, 2 min.

PACKAGING OPTIONS

CXOU -Tray Pack
-12 mm carrier tape, 7" or 13" reels per EIA 481

ELECTRICAL CHARACTERISTICS

CXOU 32.768 kHz

All parameters were measured at 25°C with a 10M Ω and 10pF load with V_{DD} 1.7 V.

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

PIN CONNECTIONS

Pin	Connection
1	Output
2	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 T-version 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

*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

CXOU	3	S	N	SM3	-	32.768K	,	50	/	C
1 = 1.2V - 1.7V 2 = 2.5V 3 = 3.0V 4 = 3.3V 5 = 5.0V	"S" if special or custom design. Blank if Std.	T = Tri-State N = no connection	Blank = SM1 Gold Plated (Pb Free) SM3 = Solder (60/40 Sn-Pb) SM5 = Solder (Pb Free)	Frequency K = kHz	Calibration Tolerance @ 25°C (in PPM)	Temp. Range: C = -10°C to +70°C I = -40°C to +85°C M = -55°C to +125°C				

10224 Rev A

