ULPXO OSCILLATOR

32.768 kHz

Ultra Low Power, High Shock Quartz Crystal Oscillator

DESCRIPTION

The ULPXO oscillator is designed for applications in harsh environments requiring ultra-low power and survival after exposure to high shock levels. The product consists of a high-shock tuning fork quartz resonator and a CMOS compatible integrated circuit hermetically sealed in a high shock ceramic package.

FEATURES

- 5.0 x 1.8 mm hermetically sealed ceramic package
- Ultra-low current consumption
- High shock resistance up to 30,000 g
- Helium impermeable housing
- Typical start-up time of 200 ms
- Typical rise and fall times of 25 ns
- Full military testing available
- Designed, manufactured and tested in the USA

APPLICATIONS

Medical

- Patient monitoring devices

Defense & Aerospace

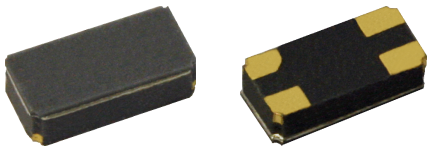
- Robust real-time clock

Industrial

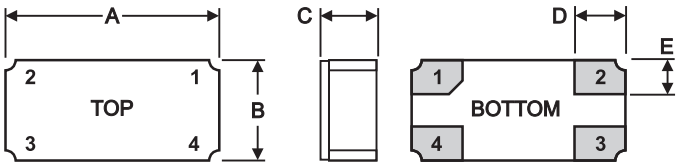
- Timekeeping modules
- IoT

PIN CONNECTIONS

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



DIMENSIONS

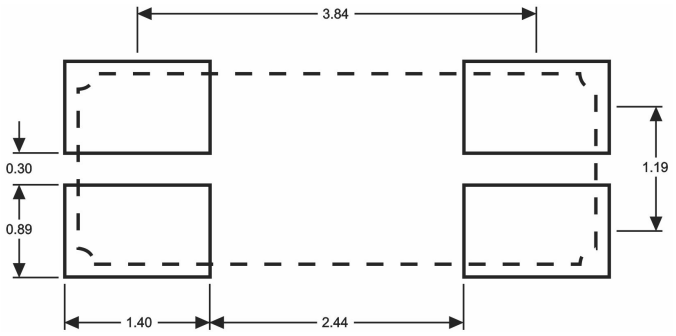


DIM (mm)	Termination	MINIMUM	TYPICAL	MAXIMUM
A		4.90	5.00	5.10
B		1.73	1.83	1.93
C	SM1	1.02	1.20	1.38
	SM3/SM5	1.15	1.33	1.50
D		1.04	1.14	1.24
E		0.55	0.65	0.75

PACKAGING OPTIONS

- Tray Pack
- Tape and Reel (per EIA 481). See Tape and Reel datasheet 10109.

SUGGESTED LAND PATTERN



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.

Frequency[1]	32.768 kHz	
Supply Voltage	1.8V to 5.0V ± 10%	
Calibration Tolerance[2]	±100 ppm to ±20 ppm	
Typical Supply Current (µA)	**3.3V** 2.0	**3.3V, OE is low** 0.5
Voltage Coefficient	±1 ppm/V	
Output Load (CMOS)[3]	10 pF	
Start-up Time (ms)	200	
Rise/Fall Time (ns)	40 MAX	
Duty Cycle	45% MIN 55% MAX	
Aging, First Year	2 ppm MAX	
Shock Survival	30,000 g peak, 0.3 ms, ½ sine	
Vibration Survival[4]	20 g, 10-2,000 Hz swept sine	
Operating Temperature Range[5]	-10°C to +70°C (Commercial) -40°C to +85°C (Industrial) -55°C to +125°C (Military) -55°C to +155°C (Extended Military)	
Storage Temperature Range[5]	-55°C to +155°C	
Max Process Temperature	260°C for 20 seconds	
Max Supply Voltage V_{DD}	-0.5V to 7.0V	
Moisture Sensitivity Level (MSL)	This product is hermetically sealed and is not moisture sensitive.	

1. Other frequencies available. Contact factory.
2. Tighter calibration tolerances available.
3. Other loads available. Contact factory.
4. Per MIL-STD-202G, Method 204D, Condition D. Random vibration testing also available.
5. Broader temperature ranges available. Contact factory.

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 (Pin3 High)*	Disable (Pin 3 Low)
Output	Frequency Output	High Z State
Oscillator	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 ULPXO OSCILLATORS

ULPXO **3** **S** **N** **SM3** — **32.768K** , **50** / **C**

Supply Voltage
1 = 1.8 V
2 = 2.5 V
3 = 3.0 V
4 = 3.3 V
5 = 5.0 V

Special
Blank = Standard
S = Special or Custom

Tristate/Disable Option
T = Tristate/Disable
N = No Connection

Terminations
Blank = Gold Plated (Lead Free)
SM3 = Solder (60/40 Sn-Pb)
SM5 = Solder (Lead Free)

Frequency
K = kHz

Calibration Tolerance @ 25°C (in ppm)

Operating Temp. Range
C = -10°C to +70°C
I = -40°C to +85°C
M = -55°C to +125°C
EM = -55°C to +155°C
S = Customer Specified

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