# CXOQ/CXOQHG OSCILLATOR

400 kHz to 100 MHz

One of the World's Smallest and Highest Precision Crystal Oscillators

## DESCRIPTION

Technological advancements permit 2.5 mm x 2.0 mm CXOQ quartz oscillator to have design-in capabilities of withstanding high shock applications. Additionally, the ultra-miniature CXOQ takes advantage of Statek's well known reliability and impeccable quality.

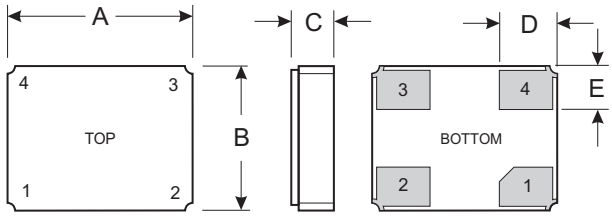

## FEATURES

- High shock survival
- High frequency stability
- Low acceleration sensitivity (HG version)
- CMOS and TTL compatible
- Low power consumption
- Full military testing per MIL PRF 55310 available
- Optional output enable/disable with Tri-State
- Low EMI emission
- Hermetically sealed ceramic package
- Designed, manufactured and tested in the USA

## APPLICATIONS

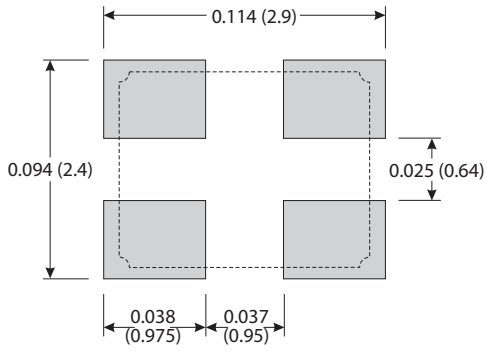
- Military
- Medical
- Industrial

## DIMENSIONS




| | TYPICAL | | MAXIMUM | |
|---|---|---|---|---|
| DIM | inches | mm | inches | mm |
| A | 0.098 | 2.50 | 0.102 | 2.60 |
| B | 0.079 | 2.00 | 0.083 | 2.10 |
| C (SM1) | 0.035 | 0.89 | 0.039 | 1.00 |
| C (SM3/SM5) | 0.040 | 1.02 | 0.048 | 1.22 |
| D | 0.026 | 0.67 | 0.027 | 0.69 |
| E | 0.022 | 0.57 | 0.023 | 0.59 |

## SUGGESTED LAND PATTERN




## PIN CONNECTIONS

1. Output Enable/Disable (E) or no connection (N)
2. Ground (Connected to Lid)
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 are available. Please contact factory.

| | | | |
|---|---|---|---|
| Frequency | 400 kHz to 100 MHz | | |
| Supply Voltage[1] | 1.8V to 5.0 V ± 10% | | |
| Calibration Tolerance[2] | ± 100 ppm to ± 30 ppm | | |
| Frequency Stability Over Temperature[3] | ± 50 ppm for Commercial<br>± 100 ppm for Industrial<br>± 100 ppm for Military | | |
| Supply Current (Typical) | | 1.8 V | 3.3 V |
| | 24 MHz | 1.5 mA | 3.0 mA |
| | 32 MHz | 2.0 mA | 5.0 mA |
| | 50 MHz | 3.0 mA | 6.0 mA |
| Output Load (CMOS) | 15 pF | | |
| Start-up Time | 5 ms MAX | | |
| Rise/Fall Time | 10 ns MAX | | |
| Duty Cycle[4] | 45% MIN/55% MAX | | |
| Aging, first year | 5 ppm | | |
| Shock, survival[5] | 5,000 g, 0.3 ms, 1/2 sine<br>HG: 20,000 g | | |
| Vibration, survival[6] | 20 g, 10-2,000 Hz swept sine | | |
| Operating Temp. Ranges | -10°C to 70°C | | (Commerical) |
| | -40°C to 85°C | | (Industrial) |
| | -55°C to 125°C | | (Military) |

1. Contact factory for available other voltages.
2. Tighter tolerances available.
3. Does not include calibration tolerances. Tighter tolerances available
4. Tighter duty cycles are available.
5. Higher shock available, contact factory for requirements above 20,000 g.
6. Per MIL-STD-202G, Method 204D, Condition D. Random vibration testing also available.

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

## ABSOLUTE MAXIMUM RATINGS

| | |
|---|---|
| Supply Voltage $V_{DD}$ | -0.5 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)

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 | Normal | Very Low |

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

## PACKAGING OPTIONS

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

## HOW TO ORDER CXOQ/CXOQHG SURFACE MOUNT CRYSTAL OSCILLATORS

CXOQ — HG — 4 — S — N — SM3 — 32.0M , 100 / 100 / — / I

- HG: HG = High Shock otherwise leave blank
- 4: Supply Voltage 1 = 1.8 V, 2 = 2.5 V, 3 = 3.0 V, 4 = 3.3 V, 5 = 5.0 V*
- S: "S" if Special or custom design; otherwise blank
- N: Enable/Disable Option E or N
- SM3: Terminations Blank = SM1, = Gold Plated (Lead Free), SM3 = Solder Dipped, SM5 = Solder Dipped (Lead Free)
- 32.0M: Frequency K = kHz, M = MHz
- 100: Calibration Tolerance @ 25°C (in ppm)
- 100: Frequency Stability over Temp. Range (in ppm)
- I: Temp. Range: C = -10°C to +70°C, I = -40°C to +85°C, M = -55°C to +125°C, S = Customer Specified

*5.0 V offered in Disable (N) option only.

OR

— / — / 200 / I

- 200: Total Frequency Tolerance (in ppm)
- I: Temp. Range: C = -10°C to +70°C, I = -40°C to +85°C, M = -55°C to +125°C, S = Customer Specified



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