



# 32.768 kHz CXO3M OSCILLATOR

High Stability/Fast Start-up Crystal Oscillator

## DESCRIPTION

For those applications requiring a 32.768 kHz oscillator with high frequency stability over temperature or fast start-up, Statek offers the AT-crystal based 32.768 kHz CXO3M oscillator. A frequency stability of  $\pm 20$  ppm over  $-40^{\circ}\text{C}$  to  $+85^{\circ}\text{C}$  is possible, compared to hundreds of parts-per-million for tuning-fork based 32.768 kHz oscillators. Whereas tuning-fork based oscillators start in hundreds of milliseconds, Statek's 32.768 kHz CXO3M oscillators start in 0.8 ms (typically).

## FEATURES

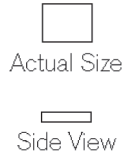
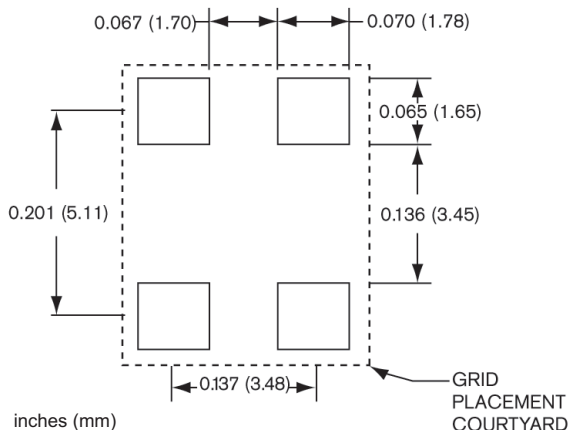
- High frequency stability over temperature
- Fast start-up
- High shock resistance
- Surface mount
- CMOS and TTL compatible
- Optional Output Enable/Disable with Tri-State
- Low EMI emission
- Hermetically sealed ceramic package
- Full military testing available

## APPLICATIONS

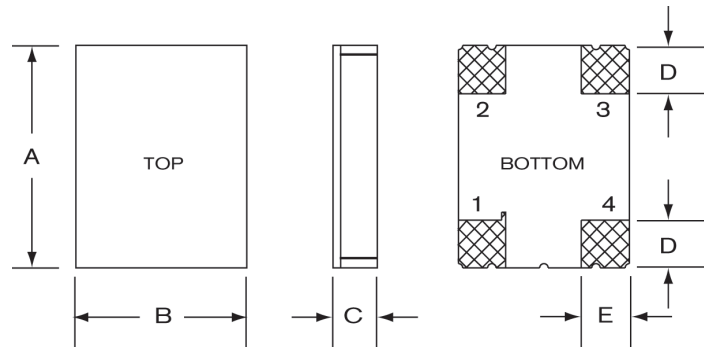
### Military / Avionics

- Aircraft landing gear
- Avionics
- Smart Munitions

## SUGGESTED LAND PATTERN



## DIMENSIONS



| DIM         | TYPICAL |      | MAXIMUM |      |
|-------------|---------|------|---------|------|
|             | inches  | mm   | inches  | mm   |
| A           | 0.256   | 6.50 | 0.263   | 6.68 |
| B           | 0.197   | 5.00 | 0.204   | 5.18 |
| C (SM1)     | 0.051   | 1.30 | 0.055   | 1.40 |
| C (SM3/SM5) | 0.055   | 1.40 | 0.063   | 1.60 |
| D           | 0.055   | 1.40 | 0.065   | 1.65 |
| E           | 0.060   | 1.52 | 0.070   | 1.78 |

## PIN CONNECTIONS

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

## SPECIFICATIONS

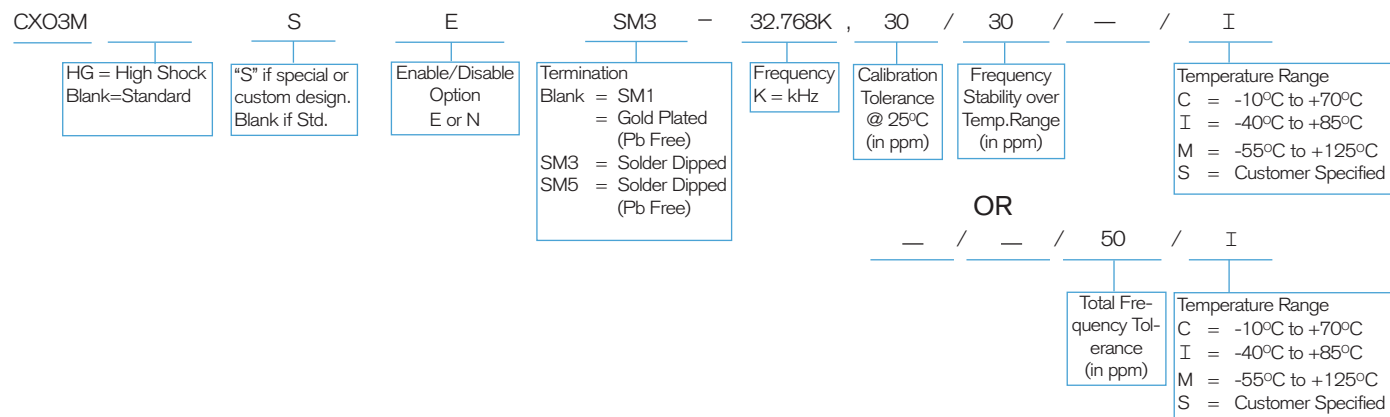
Specifications are typical at 25°C unless otherwise noted. Specifications are subject to change without notice. Tighter specifications available (contact factory).

|  |   |
|--|---|
| Supply Voltage <sup>1</sup>                          | 3.3 V ±10%  |
| Calibration Tolerance <sup>2</sup>                   | ±100 ppm  |
| Frequency Stability<br>Over Temperature <sup>3</sup> | ±10 to ±50 ppm for Commercial<br>±20 to ±100 ppm for Industrial<br>±30 to ±100 ppm for Military |
| Output Load (CMOS)                                   | 15 pF   |
| Aging, first year                                    | 10 ppm MAX  |
| Shock  | Std: 3,000 g, 0.3 ms, ½ sine<br>HG: 10,000 g, 0.3 ms, ½ sine                                    |
| Vibration <sup>4</sup>                               | 20 g, 10-2,000 Hz swept sine  |
| Operating Temp. Range                                | -10°C to 70°C (Commercial)<br>-40°C to 85°C (Industrial)<br>-55°C to 125°C (Military)           |

| SYMBOL               | PARAMETER           | MIN                | TYP | MAX                | UNIT |
|----------------------|---------------------|--------------------|-----|--------------------|------|
| V <sub>OH</sub>      | Output Voltage High | 0.9V <sub>DD</sub> |     |                    | V    |
| V <sub>OL</sub>      | Output Voltage Low  |                    |     | 0.1V <sub>DD</sub> | V    |
| t <sub>startup</sub> | Start-up Time       |                    | 0.8 |                    | ms   |
| t <sub>r</sub>       | Rise Time (10%-90%) |                    | 85  | 1000               | ns   |
| t <sub>f</sub>       | Fall Time (10%-90%) |                    | 45  | 1000               | ns   |
|                      | Duty Cycle          | 45                 | 50  | 55                 | %    |
| I <sub>DD</sub>      | Supply Current      |                    | 500 |                    | µA   |

- Other supply voltages available. Contact factory for ordering information.
  - Other tolerances available.
  - Does not include calibration tolerance. Other tolerances available.
  - 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.

## HOW TO ORDER 3.3 V 32.768 kHz CXO3M OSCILLATORS



## ABSOLUTE MAXIMUM RATINGS

|                                |                   |
|--------------------------------|-------------------|
| Supply Voltage V <sub>DD</sub> | -0.3 V to 5.0 V   |
| Storage Temperature            | -55°C to 125°C    |
| Maximum Process Temperature    | 260°C for 20 sec. |

## ENABLE/DISABLE OPTIONS (E/N)

For the 32.768 kHz CXO3M, 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 SUMMARY

|            | Enable (Pin 1 High*) | Disable (Pin 1 Low) |
|------------|----------------------|---------------------|
| Output     | Frequency Output     | High Z State        |
| Oscillator | Oscillates           | Stops               |
| Current    | 500 µA               | 3.2 µA              |

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

## PACKAGING OPTIONS

CXO3M - Tray Pack  
- 16 mm tape, 7" or 13" reels  
Per EIA 481 (see Tape and Reel datasheet #10109)

