



# HGXOHT OSCILLATOR

32.768 kHz

High Shock, High Temperature Crystal Oscillator

## DESCRIPTION

For **high temperature**, high stability and fast start-up applications, Statek offers the AT crystal-based 32.768 kHz HGXOHT oscillator. This oscillator is designed to operate at temperatures up to 200°C. A high-shock version is also offered that features 100,000 g shock survivability. Other features include fast start-up time (0.8 ms typical) and low current operation (500  $\mu$ A at 25°C.)

## FEATURES

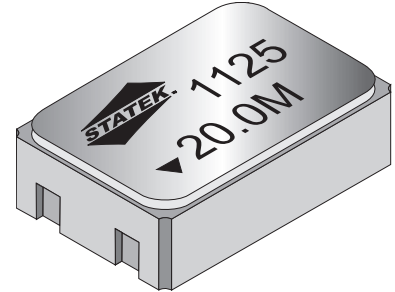
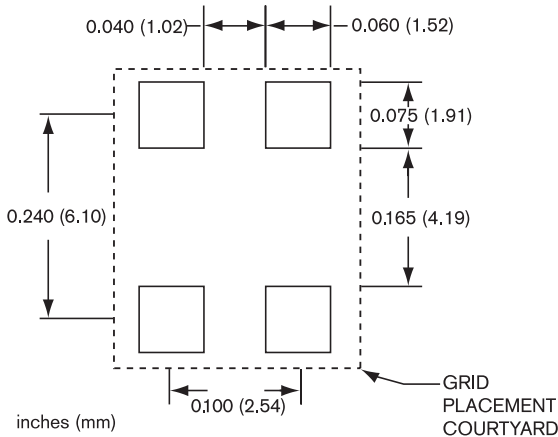
- Mechanical shock survivability up to 100,000 g
- High temperature operation up to 200°C
- Overall 5 times improvement in total frequency stability when compared to a typical tuning fork design
- Excellent stability over temperature
- Fast start-up
- CMOS output
- Optional output enable/disable
- Low current
- Hermetically sealed ceramic crystal package (Double Hermetic Seal)

## APPLICATIONS

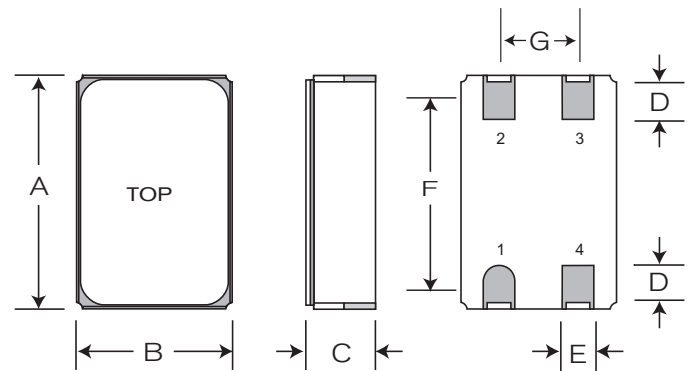
### Industrial

- Downhole instrumentation
- Rotary shaft sensors
- Underground boring tools

## SUGGESTED LAND PATTERN



## PACKAGE DIMENSIONS



DIM	TYPICAL		MAXIMUM	
	inches	mm	inches	mm
A	0.295	7.50	0.302	7.68
B	0.197	5.00	0.204	5.18
C*	0.089	2.25	0.098	2.50
D	0.055	1.40	-	-
E	0.040	1.02	-	-
F	0.240	6.10	-	-
G	0.100	2.54	-	-

\*SM1 (Termination material is Au over Ni over W). Solder dip (SM5) also available.

## PIN CONNECTIONS

1. Enable/Disable (E) or not connected (N)
2. Ground
3. Output
4.  $V_{DD}$

10209 Rev A



## SPECIFICATIONS

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

Supply Voltage	3.3 V ± 10%
Calibration Tolerance	±50 ppm, or tighter as required
Frequency Stability over Temperature <sup>1</sup>	±100 ppm for 25°C to 150°C ±150 ppm for 25°C to 175°C ±175 ppm for 25°C to 200°C
Total Tolerance <sup>2</sup>	±200 ppm for 25°C to 200°C
Supply Current (Typical)	500 µA
Output Load (CMOS)	15 pF
Start-up Time	0.8 ms typical
Rise/Fall Time	85 ns/ 45 ns
Duty Cycle	40% MIN, 60% MAX
Aging, first year	10 ppm MAX at 25°C
Aging, 1,000 Hrs	100 ppm MAX at 200°C
Shock survival <sup>3</sup>	Up to 100,000 g, 0.5 ms, ½ sine
Vibration, survival <sup>4</sup>	20 g, 10-2000 Hz, swept sine
Operating Temp Range <sup>5</sup>	-55°C up to 200°C

- Does not include calibration tolerance.
- Frequency over temperature relative to nominal frequency.
- Shock survival applies at -55°C to +125°C.
- Per MIL-STD-202G, Method 204D, Condition D, Random vibration testing also available.
- Expected life at 200°C is in excess of 1,500 hours.

## ABSOLUTE MAXIMUM RATINGS

Supply Voltage V <sub>DD</sub>	-0.5 V to 4.0 V
Storage Temperature	-55°C to +125°C
Maximum Process Temperature	260°C for 20 s

## ENABLE/DISABLE OPTIONS (E/N)

For the 32.768 kHz HGXOHT, 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

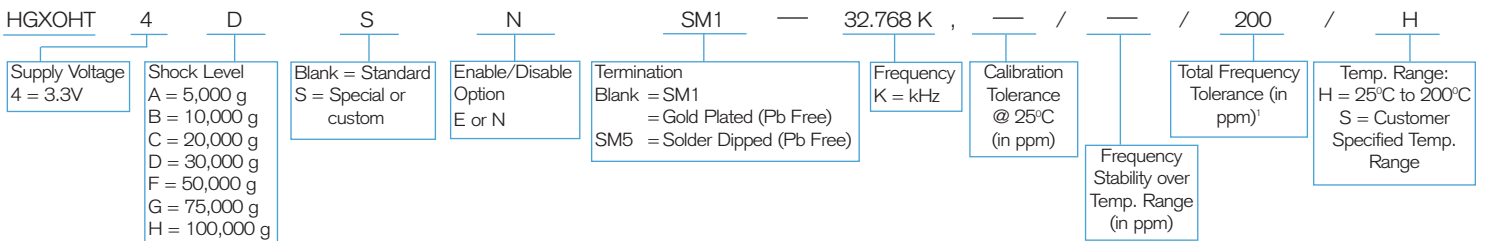
	Enable (Pin 1 High*)	Disable (Pin 1 Low)
Output	Frequency output	High Z State
Oscillator	Oscillates	Stops
Current	500 µA at 25°C	3.2 µA at 25°C

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

## PACKAGING OPTIONS

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

## HOW TO ORDER 32.768 kHz HGXOHT SURFACE MOUNT CRYSTAL OSCILLATORS



Note: The HGXOHT oscillator with SM1 or SM5 termination is Pb free.

