



# HIGH TEMPERATURE OSCILLATOR

## Leaded High Temperature/High Shock

### DESCRIPTION

An increasing number of high temperature applications require the use of leaded (through hole) ceramic packaged oscillators. For these applications, Statek offers the LHTAT 5x7mm oscillator. These oscillators are designed to operate at temperatures up to 200°C with high shock survivability.

### FEATURES

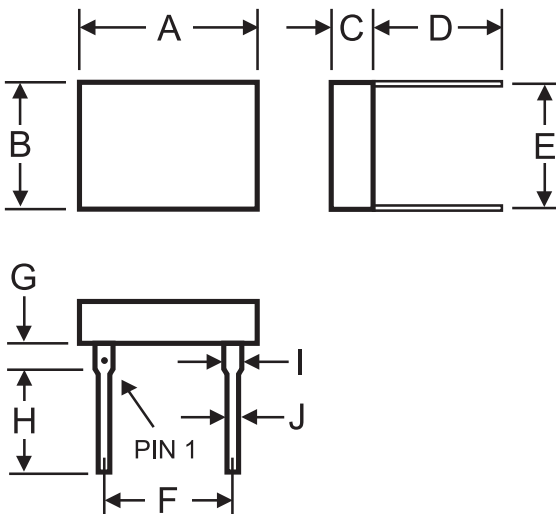
- High temperature operation up to 200°C
- Excellent stability over temperature
- High shock resistance
- CMOS output
- Optional output enable/disable
- Hermetically sealed ceramic package - 5x7mm
- Through-hole leaded package
- Reduces mechanical and thermal mounting stresses
- Robust lead attach-eutectic brazing process
- Gold Plated Kovar Leads

### APPLICATIONS

#### Industrial

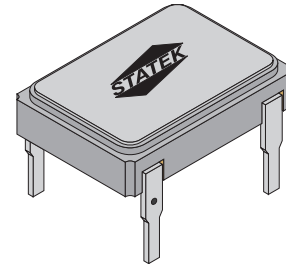
- Downhole instrumentation
- Rotary shaft sensors
- Underground boring tools
- Avionics applications

### PACKAGE DIMENSIONS LHTAT



### LHTAT

320 kHz - 50 MHz



### PIN CONNECTIONS

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

### DIMENSIONS

DIM	TYPICAL		MAX	
	inches	mm	inches	mm
A	0.276	7.00	.281	7.14
B	0.197	5.00	.202	5.13
C	0.065	1.65	.070	1.78
D	0.200	5.08	.205	5.20
E	0.195	4.90	.205	5.20
F	0.200	5.08	.205	5.20
G	0.040	1.02	—	—
H	0.160	4.06	—	—
I	0.028	0.71	—	—
J	0.018	0.46	0.021	0.53

Lead Thickness: 0.008 ±0.001 (0.20mm ±0.03)  
Lead Plating: Gold/Nickel over Kovar

LHTAT 10204 Rev B



## 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 <sup>1</sup>	3.3 V ± 10%
Calibration Tolerance	± 50 ppm, or tighter as required
Frequency Stability	± 100 ppm for 25°C to 150°C
Over Temperature	± 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)	<u>3.3 V</u>
	24 MHz    3.0 mA
	32 MHz    5.0 mA
	50 MHz    6.0 mA
Output Load (CMOS)	15 pF
Start-up Time	5 ms MAX
Rise/Fall Time	10 ns MAX
Duty Cycle	40% MIN, 60% MAX
Aging, first year	5 ppm MAX at 25°C
Aging	100 ppm MAX at 200°C
Shock, survival <sup>3</sup>	Std: 5,000 g, 0.5 ms, 1/2 sine HG: up to 30,000 g, 0.5 ms, 1/2 sine
Vibration, survival <sup>4</sup>	20 g, 10-2,000 Hz swept sine
Operating Temp Range <sup>5</sup>	-55°C up to 200°C

1. All frequencies, voltages, temperature ranges and enable/disable options may not be available. Contact factory.
  2. Total Tolerance = Calibration Tolerance + Frequency Stability over temperature.
  3. Shock survival applies at -55°C to +125°C.
  4. Per MIL-STD-202G, Method 204D, Condition D. Random vibration testing available.
- Note: All parameters are measured at ambient temperature with a 10 MΩ, 15 pF load.
5. 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 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

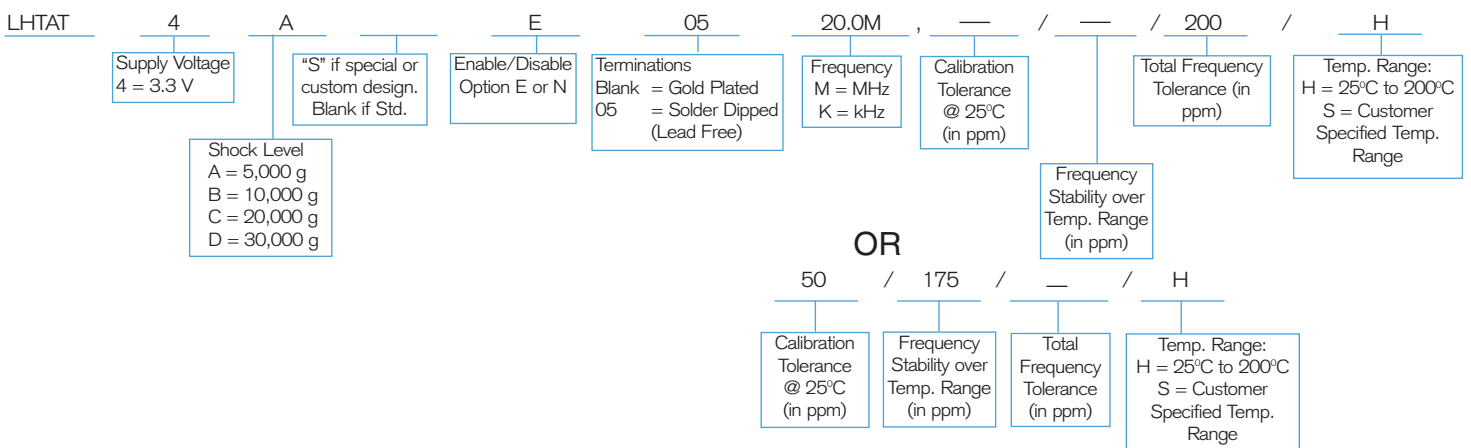
	Enable (Pin 1 High*)	Disable (Pin 1 Low)
Output	Frequency Output	High Z State
Oscillator	Oscillates	Stops
Current	Normal	Very Low

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

## PACKAGING OPTIONS

LHTAT - Tube Pack (Standard)

## HOW TO ORDER LHTAT OSCILLATORS



LHTAT 10204 Rev B