275°C LHTAT OSCILLATOR

Leaded High Temperature/High Shock Oscillator

32.768 kHz, 200 kHz to 50 MHz

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 275°C and feature Statek's industry leading high shock survivability.

FEATURES

- High temperature operation up to 275°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

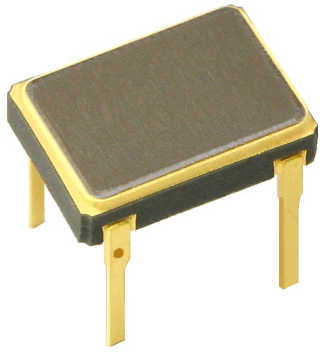
APPLICATIONS

Industrial

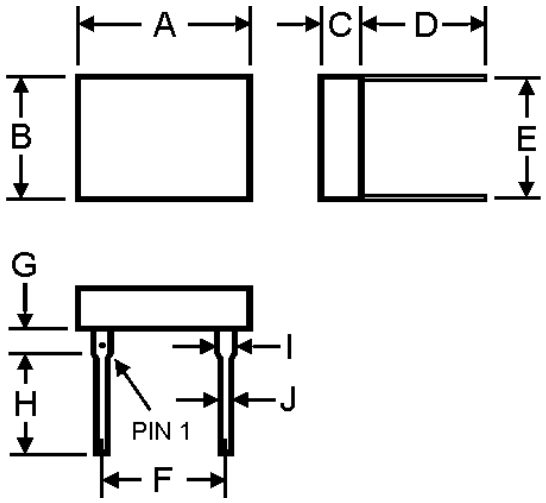
- Downhole instrumentation
- Rotary shaft sensors
- Underground boring tools
- Avionics applications
- Geothermal applications

PIN CONNECTIONS

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



PACKAGE DIMENSIONS



	TYPICAL		MAXIMUM	
DIM	inches	mm	inches	mm
A	0.276	7.00	0.281	7.14
B	0.197	5.00	0.202	5.13
C	0.065	1.65	0.070	1.78
D	0.200	5.08	0.205	5.20
E	0.195	4.90	0.205	5.20
F	0.200	5.08	0.205	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

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. Please contact factory.

Supply Voltage[1]	3.3 V and 5.0 V ±10%		
Total Tolerance[2]	±150 ppm for 25°C to 150°C		
	±175 ppm for 25°C to 175°C		
	±200 ppm for 25°C to 200°C		
	±350 ppm for 25°C to 225°C		
	±500 ppm for 25°C to 250°C		
	±750 ppm for 25°C to 275°C		
Supply Current		3.3 V	5.0 V
	24 MHz	3.0 mA	8.0 mA
	32 MHz	5.0 mA	10.0 mA
	50 MHz	6.0 mA	12.0 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, first year	±100 ppm MAX at 200°C		
Shock, survival[3]	Std: 5,000 g, 0.5 ms, ½ sine		
	HG: up to 30,000 g, 0.5 ms, ½ sine		
Vibration, survival[4]	20 g, 10-2000 Hz swept sine		
Operating Temp Range[5]	-55°C up to +275°C		

1. All frequencies, voltages, temperature ranges and enable/disable options my 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 275°C is in excess of several thousand hours.

PACKAGING OPTIONS

LHTAT - Tube Pack (Standard)

ABSOLUTE MAXIMUM RATINGS

Supply Voltage V_{DD}	-0.5 V to 7.0 V*
Storage Temperature	-55°C to +125°C

*The supply voltage range is -0.5 V to +4.0 V for some products. Contact factory.

ENABLE/DISABLE OPTIONS (E/T/N)

Statek offers three enable/disable options: E, T and N. The E-version and T-version have Tri-State outputs and differ in whether the oscillator continues to run internally when the output is put into the high Z state: it stops in the E-version and continues to run in the T-version. So the E-version offers very low current when the oscillator is disabled and T-version offers very fast output recovery when the oscillator is re-enabled. The N-version does not have PIN 1 connected internally and so has no Enable/Disable capability. The following table summerizes the E and T options:

	For Temperature <= 200°C	For Temperature > 200°C
	E*	***T****
When Enabled - PIN 1	*High*	*Low*
Output	Freq. output	Freq. output
Oscillator	Oscillates	Oscillates
Current consumption	Normal	Normal
When disabled - PIN 1	*Low*	*High*
Output	High Z state	High Z state
Oscillator	Stops	Oscillates
Current consumption	Very low	Lower than normal
When re-enabled - PIN 1 changes	*from Low to High*	*from High to Low*
Output recovery	Delayed	Immediate

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

HOW TO ORDER LHTAT OSCILLATORS

LHTAT 4 A ____ E 05 — 20.0M , ___ / ___ / 200 / H

- 4: Supply Voltage — 4 = 3.3 V; 5 = 5.0 V
- A: Shock Level — A = 5,000 g; B = 10,000 g; C = 20,000 g; D = 30,000 g
- ____: S = Special or custom; Blank = Standard
- E: Enable/Disable Option — E, T, or N
- 05: Termination — Blank = Gold Plated; 05 = Solder Dipped (Lead Free)
- 20.0M: Frequency — M = MHz; K = kHz
- ___ / ___: Total Frequency Tolerance (in ppm)
- 200: Temperature Range — H = 25°C to 200°C; Q = 25°C to 225°C; W = 25°C to 250°C; X = 25°C to 275°C; S = Customer Specified
- H: Temperature Range (see above)

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