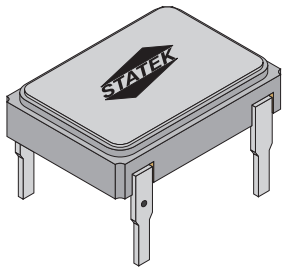
LHGAT OSCILLATOR

Leaded Military Grade/High Shock
320 kHz - 50 MHz

DESCRIPTION

An increasing number of military applications require the use of leaded (through hole) ceramic packaged oscillators. For these applications, Statek of fers the LHGA T 5x7mm oscillator. This oscillator is designed to operate over a temperature range of -55°C to 125°C with high shock survivability.



FEATURES

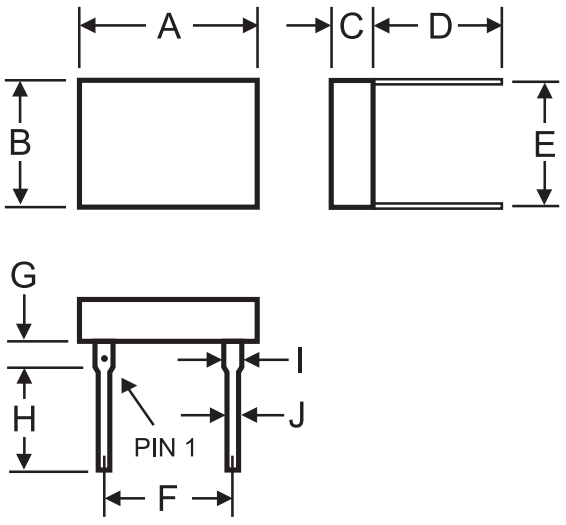
- Full military testing available
- Excellent stability over temperature
- High shock resistance
- CMOS output / output enable/disable
- Double hermetically sealed package option
- Hermetically sealed ceramic package - 5x7mm
- Through-hole leaded package
- Reduces mechanical and thermal mounting stresses
- Robust lead-attach eutectic brazing process
- Gold Plated Kovar Leads

APPLICATIONS

Military and Aerospace

- Navigation / Communications
- Avionics applications
- Flight recorder
- Engine control

PACKAGE DIMENSIONS LHGAT



PIN CONNECTIONS

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

DIMENSIONS

	TYPICAL		MAX	
DIM	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

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 Voltages[1]	1.8 V to 5.0 V		
Calibration Tolerance	± 20 ppm and up		
Frequency Stability	± 100 ppm to ±40 ppm (Military)		
Over Temperature[2]	± 100 ppm to ±30 ppm (Industrial)		
	± 50 ppm to ±15 ppm (Commercial)		
Total Frequency[3]	± 100 ppm for Military		
Tolerance	± 50 ppm for Industrial		
	± 30 ppm for Commercial		
Supply Current (Typical)		3.3 V	5.0 V
	24 MHz	3.0 mA	8.0 mA
	32 MHz	5.0 mA	10 mA
	40 MHz	5.5 mA	12 mA
	50 MHz	6.0 mA	13 mA
Output Load (CMOS)	15 pF		
Start-up Time	5 ms MAX		
Rise/Fall Time	4 ns TYP, 8 ns MAX		
Duty Cycle[4]	40% MIN, 60% MAX		
Aging, first year	5 ppm		
Shock, survival[5]	Std: 5,000 g, 0.5 ms, 1/2 sine		
	HG: up to 30,000 g, 0.5 ms, 1/2 sine		
Vibration, survival	20 g, 10-2,000 Hz swept sine		
Operating Temp Ranges[6]	-55°C to +125°C (Military)		
	-40°C to +85°C (Industrial)		
	-10°C to + 70°C (Commercial)		

1. Not all frequencies are available in certain voltages. Contact factory for details.
2. Does not include calibration tolerance.
3. Tighter tolerances available; Does not include aging.
4. Tighter Duty Cycles available. Contact factory.
5. Contact factory for requirements above 30,000 g.
6. Higher temp available (up to 200°C). Contact factory.

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

PACKAGING OPTIONS

LHGAT - Tube Pack (Standard)

ABSOLUTE MAXIMUM RATINGS

Supply Voltage V_{DD}	-0.5 V to 7.0 V*
Storage Temperature	-55°C to +125°C
Maximum Process Temperature	260°C for 20 seconds

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

ENABLE/DISABLE OPTIONS (E/N)

Statek offers three enable/disable options: E, T, and N. Both 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 consumption when the oscillator is disabled and the 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 summarizes the three options.

COMPARISON OF ENABLE/DISABLE OPTIONS E AND T

	E	T[7]
When enabled (PIN 1 is high)*		
Output	Freq. output	Freq. output
Oscillator	Oscillates	Oscillates
Current consumption	Normal	Normal
When disabled (PIN 1 is low)		
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)		
Output recovery	Delayed	Immediate

7. The T-version is not available for all frequencies. Contact factory.

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

HOW TO ORDER LHGAT OSCILLATORS

LHGAT — 4 — B — — E — 05 — 20.0M , 50 / 50 / — / M

- 4: Supply Voltage
  1 = 1.8 V
  2 = 2.5 V
  3 = 3.0 V
  4 = 3.3 V
  5 = 5.0 V
- B: Shock Level
  A = 5,000 g
  B = 10,000 g
  C = 20,000 g
  D = 30,000 g
- —: "S" if special or custom design. Blank if Std.
- E: Enable/Disable Option
  E, T or N
- 05: Terminations
  Blank = Gold Plated
  03 = Solder Dipped
  05 = Solder Dipped (Lead Free)
- 20.0M: Frequency
  M = MHz
  K = kHz
- 50: Calibration Tolerance @ 25°C (in ppm)
- 50: Frequency Stability over Temp. Range (in ppm)
- —: Temperature Range:
  C = -10°C to +70°C
  I = -40°C to +85°C
  M = -55°C to +125°C
  S = Customer Specified
- M: Package

Note: The LHGAT oscillator with gold plated or 05 termination is Pb free. The LHGAT oscillator with 03 termination contains Pb.

OR

— / — / 100 / M

- 100: Total Frequency Tolerance (in ppm)
- —: Temperature Range:
  C = -10°C to +70°C
  I = -40°C to +85°C
  M = -55°C to +125°C
  S = Customer Specified
- M: Package

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