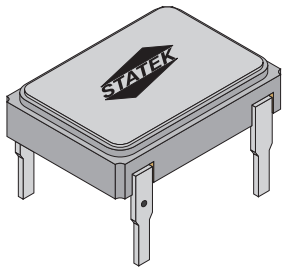
LHGAT OSCILLATOR

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 offers the LHGAT 5x7mm oscillator. This oscillator is designed to operate over a temperature range of -55°C to 125°C with high shock survivability.



FEATURES

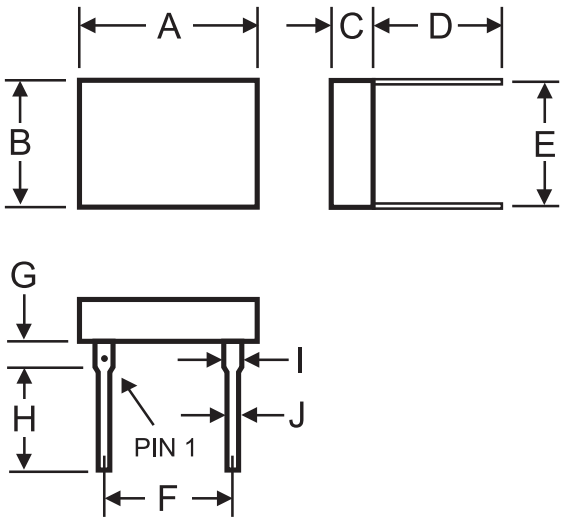
- Full military testing available
- Excellent stability over temperature
- High shock resistance
- CMOS output / output enable/disable
- Double hermetically sealed package option
- Hermetically sealed ceramic package - 5x7mm
- Through-hole leaded package
- Reduces mechanical and thermal mounting stresses
- 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

10211 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 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: Temperature Range — C = -10°C to +70°C; I = -40°C to +85°C; M = -55°C to +125°C; S = Customer Specified

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)
- M: Temperature Range — C = -10°C to +70°C; I = -40°C to +85°C; M = -55°C to +125°C; S = Customer Specified

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