LGH3000 Series

Software Compensated, Ultra-Low-G OCXO

Key Features

- As good as 0.01 ppb/g per axis
- Within pull range in 0.1 seconds
- As low as ±0.25 ppb over temp.
- Up to +/- 1000 ppm pull range
- Aging as low as +/- 50 ppb over 10 years

Common Applications

- GPS/GNSS
- Naval Vessels
- Commercial and Military Aircraft
- Smart Munitions
- Ground Vehicles
- Industrial Construction Equipment
- Autonomous Agricultural Vehicles

Functional Description

The LGH3000 Ultra-Low-G product family, incorporates Esterline Research and Design's patented MSAC compensation architecture within an ovenized oscillator temperature control system. This compensation achieves frequency stability performance of less than ±0.25 ppb over the temperature range of -40°C to +105°C. The LGH3000 design platform can deliver acceleration sensitivity performance of less than 0.01 ppb/g, translating into minimal phase noise degradation under vibration.

The LGH3000 also offers other unique and performance enhancing features. Vastly superior turn-on characteristics as compared to traditional OCXO product offerings, with turn-on stability within +/-100 ppb of final frequency after 1 second of operation are achieved. Wide pull ranges up to +/-1000 ppm, and superior aging options as low as +/-50 ppb over 10 years life are also ordering options.

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Standard Specifications:

Parameter	Minimum	Typical	Maximum	Units	Notes
Frequency Range	61		220	MHz	Frequencies unavailable from 188 to 210.
Operational Temperature Range					See Ordering Options.
Frequency vs. Temperature					Measured from hot to cold @ 1°C/ min
Calibration Tolerance			±5.0	ppb	At time of shipment.
Frequency vs. Supply			±0.1	ppb	5% Change
Frequency vs Load			±0.25	ppb	5% Change
Startup Time			100	mS	To reach 90 % of Final Amplitude and ±150 ppb of 30-Minute Frequency.
Warmup Time			5	Minutes	±10 ppb of 30-Minute frequency @ 25°C
Aging					See Ordering Options.
Supply Voltage	4.75	5.00	5.25	Volts	
Input Power			5.25	Watts	During Warmup
			2.00	Watts	Steady State at +25°C
Output Characteristics					Load = LVCMOS (15 pF)
Output Level High (Voh)		3.3		Volts	
Output Low (Vol)		0.1		Volts	
Duty Cycle	45	50	55	%	
Rise/Fall Time			6	ns	Measured between 10% and 90%
Oven Ready (Pin 6)					Open Collector – 10K ext pull-up to +5V
Oven not stabilized	2.4			Volts	
Oven Stabilized			0.5	Volts	
Digital Frequency Control					
Communication Protocol					2-pin Serial
Command Syntax					See APN#: LGH3000 – CP Rev: -
Pullability					See Ordering Options.
Linearity			1	%	
Phase Noise Characteristics					Performance at 100 MHz Output
1 Hz Offset		-61	-54	dBc/Hz	
10 Hz Offset		-89	-83	dBc/Hz	
100 Hz Offset		-107	-103	dBc/Hz	
1 KHz Offset		-128	-124	dBc/Hz	
10 KHz Offset		-133	-131	dBc/Hz	
100 KHz Offset		-133	-130	dBc/Hz	
Environmental Specifications					
Shock per MIL-STD-202			Survive		Method 213, Condition C
Vibration per MIL-STD-202			Survive		Method 204, Condition A

Ordering Information:

LGH3000-A-01-A-01-A-01-067M891234

Temperature Stability

DASH #	Stability
A	±25.0 ppb
B	±10.0 ppb
C	±5.0 ppb
D	±3.0 ppb
E	±2.0 ppb

Acceleration Sensitivity

DASH #	Stability
A	0.25 ppb/g
B	0.10 ppb/g
C	0.05 ppb/g
D	0.03 ppb/g
E	0.01 ppb/g

Output Frequency

Output Frequency is specified to the nearest 1Hz

67.891234 MHZ in the above example.

Long Term Aging

DASH #	ppb/20yr
01	±2000
02	±1000
03	±500
04	±250
05	±50

Temperature Range

DASH #	Stability
01	0 to +70°C
02	-20 to +70°C
03	-40 to +70°C
04	-40 to +85°C
05	-40 to +105°C

Pullability Options

DASH #	Stability
A	None
B	±6.25 ppm
C	±12.5 ppm
D	±25 ppm
E	±50 ppm
F	±100 ppm
G	±200 ppm
H	±400 ppm
J	±1000 ppm

Short Term Aging

DASH #	ppb/day
A	N/A
B	±1
C	±0.75
D	±0.50
E	±0.30

Notes:
1.) Not all combinations of options are available. Consult factory for additional guidance.
2.) Need an option not shown? Call or email Esterline Research and Design for help with your unique needs.

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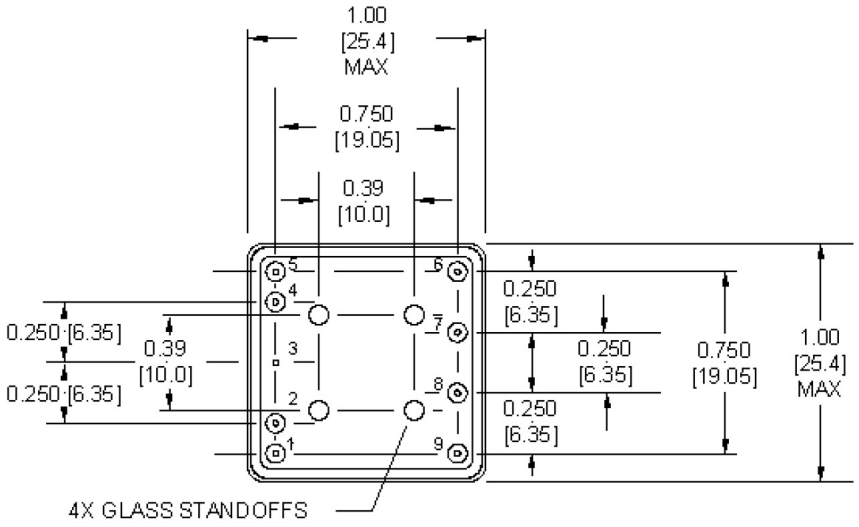
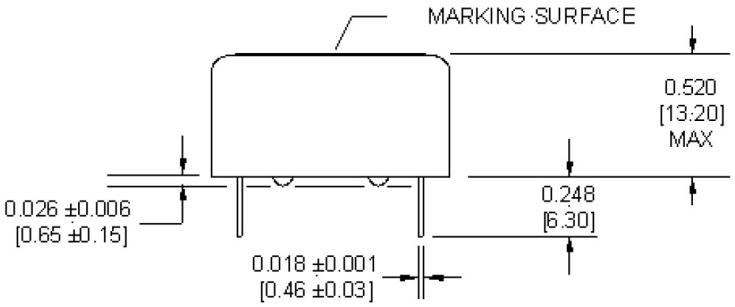
Mechanical Dimensions:

Bottom View:



Side View:



NOTES:
1 - DIMENSIONAL UNITS: in [mm]
2 - TOLERANCE: ±0.004 [±0.1 mm]
3 - PIN MARKINGS DO NOT APPEAR ON THE DEVICE
4 - PINS LABELED "N/C" SHOULD BE LEFT FLOATING

PIN FUNCTIONS	
Pin #	**Function**
1	RF Output
2	NC
3	GROUND
4	NC
5	NC
6	NC
7	NC
8	NC
9	Supply Voltage