

MEMS G50Z Gyro



- **High Performance MEMS Single Axis Gyro**
- **Standard or Differential "VSG" Compatible Signal** *G50Z -XXX-2XX*
- **Short Term Bias** $\leq 0.01^\circ/\text{sec}$ 2σ
- **Bias Over Temperature** $\leq 0.3^\circ/\text{sec}$ 2σ
- **Scale Factor Over Temp.** $< 0.08\%$
- **G-Sensitivity** $\leq 0.005^\circ/\text{sec}/g$ *Typical*
- **Axis Alignment** $< 4\text{mrad}$ *Typical*
- **Low Noise** $0.012^\circ/\text{sec}/\sqrt{\text{Hz}}$ *Typical*
- **Low Power** $< 35\text{ mA}$ *Typical*
- **Light Weight** $< 30\text{ grams}$
- **Low Voltage** $+5\text{V}$ (*single sided power*)
- **Bandwidth** 50Hz or 100Hz
- **Voltage Output**
- **Internal Temp. Sensor**
- **Self Test**
- **Shock Resistant** $500g$
- **Vibration** 6 g_{RMS}
- **Long Life**

Low Noise, G-Sensitivity and Bias Over Temperature

Export Classification: Commerce ECCN7A994

The all new MEMS G50Z Gyro is a high performance single axis MEMS Rate Sensor with both excellent bias over temperature and low noise. Designed for commercial stabilization and aircraft applications, the gyro has a voltage output with the standard -1XX unit outputting $+2.5\text{V} \pm 2.2\text{V}$ and the -2XX model offering a differential "VSG" compatible signal outputting balanced $0\text{V} \pm 5\text{V}$.

The signature features of the G50Z are low noise, impressive bias over temperature performance, low power consumption, light weight, as well as excellent g-sensitivity and misalignment. The unit is highly durable and can withstand environmental vibration and shock typically associated with commercial aircraft requirements. The unit has no inherent wear-out modes for long life and the rate output is also free from bias steps.



The MEMS G50Z gyro is offered in standard rate ranges of $\pm 20^\circ$, $\pm 100^\circ$, $\pm 175^\circ$ or $\pm 350^\circ/\text{sec}$. Consult factory for other rate ranges and options. The G50Z is designed for automotive testing, commercial aircraft applications, platform and antenna stabilization and pointing, general aviation and laboratory use. The G50Z is ideal where excellent bias over temperature performance, low noise, low power consumption, low g-sensitivity, light weight and rugged durability are desired for commercial environments and applications.

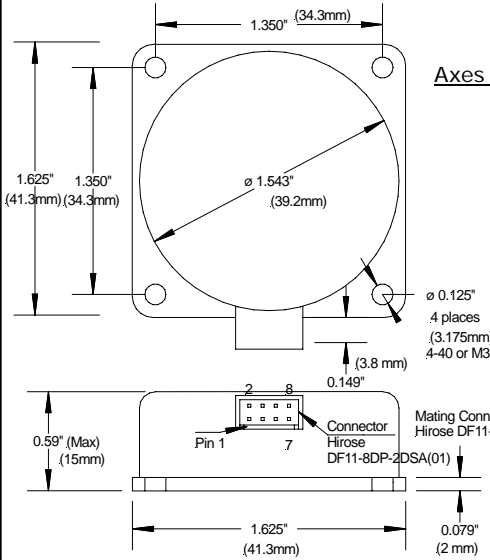


Gladiator Technologies, Inc.

Copyright © 2009 Gladiator Technologies, Inc.

Rev. Jun0409
SN: 200

MEMS G50Z Gyro



Axes (Top View) Right Hand Rule



G50Z Configuration Options		
Part Number	Bandwidth	Output
G50Z-XXX-100	50Hz	Standard
G50Z-XXX-110	100Hz	Standard
G50Z-XXX-200	50Hz	Differential "VSG"
G50Z-XXX-210	100Hz	Differential "VSG"

Specification

Pin No.	-1XX Assignment
1	+4.75V to +5.25V DC Input
2	Power Ground
3	Gyro Rate Output Voltage +2.5V Nominal
4	Gyro +2.5V Reference Voltage
5	Gyro Temperature +2.5V @ 20°C
6	Signal Ground
7	Self Test Input
8	Case

Rate output is Pin 3 with respect to Pin 4. Temperature is Pin 5 with respect to Pin 6. Self Test On is 4V to 5V on Pin 7. Self Test Off is open or 0V to 1V.

Pin No.	-2XX Assignment (VSG Signal)
1	+4.75V to +5.25V DC Input
2	Power Ground
3	Gyro Rate Output Voltage +0V Nominal
4	Internal Reference (not used +2.5V)
5	Gyro Temperature +2.5V @ 20°C
6	Signal Ground
7	Self Test Input
8	Case

Rate output is Pin 3 with respect to Pin 6. Temperature is Pin 5 with respect to Pin 6. Self Test On is 4V to 5V on Pin 7. Self Test Off is open or 0V to 1V.

PARAMETER	G50Z-020-XXX	G50Z-100-XXX	G50Z-175-XXX	G50Z-350-XXX
Power Requirements				
Input Voltage	+5V DC (±5%)	+5V DC (±5%)	+5V DC (±5%)	+5V DC (±5%)
Input Current <i>Typical (Max)</i>	35mA (50mA)	35mA (50mA)	35mA (50mA)	35mA (50mA)
Self Test (Output Change)	2.5 ± 1.0V	0.7 ± 0.3V	0.45 ± 0.2V	0.3 ± 0.2V
Performance				
Standard Full Scale Ranges	±20°/sec	±100°/sec	±175°/sec	±350°/sec
Full Scale Output (Nominal) -100	+2.5V ±2.2V DC	+2.5V ±2.2V DC	+2.5V ±2.2V DC	+2.5V ±2.2V DC
Full Scale Output (Nominal) -200	0V ±5.0V DC	0V ±5.0V DC	0V ±5.0V DC	0V ±5.0V DC
Scale Factor <i>Nominal</i>	100mV/°/sec	20mV/°/sec	12mV/°/sec	6mV/°/sec
Scale Factor Over Temperature	<0.08%	<0.08%	<0.08%	<0.08%
Temperature Sensor	2.5V ±0.05V DC Nominal at 20°C			
Temperature Sensor Scale Factor	8.4mV/°C Nominal			
Bias Factory Set 2σ	≤0.1°/sec	≤0.1°/sec	≤0.1°/sec	≤0.2°/sec
Bias Variation Over Temperature 2σ	≤0.3°/sec	≤0.3°/sec	≤0.3°/sec	≤0.5°/sec
Short Term Bias Stability 2σ (150 sec at constant temp.)	≤0.01°/sec	≤0.01°/sec	≤0.01°/sec	≤0.02°/sec
Long Term Bias Stability (1 Year)	≤0.1°/sec	≤0.1°/sec	≤0.1°/sec	≤0.2°/sec
G-Sensitivity 2σ	≤0.005°/sec/g	≤0.02°/sec/g	≤0.04°/sec/g	≤0.08°/sec/g
Axis Alignment (Typical)	<4mrad	<4mrad	<4mrad	<4mrad
Start-Up Time	<0.05 sec	<0.05 sec	<0.05 sec	<0.05 sec
Bandwidth (-3 dB) -X00/-X10 (min)	50Hz / 100 Hz	50Hz / 100 Hz	50Hz / 100 Hz	50Hz / 100 Hz
Non-Linearity (of Full Range)	≤0.5%	≤0.5%	≤0.5%	≤0.5%
Threshold/Resolution	≤0.005°/sec	≤0.005°/sec	≤0.005°/sec	≤0.01°/sec
Output Noise (DC to 50Hz) (Typical)	0.012°/sec/√Hz	0.014°/sec/√Hz	0.015°/sec/√Hz	0.018°/sec/√Hz
Operating Life (Typical)	10 Years	10 Years	10 Years	10 Years
Environments				
Operating Temperature	-40°C to +85°C			
Storage Temperature	-55°C to +100°C			
Vibration Operating	6 gRMS (20Hz to 2KHz)			
Shock	500g, any axis 3msec 1/2 sine			
Weight	< 30 grams			

Specification subject to change without notice



Gladiator Technologies, Inc.

Copyright © 2009 Gladiator Technologies, Inc.

Sold Through:

LKD Aerospace, Inc. Snoqualmie, WA 98065
 Tel: (425) 396-0829 Fax: (425) 396-1129
 Email: sales@gladiatortechologies.com
 Web: www.gladiatortechologies.com

Rev. Jun0409
 SN: 200