



Dual-Axis MEMS Gyro Evaluation Board

IDG-650EVB

GENERAL DESCRIPTION

The IDG-650EVB is a fully-tested evaluation board, providing for quick evaluation of the IDG-650 X- and Y-axis angular rate gyroscope. The IDG-650 uses InvenSense's proprietary MEMS technology with vertically driven vibrating masses to produce a functionally complete, low-cost motion sensor. All required conditioning electronics are integrated into a single chip measuring 4 x 5 x 1.2mm. It incorporates X- and Y-axis low-pass filters and an EEPROM for on-chip factory calibration of the sensor. Factory trimmed scale factors eliminate the need for external active components and end-user calibration. A built-in Proportional-To-Absolute-Temperature (PTAT) sensor provides temperature compensation information. The product is lead-free and Green Compliant.

APPLICATIONS

- High-Performance Motion Sensing Game Controllers
- Pointing Devices
- Multimedia Remotes
- Computer Mice

PIN DEFINITIONS

Pin	Signal	Purpose
1	OUTX	Output of the X-Axis Gyro
2	HPS	Auto Zero Input
3	OUTY	Output of the Y-Axis Gyro
4	TEMP	Temperature Sensor Output
5	VREF	Reserved for Factory Use
6	GND	Ground
7	GND	Ground
8	+VOUT	VDD for Gyro
9	GND	Ground
10	+VIN	Input Supply Pin for LDO

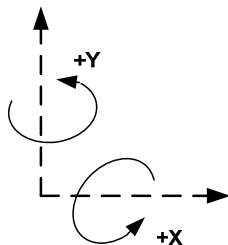
FEATURES

- Fully-tested board for easy evaluation of dual-axis gyro
- Fully integrated X- and Y-axis gyros on a single chip
- 2000°/s full scale range
- 0.5mV/°/s sensitivity
- Integrated amplifiers and low-pass filters
- Auto Zero function for bias calibration
- On-chip temperature sensor
- High vibration rejection over a wide frequency range
- High cross-axis isolation by proprietary MEMS design
- 3V single supply operation
- Hermetically sealed for temp and humidity resistance
- 10,000 g shock tolerant
- RoHS and Green Compliant

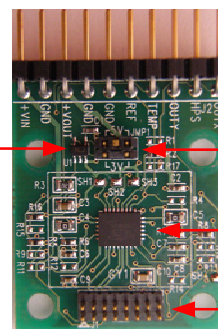
ELECTRICAL SPECIFICATIONS

Parameter	Specifications	Unit
Full-Scale Range	±2000	°/sec
Sensitivity	0.5	mV/°/sec
Cross Axis Sensitivity	± 1	%
Non-linearity	< 1	% of FSR
Gyro Supply Voltage	3.0 ±0.3	V
Gyro Supply Current	7	mA
Operating Temperature	-20 to +85	°C
On time	50	ms
Shock Tolerance	10,000	g

COMPONENT PLACEMENT AND BOARD ORIENTATION



Linear Regulator



User Header

Supply Jumper

X/Y Gyro

Factory Header

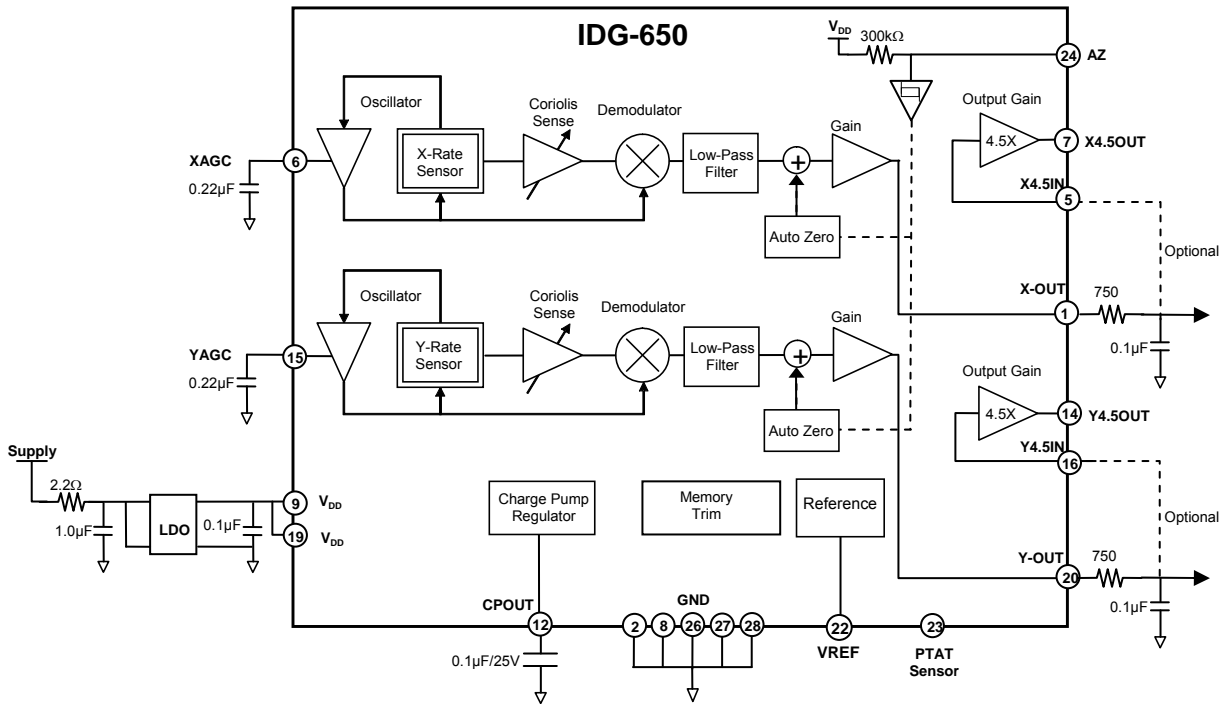
Purpose

This document provides the specification for the IDG-650 Dual-Axis Gyroscope Evaluation Board configured per the table below.

Evaluation Board Configuration

Sensitivity	Internal LPF	External LPF
0.5 mV/deg/sec	140Hz	2kHz

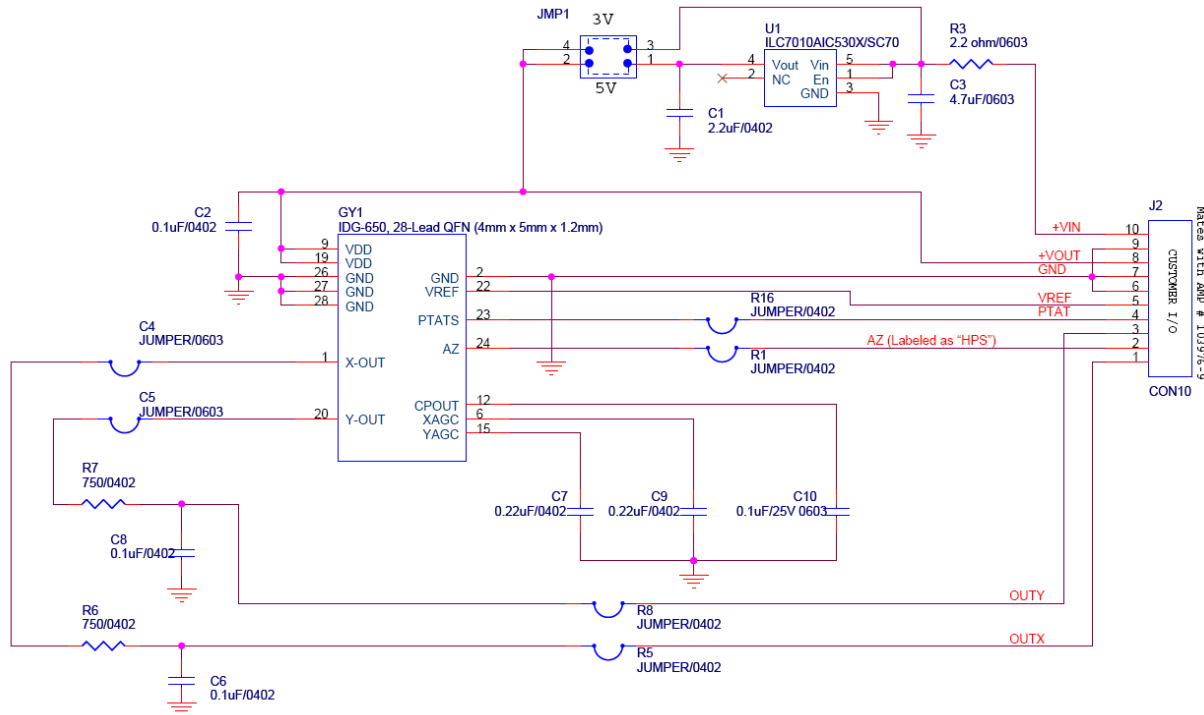
Functional Block Diagram



IDG-650 Evaluation Board Configuration

Schematic

The schematic below specifies the components on the IDG-650 Evaluation Board.



Bill of Materials

Item	Quantity	Reference	Part
1	1	C1	CAP Ceramic 2.2µF 6.3V X5R 0402
2	3	C2, C6, C8	0.1µF/10V X5R 0402
3	1	C3	4.7µF/6.3V X5R 0603
4	2	C4, C5	0Ω/0603 jumper
5	2	C7, C9	0.22µF/6.3V X5R 0402
6	1	C10	0.1µF/25V/X5R 0603
7	1	GY1	IDG-650 28QFN
8	1	JMP1	CON4A/0.050" X 0.1"
8B	1	JMP1	Shunt jumper
9	1	J1	CON16A/0.050 X2 (Reserved for factory use)
10	1	J2	0.1" RA 10 PIN STRIP lead Free
11	1	R3	2.2Ω/MF 5% 0603
12	2	R6, R7	750Ω/MF 1% 0402
13	1	U1	Voltage Regulator 3.0V SC70 (Lead Free)
14	4	R1, R5, R8, R16	0Ω/0402 jumper

Special Instructions

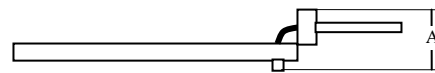
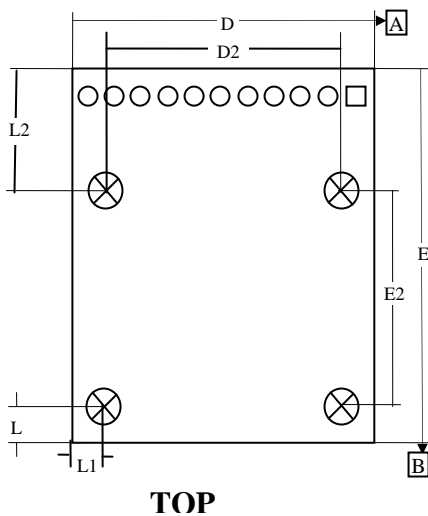
Electrostatic Discharge Sensitivity

The IDG-650 gyro can be permanently damaged by an electrostatic discharge. ESD precautions for handling and storage are recommended.

Jumper Connector

The IDG-650 evaluation board is equipped with a jumper connector to control the voltage supplied to the gyro. When the jumper is located in the “up” or standard position as shown in the picture above, the 5 Volts being supplied to the gyro is regulated to 3 Volts using an on-board regulator. When the jumper is located in the “down” position, the on-board regulator is bypassed and the gyro is being directly supplied with the voltage on Pins 9 and 19 of the IC.

Dimensional Drawing



SIDE

Dimensions (mm)		
A	5.0	±1.0
D	25.7	±0.1
E	31.8	±0.1
L	3.1	±0.1
L1	3.1	±0.1
L2	10.2	±0.1
D2	19.5	±0.1
E2	18.5	±0.1



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