IST8602-L

Analog TMR Sensor

Preliminary Datasheet

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1. General Description

IST8602-L is an analog magnetometer sensor based on the Tunnel MagnetoResistance (TMR) technology. The sensor contains a voltage divider so that can use the sensor as a switch sensor or a position sensor.
IST8602-L is available in LGA4 package.

1.1 Features and advantages

- Base on Tunneling MagnetoResistance (TMR) technology
- Linear output signal from -100 Gauss to +100 Gauss
- High sensitivity as 0.58 mV/V/Gauss
- Temperature range from -40 °C to +125 °C
- Ultralow temperature drift lower than 5 uV/V/°C
- High resistance (Typ. = 6.8 MΩ) for power saving
- LGA4 package

1.2 Applications

- Endpoint detection in cylinders
- Reference monitoring
- Non-contact current sensing
- Magnetic switches

2. Package Dimension, Pin Description and Application Circuit

Aim for various applications, IST8602 is available in LGA4 packages. The ultra-small LGA4 is suitable for wearable devices or periscope lens modules.

2.1 Package Dimension

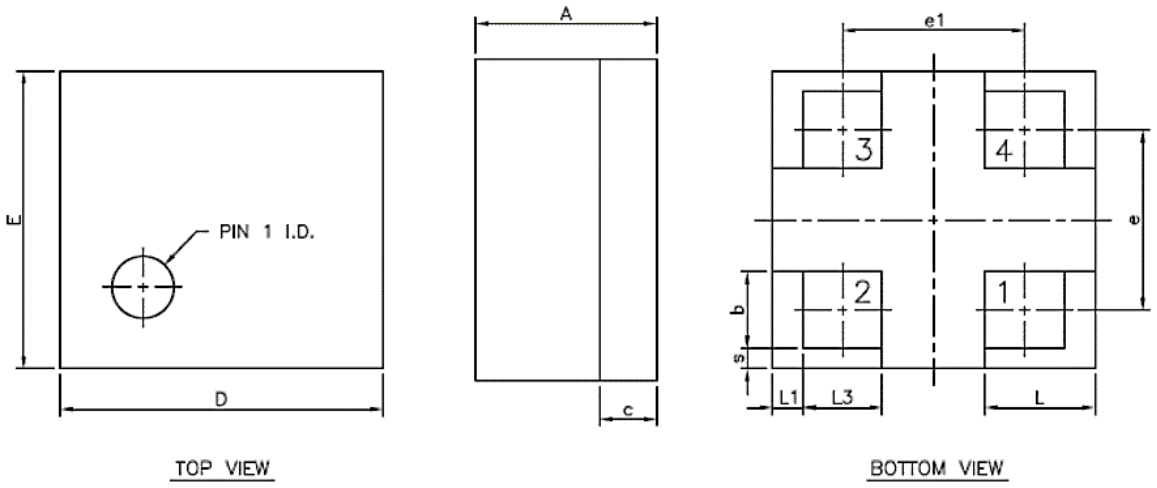

Figure 1. The drawing of LGA4 package

Symbol	Dimensions In Millimeters		
	Min.	Typ.	Max.
A	0.386	0.436	0.486
b	0.135	0.185	0.235
c	---	0.135 REF.	---
D	0.73	0.78	0.83
E	0.67	0.72	0.77
e	---	0.435	---
e1	---	0.44	---
L	0.215	0.265	0.315
L1	0.025	0.075	0.125
L3	0.14	0.19	0.24
s	0.00	0.05	0.10

2.2 Pin Description and Application Circuit

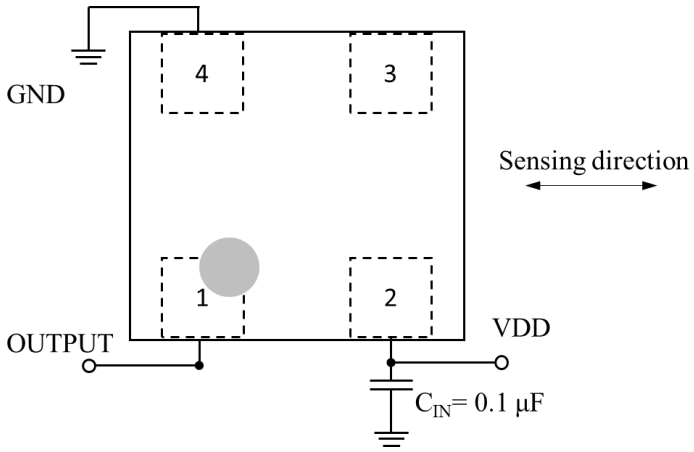

Figure 2. The top-view of pin assignment and application circuit of LGA4 package

Pin	Name	Function
1	OUTPUT	Output
2	VDD	Supply Voltage
3	---	---
4	GND	Ground

3. Specifications

3.1 Magnetic Properties

Symbol	Parameter	Min.	Typ.	Max.	Unit
B_{Sat}	Saturation	-300	~	300	Gauss
B_{Lin}	Linear range[1)]	-100	~	+100	Gauss
DR	Dynamic range		±75		Gauss
B_{Hys}	Hysteresis		1		Gauss

[1)] Stress of magnetic field beyond B_{Lin} may cause a nonlinear even non-unique output signal, and the sensor has to be reset by turning off the magnetic field.

3.2 Electrical Properties

Operating conditions: T=+25℃; VDD=1.0V; 0.1μF ceramic capacitors tied closely to VDD and GND.

Symbol	Parameter	Min.	Typ.	Max.	Unit
VDD	Supply voltage	-5.5	-	+5.5	V
V_{off}	Bridge offset	-15	-	15	mV/V
R	Sensor resistance		6.8		MΩ
V_{Hys}	Hysteresis		0.58		mV/V
S_{Lin}	Sensitivity		0.58		mV/V/ Gauss
ε_{Lin}	Linearity error		2.3		%FS
TC_R	R temp. coefficient		-2		μV/V/℃
TC_{Sen}	S_{Lin} temp. coefficient		-0.19		%/℃

3.3 Absolute Maximum Ratings

Symbol	Parameter	Min.	Max.	Unit
VDD_{max}	Max supply voltage	-7	7	V
T_{amb}	Ambient temperature	-40	125	℃
ESD_{HBM}	ESD robustness according to HBM	-	250	V

3.4 Typical performance graphs

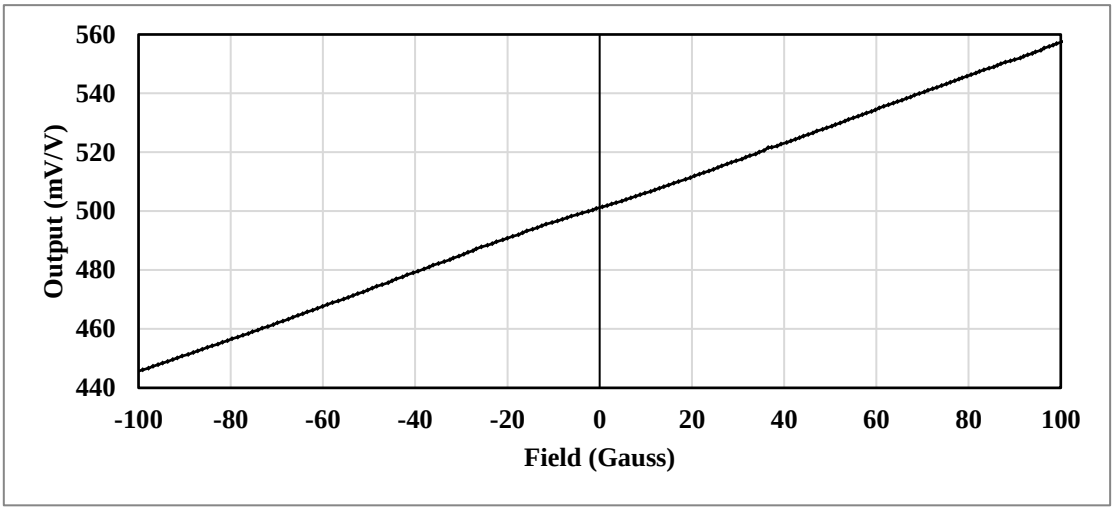

Figure 3. The general output curve of IST8602

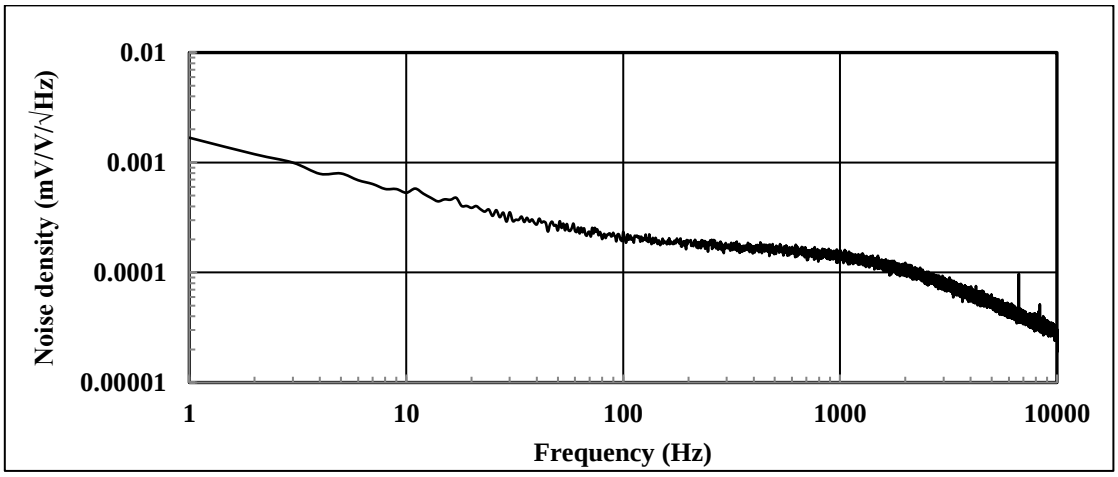

Figure 4. The noise spectrum of IST8602

4. Ordering Information

Order Number	Package Type	Packaging	Temperature Range
IST8602	LGA4	Tape and Reel: 5k pieces per reel	-40 °C to +125 °C

For more information on iSentek's Magnetic Sensors, please contact us by phone at +86-132-6706-8686 (China), +86-755-2991-0201 (China) or +886-2-2698-3306 ext:110 (Taiwan); via e-mail: sales@isentek.com or visit us online at www.isentek.com.

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US Patent 9,297,863, Taiwanese Patents I437249, I420128 and I463160 apply to our magnetic sensor technology described.