

# **IST8602-L**

## **Analog TMR Sensor**

# **Preliminary**

# **Datasheet**

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## Table of Contents

<b>1. GENERAL DESCRIPTION.....</b>	<b>3</b>
1.1. Features and Advantages .....	3
1.2. Applications .....	3
<b>2. PACKAGE DIMENSION, PIN DESCRIPTION AND APPLICATION CIRCUIT. 4</b>	<b>4</b>
2.1. Package Dimension .....	4
2.2. Pin Description and Application Circuit.....	5
<b>3. SPECIFICATIONS .....</b>	<b>6</b>
3.1. Magnetic Properties .....	6
3.2. Electrical Properties .....	6
3.3. Absolute Maximum Ratings .....	6
3.4. Typical performance graphs.....	7
<b>4. ORDERING INFORMATION .....</b>	<b>8</b>
<b>5. LEGAL DISCLAIMER .....</b>	<b>8</b>
5.1. Warranty and Liability Disclaimer.....	8
5.2. Application Disclaimer .....	8
5.3. Disclaimer Regarding Changes .....	8

## 1. General Description

IST8602-L is an analog magnetometer sensor based on Tunnel Magnetoresistance (TMR) technology. The sensor contains a voltage divider so that it can be utilized as a switch sensor or a position sensor.

IST8602-L is available in LGA4 package.

### 1.1. Features and Advantages

- Based 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  $\mu\text{V}/\text{V}/^\circ\text{C}$
- High resistance (Typ. = 6.8 M $\Omega$ ) 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

The IST8602-L is available in LGA4 packaging for a variety of applications. The ultra-compact LGA4 is suitable for wearable devices and periscope lens modules.

### 2.1. Package Dimension

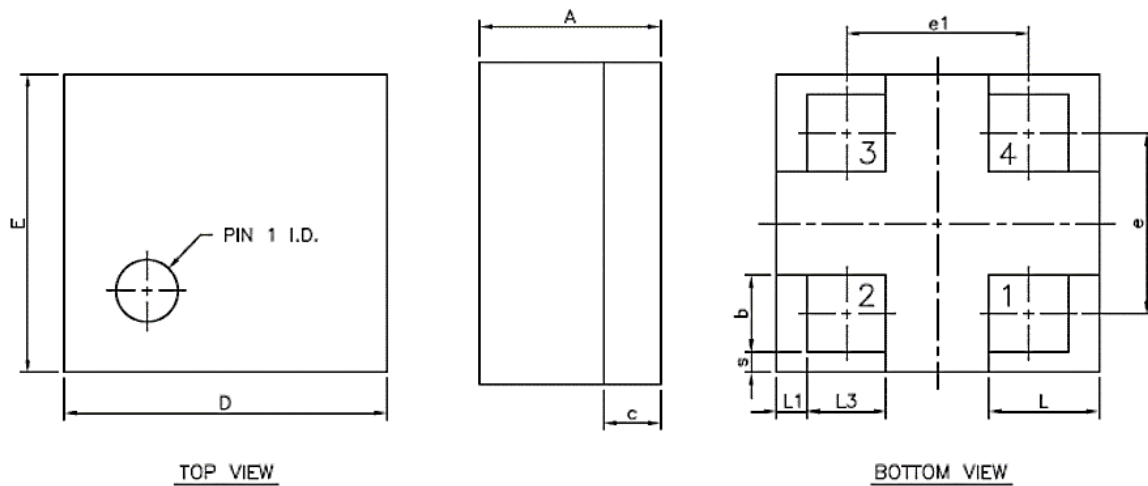


Figure 1. The drawing of LGA4 package

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

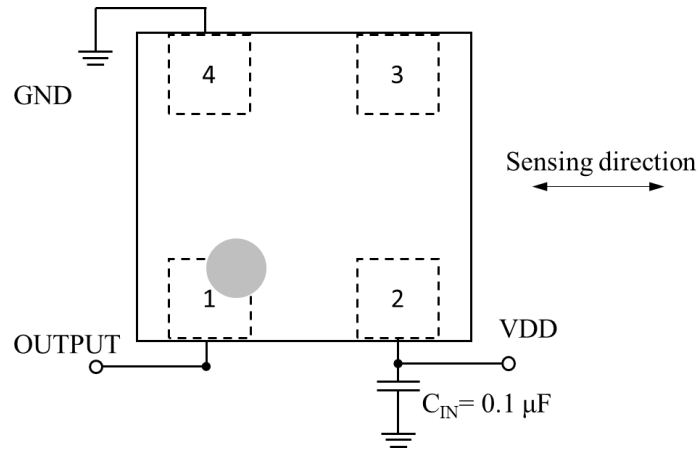


Figure 2. The top-view of pin assignment and application circuit of LGA4 package

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 <sub>Sat</sub>	Saturation	-300	~	300	Gauss
B <sub>Lin</sub>	Linear range <sup>1)</sup>	-100	~	+100	Gauss
DR	Dynamic range		±75		Gauss
B <sub>Hys</sub>	Hysteresis		1		Gauss

<sup>1)</sup> Stress of the magnetic field beyond B<sub>Lin</sub> may cause a nonlinear or 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 °C; VDD = 1.0 V; 0.1 μF ceramic capacitors tied closely to VDD and GND.

Symbol	Parameter	Min.	Typ.	Max.	Unit
VDD	Supply voltage	-5.5	-	+5.5	V
V <sub>off</sub>	Bridge offset	-15	-	15	mV/V
R	Sensor resistance		6.8		MΩ
V <sub>Hys</sub>	Hysteresis		0.58		mV/V
S <sub>Lin</sub>	Sensitivity		0.58		mV/V/ Gauss
ε <sub>Lin</sub>	Linearity error		2.3		%FS
TC <sub>R</sub>	R temp. coefficient		-2		μV/V/°C
TC <sub>Sen</sub>	S <sub>Lin</sub> temp. coefficient		-0.19		%/°C

#### 3.3. Absolute Maximum Ratings

Symbol	Parameter	Min.	Max.	Unit
VDD <sub>max</sub>	Max supply voltage	-7	7	V
T <sub>amb</sub>	Ambient temperature	-40	125	°C
ESD <sub>HBM</sub>	ESD robustness according to HBM	-	250	V

### 3.4. Typical performance graphs

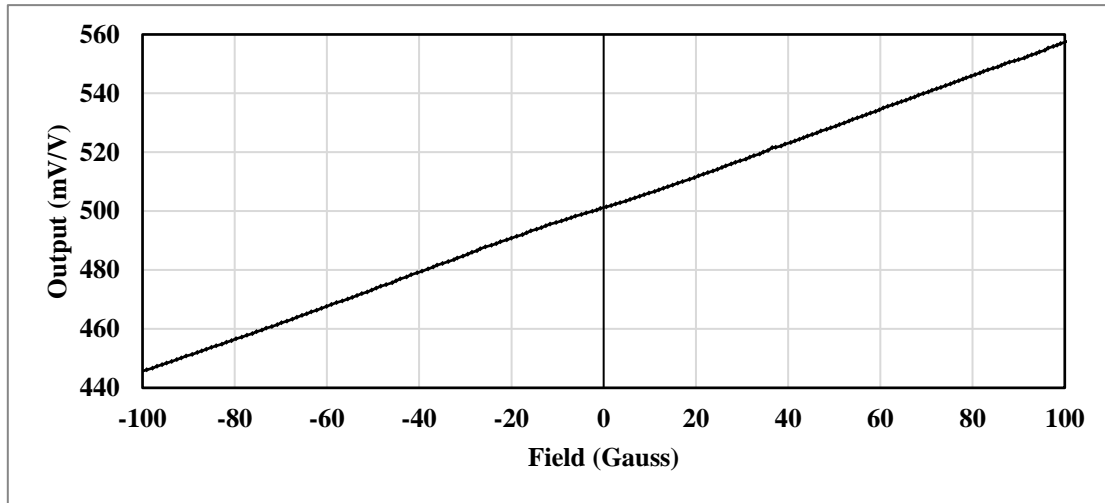


Figure 3. The general output curve of IST8602-L

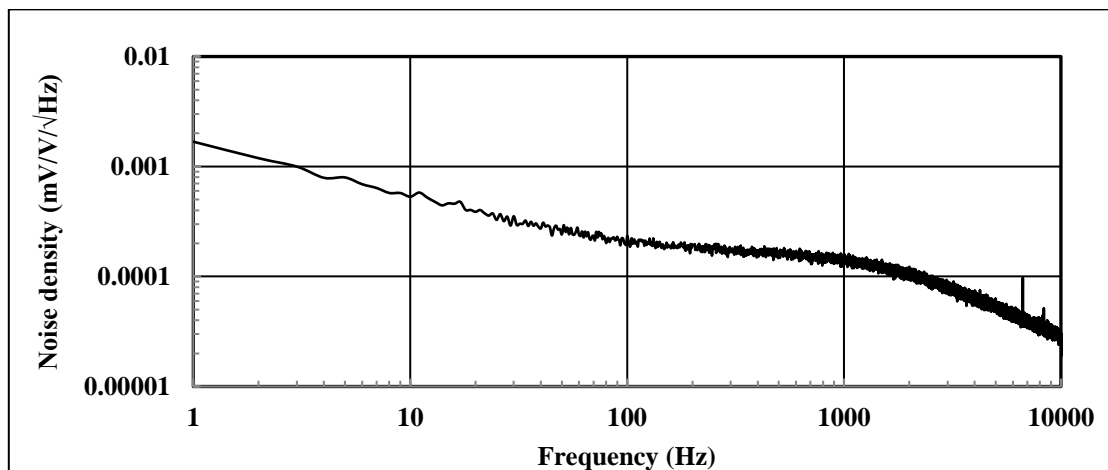


Figure 4. The noise spectrum of IST8602-L

## 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 send an email to [sales@isentek.com](mailto:sales@isentek.com) or visit our website at [www.isentek.com](http://www.isentek.com).

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

## 5. Legal Disclaimer

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