

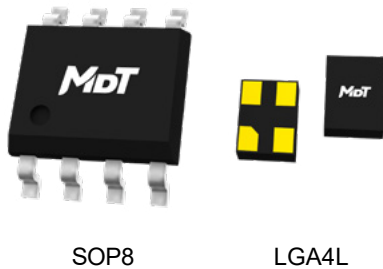
# TMR2185

## Large Dynamic Range TMR Linear Magnetic Sensor

### Description

TMR2185 TMR linear sensor adopts a unique push-pull Wheatstone full bridge structure utilizing four TMR sensor elements. This Wheatstone full bridge provides differential voltage output with excellent temperature stability when the applied magnetic field changes parallel to the sensor's sensitive direction.

The TMR2185 linear magnetic sensor is available in SOP8 and LGA4L (2 mm × 1.5 mm × 0.73 mm) package with P/N of TMR2185P and TMR2185G.



SOP8

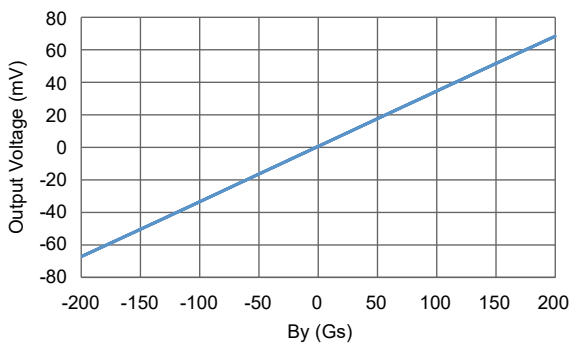
LGA4L

### Features and Benefits

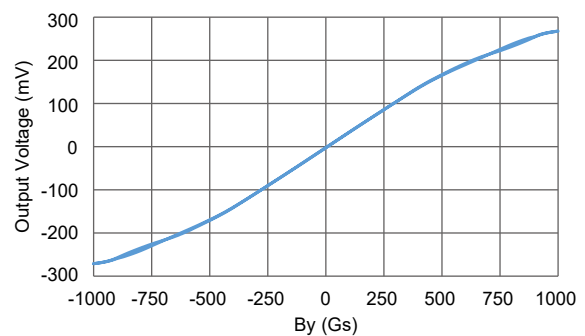
- Tunneling magnetoresistance (TMR) technology
- High sensitivity
- Large dynamic range
- Low power consumption
- Excellent temperature stability
- RoHS & REACH compliant

### Applications

- Magnetometer
- Current sensor
- Position sensor
- Rotation sensor



TMR2185 ±200 Gs Output Curve



TMR2185 ±1000 Gs Output Curve

## Selection Guide

Part Number	Supply Voltage	Saturation Field	Sensitivity	Package	Packing Form
TMR2185P	0.5 V to 7 V	±1000 Gs	0.34 mV/V/Gs	SOP8	Tape & Reel
TMR2185G	0.5 V to 7 V	±1000 Gs	0.34 mV/V/Gs	LGA4L	Tape & Reel

## Catalogue

1. Operating Principle .....	03
2. Pin Configuration .....	03
3. Absolute Maximum Ratings .....	04
4. Electrical Specifications .....	04
5. Dimensions .....	05

## 1. Operating Principle

The TMR2185 sensing axis is parallel to the package top-marking surface; the sensing axis is defined from the N pole toward the S pole, as indicated by the arrow in the figure below.

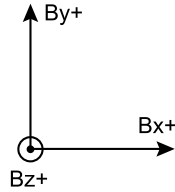


Figure 1-1. Definition of axis

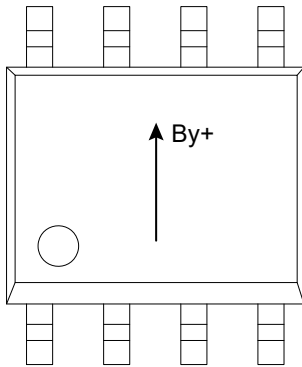


Figure 1-2. Axial diagram (SOP8 top view)

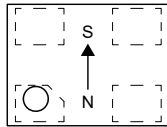


Figure 1-3. Axial diagram (LGA4L top view)

The TMR2185 output voltage varies linearly with the magnetic field along the sensing axis.

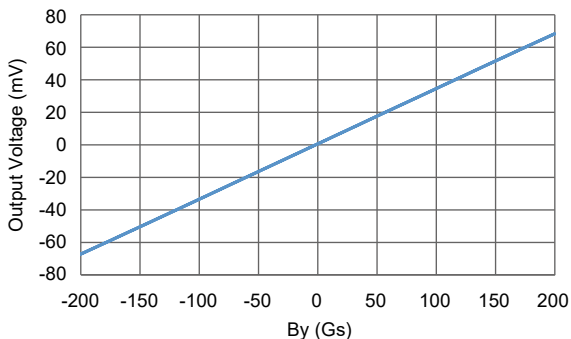


Figure 2-1. TMR2185 output curve

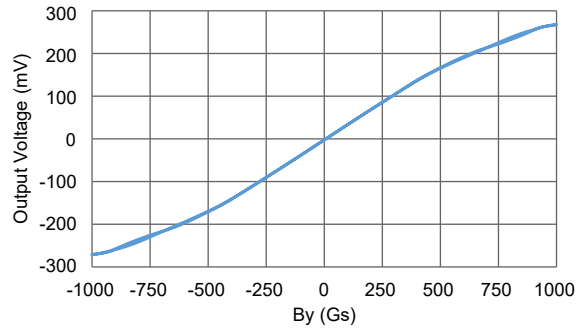


Figure 2-2. TMR2185 output curve

## 2. Pin Configuration

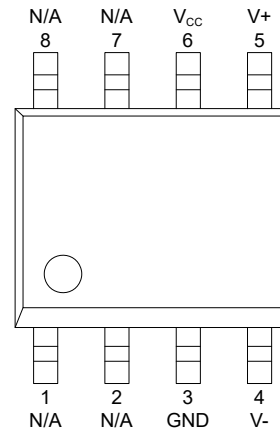


Figure 3-1. Pin Configuration (SOP8)

Pin Number	Name	Function
3	GND	Ground
4	V-	Analog differential output 2
5	V+	Analog differential output 1
6	V <sub>CC</sub>	Supply voltage
1, 2, 7, 8	N/A	Not connected

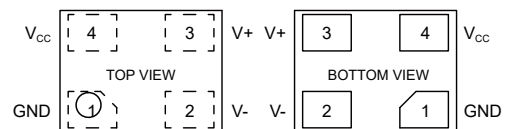


Figure 3-2. Pin Configuration (LGA4L)

Pin Number	Name	Function
1	GND	Ground
2	V-	Analog differential output 2
3	V+	Analog differential output 1
4	V <sub>CC</sub>	Supply voltage

### 3. Absolute Maximum Ratings

Parameters	Symbol	Min.	Max.	Unit
Supply voltage	$V_{CC}$	-	7	V
Reverse supply voltage	$V_{RCC}$	-	7	V
External magnetic field	B	-	4000	Gs
ESD performance (HBM)	$V_{ESD}$	-	4000	V
Operating ambient temperature	$T_A$	-40	125	°C
Storage ambient temperature	$T_{STG}$	-50	150	°C

### 4. Electrical Specifications

$V_{CC} = 1.0\text{ V}$ ,  $T_A = 25\text{ °C}$ , differential output unless otherwise specified

Parameter	Symbol	Condition	Min.	Typ.	Max.	Unit
Supply Voltage	$V_{CC}$	Operating	0.5	-	7	V
Supply Current <sup>1)</sup>	$I_{CC}$	Open output, $V_{CC} = 1.0\text{ V}$	-	250	-	$\mu\text{A}$
Resistance <sup>1)</sup>	$R_B$	-	-	43	-	$\text{k}\Omega$
Sensitivity	SEN	B in $\pm 200\text{ Gs}$	-	0.34	-	$\text{mV/V/Gs}$
Saturation Magnetic Field	$B_{SAT}$	-	-	$\pm 1000$	-	Gs
Nonlinearity	NONL	B in $\pm 200\text{ Gs}$	-	0.2	-	%FS
Offset	$V_{OFFSET}$	-	-10	-	10	$\text{mV/V}$
Hysteresis	HYS	B in $\pm 200\text{ Gs}$	-	0.3	-	Gs
Resistance Temperature Coefficient	$TCR_B$	B = 0 Gs	-	-660	-	$\text{PPM/°C}$
Sensitivity Temperature Coefficient	TCS	-	-	-770	-	$\text{PPM/°C}$

1)  $I_{CC} = V_{CC} / R_B$ , and supply current changes linearly with supply voltage.

## 5. Dimensions

### SOP8 Package

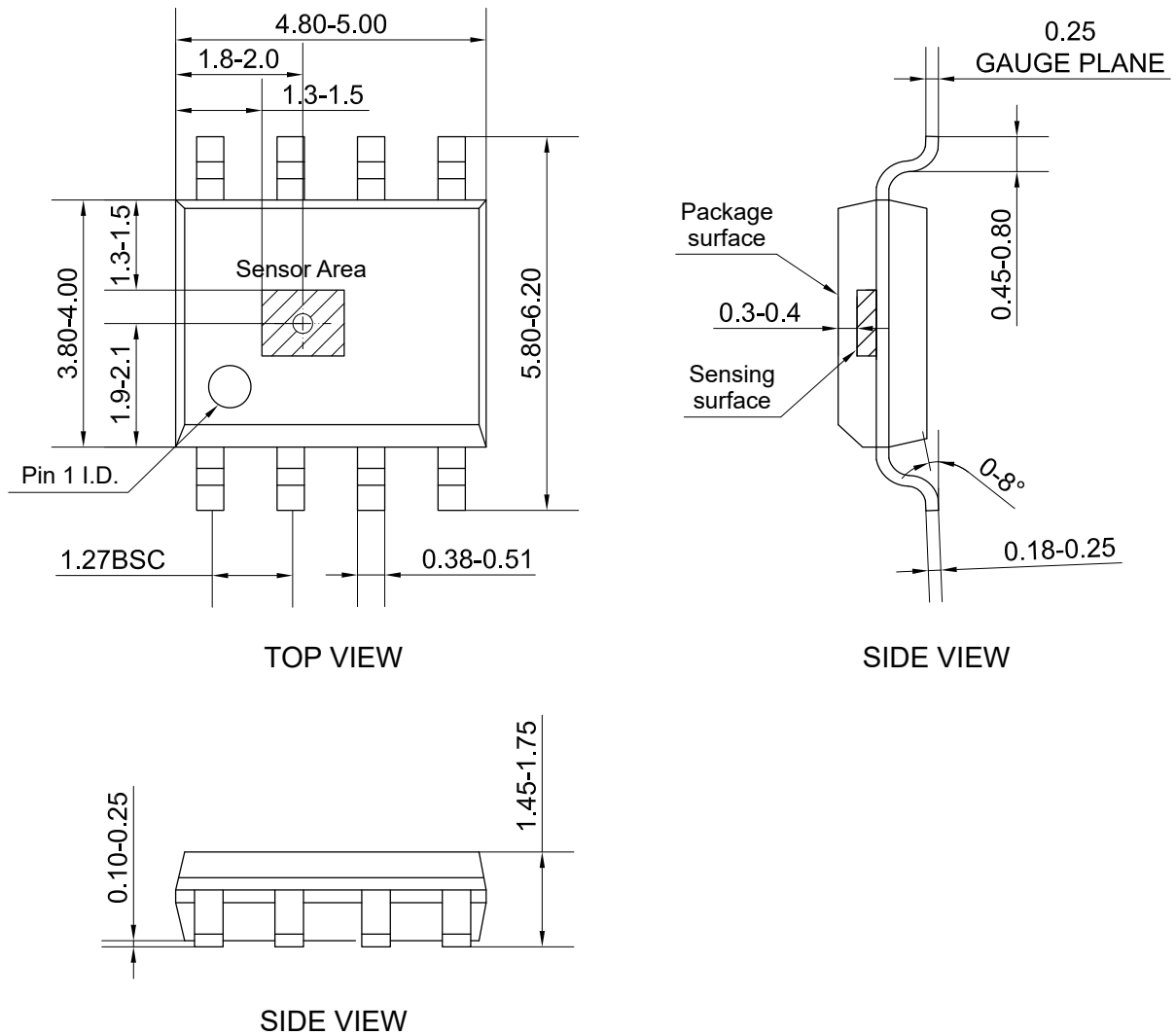


Figure 4. Package outline of SOP8 (unit: mm)

LGA4L Package

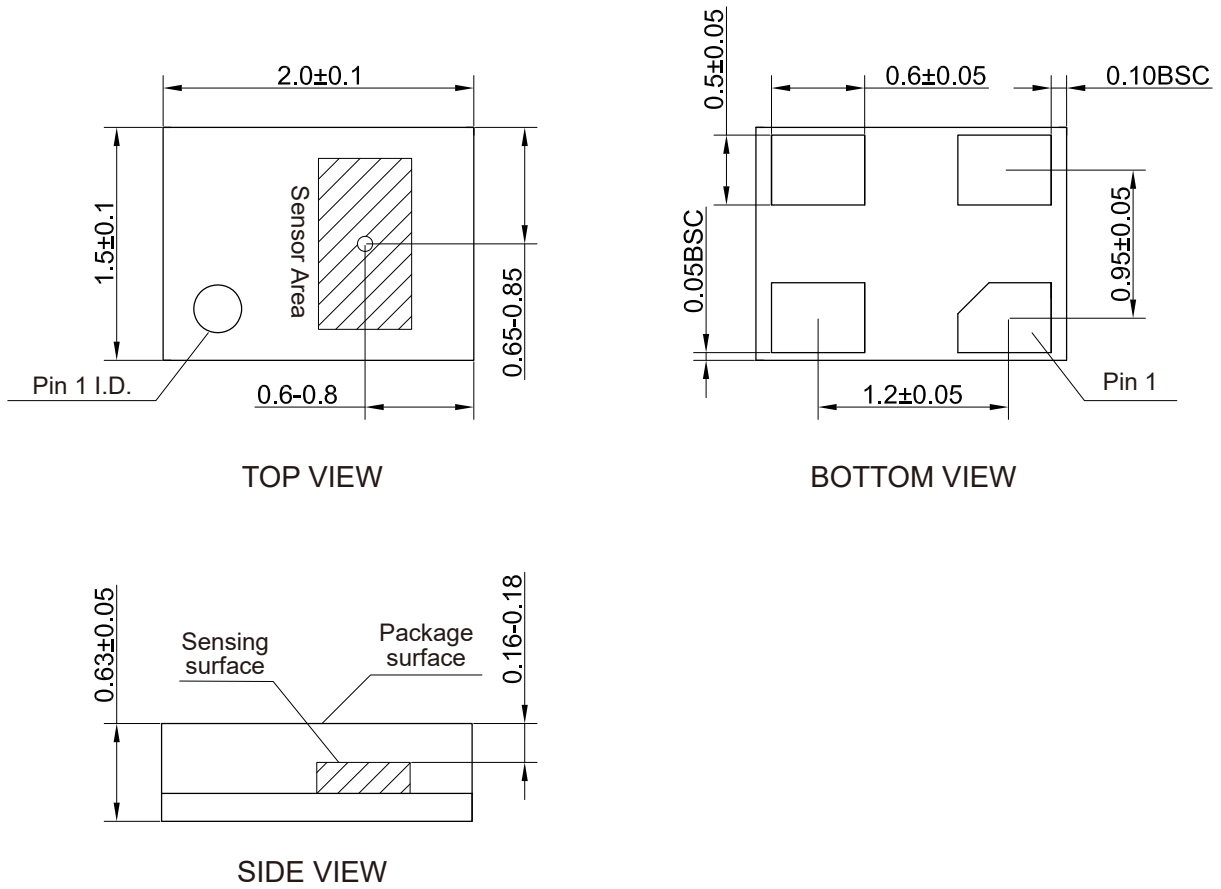


Figure 5. Package outline of LGA4L (unit: mm)

Copyright © 2026 by MultiDimension Technology Co., Ltd.

Information furnished herein by MultiDimension Technology Co., Ltd. (hereinafter MDT) is believed to be accurate and reliable. However, MDT disclaims any and all warranties and liabilities of any kind, with respect to any examples, hints or any performance or use of technical data as described herein and/or any information regarding the application of the product, including without limitation warranties of non-infringement of intellectual property rights of any third party. This document neither conveys nor implies any license under patent or other industrial or intellectual property rights. Customer or any third-party must further determine the suitability of the MDT products for its applications to avoid the applications default of customer or third-party. MDT accept no liability in this respect.

MDT does not assume any liabilities of any indirect, incidental, punitive, special or consequential damages (including without limitation of lost profits, lost savings, business interruption, costs related to the removal or replacement of any products or rework charges) whether or not such damages are based on tort (including negligence), warranty, breach of contract or any other legal theory. Notwithstanding any damages that customer might incur for any reason whatsoever, MDT's aggregate and cumulative liability towards customer for the products described herein shall be limited in accordance with the terms and conditions of commercial sale of MDT.

Absolute maximum ratings are the extreme limits the device will withstand without damage to the MDT product. However, the electrical and mechanical characteristics are not guaranteed as the maximum limits (above recommended operating conditions) are approached. MDT disclaims any and all warranties and liabilities of the MDT product will operate at absolute maximum ratings.

Specifications may change without notice.

Please download latest document from our official website [www.dowaytech.com/en](http://www.dowaytech.com/en).

## Recycling

The product(s) in this document should be disposed of at the end of the product(s) life using a qualified waste management company for recycling in accordance with local regulations.



No.2 Guangdong Road, Zhangjiagang Free Trade Zone, Jiangsu, China

Web: [www.dowaytech.com/en](http://www.dowaytech.com/en) E-mail: [info@dowaytech.com](mailto:info@dowaytech.com)

