

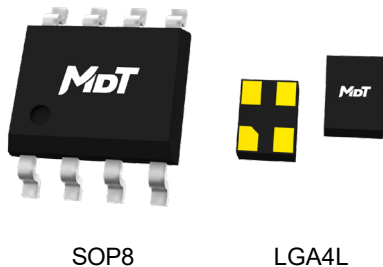
TMR2185

Large Dynamic Range TMR Linear Magnetic Sensor

Description

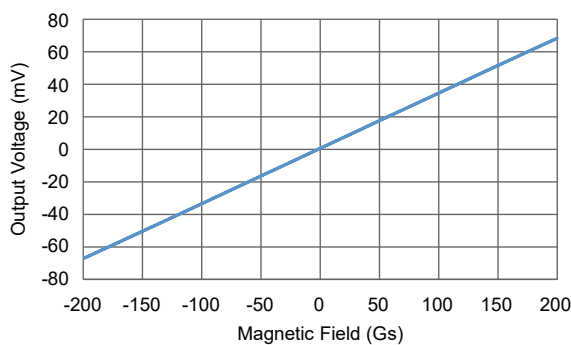
TMR2185 TMR linear sensor adopts a unique push-pull Wheatstone full bridge structure utilizing four TMR sensor elements. This Wheatstone full bridge provides differential voltage output with excellent temperature stability when the applied magnetic field changes parallel to the sensor's sensitive direction.

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.

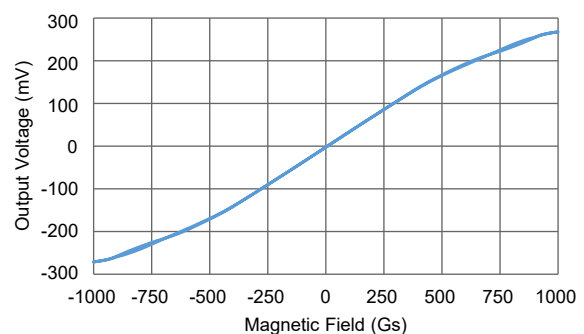


SOP8

LGA4L



TMR2185 ±200 Gs Output Curve



TMR2185 ±1000 Gs Output Curve

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

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

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1. Pin Configuration

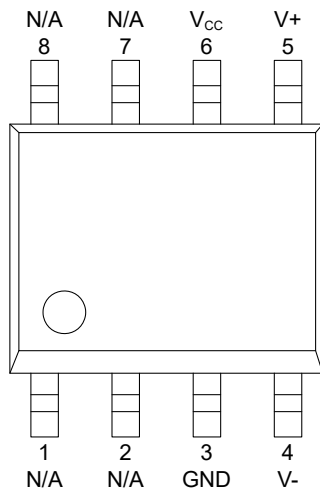


Figure 1-1. Pin Configuration (SOP8)

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

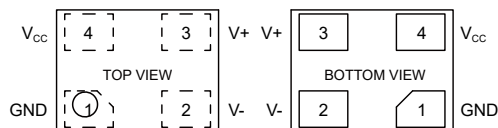


Figure 1-2. Pin Configuration (LGA4L)

Pin Number	Name	Function
1	GND	Ground
2	V-	Analog differential output 2
3	V+	Analog differential output 1
4	V _{CC}	Supply voltage

2. Sensing Direction

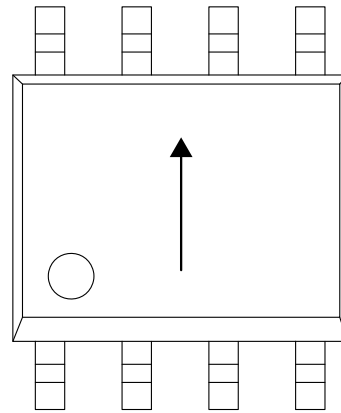


Figure 2-1. Sensing Direction (SOP8)

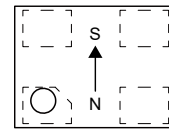


Figure 2-2. Sensing Direction (LGA4L)

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 ¹⁾	I_{CC}	Open output, $V_{CC} = 1.0 \text{ V}$	-	250	-	μA
Resistance ¹⁾	R_B	-	-	43	-	kΩ
Sensitivity	SEN	B in $\pm 200 \text{ Gs}$	-	0.34	-	mV/V/Gs
Saturation Magnetic Field	B_{SAT}	-	-	± 1000	-	Gs
Nonlinearity	NONL	B in $\pm 200 \text{ Gs}$	-	0.2	-	%FS
Offset	V_{OFFSET}	-	-10	-	10	mV/V
Hysteresis	HYS	B in $\pm 200 \text{ Gs}$	-	0.3	-	Gs
Resistance Temperature Coefficient	TCR_B	B = 0 Gs	-	-660	-	PPM/°C
Sensitivity Temperature Coefficient	TCS	-	-	-770	-	PPM/°C

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

5. Dimensions

SOP8 Package

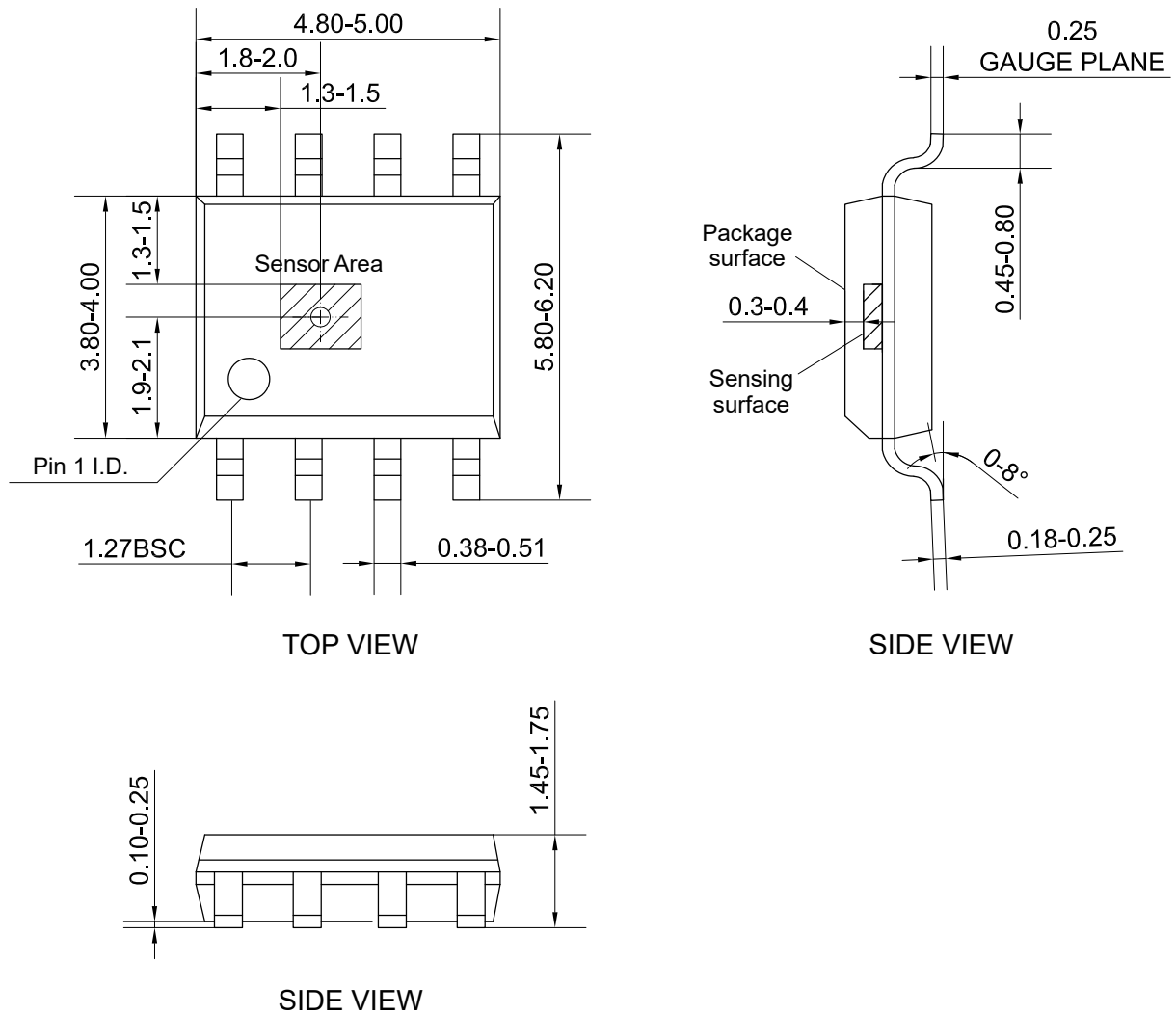


Figure 3. Package outline of SOP8 (unit: mm)

LGA4L Package

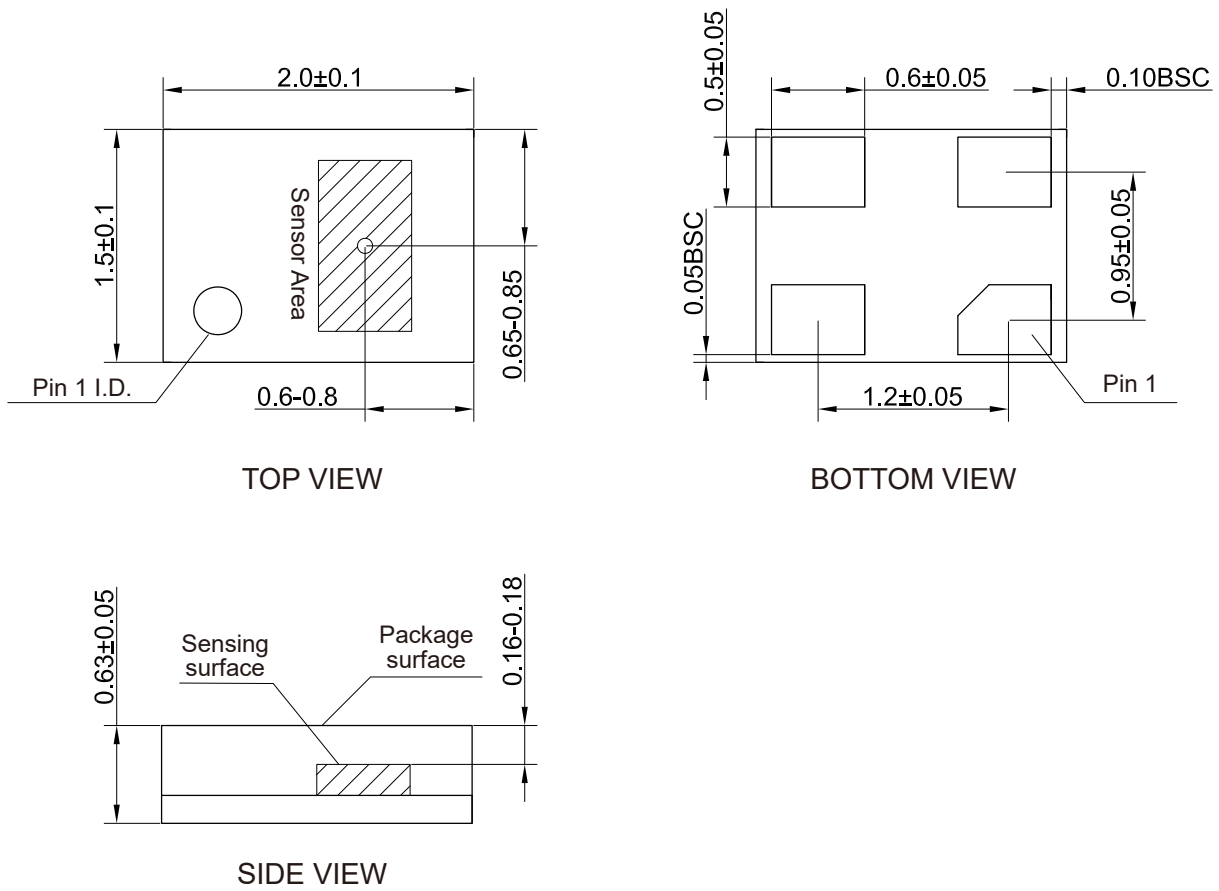


Figure 4. Package outline of LGA4L (unit: mm)

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