

# TMR2083

## TMR Linear Magnetic Sensor

### Description

TMR2083 TMR linear sensor adopts a unique push-pull Wheatstone full bridge structure utilizing four unshielded high sensitivity TMR sensing 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 TMR2083 is available in SOT23-5 package with P/N of TMR2083S.



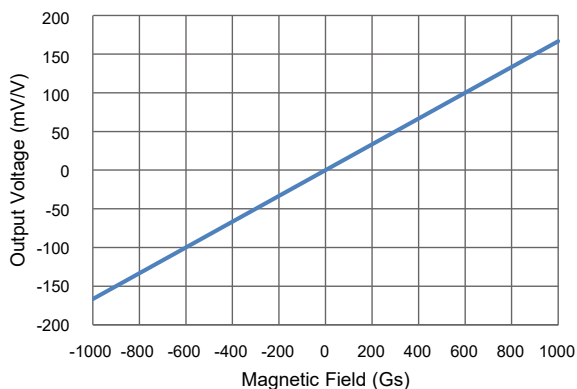
SOT23-5

### Features and Benefits

- Tunneling magnetoresistance (TMR) technology
- Large dynamic range:  $\pm 500$  Gs
- Non-linearity: 0.5%
- Excellent temperature stability
- RoHS and REACH compliant

### Applications

- Magnetometer
- Current sensor
- Position sensor
- Rotation sensor



TMR2083  $\pm 1000$  Gs Output Curve

## Selection Guide

Part Number	Supply Voltage	Linear Dynamic Range	Sensitivity	Package	Packing Form
TMR2083S	0.5 V to 7 V	±500 Gs	0.18 mV/V/Gs	SOT23-5	Tape & Reel

## Catalogue

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## 1. Pin Configuration

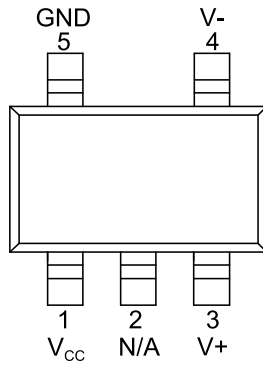


Figure 1. Pin Configuration (SOT23-5)

## 2. Sensing Direction

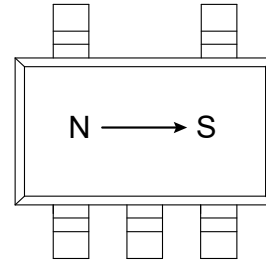


Figure 2. Sensing Direction (SOT23-5)

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

### 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, $V_{CC} = 1.0\text{ V}$	-	100	-	$\mu\text{A}$
Resistance <sup>1)</sup>	$R_B$	-	-	10	-	k $\Omega$
Sensitivity	SEN	B in $\pm 500\text{ Gs}$	-	0.18	-	mV/V/Gs
Saturation Magnetic Field	$B_{SAT}$	-	-	$\pm 1500$	-	Gs
Nonlinearity	NONL	B in $\pm 500\text{ Gs}$	-	0.5	-	%FS
Offset Voltage	$V_{OFFSET}$	-	-10	-	10	mV/V
Hysteresis	HYS	B in $\pm 500\text{ Gs}$	-	1.5	-	Gs
Temperature Coefficient of Resistance	$TCR_B$	B = 0 Gs	-	-450	-	PPM/°C
Temperature Coefficient of Sensitivity	TCS	-	-	-1000	-	PPM/°C
Temperature Coefficient of Offset Voltage	TCO	B = 0 Gs	-	0.002	-	mV/V/°C

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

## 5. Dimensions

### SOT23-5 Package

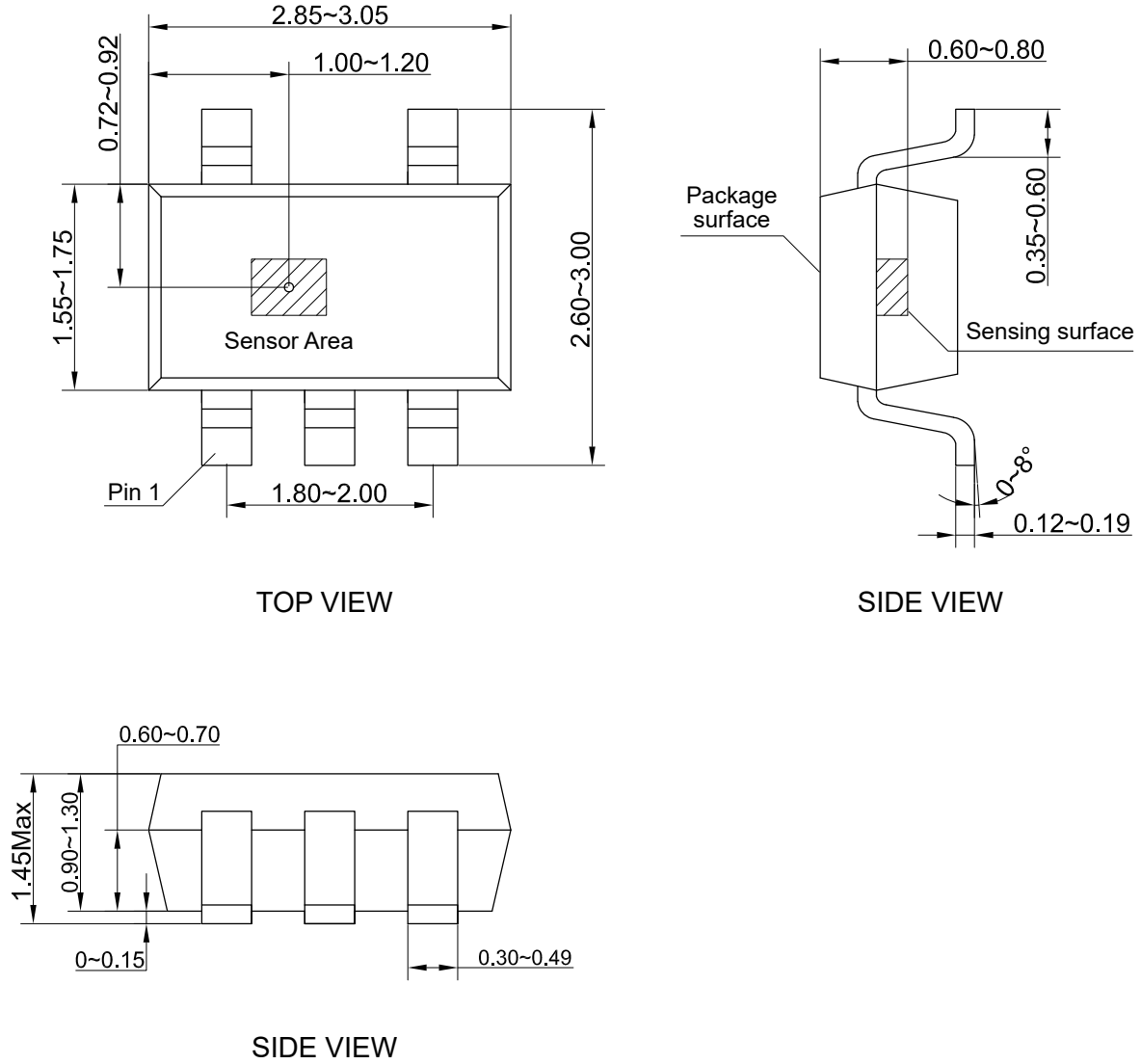


Figure 3. Package outline of SOT23-5 (unit: mm)

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