

# 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.



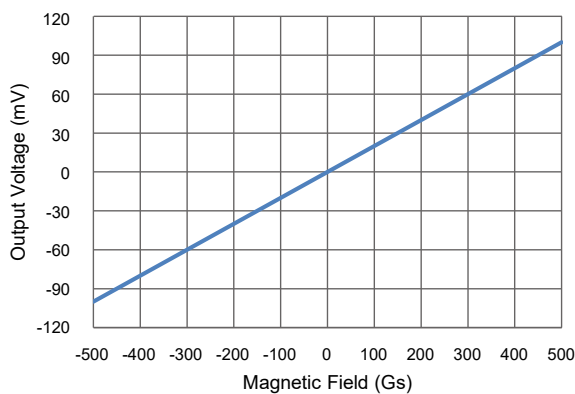
SOT23-5

### Features and Benefits

- Tunneling magnetoresistance (TMR) technology
- Large dynamic range:  $\pm 500$  Gs
- Non-linearity: 0.2%
- Excellent temperature stability
- RoHS and REACH compliant

### Applications

- Magnetometer
- Current sensor
- Position sensor
- Rotation sensor



TMR2083  $\pm 500$  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	0.2 mV/V/Gs	SOT23-5	Tape & Reel

## Catalogue

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

## 1. Pin Configuration

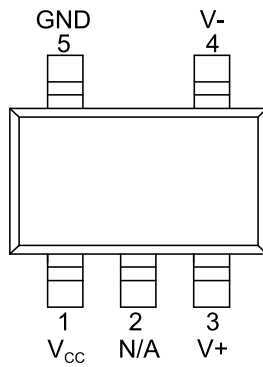


Figure 1. Pin Configuration (SOT23-5)

## 2. Sensing Direction

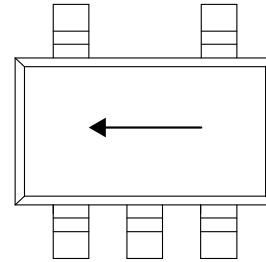


Figure 2. Sensing Direction (SOT23-5)

Pin Number	Name	Function
1	$V_{CC}$	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	-	μA
Resistance <sup>1)</sup>	$R_B$	-	-	10	-	kΩ
Sensitivity	SEN	B in ±500 Gs	-	0.2	-	mV/V/Gs
Saturation Magnetic Field	$B_{SAT}$	-	-	±1000	-	Gs
Nonlinearity	NONL	B in ±500 Gs	-	0.2	-	%FS
Offset Voltage	$V_{OFFSET}$	-	-10	-	10	mV/V
Hysteresis	HYS	B in ±500 Gs	-	2	-	Gs
Temperature Coefficient of Resistance	$TCR_B$	B = 0 Gs	-	-300	-	PPM/°C
Temperature Coefficient of Sensitivity	TCS	-	-	-1000	-	PPM/°C
Temperature Coefficient of Offset Voltage	TCO	B = 0 Gs	-	0.008	-	mV/V/°C

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

## 5. Dimensions

### SOT23-5 Package

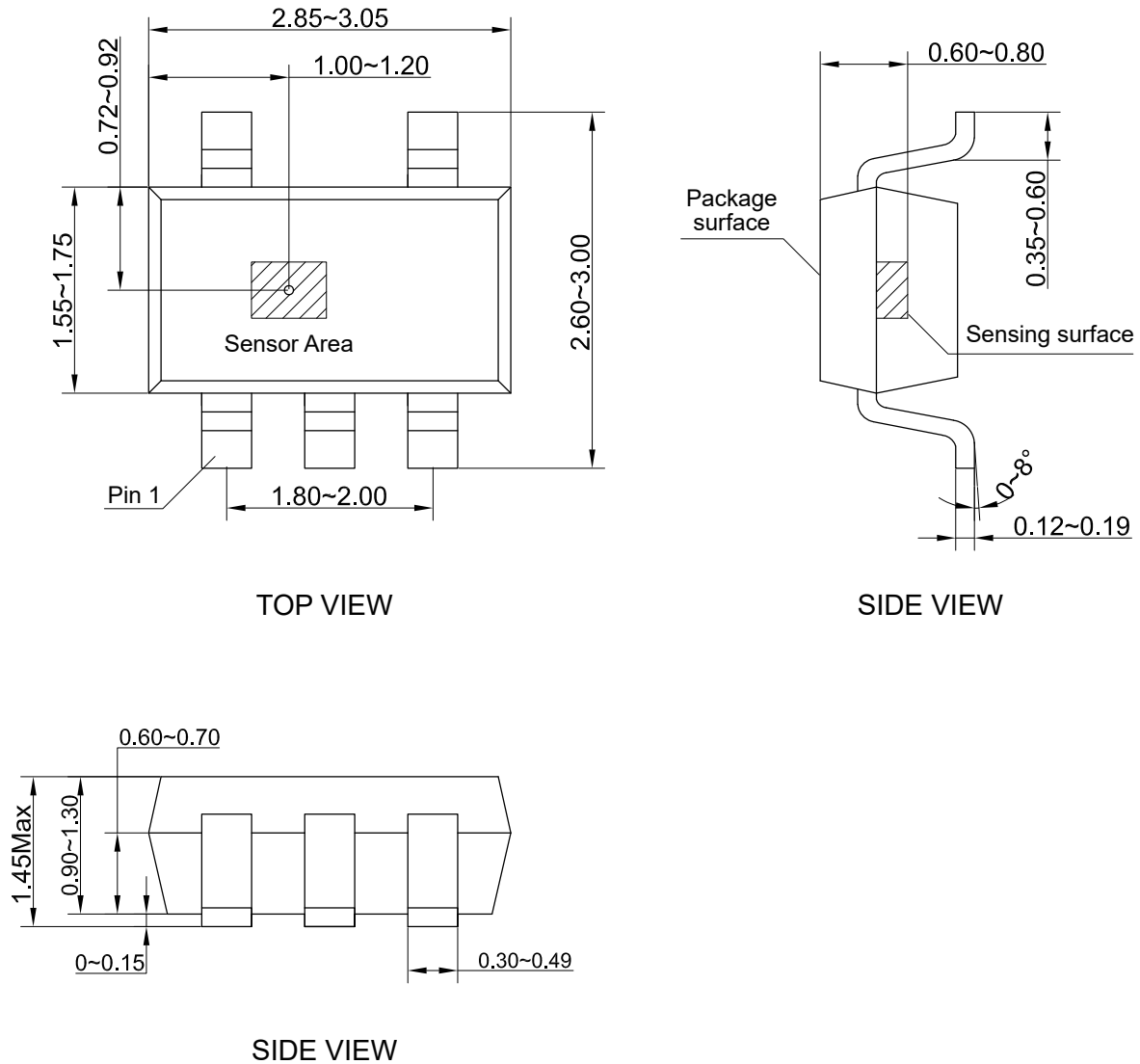


Figure 3. Package outline of SOT23-5 (unit: mm)

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 need to be handed over to a qualified solid waste management services company for recycling in accordance with relevant regulations on waste classification after the end of the product(s) life.

