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.

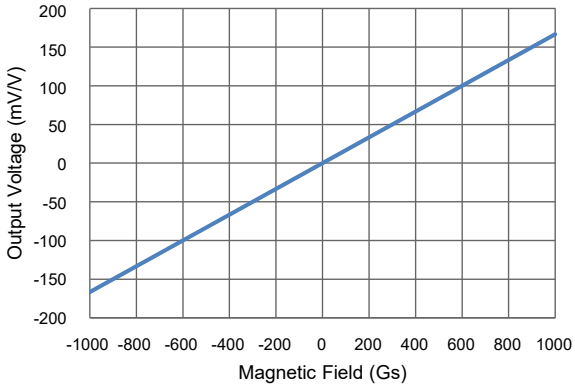
SOT23-5

Features and Benefits

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

Applications

- Magnetometer
- Current sensor
- Position sensor
- Rotation sensor



TMR2083 ±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

1. Pin Configuration

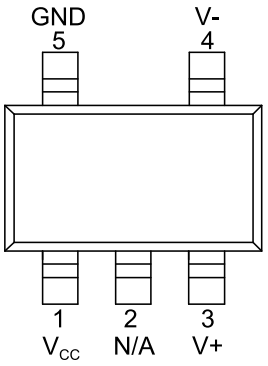


Figure 1. Pin Configuration (SOT23-5)

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

2. Sensing Direction

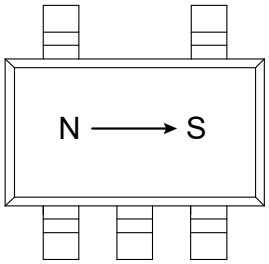


Figure 2. Sensing Direction (SOT23-5)

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 V, T_A = 25 °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 V	-	100	-	μA
Resistance [1)]	R_B	-	-	10	-	kΩ
Sensitivity	SEN	B in ±500 Gs	-	0.18	-	mV/V/Gs
Saturation Magnetic Field	B_{SAT}	-	-	±1500	-	Gs
Nonlinearity	NONL	B in ±500 Gs	-	0.5	-	%FS
Offset Voltage	V_{OFFSET}	-	-10	-	10	mV/V
Hysteresis	HYS	B in ±500 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

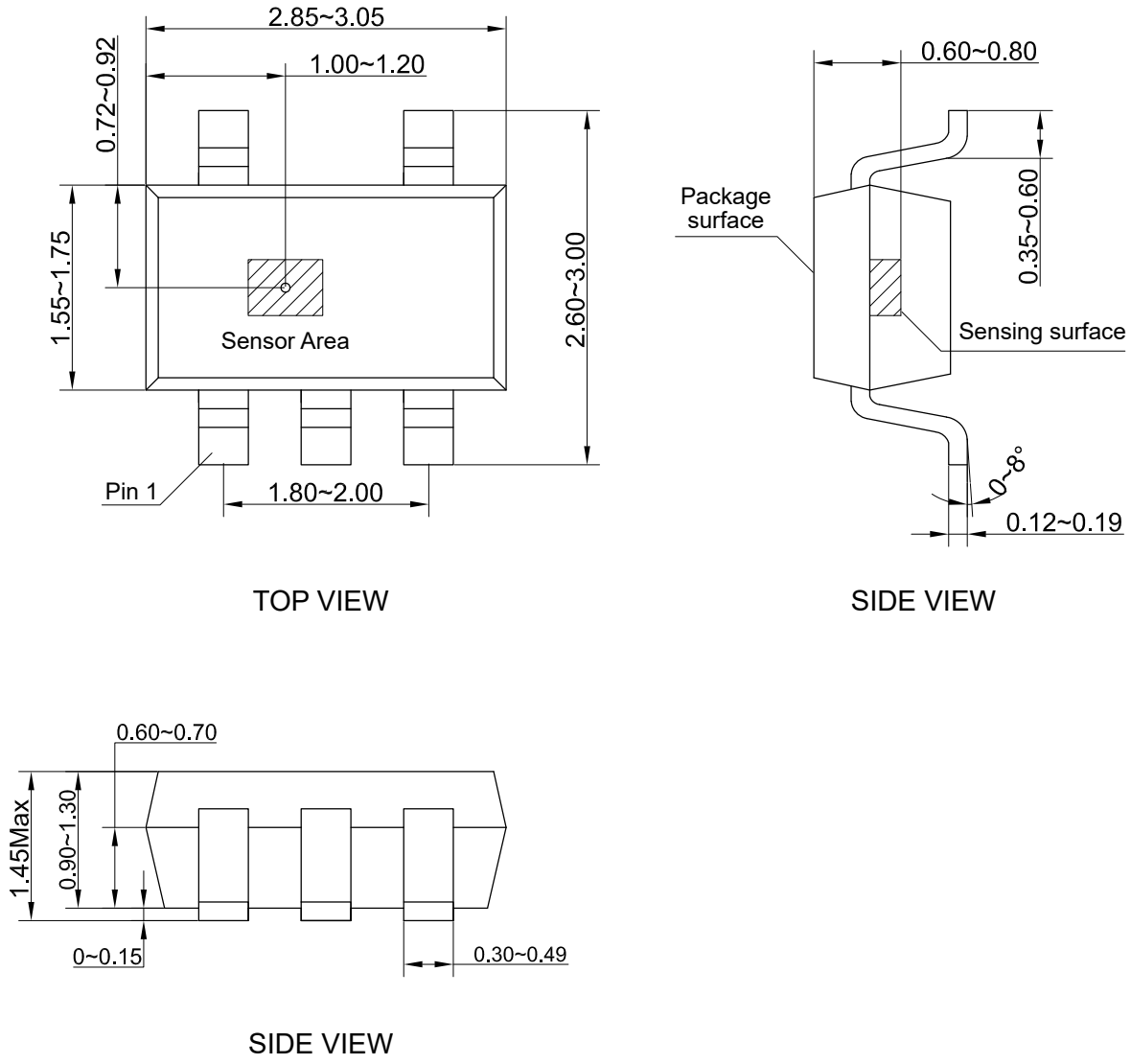


Figure 3. Package outline of SOT23-5 (unit: mm)

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.

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