

## General Description

The TMR2009 linear sensor utilizes a unique push-pull Wheatstone bridge composed of four TMR sensor elements. The TMR2009 is available in a 3 mm X 3 mm X1.45 mm SOT23-5 package.

## Features and Benefits

- Tunneling Magneto resistance (TMR) Technology
- High Sensitivity
- Low Power Consumption
- Excellent Thermal Stability
- Compatible with Wide Range of Supply Voltages
- No need for set/reset calibration

## Applications

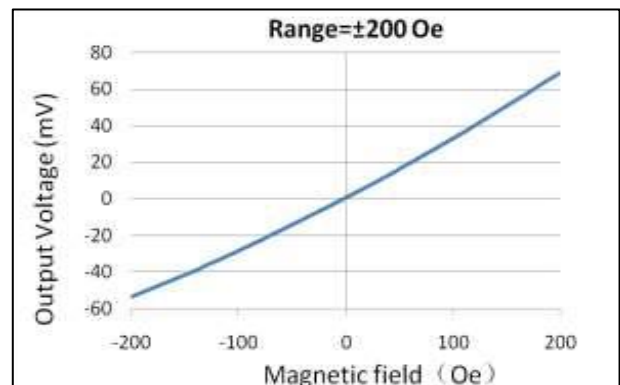
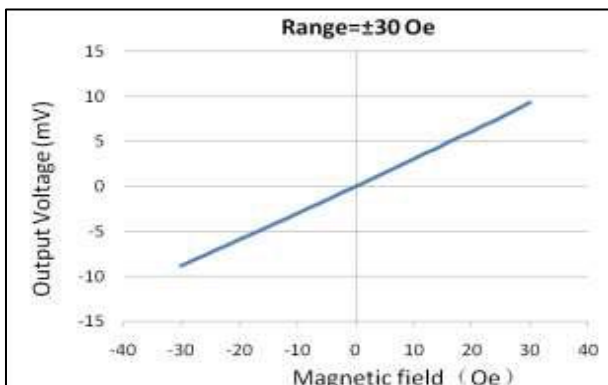
- Weak Magnetic Field Sensing
- Current Sensors
- Position and Displacement Sensing



TMR2009

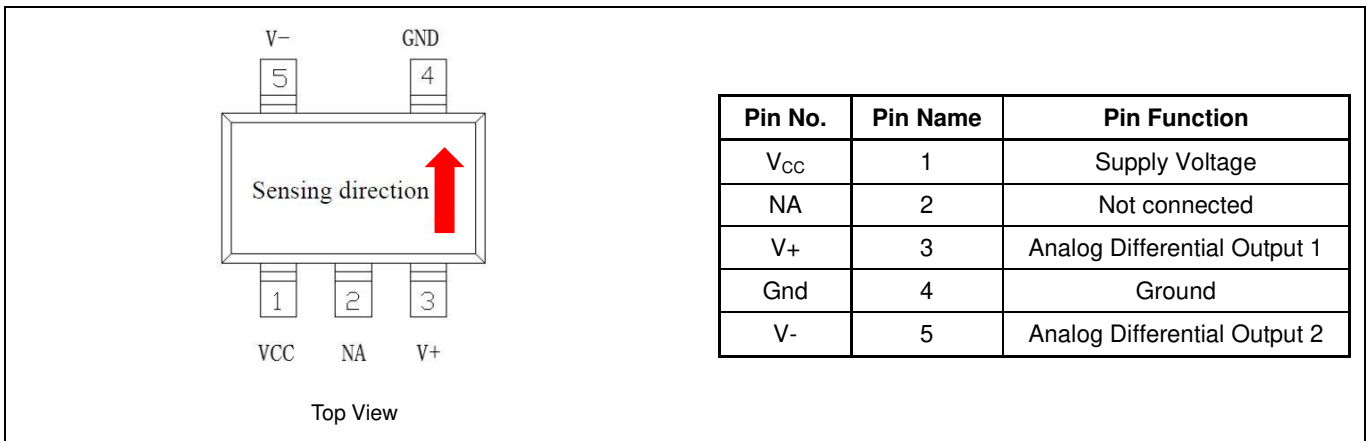
## Transfer Curve

The following figure shows the response of the TMR2009 to an applied magnetic field in the range of  $\pm 10$  Oe and  $\pm 200$  Oe when the TMR2009 is biased at 1V.



## Pin Configuration

(Arrow indicates direction of applied field that generates a positive output voltage.)



## Absolute Maximum Ratings

Parameter	Symbol	Limit	Unit
Supply Voltage	V <sub>CC</sub>	7	V
Reverse Supply Voltage	V <sub>RCC</sub>	7	V
Max Exposed Field	H <sub>E</sub>	4000	Oe <sup>(1)</sup>
ESD Voltage	V <sub>ESD</sub>	4000	V
Operating Temperature	T <sub>A</sub>	-40~125	°C
Storage Temperature	T <sub>stg</sub>	-50 ~150	°C

## Specification (V<sub>CC</sub>=1.0V, T<sub>A</sub>=25°C, Differential Output)

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Supply Voltage	V <sub>CC</sub>	Operating		1	7	V
Supply Current	I <sub>CC</sub>	Output Open		16.7 <sup>(2)</sup>		μA
Resistance	R			10, 60		kOhm
Sensitivity	SEN	Fit @±50Oe		0.3		mV/V/Oe
Saturation Field	H <sub>sat</sub>		-170		230	Oe
Non-Linearity	NONL	Fit @±50Oe		1.2		%FS
Offset Voltage	V <sub>offset</sub>		-30	3	30	mV/V
Hysteresis	Hys	Fit @±50Oe		1.2		Oe
Temperature Coefficient of Resistance	TCR	H = 0 Oe		-640		PPM/°C
Temperature Coefficient of Sensitivity	TCS			-135		PPM/°C

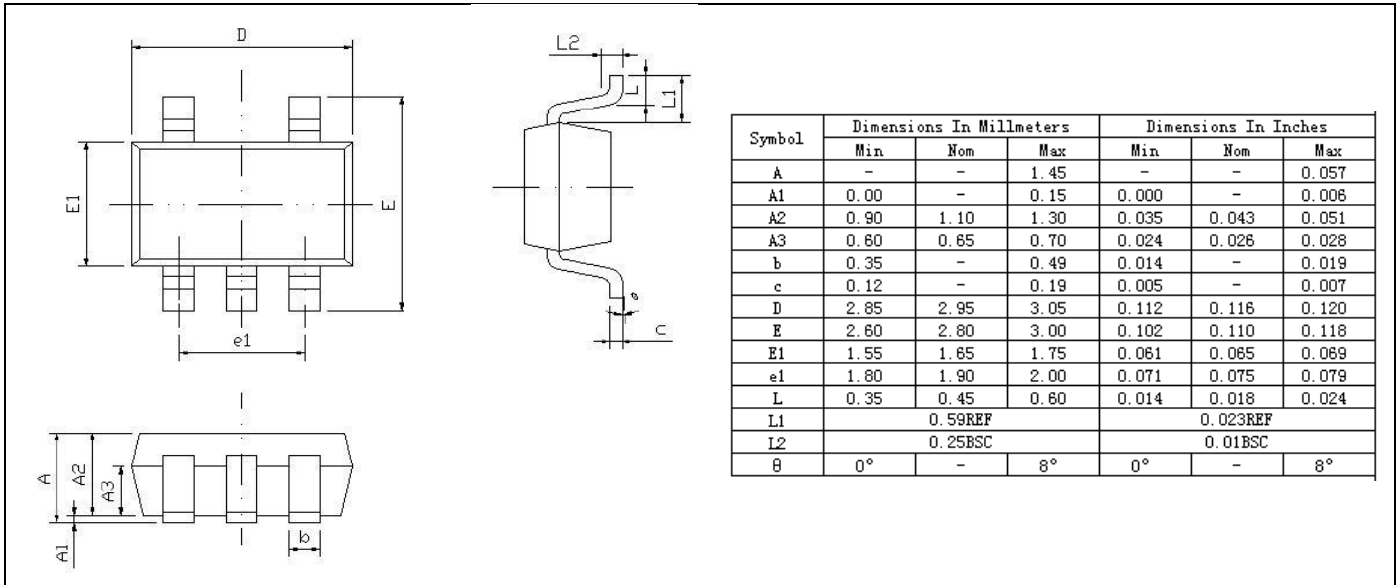
Notes:

(1) 1 Oe (Oersted) = 1 Gauss in air = 0.1 millitesla = 79.8 A/m.

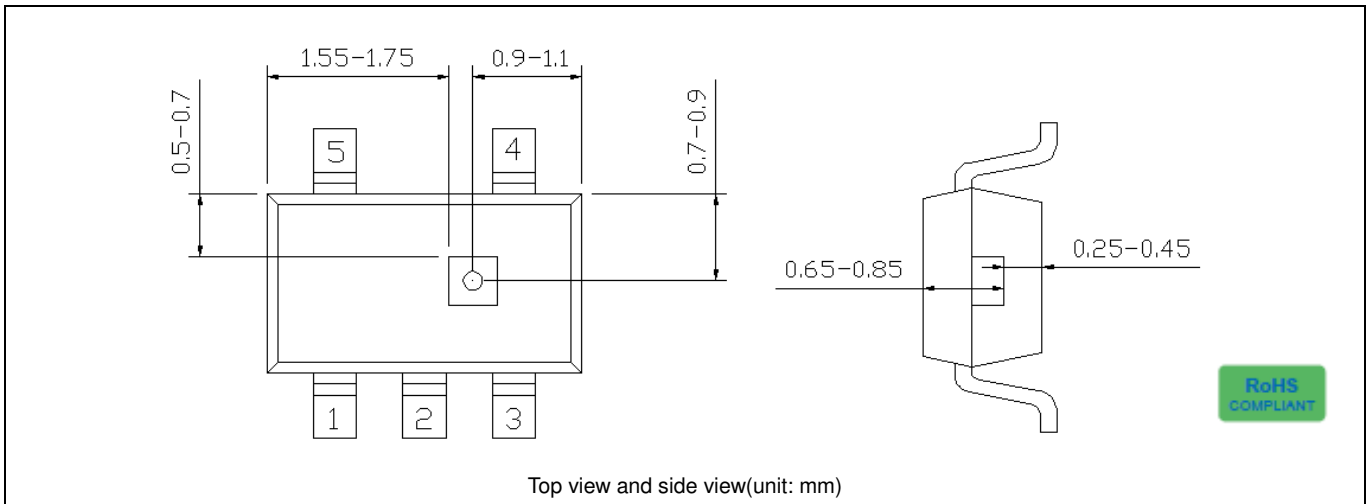
(2) Custom sensor resistance may be available upon request.

## Package Information

SOT23-5L package



## TMR Sensor Position





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