TMR2305M

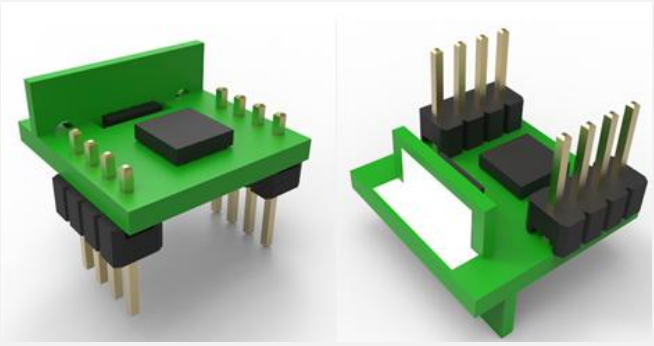
3 axis TMR linear sensor

General Description

The 3-Axis TMR2305M linear sensor utilizes three unique push-pull Wheatstone bridges. The 3-Axis TMR2305M is available in a Module（9.5mm x 9.5mm x 6mm）.

Features and Benefits

- Tunneling Magneto resistance (TMR) Technology
- Ultra High Sensitivity (25 mV/V/Oe)
- Very Low Noise Spectural Density(2nT/ √Hz@1Hz)
- Triple-axis Linear Detection
- Very Wide Dynamic Range
- Low Power Consumption
- Excellent Thermal Stability
- Compatible with wide Range of Supply Voltages
- No need for set/reset calibration



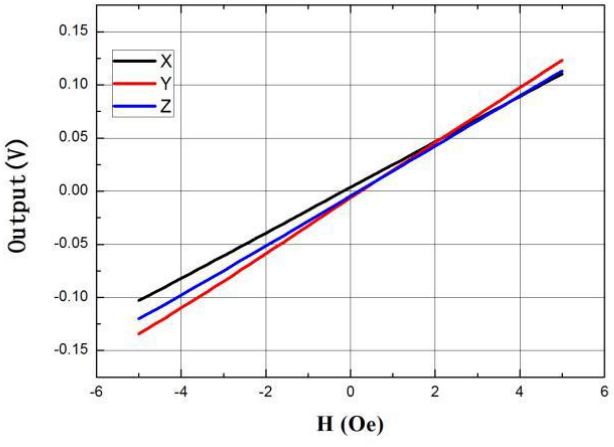
Top view Bottom view

Applications

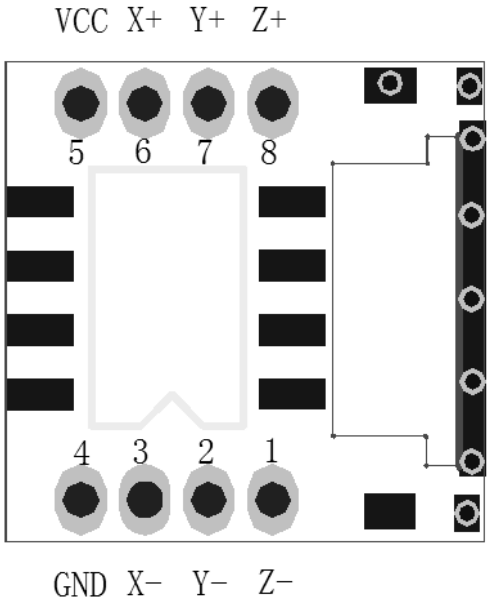
- Three Orthogonal Direction Sensing
- Weak Magnetic Field Sensing
- Current Sensors
- Position and Displacement Sensing

Transfer Curve

The following figure shows the response of the 3-axis TMR2305M to an applied magnetic field in the range of ±5 Oe When the TMR2305M is biased at 1V.



Pin Configuration



Pin No.	Pin Name	Pin Function
1	NA	Analog Z-axis Output-
2	GND	Analog Y-axis Output-
3	NA	Analog X-axis Output-
4	VY-	Ground
5	VY+	Supply Voltage
6	NA	Analog X-axis Output+
7	VZ+	Analog Y-axis Output+
8	VZ-	Analog Z-axis Output+

Absolute Maximum Ratings

Parameter	Symbol	Limit	Unit
Supply Voltage	V_{CC}	7	V
Reverse Supply Voltage	V_{RCC}	7	V
Max Exposed Field	H_E	4000	Oe(1)
ESD Voltage	V_{ESD}	4000	V
Operating Temperature	T_A	-40~125	°C
Storage Temperature	T_{stg}	-50 ~150	°C

Specification (V_{CC}=1.0V, T_A=25°C, Differential Output)

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Supply Voltage	V_{CC}	Operating		1	7	V
Supply Current	I_{CC}	Output Open		0.3(2)		mA
Resistance(SOP8)	R	X-axis		9		KOhm
		Y-axis		9		KOhm
		Z-axis		9		KOhm
Sensitivity	SEN	X-axis Fit @±5 Oe		25		mV/V/Oe
		Y-axis Fit @±5 Oe		25		mV/V/Oe
		Z-axis Fit @±5 Oe		25		mV/V/Oe
Saturation Field	H_{sat}	X-axis		±10		Oe
		Y-axis		±10		Oe
		Z-axis		±10		Oe
Non-Linearity	NONL	X-axis Fit @±5 Oe		2		%FS
		Y-axis Fit @±5 Oe		2		%FS
		Y-axis Fit @±5 Oe		2		%FS
Offset Voltage	V_{offset}	X-axis	-20		20	mV/V
		Y-axis	-20		20	mV/V
		Z-axis	-20		20	mV/V
Hysteresis	Hys	X-axis Fit @±5 Oe			1	Oe
		Y-axis Fit @±5 Oe			1	Oe
		Z-axis Fit @±5 Oe			1	Oe
Temperature Coefficient of Resistance	TCR	H = 0 Oe		-500		PPM/°C
Temperature Coefficient of Sensitive	TCS			-1100		PPM/°C
Self Noise	Ni	X-axis @1Hz		2		nT/√Hz
		Y-axis @1Hz		2		nT/√Hz
		Z-axis @1Hz		2		nT/√Hz

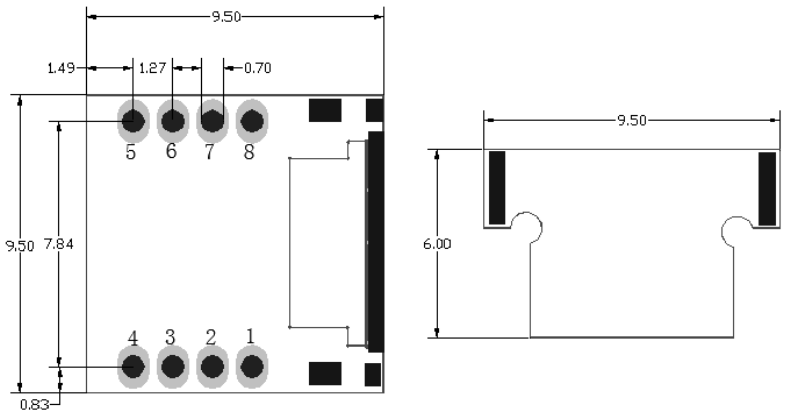
Notes:

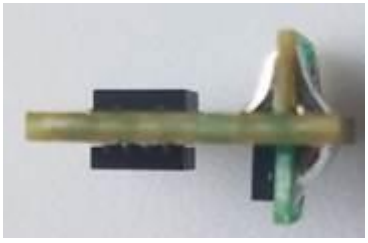
(1) 1 Oe (Oersted) = 1 Gauss in air = 0.1 millitesla = 79.8 A/m.

(2) Custom resistance may be available upon request.

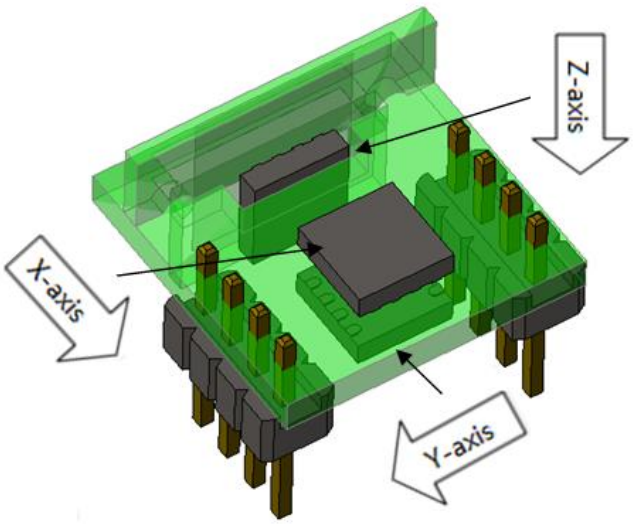
Package Information

Module package drawing, size: 9.5x9.5x6.0 mm





TMR Sensor Position



RoHS COMPLIANT

American Electronic Components Inc.
1101 Lafayette Street, Elkhart, Indiana 46516, United States of America.
Web: www.aecsensors.com Email: sales@aecsensors.com
Toll: 888 847 6552, Tel: +1 574 293 8013