

General Description

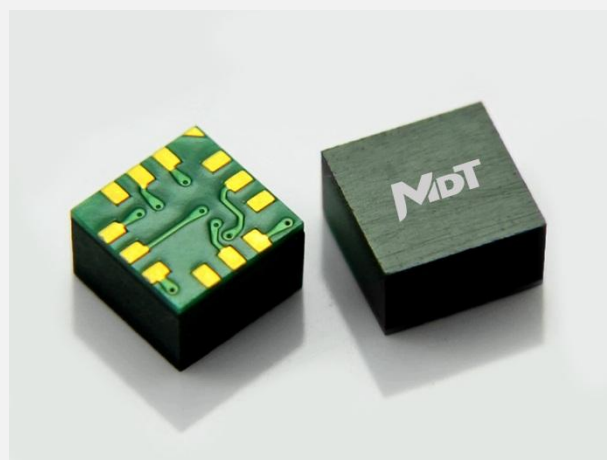
The 3-Axis TMR2305 linear sensor utilizes three unique push-pull Wheatstone bridges. The 3-Axis TMR2305 is available in a 5 mm X 5 mm X 2.5 mm LGA package.

Features and Benefits

- Tunneling Magneto resistance (TMR) Technology
- Ultra High Sensitivity (25 mV/V/Oe)
- Very Low Noise Spectral Density($2nT/\sqrt{\text{Hz}}$ @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

Applications

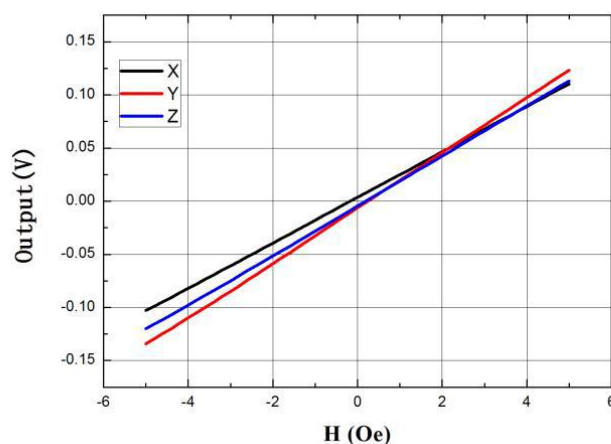
- Three Orthogonal Direction Sensing
- Weak Magnetic Field Sensing
- Current Sensors
- Position and Displacement Sensing



TMR2305

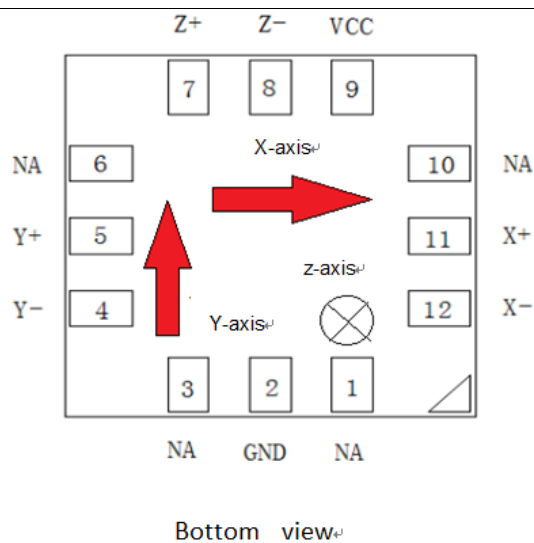
Transfer Curve

The following figure shows the response of the 3-axis TMR2305 to an applied magnetic field in the range of ± 5 Oe When the TMR2305 is biased at 1V.



Pin Configuration

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



Pin No.	Pin Name	Pin Function
1	NA	NA
2	GND	Ground
3	NA	NA
4	VY-	Analog Y-axis Output-
5	VY+	Analog Y-axis Output+
6	NA	NA
7	VZ+	Analog Z-axis Output+
8	VZ-	Analog Z-axis Output-
9	V _{CC}	Supply Voltage
10	NA	NA
11	VX+	Analog X-axis Output+
12	VX-	Analog X-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 ($V_{CC}=1.0V$, $T_A=25^{\circ}C$, 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/ $^{\circ}C$
Temperature Coefficient of Sensitive	TCS			-1100		PPM/ $^{\circ}C$
Self Noise	Ni	X-axis @1Hz		2		nT/ $\sqrt{Hz}$
		Y-axis @1Hz		2		nT/ $\sqrt{Hz}$
		Z-axis @1Hz		2		nT/ $\sqrt{Hz}$

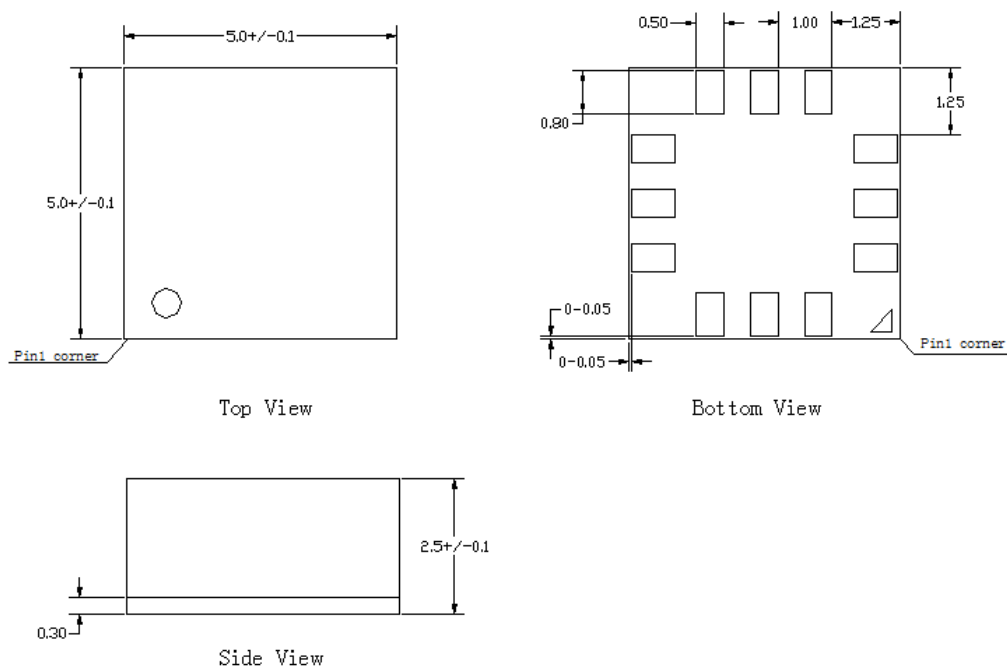
Notes:

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

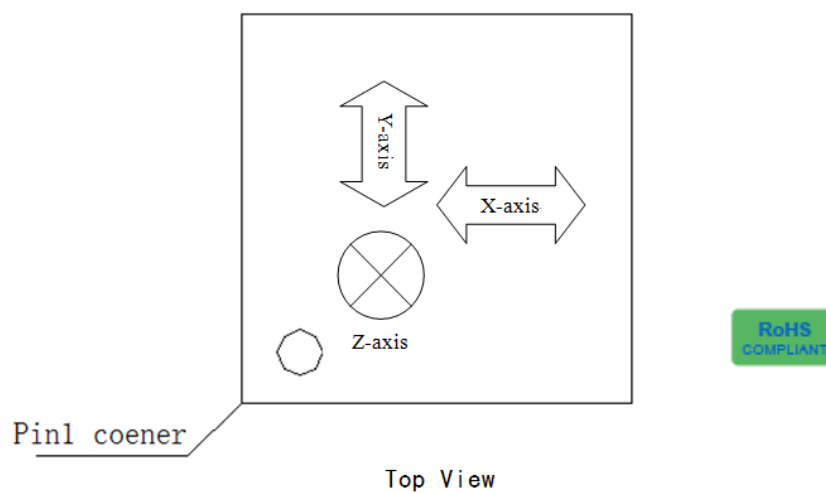
(2) Custom resistance may be available upon request.

Package Information

LGA 5X5X2.5 package drawing:



TMR Sensor Position



Top view and side view(unit: mm)



MultiDimension Technology Co., Ltd.

Address: No. 7 Guangdong Road, Zhangjiagang Free Trade Zone, Jiangsu, 215634, China

Web: www.dowaytech.com/en

Email: info@dowaytech.com

The information provided herein by MultiDimension Technology Co., Ltd. (hereinafter MultiDimension) is believed to be accurate and reliable. Publication neither conveys nor implies any license under patent or other industrial or intellectual property rights. MultiDimension reserves the right to make changes to product specifications for the purpose of improving product quality, reliability, and functionality. MultiDimension does not assume any liability arising out of the application and use of its products. MultiDimension's customers using or selling this product for use in appliances, devices, or systems where malfunction can reasonably be expected to result in personal injury do so at their own risk and agree to fully indemnify MultiDimension for any damages resulting from such applications.