MULTI DIMENSION
Sensing the Future

TMR2301

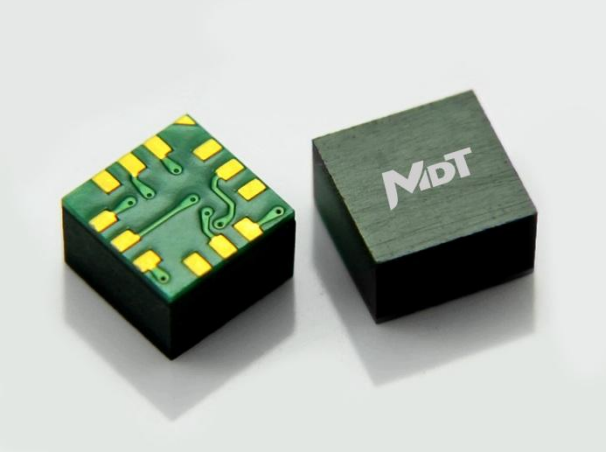
3 axis TMR linear sensor

General Description

The 3-Axis TMR2301 linear sensor utilizes three unique push-pull Wheatstone bridges. The 3-Axis TMR2301 is available in a 4 mm X 4mm X 2.5 mm LGA package.

Features and Benefits

- Tunneling Magneto resistance (TMR) Technology
- 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



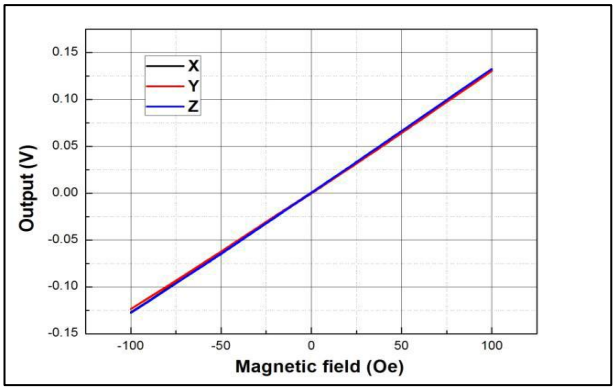
TMR2301

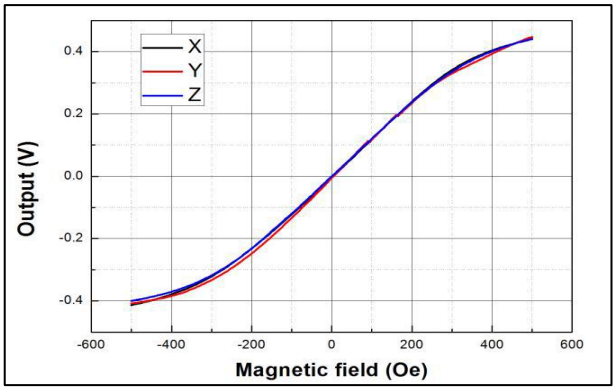
Applications

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

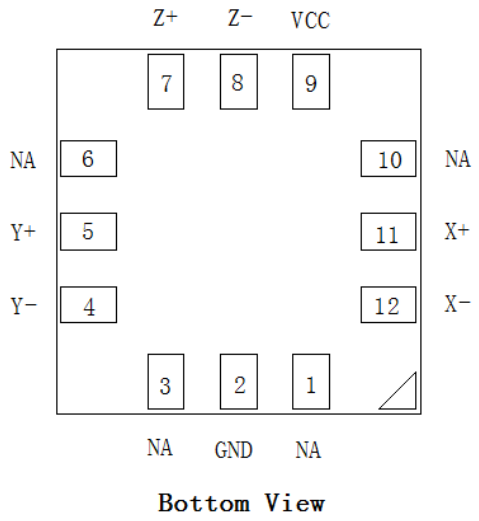
Transfer Curve

The following figure shows the response of the 3-axis TMR2301 to an applied magnetic field in the range of ±100 Oe (left) and ±500 Oe when the 3-axis TMR2301 is biased at 1V.





Pin Configuration



Bottom View

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°C, Differential Output)

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Supply Voltage	V_{CC}	Operating		1	7	V
Supply Current	I_{CC}	Output Open		0.2(2)		mA
Resistance(SOP8)	R	X-axis		15		KOhm
		Y-axis		15		KOhm
		Z-axis		15		KOhm
Sensitivity	SEN	X-axis Fit @±200 Oe		1		mV/V/Oe
		Y-axis Fit @±200 Oe		1		mV/V/Oe
		Z-axis Fit @±200 Oe		1		mV/V/Oe
Saturation Field	H_{sat}	X-axis		±500		Oe
		Y-axis		±500		Oe
		Z-axis		±500		Oe
Non-Linearity	NONL	X-axis Fit @±200 Oe		1.5		%FS
		Y-axis Fit @±200 Oe		1.5		%FS
		Y-axis Fit @±200 Oe		1.5		%FS
Offset Voltage	V_{offset}	X-axis	-25		25	mV/V
		Y-axis	-25		25	mV/V
		Z-axis	-25		25	mV/V
Hysteresis	Hys	X-axis Fit @±200 Oe			1	%FS
		Y-axis Fit @±200 Oe			1	%FS
		Z-axis Fit @±200 Oe			1	%FS
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		100		nT/√Hz
		Y-axis @1Hz		100		nT/√Hz
		Z-axis @1Hz		100		nT/√Hz

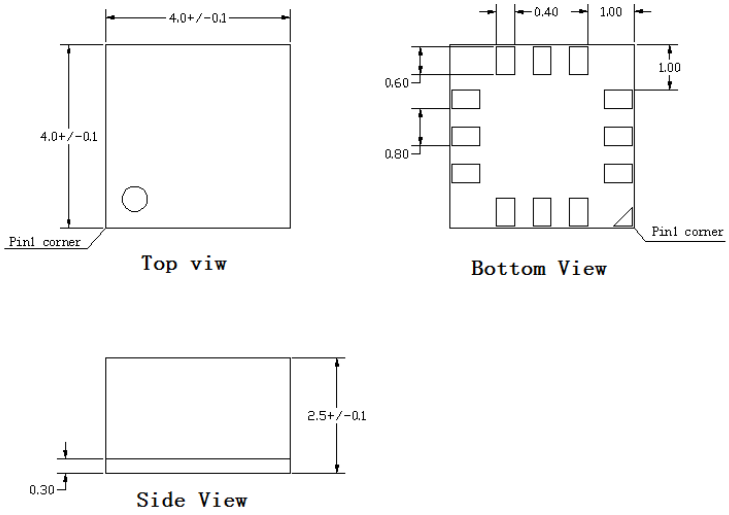
Notes:

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

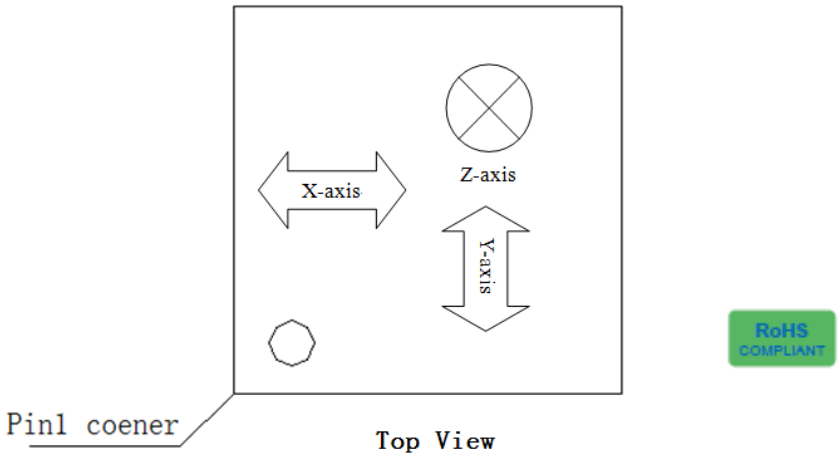
(2) Custom resistance may be available upon request.

Package Information

LGA 4x4x2.5 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.