TMR2105

Large Dynamic Range TMR Linear Sensor

General Description

The TMR2105 linear sensor utilizes a unique push-pull Wheatstone bridge composed of four unshielded TMR sensor elements. The unique bridge design provides a high sensitivity differential output that is linearly proportional to a magnetic field applied parallel to the surface of the sensor package, and it provides superior temperature compensation of the output. The TMR2105 is available in a 2 mm X1. 5 mm X 0.73 mm LGA4 package.

Features and Benefits

- Tunneling Magneto resistance (TMR) Technology
- Large Dynamic Range up to 1000 Oe
- Low Power Consumption
- Excellent Thermal Stability

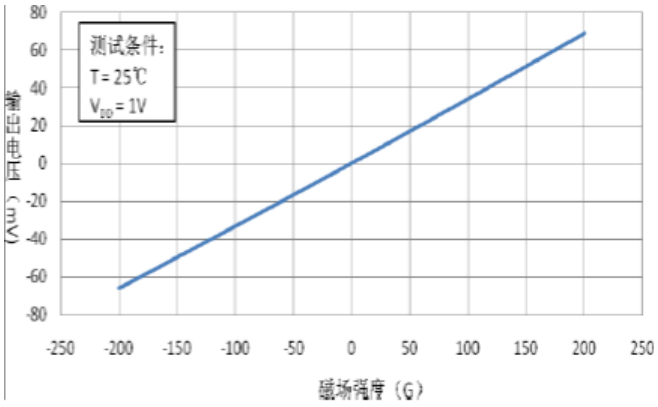
TMR2105

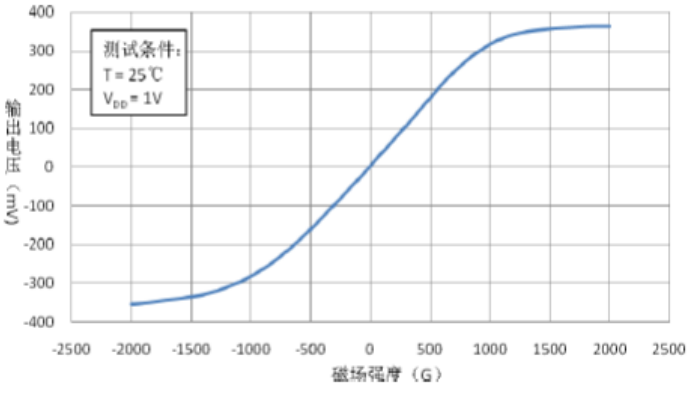
Applications

- Magnetic Field Sensing
- Current Sensors
- Displacement Sensing
- Rotary Position Sensors

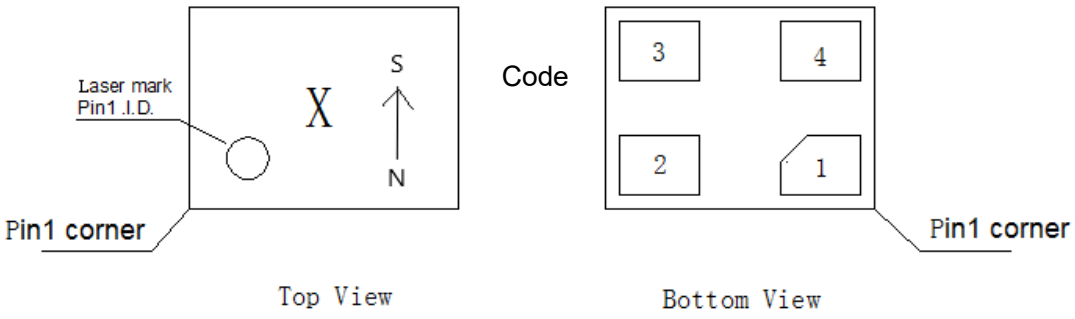
Transfer Curve

The following figure shows the response of the TMR2105 to an applied magnetic field in the range of ±200 Oe (left) and ±2000 Oe (right) when the TMR2105 is biased at 1 V.





Pin Configuration



Pin No.	Pin Name	Pin Function
1	GND	Ground
2	V-	Analog Differential Output 2
3	V_+	Analog Differential Output 1
4	VCC	Supply Voltage

Absolute Maximum Ratings

Parameter	Symbol	Limit	Unit
Supply Voltage	V_{CC}	7	V
Reverse Supply Voltage	V_{RCC}	7	V
Magnetic Field	H	1500	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)

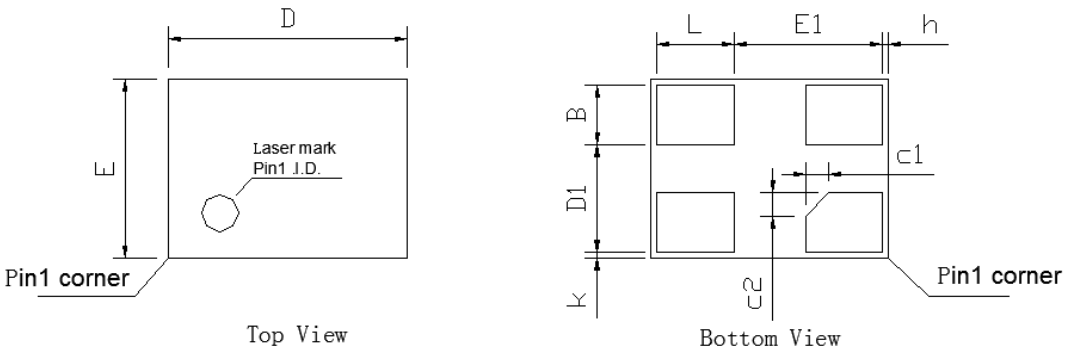
Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Supply Voltage	V_{CC}	Operating		1	7	V
Supply Current	I_{CC}	Output Open		16(2)		μA
Resistance(SOP8)	R			60(2)		KOhm
Sensitivity	SEN	Fit @±150 Oe		0.3		mV/V/Oe
Saturation Field	H_{sat}			±1000		Oe
Non-Linearity	NONL	Fit @±150 Oe		0.1		%FS
Offset Voltage	V_{offset}		-10		10	mV/V
Hysteresis	Hys	Fit @±150 Oe		1.5		Oe
Temperature Coefficient of Resistance	TCR	H = 0 Oe		-600		PPM/°C
Temperature Coefficient of Sensitive	TCS			-300		PPM/°C

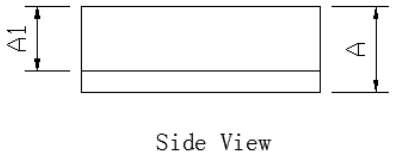
Notes:

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

(2) Custom resistance may be available upon request.

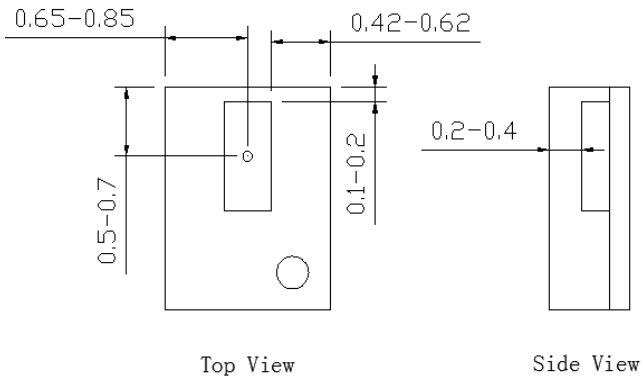
Package Information





Symbol	Dimensions In Millmeters			Dimensions In Inches		
	Min	Nom	Max	Min	Nom	Max
A	-	0.73	-	-	0.03	-
A1	-	0.55	-	-	0.02	-
D	1.90	2.00	2.10	0.075	0.079	0.083
E	1.40	1.50	1.60	0.055	0.059	0.063
B	0.50 BSC			0.020 BSC		
L	0.65 BSC			0.026 BSC		
D1	0.90 BSC			0.035 BSC		
E1	1.25 BSC			0.049 BSC		
h	0.05 REF			0.002 REF		
k	0.05 REF			0.002 REF		
c1	0.20 REF			0.008 REF		
c2	0.20 REF			0.008 REF		

TMR Sensor Position



Top view and side view(unit: mm)

RoHS COMPLIANT

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