



# 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

### Applications

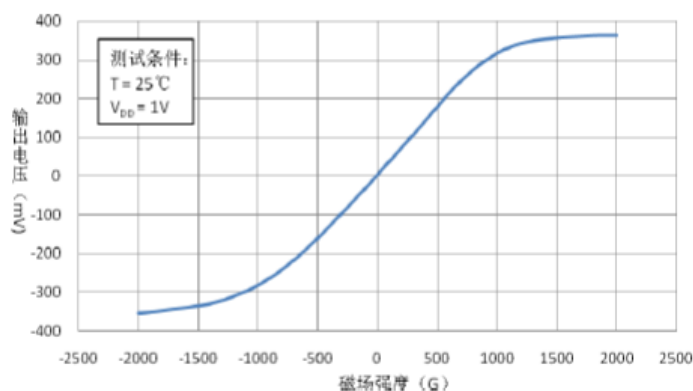
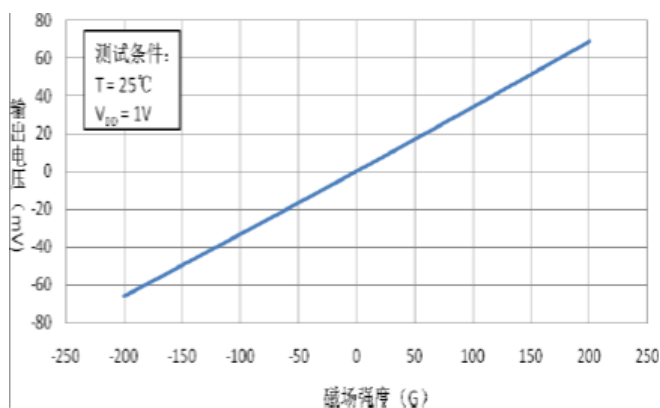
- Magnetic Field Sensing
- Current Sensors
- Displacement Sensing
- Rotary Position Sensors



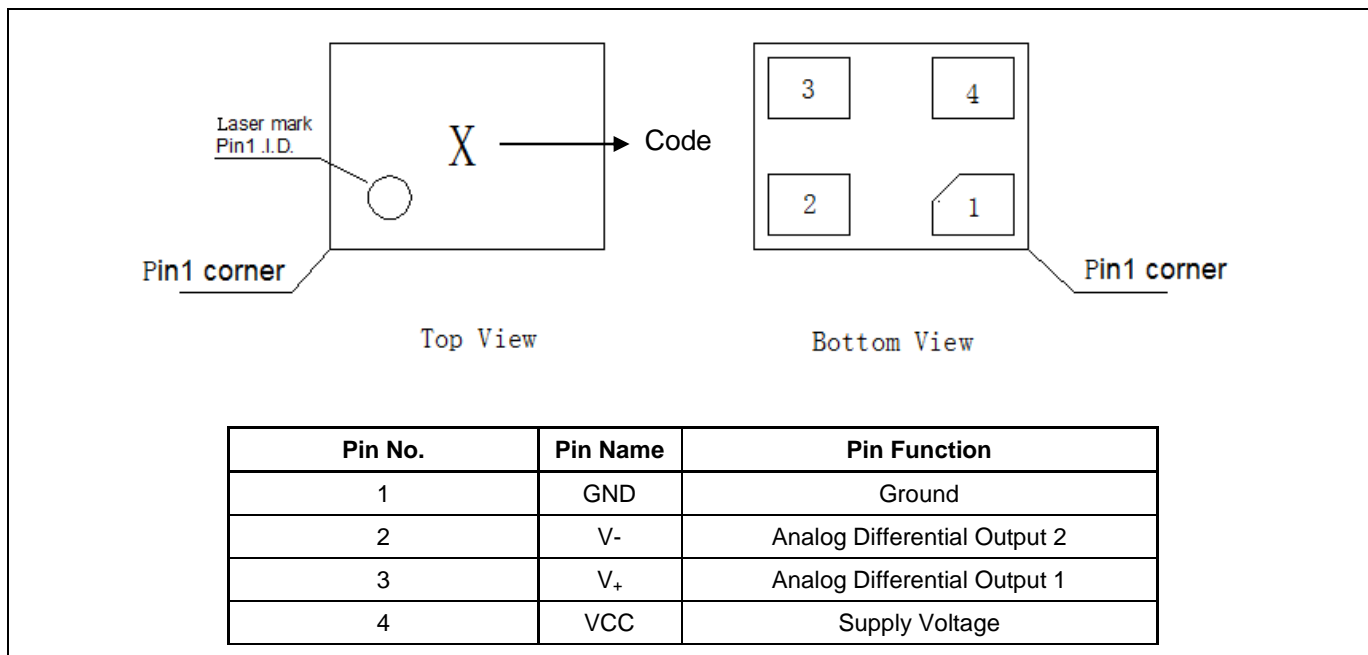
TMR2105

### Transfer Curve

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



## Pin Configuration



## 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 <sup>(1)</sup>
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)

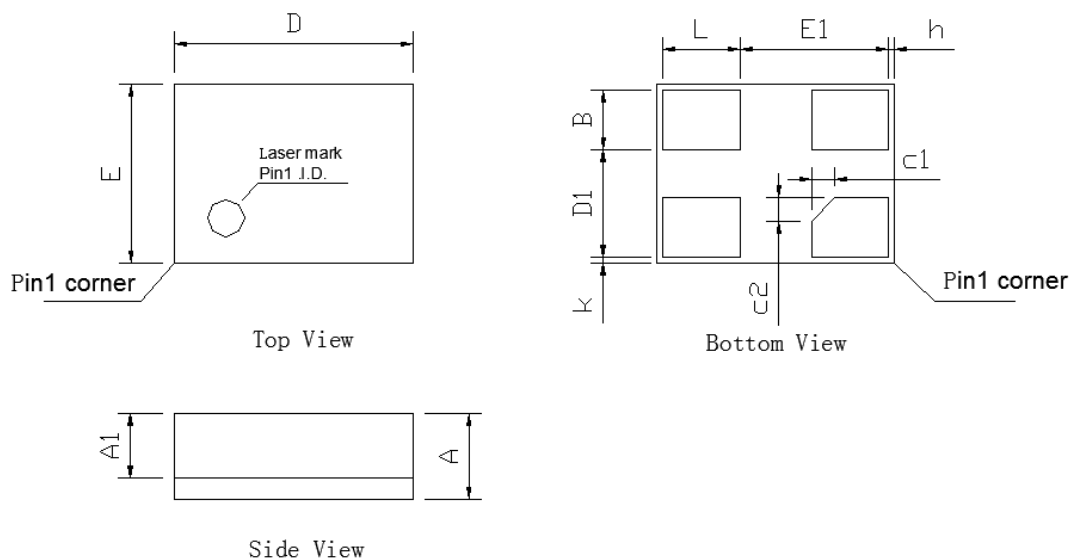
Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Supply Voltage	$V_{CC}$	Operating		1	7	V
Supply Current	$I_{CC}$	Output Open		16 <sup>(2)</sup>		μA
Resistance(SOP8)	R			60 <sup>(2)</sup>		KOhm
Sensitivity	SEN	Fit @±150 Oe		0.3		mV/V/Oe
Saturation Field	$H_{sat}$			± 1000		Oe
Non-Linearity	NONL	Fit @±150 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.

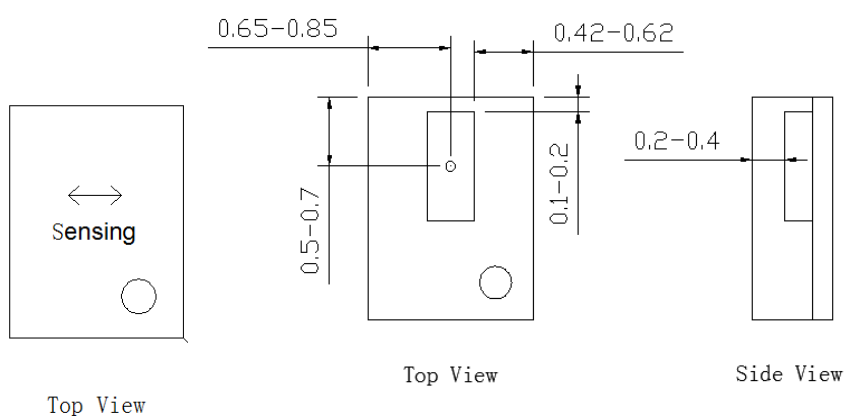
(2) Custom resistance may be available upon request.

## Package Information



Symbol	Dimensions In Millimeters			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)





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