MULTI DIMENSION
Sensing the Future

TMR2905

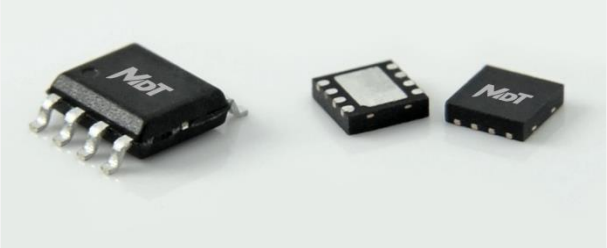
Ultra High Sensitivity TMR linear sensor

General Description

The TMR2905 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 TMR2905 is packaged in 6mm X 5mm X 1.5mm SOP8 named TMR2905P, and packaged in3mmX3mmX0.75mm DFN8 named TMR2905D.

Features and Benefits

- Tunneling Magneto resistance (TMR) Technology
- Ultra High Sensitivity (50~60mV/V/Oe)
- Large Dynamic Range
- Very Low Power Consumption
- Excellent Thermal Stability
- Very Low Hysteresis
- Compatible with wide Range of Supply Voltages
- Ultra Low Noise Spectral Density(＜2nT/sqrt(Hz)@1Hz)



TMR2905

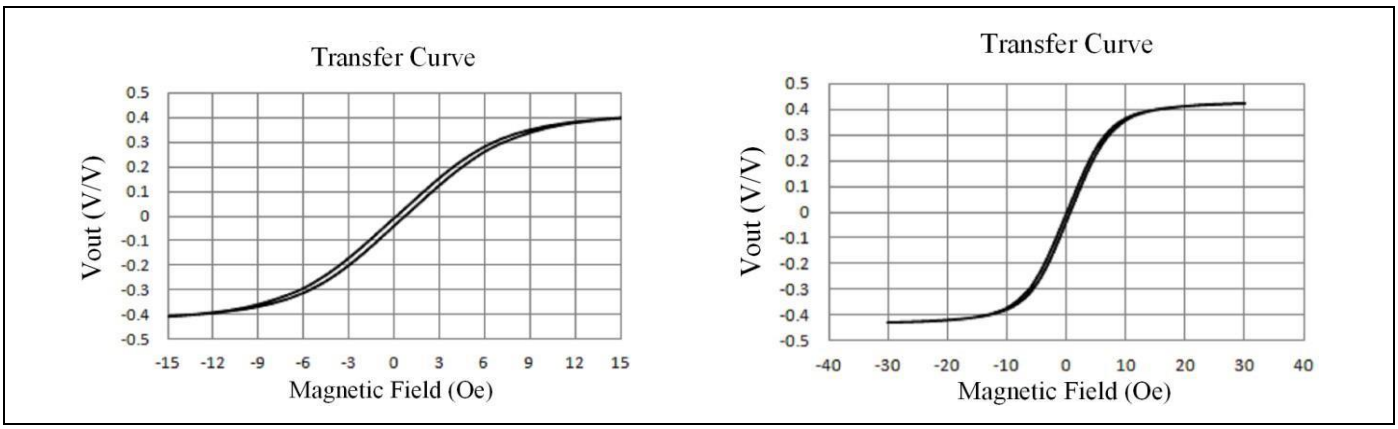
PN series	Resistance	Package
TMR2905SP	5kOhm	SOP8
TMR2905BP	45kOhm	SOP8
TMR2905SD	5kOhm	DFN8
TMR2905BD	45kOhm	DFN8

Applications

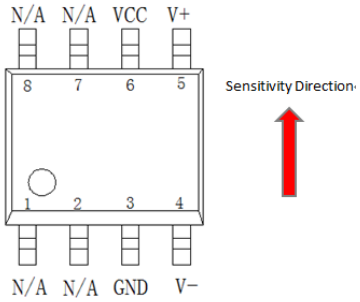
- Weak Magnetic Field Sensing
- Current Sensors
- Position and Displacement Sensing

Transfer Curve

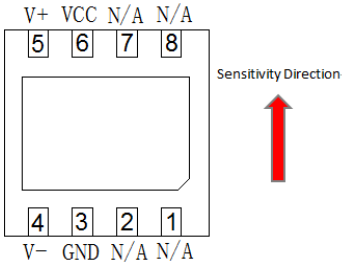
The following figure shows the response of the TMR2905 to an applied magnetic field in the range of ±15 Oe and ±30 Oe when the TMR2905 is biased at 1V.



Pin Configuration



SOP8 Top view



DFN8 Bottom view

Pin No.	Pin Name	Pin Function
1,2,7,8	N/A	Not Connected
3	GND	Ground
4	V-	Analog Differential Output 2
5	V+	Analog Differential Output 1
6	Vcc	Supply Voltage

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		0.2，0.02(2)		mA
Resistance(3)	TMR2905S	R	Between Vcc and GND	2	5	8	KOhm
	TMR2905B			35	45	55	KOhm
Sensitivity		SEN	Fit @±5 Oe	45		65	mV/V/Oe
Saturation Field		H_{sat}			±10		Oe
Non-Linearity		NONL	Fit @±5 Oe		2		%FS
Offset Voltage		V_{offset}		-30		30	mV/V
Hysteresis		Hys	Fit @±30 Oe			1	Oe
Temperature Coefficient of Resistance		TCR	H = 0 Oe		-500		PPM/°C
Temperature Coefficient of Sensitivity		TCS			-1100		PPM/°C

Notes:

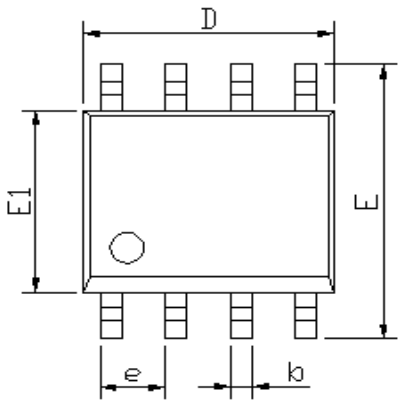
(1) 1 Oe (Oersted) = 1 Gauss in air = 0.1 millitesla = 79.8 A/m.

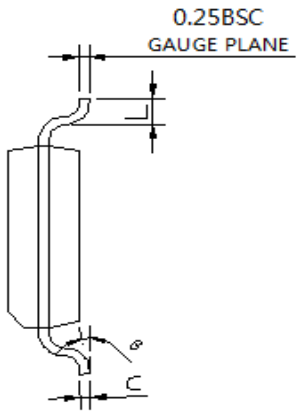
(2) $I_{CC} = V_{CC}/R$

(3)45Kohm be defined TMR2905B，5Kohm be defined TMR2905S，Custom resistance may be available upon request.

Package Information

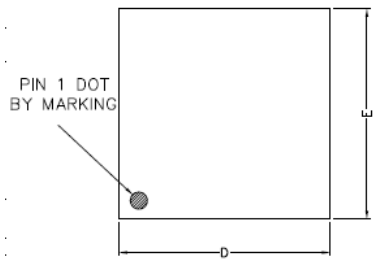
SOP8 封装图

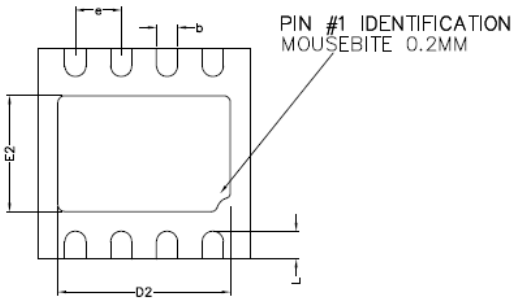


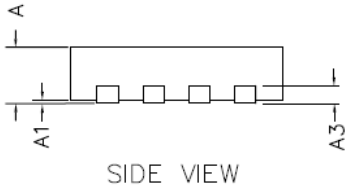


COMMON DIMENSION(MM)			
PKG.	SOP8		
REF.	MIN.	NOM.	MAX.
A	1.45	1.60	1.75
A1	0.10	0.20	0.25
D	4.80	4.90	5.00
E	5.80	6.00	6.20
E1	3.80	3.90	4.00
L	0.45	0.60	0.80
b	0.38	-	0.51
c	0.18	-	0.25
e	1.27 BSC		
θ	0°	-	8°

DFN8 package drawing



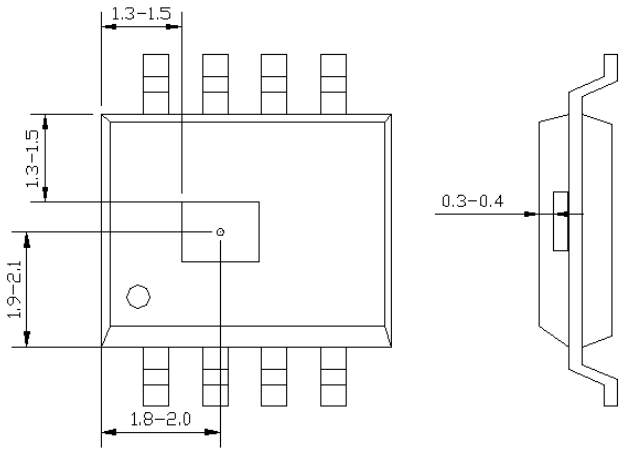




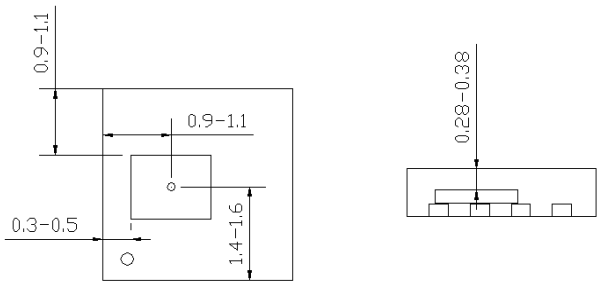
COMMON DIMENSIONS(MM)			
PKG.	DFN 8L (3X3)		
REF.	MIN.	NOM.	MAX.
A	0.70	0.75	0.80
A1	0.00		0.05
A3	0.2 REF.		
D	2.95	3.00	3.05
E	2.95	3.00	3.05
b	0.25	0.30	0.35
L	0.30	0.40	0.50
D2	2.30	2.45	2.55
E2	1.50	1.65	1.75
e	0.65 BSC		

TMR Sensor Position

SOP8 package



DFN8 package



Top view and side view (unit:mm)

RoHS COMPLIANT

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