



TMR2103

Large Dynamic Range TMR linear sensor

General Description

The TMR2103 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 TMR2103 is available in two packaging form factors: SOP8 6mm X 5mm X 1.5mm (P/N TMR2103P), or DFN8 3mm X 3mm X 0.75mm (P/N TMR2103D).

Features and Benefits

- Tunneling Magneto resistance (TMR) Technology
- High Sensitivity
- Large Dynamic Range
- Very Low Power Consumption
- Excellent Thermal Stability
- Very Low Hysteresis
- Compatible with Wide Range of Supply Voltages

Applications

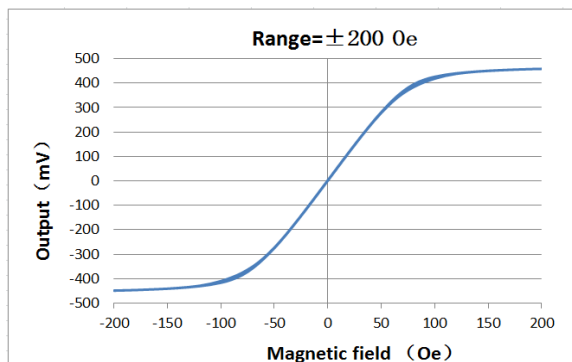
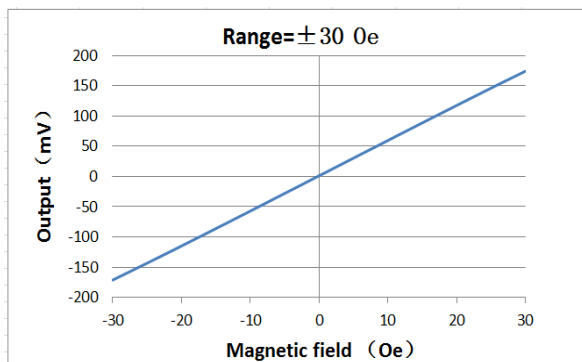
- Magnetic Field Sensing
- Current Sensors
- Industrial Flow Meters
- Displacement Sensing
- Rotary Position Sensors



TMR2103

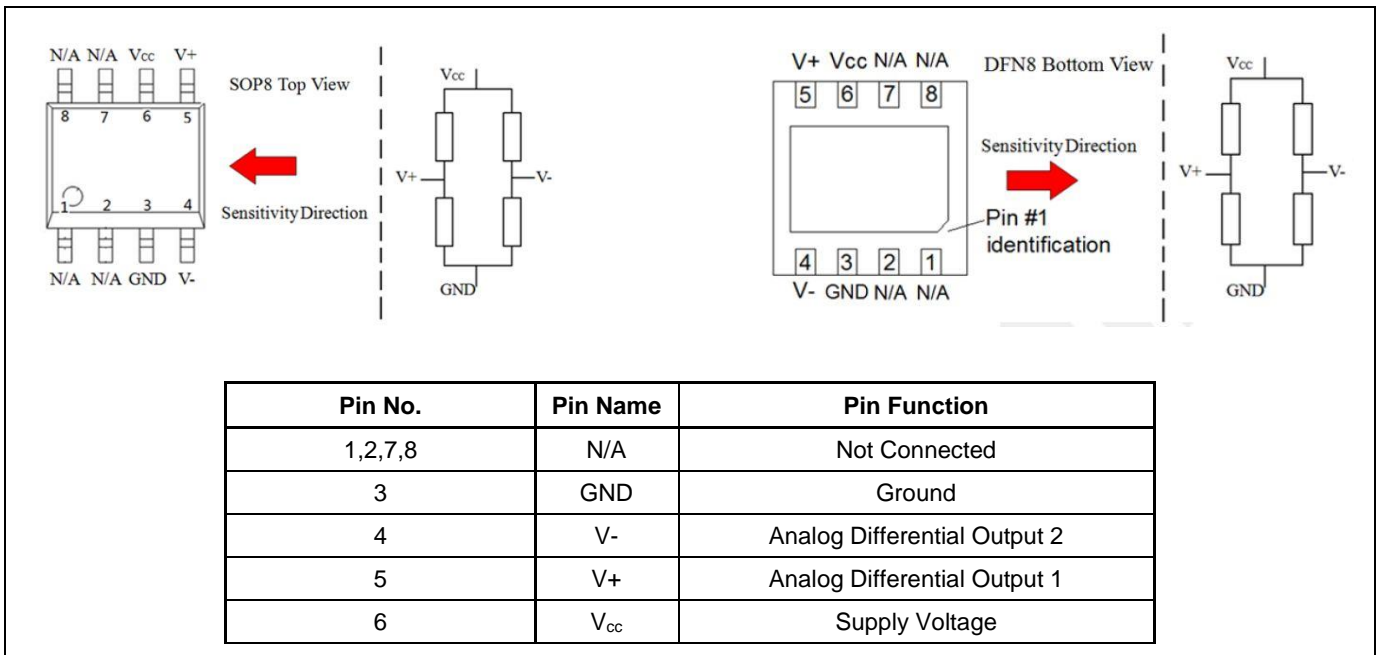
Transfer Curve

The following figure shows the response of the TMR2103 to an applied magnetic field in the range of ± 30 Oe (left) and ± 200 Oe (right) when the TMR2103 is biased at 1 V. At low fields the TMR2103 response is highly linear, and it is not harmed when the sensor is driven into saturation.



Pin Configuration

(Arrow indicates direction of applied field that generates a positive output 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		60 ⁽²⁾		µA
Resistance(SOP8)	R			50 ⁽²⁾		KOhm
Sensitivity	SEN	Fit @±30Oe		6.0		mV/V/Oe
Saturation Field	H _{sat}			±75		Oe
Non-Linearity	NONL	Fit @±30Oe		0.5		%FS
Offset Voltage	V _{offset}		-15		15	mV/V
Hysteresis	Hys	Fit @±30Oe		0.3		Oe
Temperature Coefficient of Resistance	TCR	H = 0 Oe		-640		PPM/°C
Temperature Coefficient of Sensitive	TCS			-13		PPM/°C

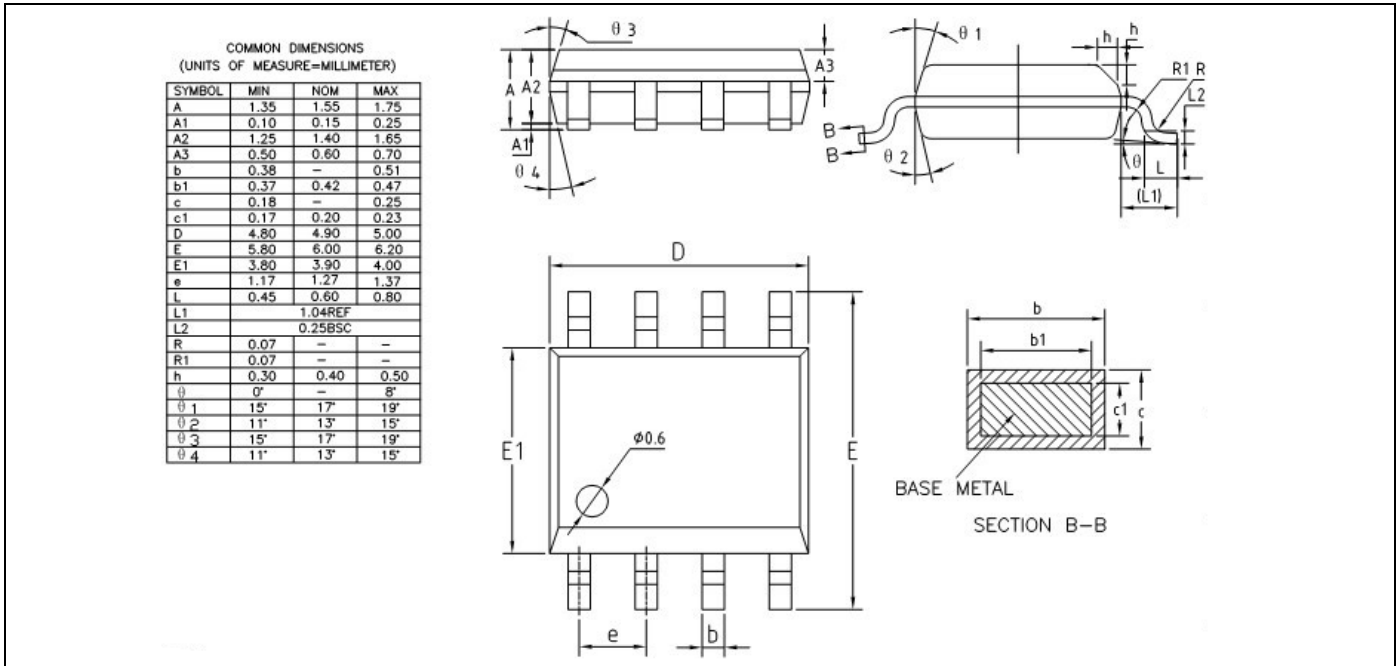
Notes:

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

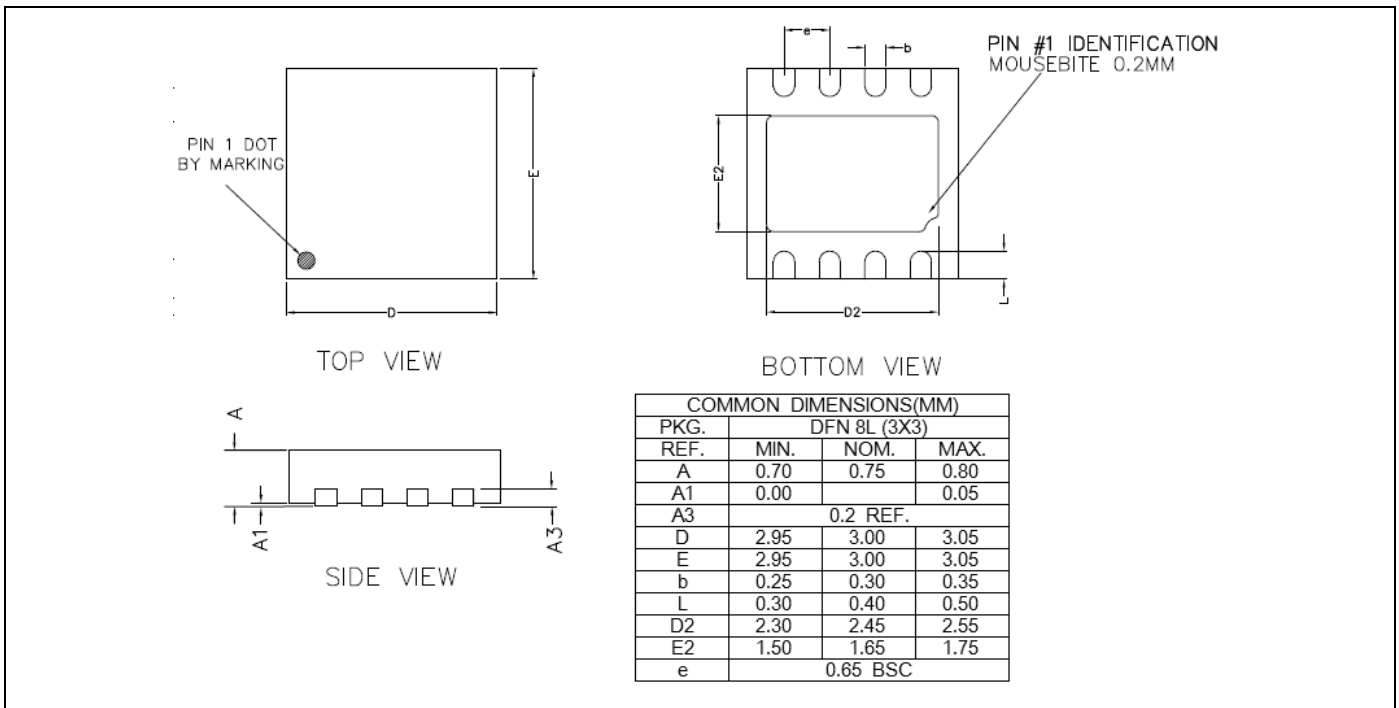
(2) Custom resistance may be available upon request.

Package Information

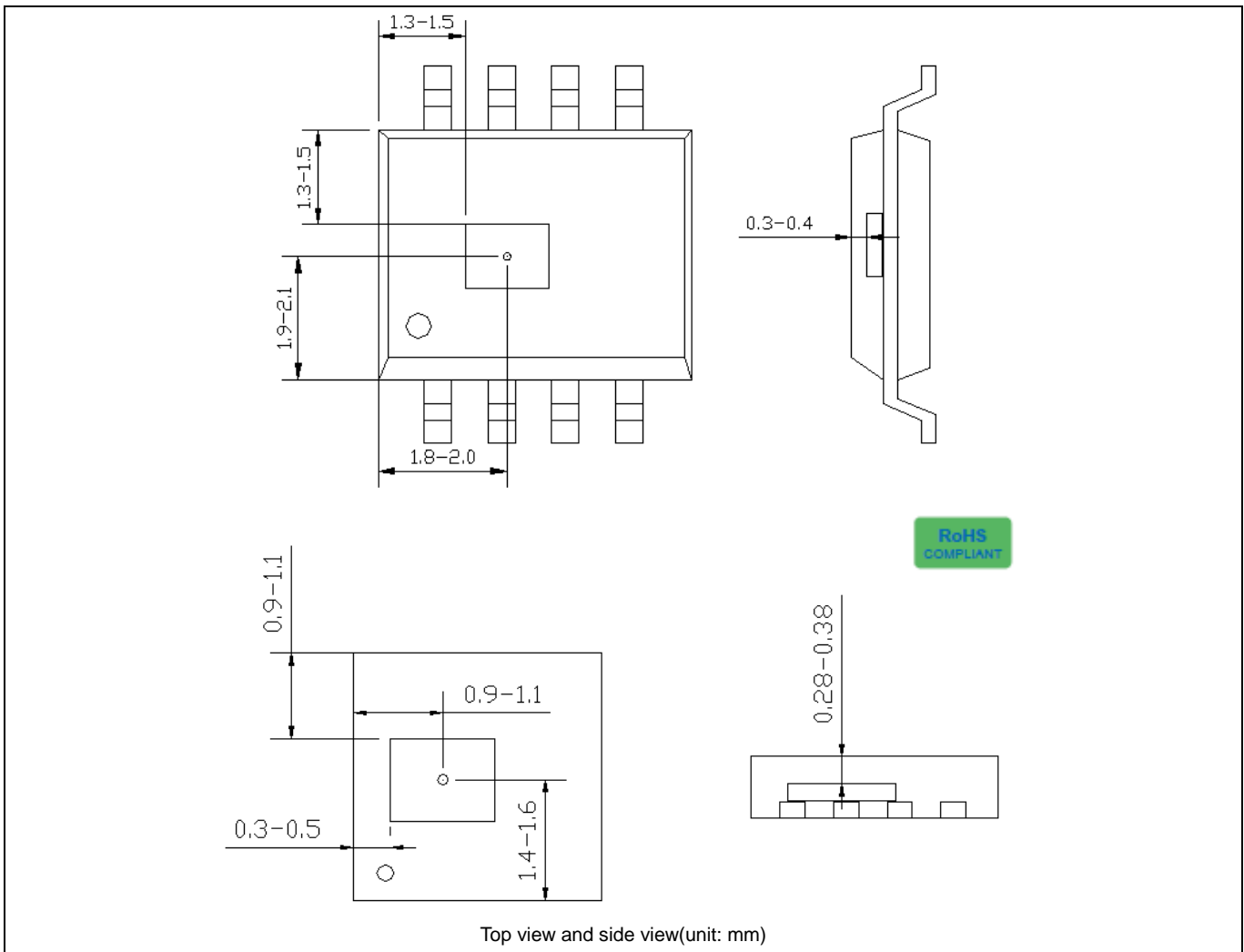
SOP8 package drawing



DFN8 package drawing



TMR Sensor Position





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