



TMR26XX

TMR Linear Sensor
with Built-in Signal Conditioning Circuitry

Introduction

The TMR26XX series of TMR linear sensors are linear magnetic field sensors that integrate Tunneling Magnetoresistance (TMR) sensors with built-in signal conditioning circuitry. The signal conditioning circuitry performs calibration and correction to the TMR sensor parameters including offset, sensitivity, measurement range and linearity, with adjustable gains to normalize its output signal to a full-scale voltage signal. In addition to TMR technology's benefits of high resolution, high signal-to-noise ratio, and low-power, TMR26XX features excellent uniformity of device sensitivity, full-scale voltage output and small offset drift, offering enhanced flexibility and versatility for the design and application of TMR-based magnetic sensor systems. The TMR26XX linear sensors are available in an SOP8 (6mmx5mmx1.5mm) package.

Features

- Tunneling Magnetoresistance (TMR) technology
- High uniformity in sensitivity with small offset drift
- Outstanding temperature stability
- Low Hysteresis
- Full-scale linear output under 3.3/5.0V voltage supply
- No need for set/reset signal

Applications

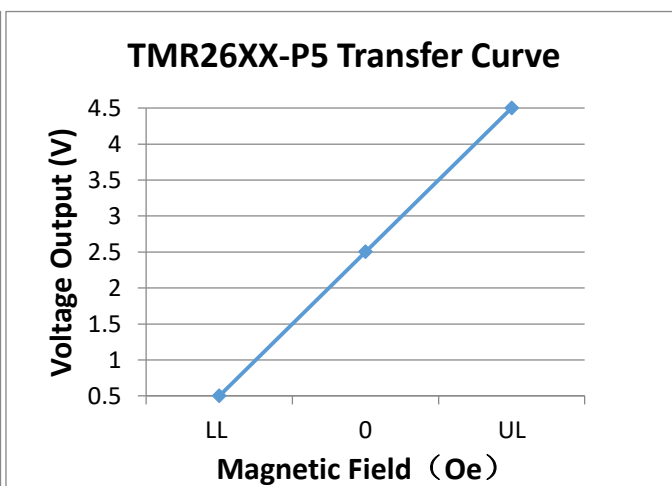
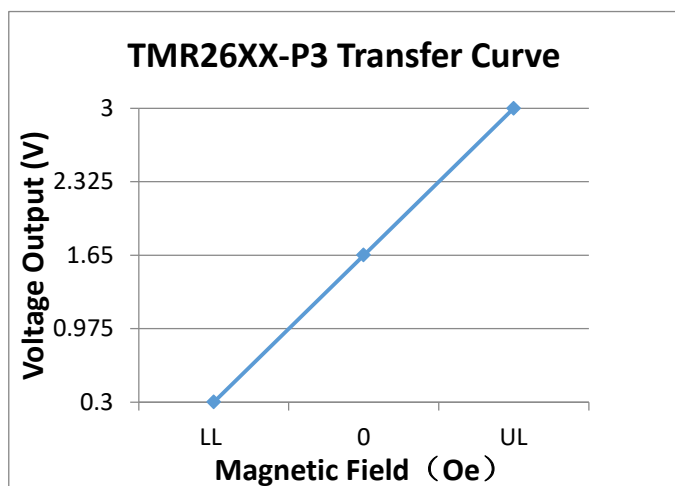
- Magnetic field measurement
- Current sensors
- Position sensors



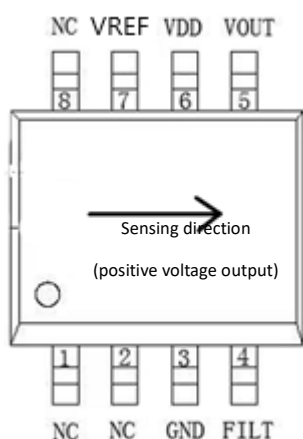
TMR26XX in SOP8 package

Transfer Curve

The following figures illustrate the typical responses of TMR26XX in two categories TMR26XX-P3 and TMR26XX-P5. TMR26XX-P3 requires a 3.3V (typical) voltage supply, and its full-scale output range is 0.3 ~ 3.0V, with the zero offset at 1.65V. TMR26XX-P5 requires a 5.0V (typical) voltage supply, and its full-scale output range is 0.5 ~ 4.5V, with the zero offset at 2.5V.



Pin Configuration



(top view)

Pin No.	Name	Description
1, 2, 8	N/A	
3	GND	Ground
4	FILT	A filtering capacitor should be connected between FILT to GND.
5	V _{OUT}	Analog voltage output
6	V _{DD}	Supply Voltage
7	VREF	Internal voltage reference output (recommend to leave open)

Absolute Maximum Ratings

Parameter	Symbol	Limit	Unit
Supply Voltage	V _{CC}	5.5	V
Reverse Supply Voltage	V _{RCC}	0.5	V
Magnetic Field Exposure	H _E	1200	Oe ⁽¹⁾
ESD Voltage (HBM)	V _{ESD}	4	kV
Operating Temperature	T _A	-40~125	°C
Storage Temperature	T _{stg}	-50~150	°C

Specifications (T_A=25°C)

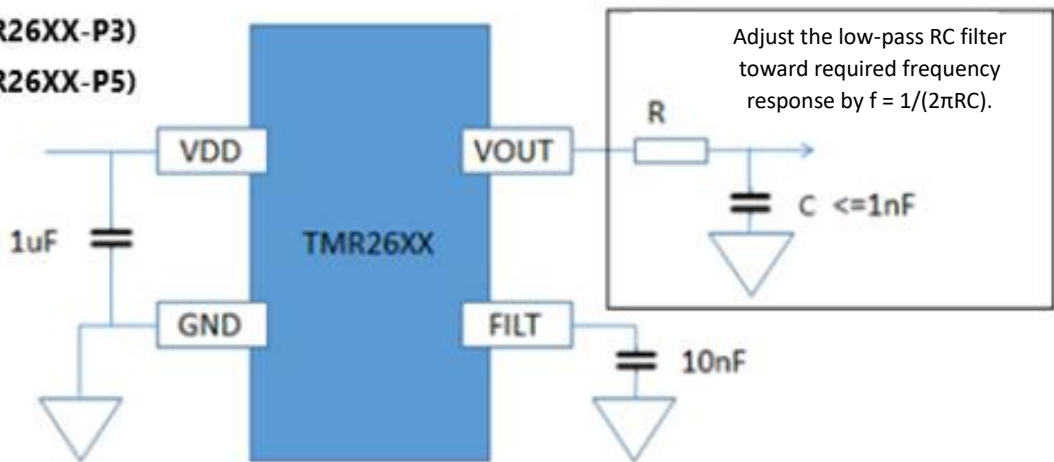
Parameter	Symbol	Conditions (P/N specific)	Min	Typical	Max	Unit
Supply Voltage	V _{CC}	TMR26XX-P3	3.2	3.3	5.5	V
		TMR26XX-P5	4.8	5.0	5.5	V
Supply Current	I _{CC}	TMR26XX-P3 (V _{CC} =3.3V)		3.2		mA
		TMR26XX-P5 (V _{CC} =5.0V)		4.2		mA
Linear Range	H _{sat}	TMR2602-P3/TMR2602-P5	-25		25	Oe
		TMR2604-P3/TMR2604-P5	-80		80	
Sensitivity (within linear range)	SEN	TMR2602-P5		80		mV/Oe
		TMR2602-P3		54		
		TMR2604-P5		25		
		TMR2604-P3		16.875		
Offset Voltage	V _{offset}	TMR26XX-P5		2.5		V
		TMR26XX-P3		1.65		
Non-linearity Error (within linear range)	NONL	TMR2602-P3/TMR2602-P5		0.5		%FS
		TMR2604-P3/TMR2604-P5		1		

Hysteresis (within linear range)	Hys	TMR2602-P3/TMR2602-P5	0.1	Oe
		TMR2604-P3/TMR2604-P5	0.5	
3dB Bandwidth	F	A 10nF capacitor is connected between FILT and GND.	200	kHz
Temperature Coefficient of Offset	TCO	H=0 Oe	-0.17	mV/°C
Temperature Coefficient of Sensitivity	TCS	TMR26XX	-800	PPM/°C

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

Application Circuit

3.2~5.5V(TMR26XX-P3)
4.8~5.5V(TMR26XX-P5)



Package Specification

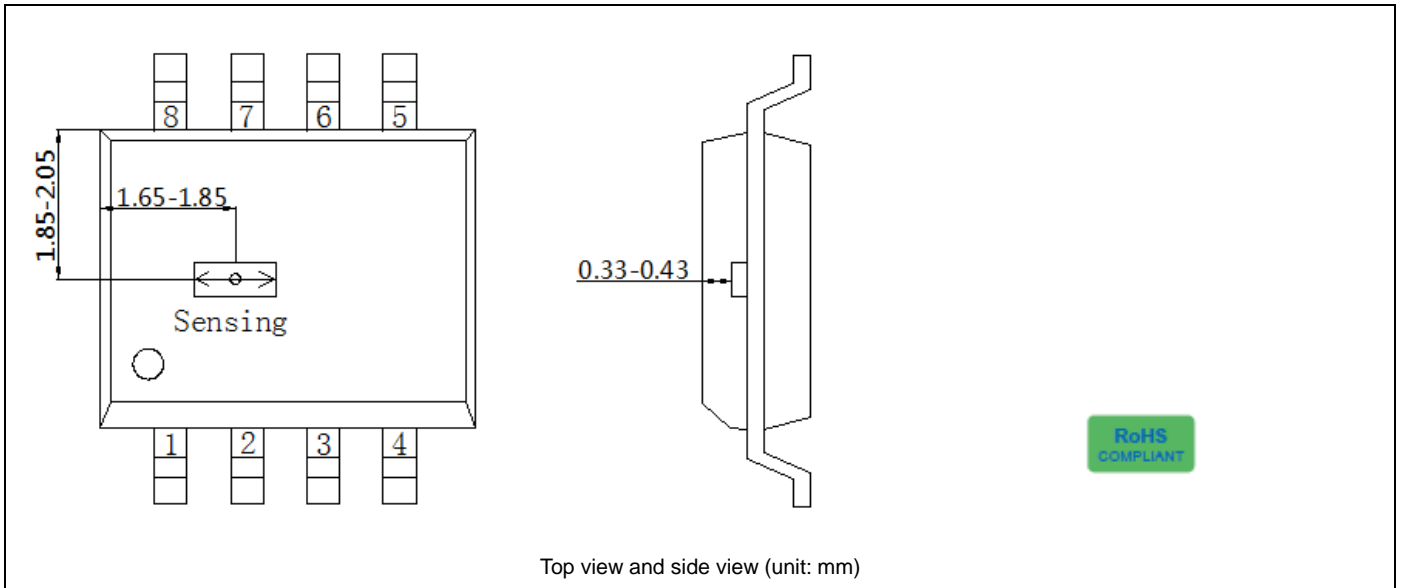
SECTION B-B
BASE METAL

COMMON DIMENSIONS
(UNITS OF MEASURE=MILLIMETER)

SYMBOL	MIN	NOM	MAX
A	1.35	1.55	1.75
A1	0.10	0.15	0.25
A2	1.25	1.40	1.65
A3	0.50	0.60	0.70
b	0.38	-	0.51
b1	0.37	0.42	0.47
c	0.18	-	0.25
c1	0.17	0.20	0.23
D	4.80	4.90	5.00
E	5.80	6.00	6.20
E1	3.80	3.90	4.00
e	1.17	1.27	1.37
L	0.45	0.60	0.80
L1	1.04REF		
L2	0.25BSC		
R	0.07	-	-
R1	0.07	-	-
h	0.30	0.40	0.50
theta 1	0°	-	8°
theta 2	15°	17°	19°
theta 3	11°	13°	15°
theta 4	15°	17°	19°
theta 5	11°	13°	15°

SOP8 Package Diagram

TMR Sensor Position





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