MMLP57F
TMR Linear Sensor

General Description

The MMLP57F 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 MMLP57F is available in a 6 mm × 5 mm × 1.7 mm SOP8 package.

Features and Benefits

- n Tunneling Magnetoresistance (TMR) Technology
- n Compatible with Wide Range of Supply Voltages
- n Extremely Low Power Consumption
- n Excellent Thermal Stability
- n Very Low Hysteresis

Applications

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

Absolute Maximum Ratings

Parameter	Symbol	Limit	Unit
Supply Voltage	VCC	7	V
Storage Temperature	Tstg	-50 ~ 150	°C
Magnetic Field	B	2000	Oe1
ESD level		4000	V

Specification (VCC=1.0V, TA=25 °C, Differential Output)

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Supply Voltage	VCC			1	5	V
Supply Current	ICC			10		μA
Resistance	R			100[2]		kOhm
Sensitivity	SEN	Fit @±30 Oe		6		mV/V/Oe
Dynamic Range				±70		Oe
Linearity Range		1% Non-linearity		±30		Oe
Offset Voltage	VO			±5		mV/V
Hysteresis	Hys	Fit @±30 Oe		0.2		%
Offset Temperature Drift	VOT	H = 0 Oe		0.01		mV/V/°C
TCOV				-0.1		%/°C
Operation Temperature	TA		-40		125	°C

Note:

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

（2） Custom sensor resistance may be available upon request. Please contact Multi-Dimension Technology for more details.

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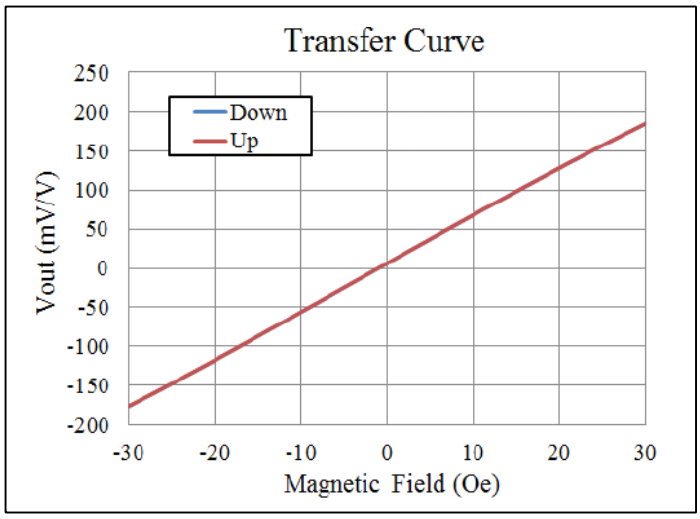
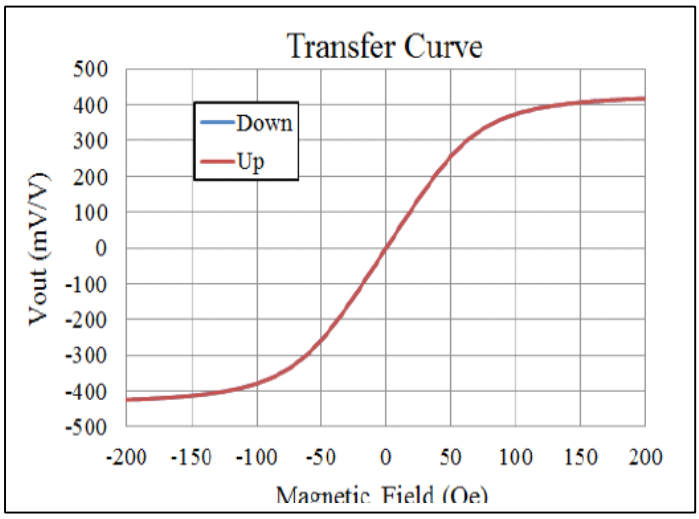
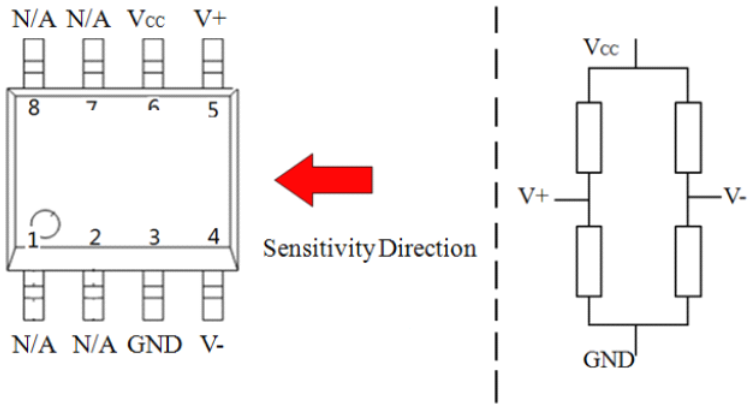
Transfer Curve

The following figure shows the response of the MMLP57F to an applied magnetic field in the range of ±30 Oe (left) and ±200 Oe (right) when the MMLP57F is biased at 1 V. At low fields the MMLP57F response is highly linear, and it is not harmed when the sensor is driven into saturation.





Pin Configuration



Top view

(Top 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

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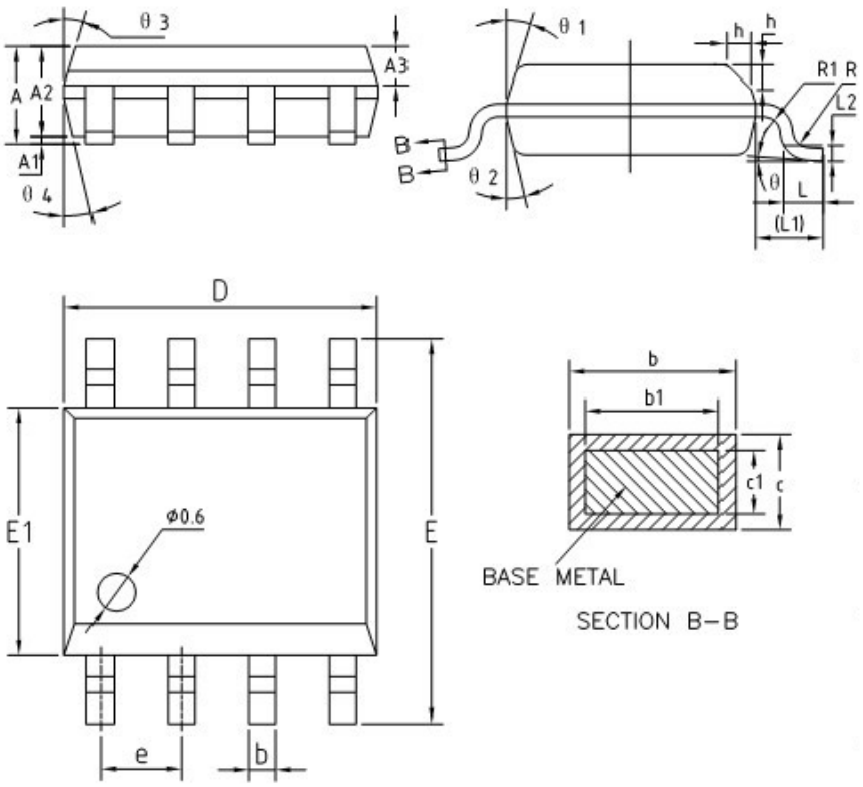
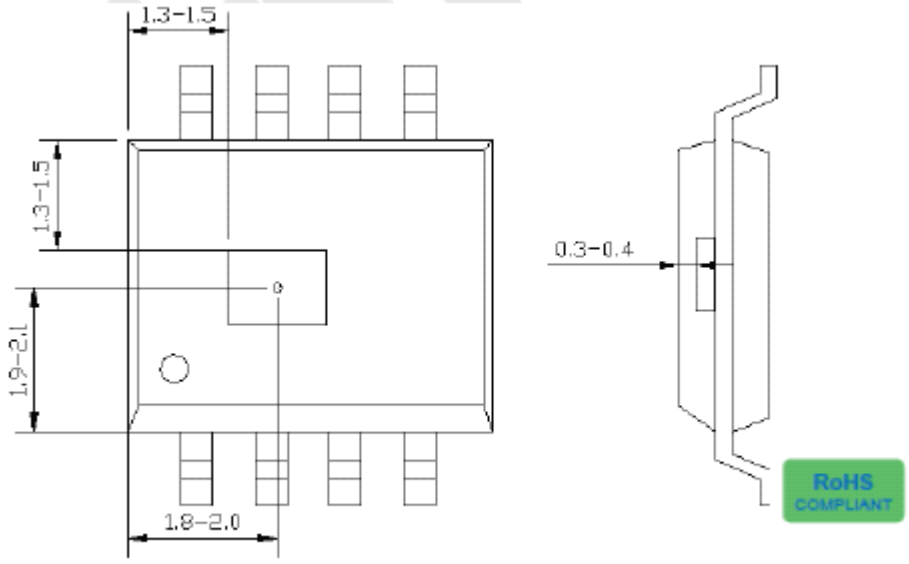
Package Information

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
θ	0°	–	8°
θ1	15°	17°	19°
θ2	11°	13°	15°
θ3	15°	17°	19°
θ4	11°	13°	15°



TMR Sensor Position



unit: mm

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