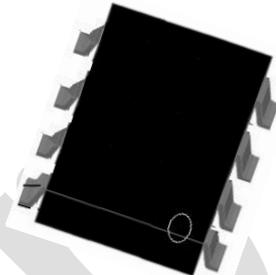


## MMLH45F TMR Linear Sensor

### Features and Benefits

- Tunneling Magnetoresistance (TMR) Technology
- High Sensitivity 12 mV/V/Oe
- Compatible with Wide Range of Supply Voltages
- Extremely Low Power Consumption
- Excellent Thermal Stability



### Applications

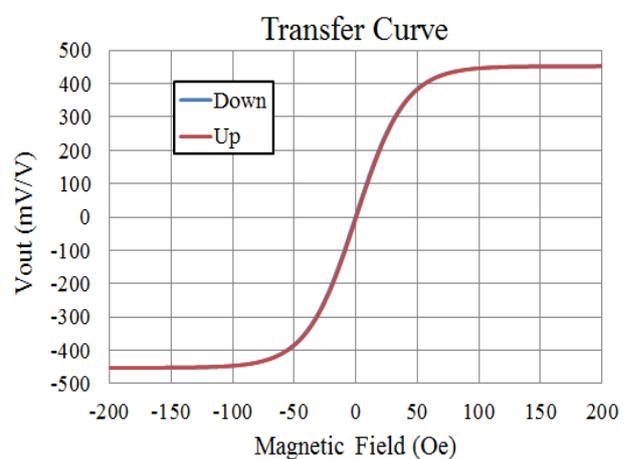
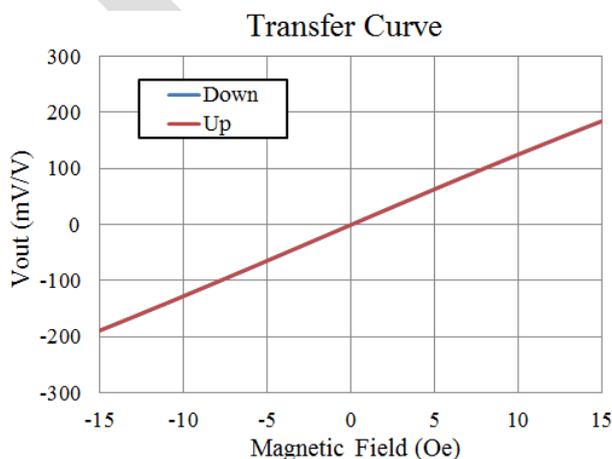
- Magnetic Field Sensing
- Current Sensors
- Displacement Sensing
- Rotary Position Sensors

### General Description

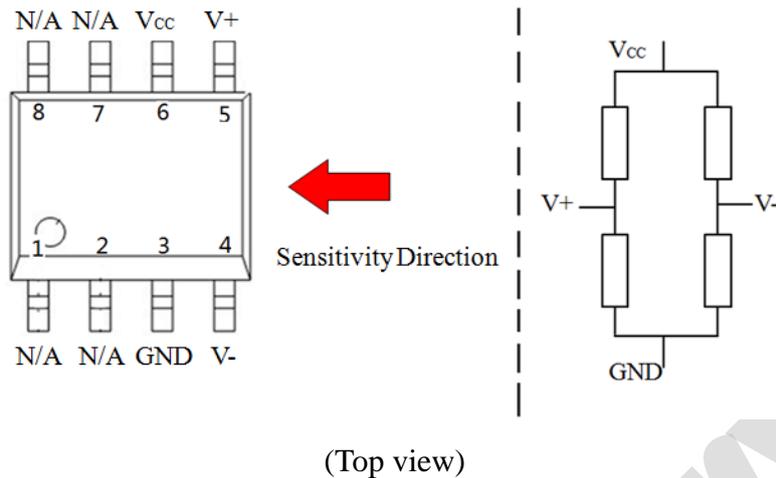
The MMLH45F linear sensor utilizes a unique push-pull Wheatstone bridge composed of four unshielded TMR sensor elements. This bridge design provides a high sensitivity differential output that is linearly proportional to a magnetic field applied parallel to the surface of the sensor package, in addition to providing superior temperature compensation of the output. The MMLH45F is available in a 6 mm × 5 mm × 1.7 mm SOP8 package.

### Transfer Curve

The following figures show the response of the MMLH45F to an applied magnetic field in the range of ±15 Oe (left) and ±200 Oe (right) when the MMLH45F is biased at 1 V. At low fields the MMLH45F response is highly linear, and it is not harmed when driven into saturation.



## Pin Configuration



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	V <sub>CC</sub>	Supply Voltage

## Absolute Maximum Ratings

Parameter	Symbol	Limit	Unit
Supply Voltage	V <sub>CC</sub>	6	V
Storage Temperature	T <sub>stg</sub>	-50 ~ 150	°C
Magnetic Field	B	2000	Oe <sup>1</sup>
ESD Level		4000	V

## Specification (V<sub>CC</sub>=1.0V, T<sub>A</sub>=25 °C, Differential Output)

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Supply Voltage	V <sub>CC</sub>			1	5	V
Supply Current	I <sub>CC</sub>			12.5		μA
Resistance	R			80 <sup>2</sup>		kOhm
Sensitivity	SEN	Fit @ ±15 Oe		12		mV/V/Oe
Dynamic Range				±50		Oe
Linearity Range		1% Non-linearity		±15		Oe
Offset Voltage	V <sub>O</sub>			±5		mV/V
Hysteresis	Hys	Fit @ ±15 Oe		1		%FS
Offset Temperature Drift	V <sub>OT</sub>	H = 0 Oe		0.01		mV/V/°C
TCOV				-0.1		%/°C
Operation Temperature	T <sub>A</sub>		-40		125	°C

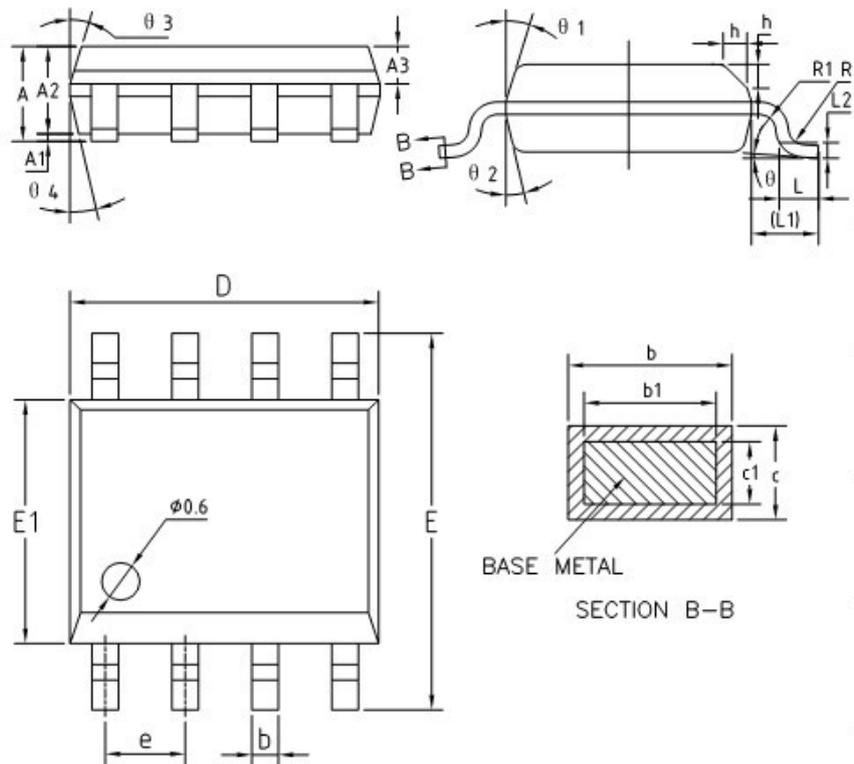
Note:

- (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 MultiDimension Technology for more details.

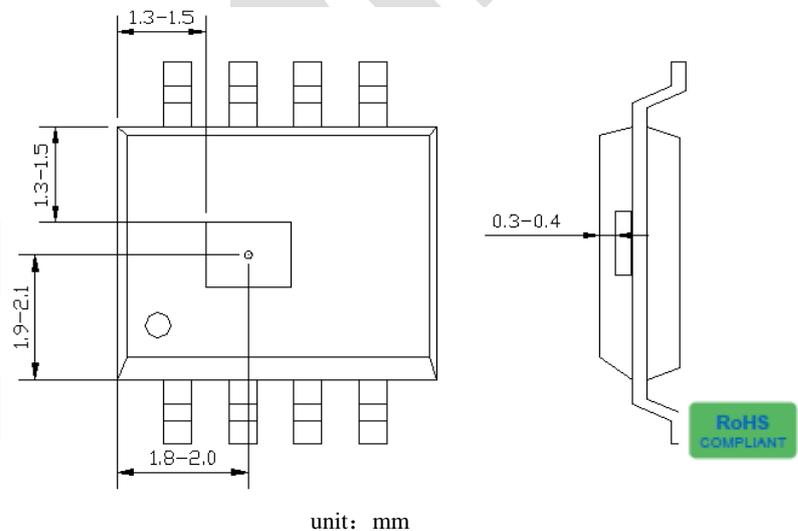
# Package Information

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°
θ 1	15°	17°	19°
θ 2	11°	13°	15°
θ 3	15°	17°	19°
θ 4	11°	13°	15°



# TMR Sensor Position



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