

The MH 481, a linear Hall-effect sensor, is composed of hall sensor, linear amplifier and emitter-follower output stage. The integrated circuitry features low noise output, which makes it unnecessary to use external filtering. It also includes thin film resistors to provide increased temperature stability and accuracy. These linear Hall sensors have an operating Temperature range of –40 degree C to +100 degree C, appropriate for commercial, consumer, and industrial environments.

The high sensitivity of Hall Effect sensor accurately tracks extremely small changes in magnetic flux density. The linear sourcing output voltage is set by the supply voltage and varies in proportion to the strength of the magnetic field. Typical operation current is 6.0mA and operating voltage range is 3.0 volts to 6.5 volts.

The MH 481 is rated for operation between the ambient temperatures –40°C and 100°C for the E temperature range. The package style available provides magnetically optimized solutions for most applications. Package UA is a three-lead ultra mini SIP for through-hole mounting.

Pb Free is qualified by third party lab.

### ***Features and Benefits***

- Operating Voltage Range: 3.0V~6.5V
- Power consumption of 6 mA at 5 Vdc for energy efficiency
- Low-Noise Operation
- Single current sourcing output
- Linear output for circuit design flexibility
- Thin film resistors for a stable and accurate output
- Responds to either positive or negative gauss
- Small Size
- Magnetically Optimized Package
- Cost competitive
- Robust ESD performance

### ***Applications***

- Current sensing
- Motor control
- Position sensing
- Magnetic code reading
- Rotary encoder
- Ferrous metal detector
- Vibration sensing
- Liquid level sensing
- Weight sensing



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MH 481

## Ratiometric Linear Hall effect Sensors

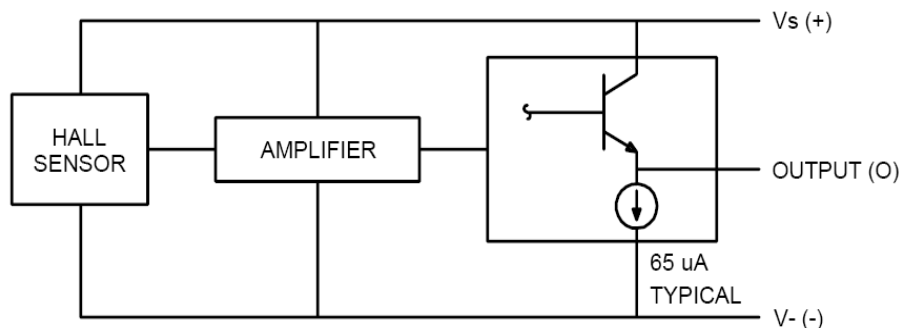
### Ordering Information

|                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <div>XX</div> <div>XXXX</div> <div>X</div> <div>XX</div> <div>X</div> <div>XX</div> <div>XX</div> <div>X</div>                                                                                                                  | <div>Company Name and Product Category</div> <div>MH:MST Hall Effect/MP:MST Power MOSFET</div> <div>Part number</div> <div>181,182,185,186,187,189,281,282,248,248B,249, 481...</div> <div>Temperature range</div> <div>E: 85 Degree C, K: 125 Degree C, L: 150 Degree C</div> <div>Package type</div> <div>UA:TO-92S,SO:SOT-23,ST:Tsot-25,SU:USON</div> <div>Sorting</div> <div><math>\alpha</math>, <math>\beta</math>, Blank.....</div> <div>Package Identification Code</div> <div>01,02,03.....</div> <div>Handling Code</div> <div>BLANK: ESD bag, TR: Tape &amp; Reel</div> <div>Lead Free Code</div> <div>BLANK: Lead Free Device ,G: Green</div> |
| <div>Lead Free</div> <div>Handling Code</div> <div>Package Identification</div> <div>Sorting Code</div> <div>Package type</div> <div>Temperature code</div> <div>Part number</div> <div>Company Name and Product Category</div> |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |

| Part No. | Temperature Suffix   | Package Type | Package Identification |
|----------|----------------------|--------------|------------------------|
| 481      | E (-40°C to + 100°C) | UA ( TO-92S) | 01                     |

### Function Block Diagram

#### Block Diagram Current Sourcing Output



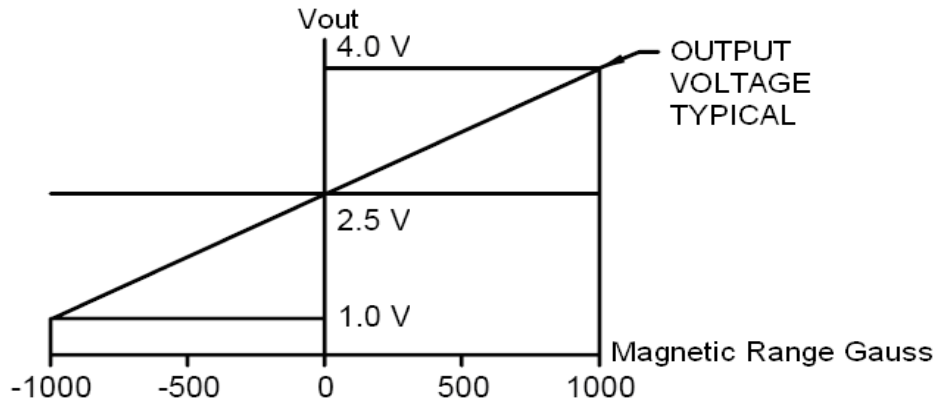


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**MH 481**

***Ratiometric Linear Hall effect Sensors***

***Transfer Characteristics (Vs=5.0VDC)***



***Absolute Maximum Ratings***

|                                                         |                                         |
|---------------------------------------------------------|-----------------------------------------|
| Supply Voltage, V <sub>cc</sub>                         | -0.5V <sub>dc</sub> to 8V <sub>dc</sub> |
| Output Current, I <sub>out</sub>                        | 10mA                                    |
| Operating Temperature Range, T <sub>A</sub> "E" version | -40°C to 100°C                          |
| Storage Temperature, T <sub>s</sub>                     | -65°C to 170°C                          |
| Magnetic Flux Density                                   | No limit                                |

***Electrical Specifications***

DC Operating Parameters T<sub>A</sub>=+25°C, V<sub>DD</sub>=5V (Unless otherwise specified)

| Parameters           | Test Conditions         | Min     | Typ      | Max  | Units |
|----------------------|-------------------------|---------|----------|------|-------|
| Operating voltage    |                         | 3.5     |          | 6.5  | V     |
| Supply current       |                         |         | 4.5      | 10   | mA    |
| Output Current       | Min(V <sub>s</sub> >3V) | 1.0     | 1.5      |      | mA    |
| Output Voltage       | Null @ 0 G              |         | 2.5      |      | V     |
| Output Bandwidth     |                         |         | 20       |      | KHz   |
| Output Voltage Span  |                         | 1.05    | 0.95     |      | V     |
| Magnetic Range Gauss |                         | +/- 650 | +/- 1000 |      | G     |
| Linearity            | % of Span               |         | -0.7     |      |       |
| Output type          | Linear, Sourcing        |         |          |      |       |
| Magnetics type       | Analog                  |         |          |      |       |
| Response Time        |                         |         | 3        |      | μS    |
| Sensitivity          |                         | 1.0     | 1.4      | 1.75 | mV/G  |

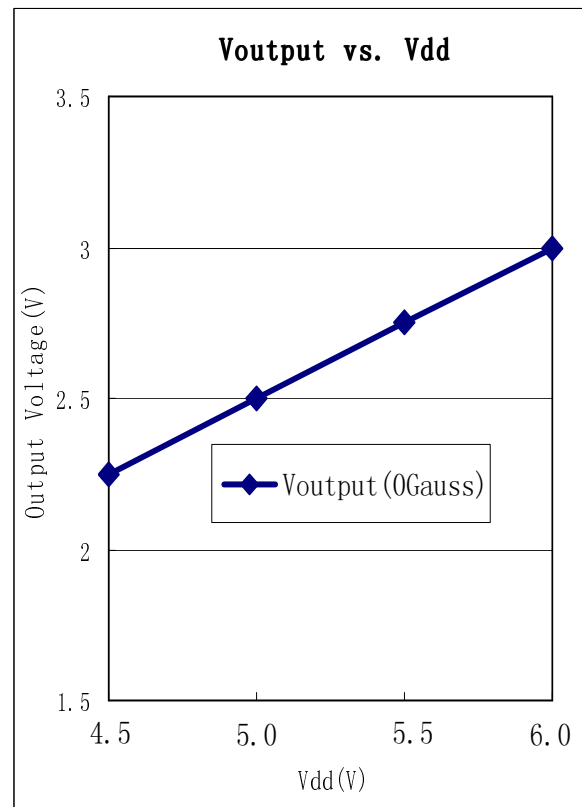
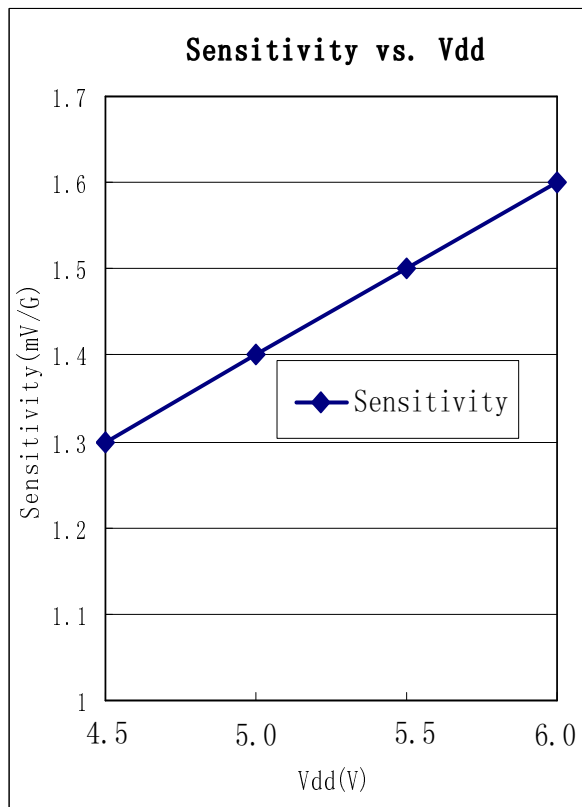
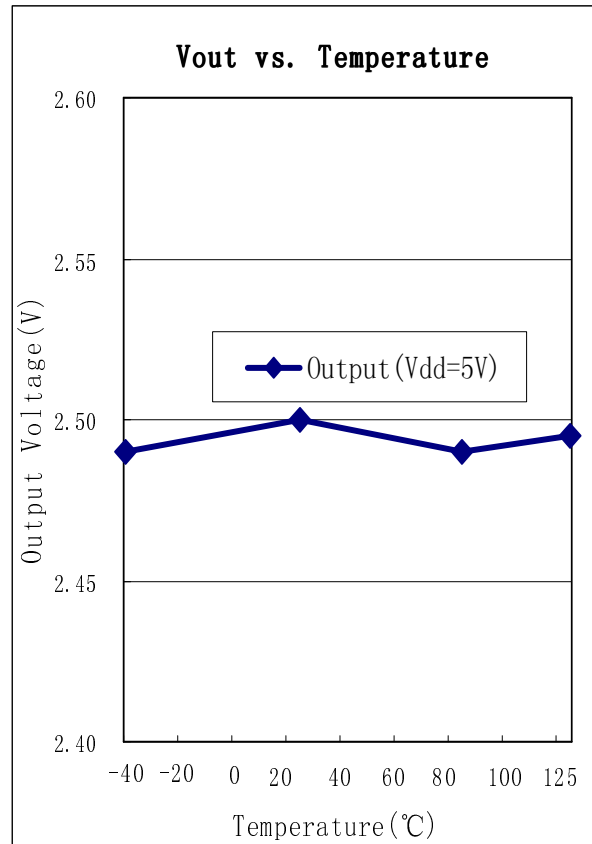
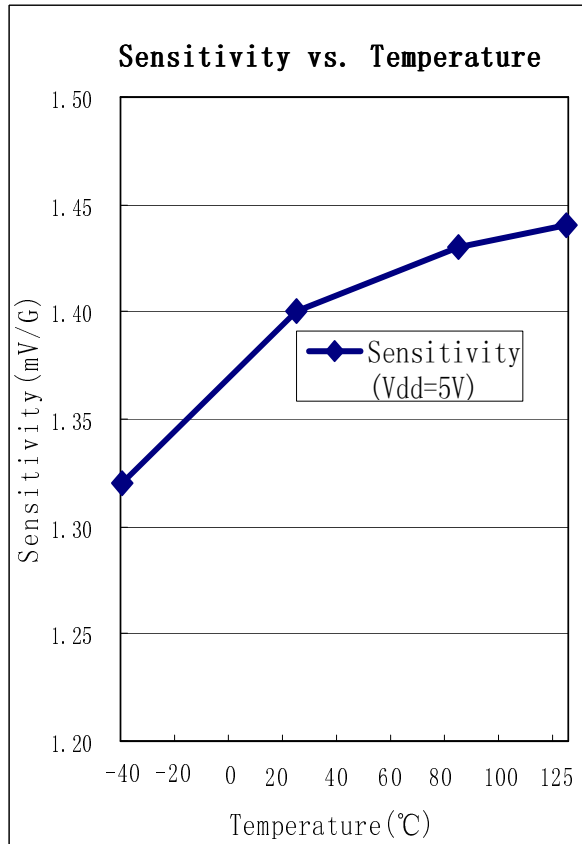


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### Performance Graphs

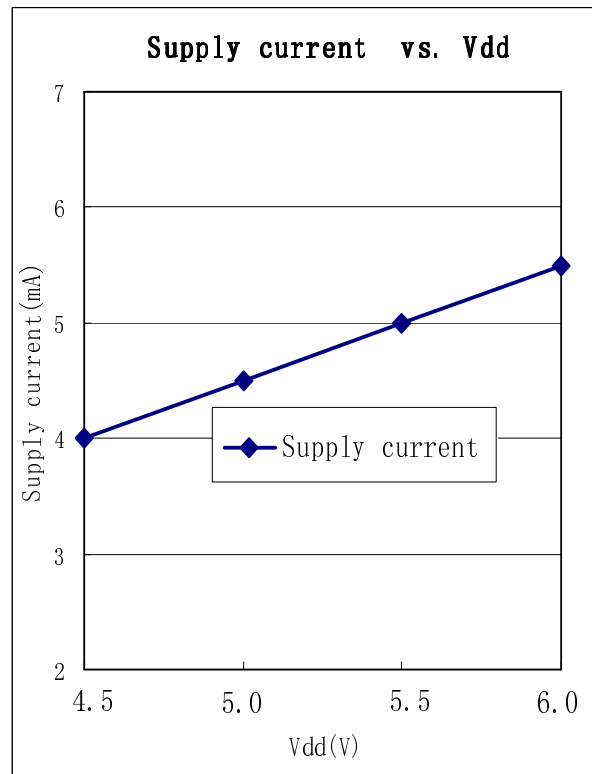
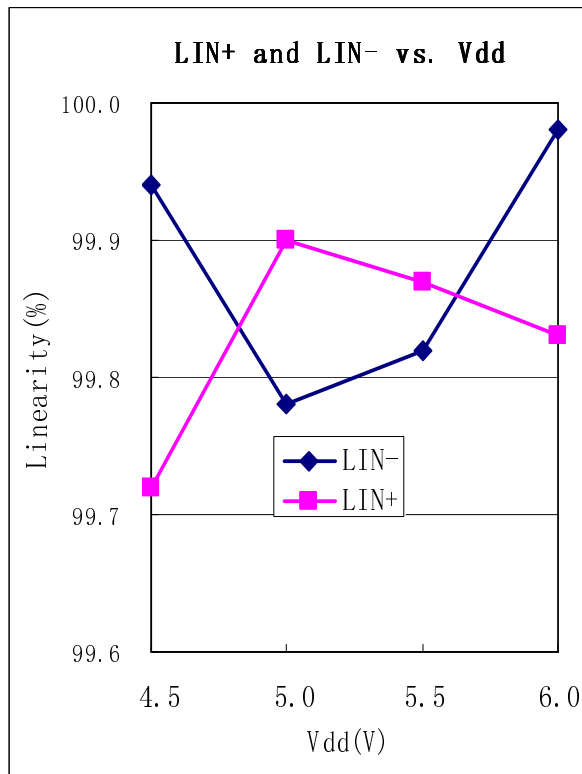




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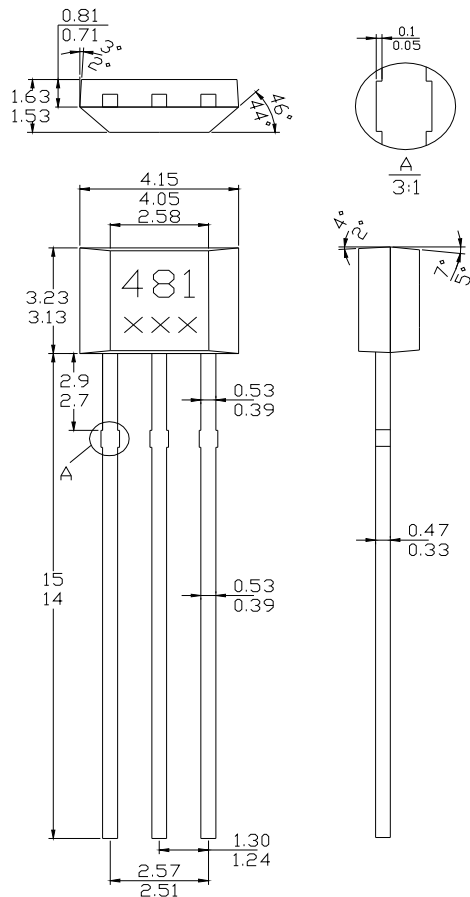
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Ratiometric Linear Hall effect Sensors



## Sensor Location, package dimension and marking

### MH 481-01 Package



#### NOTES:

- 1).Controlling dimension: mm
- 2).Leads must be free of flash and plating voids
- 3).Do not bend leads within 1 mm of lead to package interface

#### 4).PINOUT:

|       |        |
|-------|--------|
| Pin 1 | VDD    |
| Pin 2 | GND    |
| Pin 3 | Output |

