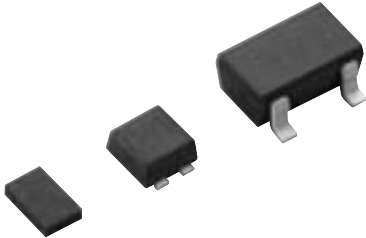


AMR Sensors (Magnetic Switches)



Murata offers a broad product portfolio of AMR sensors for wide range of consumer and industrial applications including open-close detection for consumer electronics and white goods, flow rate detection for smart gas and water meters, and position sensing for cylinder switches. More than 30 part numbers support diverse design and performance needs.

Murata AMR sensor is a sensing device utilizing the Magneto Resistance effect. It is comprised of four AMR elements and a IC circuit. Features include high sensitivity, narrow sensitivity spec range, design flexibility, and reliable performance in different operating conditions.

■ Position/Rotation Sensing [General Use]

Ta=25°C

| Part Number | Type/Feature | Power Supply | Avg. Current Consumption | Sensitivity | PKG Type | Operating Temp. (°C) |
|-------------|---------------------------|--------------|--------------------------|---------------|---------------|----------------------|
| MRMS201A | Std. performance | 1.6 to 3.5V | 5μA (Typ. Vcc3.0V) | 0.5 to 2.5 mT | 3Pin MM | -40 to +85 |
| MRMS301A | Std. performance | 1.6 to 3.5V | 3μA (Typ. Vcc1.8V) | 0.5 to 2.5 mT | 3Pin FLP | -40 to +85 |
| MRMS501A | Std. performance | 1.6 to 3.5V | 3μA (Typ. Vcc1.8V) | 0.5 to 2.5 mT | Mini 3Pin FLP | -40 to +85 |
| MRMS601A | Std. performance | 1.6 to 3.5V | 3μA (Typ. Vcc1.8V) | 0.5 to 2.5 mT | 4Pin LLP | -40 to +85 |
| MRMS211H | Hi-accuracy | 1.6 to 3.5V | 5μA (Typ. Vcc3.0V) | 0.8 to 1.4 mT | 3Pin MM | -40 to +85 |
| MRMS211M | Hi-accuracy | 1.6 to 3.5V | 5μA (Typ. Vcc3.0V) | 1.2 to 1.8 mT | 3Pin MM | -40 to +85 |
| MRMS211L | Hi-accuracy | 1.6 to 3.5V | 5μA (Typ. Vcc3.0V) | 1.6 to 2.2 mT | 3Pin MM | -40 to +85 |
| MRMS511H | Hi-accuracy | 1.6 to 3.5V | 3μA (Typ. Vcc1.8V) | 0.8 to 1.4 mT | Mini 3Pin FLP | -40 to +85 |
| MRMS511M | Hi-accuracy | 1.6 to 3.5V | 3μA (Typ. Vcc1.8V) | 1.2 to 1.8 mT | Mini 3Pin FLP | -40 to +85 |
| MRMS511L | Hi-accuracy | 1.6 to 3.5V | 3μA (Typ. Vcc1.8V) | 1.6 to 2.2 mT | Mini 3Pin FLP | -40 to +85 |
| MRMS611H | Hi-accuracy | 1.6 to 3.5V | 3μA (Typ. Vcc1.8V) | 0.8 to 1.4 mT | 4Pin LLP | -40 to +85 |
| MRMS611M | Hi-accuracy | 1.6 to 3.5V | 3μA (Typ. Vcc1.8V) | 1.2 to 1.8 mT | 4Pin LLP | -40 to +85 |
| MRMS611L | Hi-accuracy | 1.6 to 3.5V | 3μA (Typ. Vcc1.8V) | 1.6 to 2.2 mT | 4Pin LLP | -40 to +85 |
| MRMS205A | 5V operation | 3.0 to 5.5V | 8μA (Typ. Vcc5.0V) | 0.5 to 2.5 mT | 3Pin MM | -40 to +85 |
| MRMS215H | 5V operation, Hi-accuracy | 3.0 to 5.5V | 8μA (Typ. Vcc5.0V) | 0.8 to 1.4 mT | 3Pin MM | -40 to +85 |
| MRMS215M | 5V operation, Hi-accuracy | 3.0 to 5.5V | 8μA (Typ. Vcc5.0V) | 1.2 to 1.8 mT | 3Pin MM | -40 to +85 |
| MRMS215L | 5V operation, Hi-accuracy | 3.0 to 5.5V | 8μA (Typ. Vcc5.0V) | 1.6 to 2.2 mT | 3Pin MM | -40 to +85 |

■ Position Sensing [High Performance]

Ta=25°C

| Part Number | Type/Feature | Power Supply | Current Consumption | Sensitivity | PKG Type | Operating Temp. (°C) |
|-------------|--------------------------|---------------|------------------------|------------------------------------------------|---------------|----------------------|
| MRSS27H | Hi-voltage, Hi-speed | 3.5 to 30.0V | 1.5mA (Vcc12.0V)*1 | 0.8 to 2.2 mT | 3Pin MM | -40 to +100 |
| MRSS29D | Hi-voltage, Hi-speed | 3.5 to 30.0V | 1.5mA (Vcc12.0V)*1 | 0.8 to 2.5 mT | 3Pin MM | -40 to +100 |
| MRMS541D | Hi-speed, Hi-accuracy | 2.4 to 3.8V | 220μA (Typ. Vcc3.0V)*2 | 1.0 to 2.5 mT | Mini 3Pin FLP | -40 to +85 |
| MRUS72S | Hi-speed, Lo-power | 2.4 to 3.6V | 2.5mA (Vcc3.0V)*4 | 0.5 to 2.5 mT | Mini 4Pin FLP | -40 to +85 |
| MRUS73C | Hi-speed, 2-Output | 2.4 to 3.8V | 250μA (Typ. Vcc3.3V)*2 | Out1 1.4 to 2.8 mT Out2 1.6 to 3.0 mT | Mini 4Pin FLP | -40 to +85 |
| MRUS74S | Hi-speed, Ultra lo-power | 1.6 to 3.5V*3 | 2.5mA (VIH3.0V)*4 | 2.5 mT<*5 | Mini 4Pin FLP | -40 to +105 |
| MRMS571A | Open-drain output | 2.4 to 5.5V | 8μA (Typ. Vcc5.0V)*2 | 0.8 to 1.8 mT | Mini 3Pin FLP | -40 to +85 |

*1 Icc (Max) at Vcc12.0V

*2 Avg. current consumption at specified power supply voltage.

*3 Enable voltage (VIH)

*4 Peak current consumption. Avg. current consumption depends on Vcc/VIH input parameter settings.

*5 The value indicates Hon sensitivity (Max).

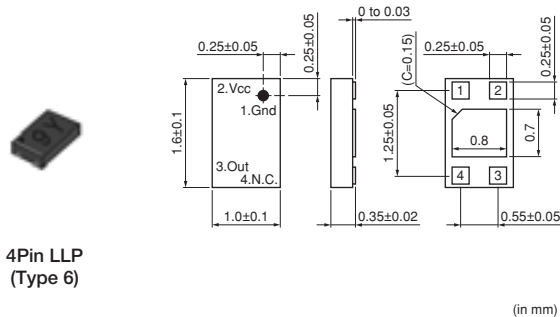
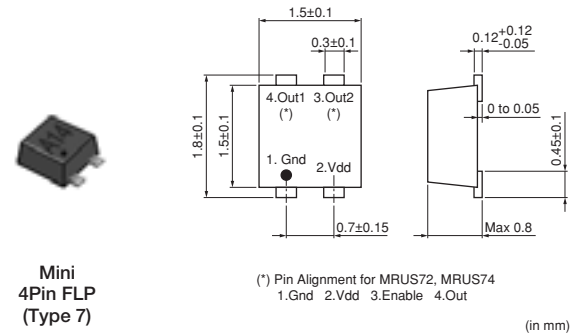
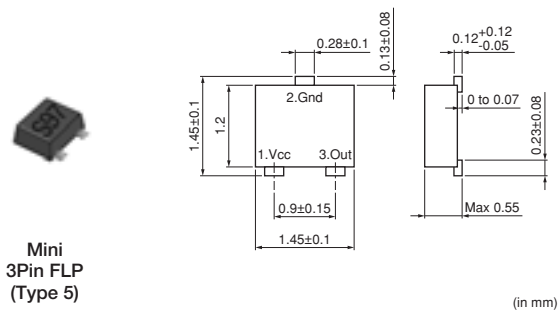
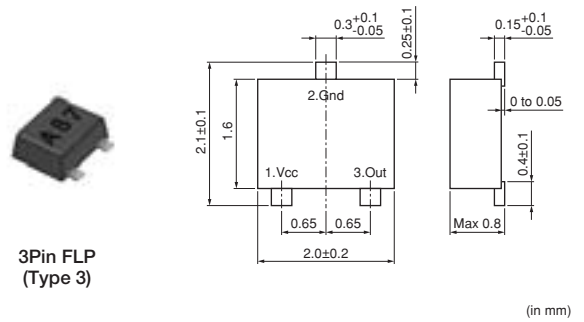
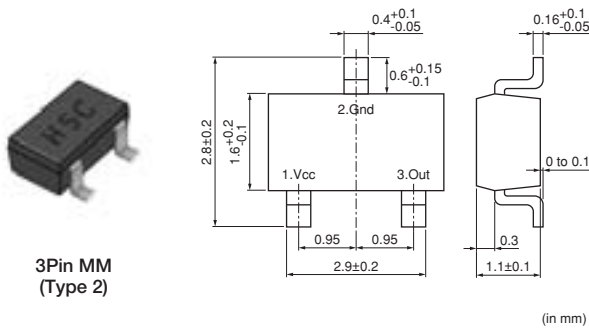
■ Rotation Sensing [High Performance]; 2-axis(X, Y plane) Field Operation;

Ta=25°C

| Part Number | Type/Feature | Power Supply | Current Consumption | Sensitivity*1 | PKG Type | Operating Temp. (°C) |
|-------------|---------------------------|---------------|---------------------|---------------|---------------|----------------------|
| MRSS29DR | Hi-voltage, Hi-speed | 3.5 to 30.0V | 1.5mA (Vcc12.0V)*2 | 3.2 mT<*3 | 3Pin MM | -40 to +85 |
| MRUS72X | Low power, Hi-speed | 2.4 to 3.6V | 2.5mA (Vcc3.0V)*4 | 1.5 mT< | Mini 4Pin FLP | -40 to +85 |
| MRUS74X | Ultra low power, Hi-speed | 2.0 to 3.6V*5 | 2.5mA (VIH3.0V)*4 | 1.5 mT< | Mini 4Pin FLP | -40 to +105 |

- *1 The value indicates Hon sensitivity (Max).
- *2 Icc (Max) at Vcc12.0V
- *3 Condition: Magnetic field of 2mT is applied to Direction B (Y axis).
- *4 Peak current consumption. (Max) Avg. current consumption depends on Vcc/VIH input parameter settings.
- *5 Enable voltage (VIH)

■ Package Types; Dimensions (in mm)



| Package Type | Form of Packing | Pcs/Reel |
|-------------------------------------------------------|-----------------|----------|
| 3Pin MM 3Pin FLP Mini 3Pin FLP Mini 4Pin FLP | Tape & Reel | 3,000 |
| 4Pin LLP | Tape & Reel | 5,000 |

■ Product Code System

AMR Sensors (Magnetic Switches)

(Part Number)



① Series Name

② PKG Type

| Type | PKG Type |
|------|---------------|
| 2 | 3Pin MM |
| 3 | 3Pin FLP |
| 5 | Mini 3Pin FLP |
| 6 | 4Pin LLP |
| 7 | Mini 4Pin LLP |

③ Type

| Type | Type |
|------|-----------------------------------|
| 01 | Standard/Cost Reduction |
| 11 | High Accuracy |
| 05 | Standard/Cost Reduction (5V Type) |
| 15 | High Accuracy (5V Type) |

④ Sensitivity Level (Type 01)

| Type | Sensitivity Level |
|------|--------------------------|
| A | Hon 2.5 mT / Hoff 0.5 mT |

④ Sensitivity Level (Type 11)

| Type | Sensitivity Level |
|------|--------------------------|
| H | Hon 1.4 mT / Hoff 0.8 mT |
| M | Hon 1.8 mT / Hoff 1.2 mT |
| L | Hon 2.2 mT / Hoff 1.6 mT |

■ Caution for Use

1. Handling

- This product may be degraded by electrostatic discharge. It is necessary to take anti-static precautions when handling.

2. Design

- Please evaluate this product for the magnet-variation of the magnet used along with this product, otherwise this product may result in the miss-operation or the non-operation.
- Sensor miss-operation or non-operation may occur due to the influence of the magnetic noise from surrounding devices such as motor. Please make sure there is no influence of the magnetic noise in designing process.
- Please be careful about a magnetic body (Iron, Nickel, etc.) and a magnetic noise immunity that may affect the magnetism of a magnet.
- Please do not supply inverse voltage or excess voltage to this product. If applied, this product may be damaged and electrically destroyed.
- Please design your product not to be affected by stress of the resin due to heat shrink. Also, please avoid corrosive gas that may erode the PCB wiring.
- It is effective to make the Vcc and GND line wide and short or to adopt multi-layer PCB for switching noise protection. In addition, please place a bypass capacitor near the sensor.

EU RoHS Compliant

- All the products in this catalog comply with EU RoHS.
- EU RoHS is "the European Directive 2002/95/EC on the Restriction of the Use of Certain Hazardous Substances in Electrical and Electronic Equipment".
- For more details, please refer to our website 'Murata's Approach for EU RoHS' (<http://www.murata.com/info/rohs.html>).

⚠Note:

1. Export Control

<For customers outside Japan>

No Murata products should be used or sold, through any channels, for use in the design, development, production, utilization, maintenance or operation of, or otherwise contribution to (1) any weapons (Weapons of Mass Destruction [nuclear, chemical or biological weapons or missiles] or conventional weapons) or (2) goods or systems specially designed or intended for military end-use or utilization by military end-users.

<For customers in Japan>

For products which are controlled items subject to the "Foreign Exchange and Foreign Trade Law" of Japan, the export license specified by the law is required for export.

2. Please contact our sales representatives or product engineers before using the products in this catalog for the applications listed below, which require especially high reliability for the prevention of defects which might directly damage a third party's life, body or property, or when one of our products is intended for use in applications other than those specified in this catalog.

- | | |
|-----------------------------|------------------------------------------------------------------------------------------------------|
| ① Aircraft equipment | ② Aerospace equipment |
| ③ Undersea equipment | ④ Power plant equipment |
| ⑤ Medical equipment | ⑥ Transportation equipment (vehicles, trains, ships, etc.) |
| ⑦ Traffic signal equipment | ⑧ Disaster prevention / crime prevention equipment |
| ⑨ Data-processing equipment | ⑩ Application of similar complexity and/or reliability requirements to the applications listed above |

3. Product specifications in this catalog are as of September 2013. They are subject to change or our products in it may be discontinued without advance notice.

Please check with our sales representatives or product engineers before ordering. If there are any questions, please contact our sales representatives or product engineers.

4. Please read rating and ⚠CAUTION (for storage, operating, rating, soldering, mounting and handling) in this catalog to prevent smoking and/or burning, etc.

5. This catalog has only typical specifications. Therefore, please approve our product specifications or transact the approval sheet for product specifications before ordering.

6. Please note that unless otherwise specified, we shall assume no responsibility whatsoever for any conflict or dispute that may occur in connection with the effect of our and/or a third party's intellectual property rights and other related rights in consideration of your use of our products and/or information described or contained in our catalogs. In this connection, no representation shall be made to the effect that any third parties are authorized to use the rights mentioned above under licenses without our consent.

7. No ozone depleting substances (ODS) under the Montreal Protocol are used in our manufacturing process.

 **Murata Manufacturing Co., Ltd.**

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