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.

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

*1 Icc (Max) at Vcc12.0V
*2 Avg. current consumption at specified power supply voltage.
*3 Enable voltage (Vin)
*4 Peak current consumption. Avg. current consumption depends on Vcc/Vih input parameter settings.
*5 The value indicates Hon sensitivity (Max).
### Package Types; Dimensions (in mm)

#### 3Pin MM (Type 2)
- 2.8±0.2
- 1.45±0.1
- 0.35
- 0.95
- 2.9±0.15
- 0 to 0.1
- 3.0
- 1.1±0.1

#### 3Pin FLP (Type 3)
- 2.1±0.1
- 0.6
- 0.3±0.1
- 0 to 0.05
- 0.25±0.05
- 0.25±0.05
- 0.25±0.05
- 0.25±0.05

#### Mini 3Pin FLP (Type 5)
- 1.5±0.1
- 0.7±0.12
- 0.05
- 0 to 0.7±0.25
- 0.1±0.12
- 0.05
- 0.2±0.1
- 0.1

#### Mini 4Pin FLP (Type 7)
- 2.0±0.1
- 1.2
- 1.1±0.1
- 0.35±0.02
- 0 to 0.05
- 0.25±0.05
- 0.25±0.05
- 0.25±0.05

#### 4Pin LLP (Type 8)
- 1.5±0.1
- 0.30±0.05
- 0.30±0.05
- 0.30±0.05
- 0 to 0.05
- 0.25±0.05
- 0.25±0.05
- 0.25±0.05

### Part Number | Type/Feature | Power Supply | Current Consumption | Sensitivity | 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$^c$ | 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$^c$ | Mini 4Pin FLP | -40 to +105

*1 The value indicates Hôn 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)

### Notes
- Please read rating and CAUTION (for storage, operating, rating, soldering, mounting and handling) in this catalog to prevent smoking and/or burning, etc.
- This catalog has only typical specifications. Therefore, please approve our product specifications or transact the approval sheet for product specifications before ordering.

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

- **Part Number**
- **Type/Feature**
- **Power Supply**
- **Current Consumption**
- **Sensitivity**
- **PKG Type**
- **Operating Temp. (°C)**
Product Code System

AMR Sensors (Magnetic Switches)

(Part Number)  MRMS 2 01 A

1. Series Name
2. PKG Type

<table>
<thead>
<tr>
<th>Type</th>
<th>PKG Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>3Pin MM</td>
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<tr>
<td>3</td>
<td>3Pin FLP</td>
</tr>
<tr>
<td>5</td>
<td>Mini 3Pin FLP</td>
</tr>
<tr>
<td>6</td>
<td>4Pin LLP</td>
</tr>
<tr>
<td>7</td>
<td>Mini 4Pin LLP</td>
</tr>
</tbody>
</table>

3. Type

<table>
<thead>
<tr>
<th>Type</th>
<th>Type</th>
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</thead>
<tbody>
<tr>
<td>01</td>
<td>Standard/Cost Reduction</td>
</tr>
<tr>
<td>11</td>
<td>High Accuracy</td>
</tr>
<tr>
<td>05</td>
<td>Standard/Cost Reduction (5V Type)</td>
</tr>
<tr>
<td>15</td>
<td>High Accuracy (5V Type)</td>
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</tbody>
</table>

4. Sensitivity Level (Type 01)

<table>
<thead>
<tr>
<th>Type</th>
<th>Sensitivity Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Hon 2.5 mT / Hoff 0.5 mT</td>
</tr>
</tbody>
</table>

5. Sensitivity Level (Type 11)

<table>
<thead>
<tr>
<th>Type</th>
<th>Sensitivity Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>H</td>
<td>Hon 1.4 mT / Hoff 0.8 mT</td>
</tr>
<tr>
<td>M</td>
<td>Hon 1.8 mT / Hoff 1.2 mT</td>
</tr>
<tr>
<td>L</td>
<td>Hon 2.2 mT / Hoff 1.6 mT</td>
</tr>
</tbody>
</table>

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 contributing 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 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.

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7. No ozone-depleting substances (ODS) under the Montreal Protocol are used in our manufacturing process.
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Murata:
MRMS511D  MRMS215H  MRMS511L  MRMS211H  MRSS29DR  MRUS73C  MRMS205A  MRUS74X  MRMS611M
MRMS27H  MRMS611L  MRMS215M  MRSS27H  MRUS72S  MRUS52F  MRMS511M  MRMS215L  MRMS29D
MRMS511H  MRMS301A  MRMS211L  MRMS571A  MRSS29D  MRUS72X  MRMS601A  MRMS611H  MRUS74S
MRMS201A  MRMS211M  MRMS501A