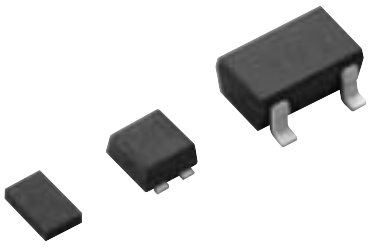
AMR Sensors (Magnetic Switches)



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 (V_{IH}3.0V)*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 (V_{IH})
*4 Peak current consumption. Avg. current consumption depends on Vcc/V_{IH} input parameter settings.
*5 The value indicates Hon sensitivity (Max).

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

Ta=25°C

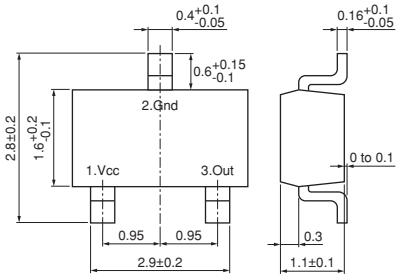
Part Number	Type/Feature	Power Supply	Current Consumption	Sensitivity*1	PKG Type	Operating Temp. (°C)
MRSS29DR	Hi-voltage, Hi-speed	3.5 to 30.0V	1.5mA (Vcc12.0V)*2	3.2 mT<*3	3Pin MM	-40 to +85
MRUS72X	Low power, Hi-speed	2.4 to 3.6V	2.5mA (Vcc3.0V)*4	1.5 mT<	Mini 4Pin FLP	-40 to +85
MRUS74X	Ultra low power, Hi-speed	2.0 to 3.6V*5	2.5mA (V_{IH}3.0V)*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/V_{IH} input parameter settings.
*5 Enable voltage (V_{IH})

■ Package Types; Dimensions (in mm)



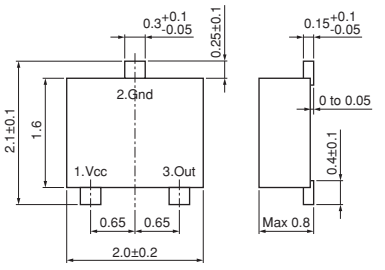
3Pin MM
(Type 2)



(in mm)



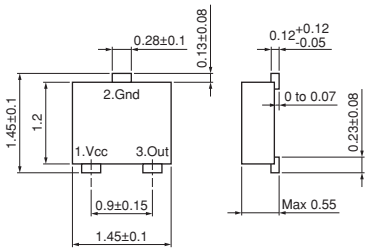
3Pin FLP
(Type 3)



(in mm)



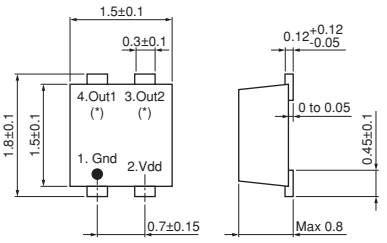
Mini
3Pin FLP
(Type 5)



(in mm)



Mini
4Pin FLP
(Type 7)

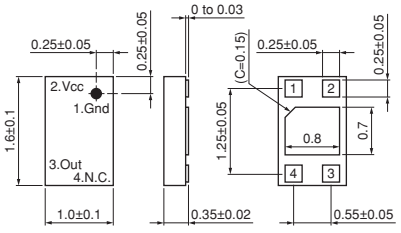


(*) Pin Alignment for MRUS72, MRUS74
1.Gnd 2.Vdd 3.Enable 4.Out

(in mm)



4Pin LLP
(Type 6)



(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) **MRMS** ❶ **2** ❷ **01** ❸ **A** ❹

❶Series Name

❷PKG Type

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

❸Type

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

❹Sensitivity Level (Type **01**)

Type	Sensitivity Level
A	Hon 2.5 mT / Hoff 0.5 mT

❹Sensitivity 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.

http://www.murata.com/

Head Office
1-10-1, Higashi Kotari, Nagaokakyo-shi, Kyoto 617-8555, Japan
Phone: 81-75-951-9111

International Division
3-29-12, Shibuya, Shibuya-ku, Tokyo 150-0002, Japan
Phone: 81-3-5469-6123 Fax: 81-3-5469-6155 E-mail: intl@murata.co.jp

Mouser Electronics

Authorized Distributor

Click to View Pricing, Inventory, Delivery & Lifecycle Information:

Murata:

MRMS541D MRMS215H MRMS511L MRMS211H MRSS29DR MRUS73C MRMS205A MRUS74X MRMS611M MRMS27H MRMS611L MRMS215M MRSS27H MRUS72S MRMS511M MRMS215L MRMS29D MRMS511H MRMS301A MRMS211L MRMS571A MRSS29D MRUS72X MRMS601A MRMS611H MRUS74S MRMS201A MRMS211M MRMS501A