

MRMS611M

High accuracy type MR sensor

MRMS611 is optimal magnetic sensor for applications which require precise control of the detection range. NEC's original thin film control technology contributed to highly improved magnetic field sensitivity range as well as temperature characteristics.

[Application Examples]

- Mobile phones, notebook PCs and PDAs requiring high accuracy detection angle
- Slider phones requiring high accuracy position detection
- Applications requiring minimization of temperature dependence

FEATURES

MRMS611 is narrow sensitivity type MR sensor which features Min-Max 0.6mT sensitivity range (includes hysteresis) at ambient temperature.

Operating magnetic field ranges are available in 3 sensitivity level(H, M, L) as shown in the table below.

Unit: mT

Series Name	Sensitivity	Hoff Min	Hon Max
MRMS611	H	0.8	1.4
	M	1.2	1.8
	L	1.6	2.2

Improved temperature characteristics with built-in temperature-compensated circuit.

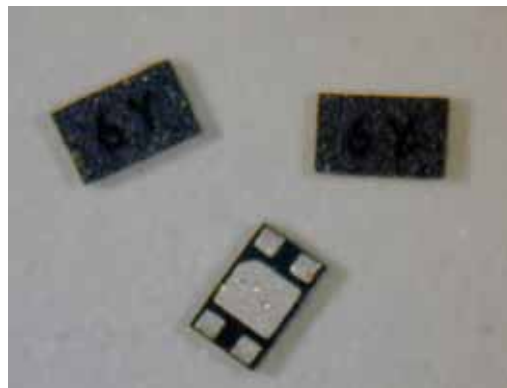
$$H_{on} = \pm 0.20\text{mT at } T_a\text{-40 to +85}[\text{°C}]$$

Realized low voltage of operating(1.6 to 3.5V), low power consumption(Typ 6 μ W (Vcc=1.8V))

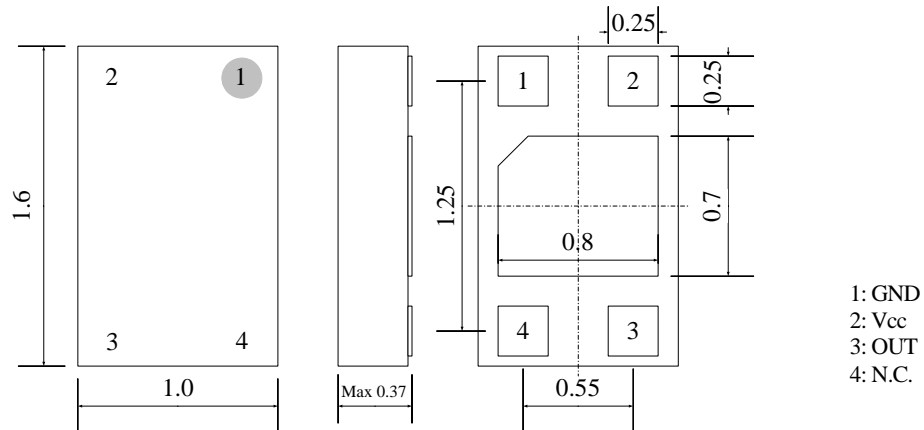
Detecting horizontal magnetic flux density. No dependence on Magnetic field polarity.

Operating temperature -40 to +85

RoHS Compliant, Halogen Free

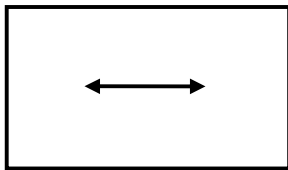


DIMENSIONS (Unit: mm)

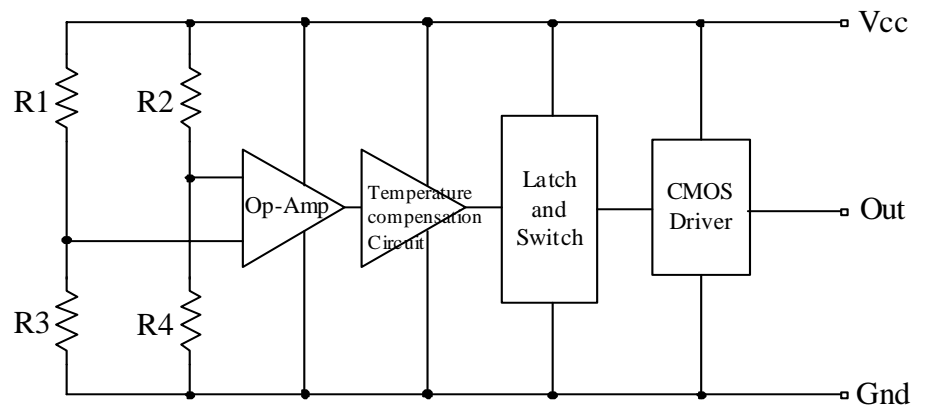


FUNDEMENTAL OPERATION

Direction of Magnetic Field



Circuit Block



The intermittent switch circuit inside
R1-R4:MR Elements

PERFORMANCE

Performance Characteristics ($T_a=25\pm 3^\circ\text{C}$)

	Operating require Condition	Output Voltage
When power switch is ON	H = 0 mT(Magnetic Flux Density) {0 A/m (Magnetic Field Strength)}	Hi-level
When magnetic field is applied	H 1.8mT (Magnetic Flux Density) {1.4kA/m (Magnetic Field Strength)}	Lo-level
When magnetic field is applied	H 1.2mT(Magnetic Flux Density) {1.0kA/m (Magnetic Field Strength)}	Hi-level

Recommended Operating Conditions

($T_a = 25 \pm 3^\circ\text{C}$ unless otherwise specified)

Item	Symbol	Condition	Min	Std	Max	Unit
Supply Voltage	-	-	1.6	1.8	3.5	V
Supply Current	(AVG)	V _{CC} =1.8V	-	3.0	-	μA
Ambient Temperature	-	-	-40	25	85	°C
Output Voltage	VOH	V _{CC} =1.8V I _{out} =1mA	1.6	-	-	V
	VOL	V _{CC} =1.8V I _{out} =-1mA	-	-	0.2	V
Operating Magnetic Field	Hon	25±3°C	-	-	1.8	mT ^{*1}
		-40 ~ +85°C	-	-	2.0	
	Hoff	25±3°C	1.2	-	-	
		-40 ~ +85°C	1.0	-	-	

*1) 1 [mT](SI) = 10 [G] (CGS)

ABSOLUTE MAXIMUM RATINGS

($T_a=25 \pm 3^\circ\text{C}$ unless otherwise specified)

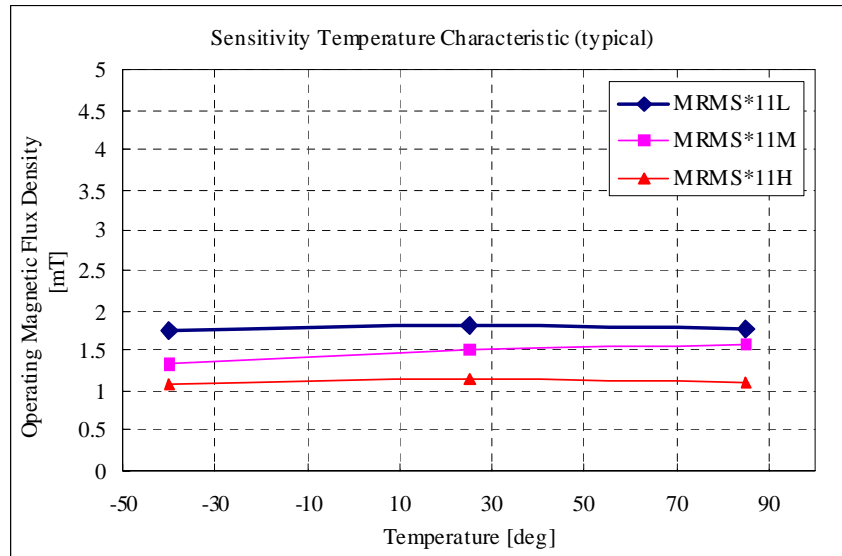
Item	Condition	Specifications	Unit
Supply Voltage	-	6.0	V
Storage Temperature	-	-40 ~ +125	°C

ESD PROTECTION

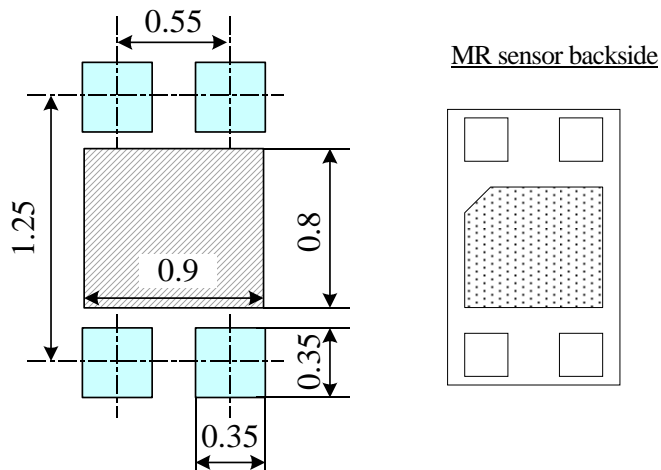
Human Body Model (HBM) tests according to: MIL-STD-883D Method: 3015.7

Parameter	Symbol	Limited Values		Unit	Notes
		Min	Max		
ESD Voltage	V _{ESD}	± 4.0		kV	R=1.5k C=100pF T=25

Temperature Characteristics



RECOMMENDED MOUNT PAD (Unit: mm)



Note) No soldering needed for the shaded mount pad area
 In case of wiring signal line other than GND, make sure to insulate the dotted area of the MR sensor backside and the shaded mount pad area.



NEC Corporation
 Sales and Marketing Department, Fiber Optic Devices Division
 1131, Hinode, Abiko, Chiba 270-1198, Japan
 Tel: +81-4-7185-7410 Fax: +81-4-7185-7925
<http://www.nec.com/global/prod/fod/>

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Renesas Electronics Europe GmbH
 Sales and Marketing of Semiconductors across Europe
 Arcadiastrasse 10, D-40472 Dusseldorf, Germany
 Tel: +49-211-6503-0 FAX: +49-211-6503-1327

NEC Corporation of America
 Fiber Optech Department (USA & CANADA)
 6535 N. State Highway 161, Irving, TX 75039, U.S.A.
 Tel: +1-214-262-3693 FAX: +1-214-262-3685