



MDSM-1000A-B

COMPASS SENSORS MODULE

- Two integrated Magnetic Sensors MF1_A (MF1_B).

Description

The MDSM-1000A-B is a SMD module including 2 high sensitivity compass magnetoresistive sensors. This device supplies to designer the best solution for electronic compass application.

MDSM-1000A-B is a dual MR sensor with low noise and low flip current giving the highest resolution and stability.

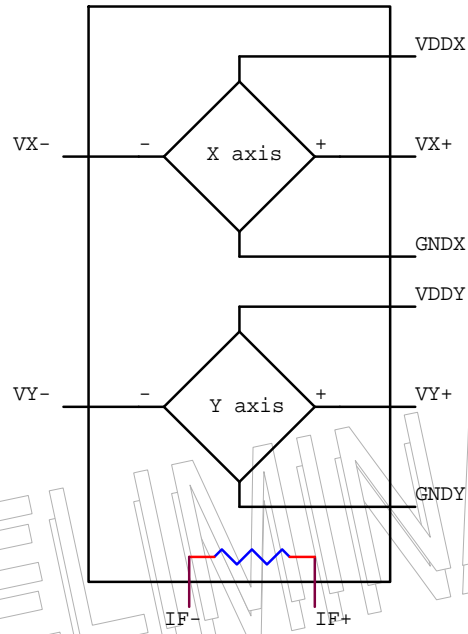
The small size of this module (6.35 x 6.35 x 1.7 mm) eases its integration in all watch applications.

Application

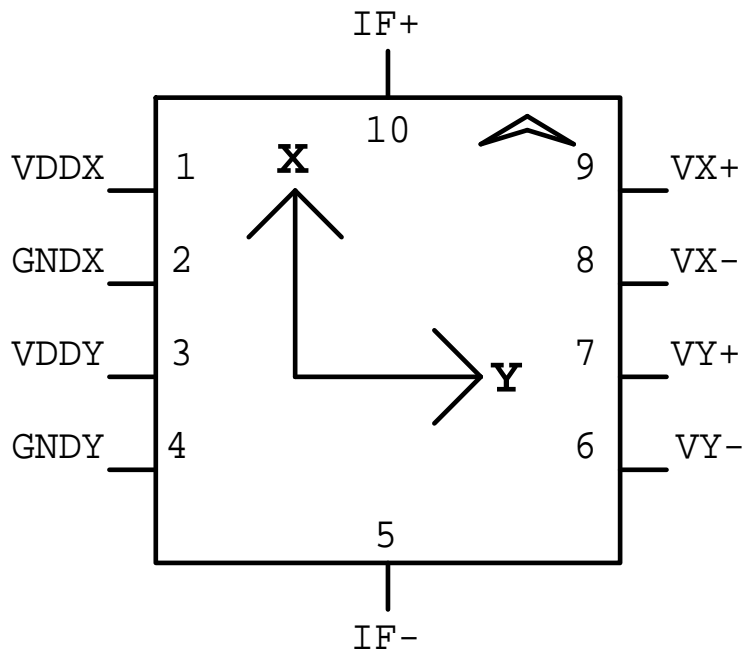
- Electronic compass with 1° resolution that can be raised up to 0.1° resolution by using a high resolution AD converter.
- High added-value sensor watches.
- GPS.



Block diagram



Pins description



Pinout of MDSM-1000A-B



Pin name	Pin no	Description
VDDX	1	Positive power for the sensor in X axis
GNDX	2	Negative power for the sensor in X axis
VDDY	3	Positive power for the sensor in Y axis
GNDY	4	Negative power for the sensor in Y axis
IF-	5	Negative power for flipping pulse
VY-	6	Negative output of the sensor in Y axis
VY+	7	Positive output of the sensor in Y axis
VX-	8	Negative output of the sensor in X axis
VX+	9	Positive output of the sensor in Y axis
IF+	10	Positive power for flipping pulse

Absolute maximum ratings

MDSM-1000A

Description	Symbol	Value
Maximum voltage applied between VDD and GND	V	3.6 V
Maximum flip current (pulse 10us, 1ms pause)	I _F	1 A
Maximum flipstrom (permanent)	I _{FS}	10 mA
Operating temperature range	T	-20°C – 70°C

MDSM-1000B

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Maximum flip current (pulse 10us, 1ms pause)	I _F	1 A
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Electrical characteristics (preliminary , 25°C)

MDSM-1000A

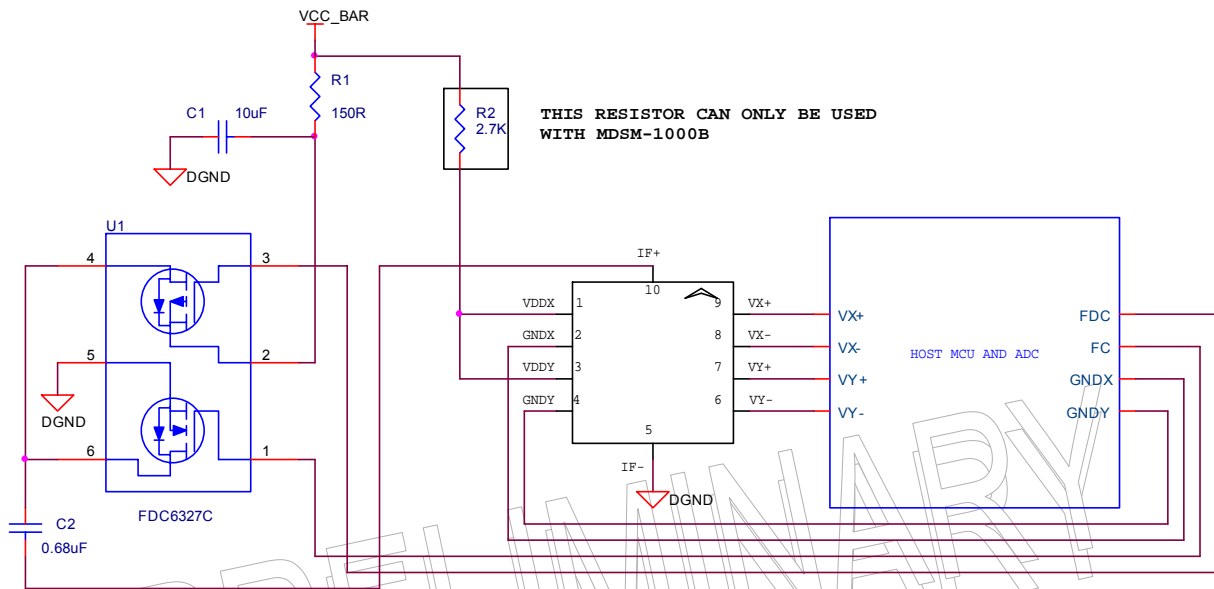
Description	Symbol	Value
Sensor resistance	R_S	$1.5 \pm 0.5 \text{ K}\Omega$
Temperature coefficient of R_S	TK_{RS}	$(2.6 \pm 0.5) * 10^{-3} \text{ K}^{-1}$
Resistance of flip coil	R_F	$\leq 3.5\Omega$
Temperature coefficient of R_F	TK_{RF}	$(3.7 \pm 0.7) * 10^{-3} \text{ K}^{-1}$
Minimum resistance of isolation	R_{ISO}	$> 100 \text{ M}\Omega$
Maximum voltage across isolation	V_{ISO}	60 V
Offset	V_{off}	$\leq 5\text{mV/V}$
Sensitivity to magnetic field	S_H	$6 \pm 2 \text{ mV/V kA/m}$
Temperature coefficient of sensitivity	TK_S	$(0.4 \pm 0.8) * 10^{-3} \text{ K}^{-1}$
Typical flip current (intermittent: 10us pulse, 10ms pause)	I_F	$> 0.7\text{A}$

MDSM-1000B

Description	Symbol	Value
Sensor resistance	R_S	$1.5 \pm 0.5 \text{ K}\Omega$
Temperature coefficient of R_S	TK_{RS}	$(2.6 \pm 0.5) * 10^{-3} \text{ K}^{-1}$
Resistance of flip coil	R_F	$\leq 3.5\Omega$
Temperature coefficient of R_F	TK_{RF}	$(3.7 \pm 0.7) * 10^{-3} \text{ K}^{-1}$
Minimum resistance of isolation	R_{ISO}	$> 100 \text{ M}\Omega$
Maximum voltage across isolation	V_{ISO}	50 V
Offset	V_{off}	$\leq 5\text{mV/V}$
Sensitivity to magnetic field	S_H	$6 \pm 2 \text{ mV/V kA/m}$
Temperature coefficient of sensitivity	TK_S	$(0.4 \pm 0.8) * 10^{-3} \text{ K}^{-1}$
Typical flip current (intermittent: 10us pulse, 10ms pause)	I_F	Typ. 0.35A



Application schematic



The application schematic of MDS-1000A-B with Power control by GND signal.

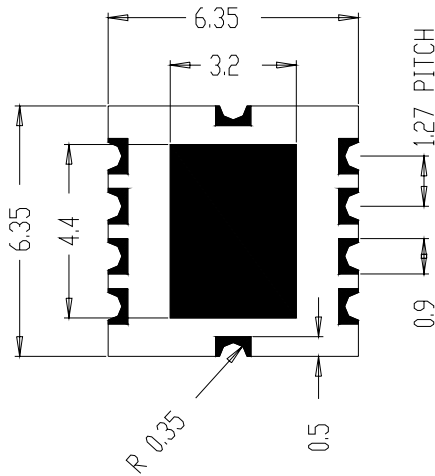
Important notice : Magnetic sensors placement

Place the magnetoresistive sensors such a way that their x or y axis passes through the center of the battery.

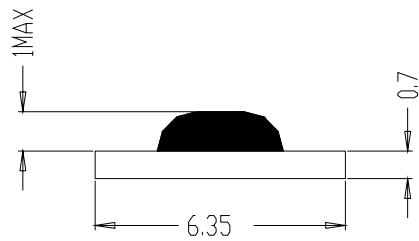
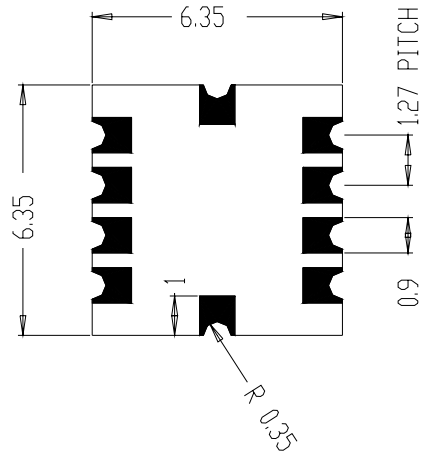


Physical size

TOP VIEW

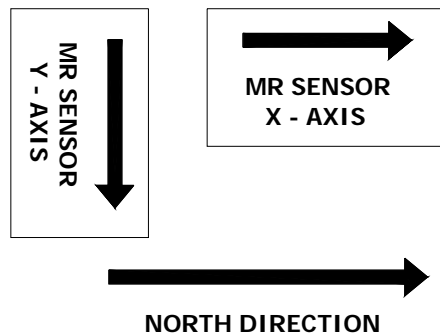


BOTTOM VIEW



MR sensors direction

TOP VIEW





DIGISENSOR CO., LTD

ORDERING INFORMATION

PRODUCT CODE : MDSM-1000A (MDSM-1000B)

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