TMR6206 TMR Magnetic Pattern Recognition Sensor

General Description

The TMR6206 is a type of 6 channels magnetic pattern recognition sensor with high consistency, high sensitivity and high signal-to-noise ratio performance, it is used for detecting the paper bills, bank notes and security documents with magnetic anti-counterfeiting consists. The TMR6206 consist of TMR magneto-resistance sensor, high-quality magnet, high-strength plastic base and durable non-magnetic stainless steel cover. The appearance is shown in Figure. 1.

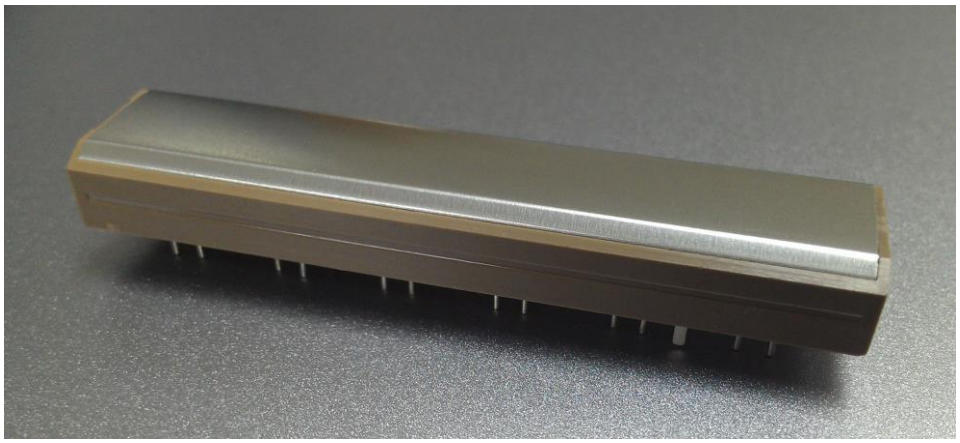


Figure 1. TMR6206 Magnetic Pattern Recognition Sensor Appearance

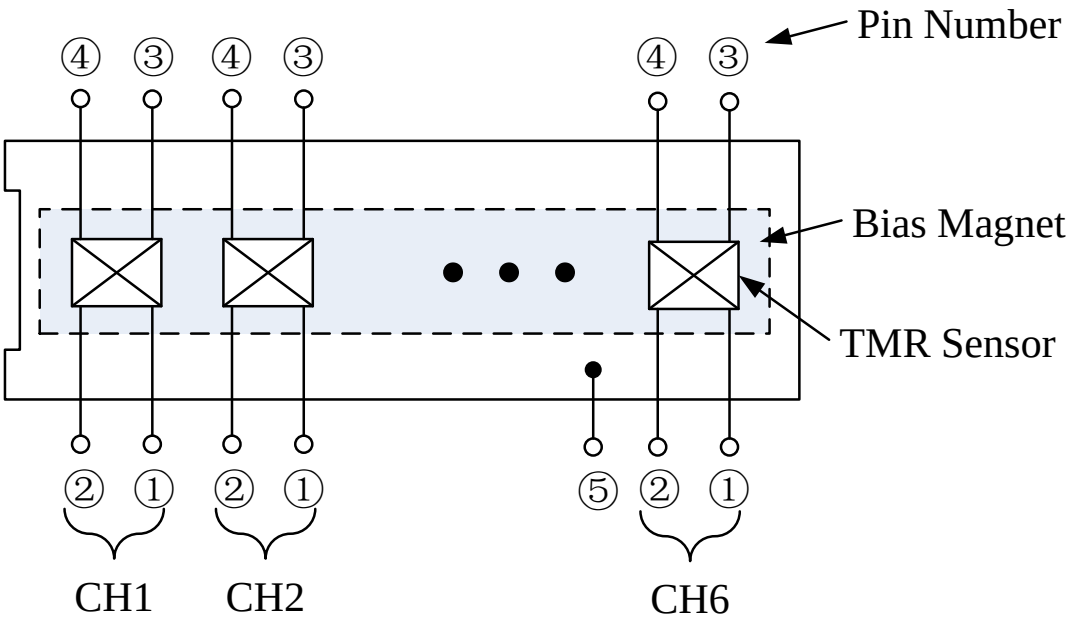
Features and Benefits

- High sensitivity and excellent gap performances
- Sensitivity matching of each channel
- Output voltage is independent of scanning speed
- Differential output, high CMRR performance
- Durable metal case, suitable for long time and heavy load situations
- 60mm detection width, no non-detection area
- 6 channels, 10mm detection width per channel

Typical Applications

- Bill and banknote counter and validator
- Bill and banknote sorter
- ATM
- Bill reader and validator in automated vending machines

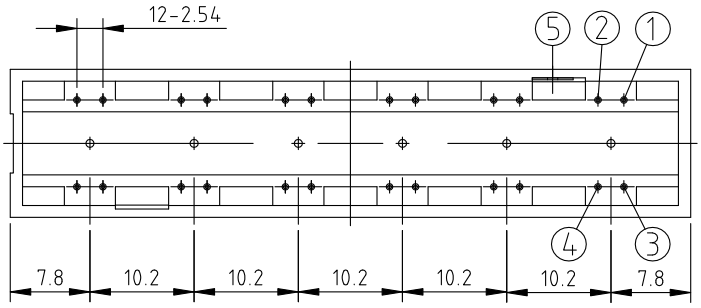
Schematic and Pin Configuration



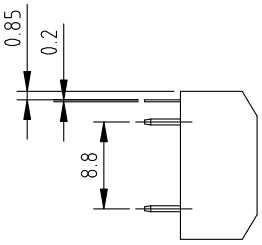
Block Diagram (Top View)

Pin No.	Symbol	Description
1	V+	Differential Positive output
2	V_{CC}	Power supply
3	V-	Differential Negative output
4	GND	Ground
5	Shell GND	Shell ground

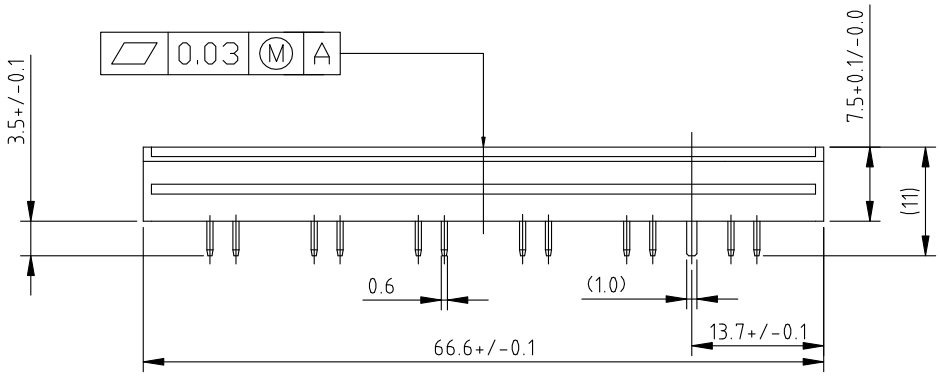
Outline Drawing and Dimensions



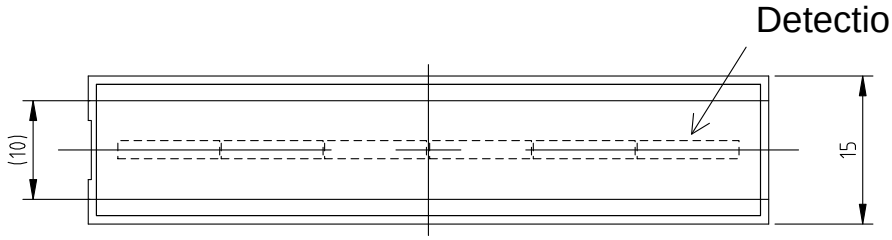
Bottom View



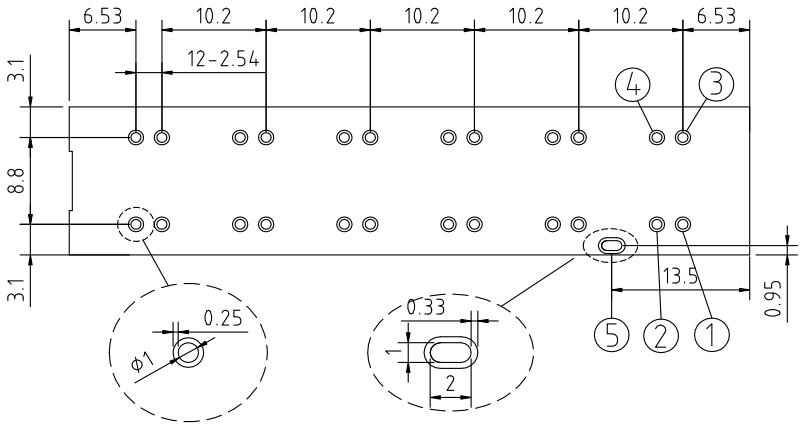
Side View



Front View



Top View



Recommended Pad Layout

Unit: mm

Absolute Maximum Ratings

Parameter	Symbol	Rating	Unit
Maximum Supply Voltage	V_{CC}	5.5	V
Operating Temperature	T_A	-20 ~ 65	℃
Storage Temperature	T_{stg}	-30 ~ 85	℃
Operating Humidity	HMD	10 ~ 90 (no dew)	%RH
ESD (HBM)	V_{HBM}	2000	V

Electrical Property （T_A=25℃）

Parameter	Symbol	Condition	Min.	Typ.	Max.	Unit
Sensitivity	$S^{(1)}$	V_{CC}=5V	0.4		1.3	V_{PP}
Resistance	R	No external magnetic field	0.5		3	kOhm
Output Offset Voltage	V_{OS}	V_{CC}=5V	-75		75	mV/V
Noise	V_N (2)	V_{CC}=5V		50		μV_{PP}
Surface Magnetic Field	B	On sensing surface (S pole)		800		G
Sensitivity Deviation	ΔS	$(S_{MAX} - S_{MIN}) / S_{MEAN}$	0		0.67	V/V
Number of Channels	C			6		
Detection Width per Channel	W			10		mm
Resolution	T			0.475		mm

Notes:

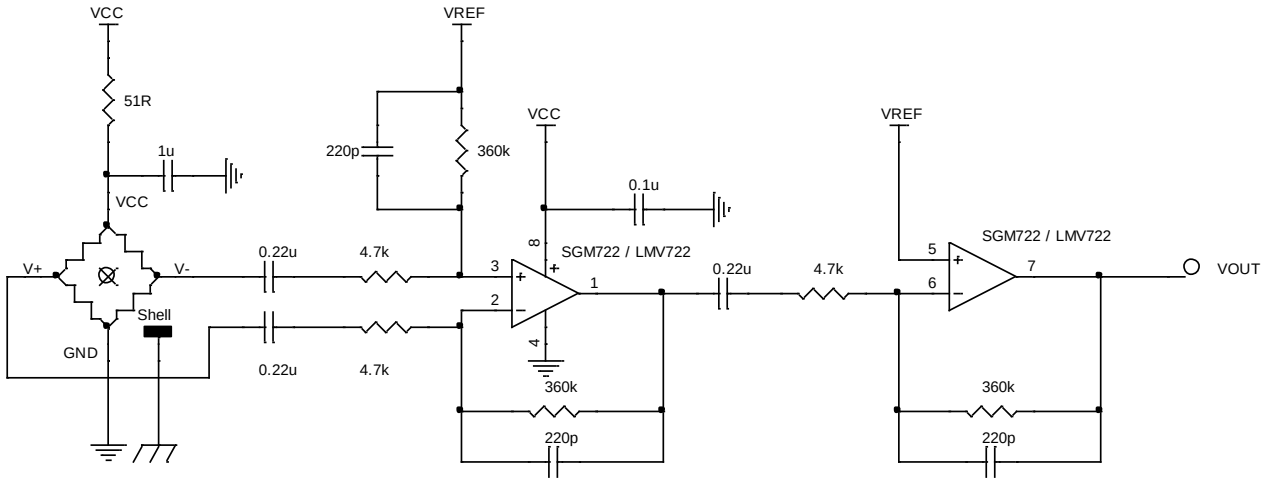
(1) It is tested with 0.4mm x 0.4mm size dots magnetic ink printed paper moving on the surface of the sensor with 0.03mm gap, measure the peak-peak output voltage with the “Recommended Application Circuit”.

(2) The amplifier’s gain is 10000V/V@1kHz, no external magnetic field applied, measure the peak-to-peak voltage V_{PP}, then $V_N = V_{PP}/10000$.

Caution for Use

- The sensor contains a permanent magnet, it will cause the recordable magnetic media damaged, such as cassette tapes, floppy disks, credit cards, hard drives, keep it away from such types of magnetic media.
- To avoid the ferromagnetic particles being collected from a dirty environment.
- Magnets tend to snap to each other or the magnetic metals, be careful when handling the sensor not to apply mechanical shock, otherwise the sensors might be abnormal or break.
- Do not place the sensor near the person who has an electronic medical device. It is very dangerous and may cause malfunction of an electronic medical device.
- Magnetic devices may be subject to special transport regulations.
- To avoid the abrasion of the sensor's metal case or stuck the banknote, about 0.1mm gap between the sensor and the opposite side such as rollers is recommended to reduce the pressure of the sensor's metal case.
- To avoid excessive force on terminals, please mount the sensor's base firmly on the PCB and solder all the terminals.
- Hand soldering should be applied, the soldering temperature should be 350±10°C less than 3 seconds or 260±5°C less than 10 seconds

Recommended Application Circuit



Notes:

Shell GND pin should be connected to the shielding ground.

The information provided herein by MultiDimension Technology Co., Ltd. (hereinafter MultiDimension) is believed to be accurate and reliable. Publication neither conveys nor implies any license under patent or other industrial or intellectual property rights. MultiDimension reserves the right to make changes to product specifications for the purpose of improving product quality, reliability, and functionality. MultiDimension does not assume any liability arising out of the application and use of its products. MultiDimension's customers using or selling this product for use in appliances, devices, or systems where malfunction can reasonably be expected to result in personal injury do so at their own risk and agree to fully indemnify MultiDimension for any damages resulting from such applications.

"MultiDimension", "MultiDimension Sensing the Future", and "MDT" are registered trademarks of MultiDimension Technology Co., Ltd.