

# TMR6401

## Single Channel TMR Magnetic Pattern Recognition Sensor

### General Description

The TMR6401 is a type of single channel magnetic pattern recognition sensor with high sensitivity, high signal-to-noise ratio performance, it is used for detecting paper bills, bank notes and security documents with magnetic anti-counterfeiting consists. The TMR6401 consists of high sensitivity TMR magneto-resistance sensor, high-quality magnet and durable metal case.

### Features and Benefits

- High sensitivity and excellent gap performances
- Output voltage is independent of scanning speed
- Differential output, high CMRR performance
- Single channel detection, 5mm detection width
- Downsizing appearance
- Simple structure for low cost solutions

### Applications

- Bill counter and validator
- Bill sorter
- Magnetic ink document reader
- Automatic vending machines and validator modules



TMR6401

### Schematic & Pin Configuration

**Block Diagram**

**Bottom View**

Pin No.	Symbol
1	V-
2	V <sub>CC</sub>
3	V+
4	GND
5	Shell GND

### Absolute Maximum Ratings

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

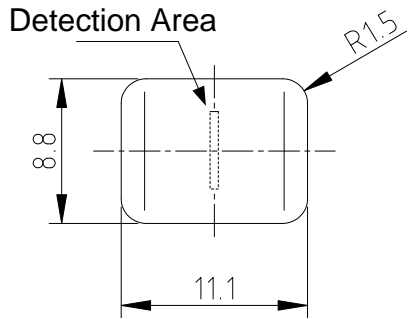
### Electrical Property ( $V_{CC}=5V$ , $T_A=25^{\circ}C$ )

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Sensitivity	$S^{(1)}$			TBD		V
Resistance	R	No external magnetic field	1		5	kOhm
Output Offset Voltage	$V_{offset}$			2.5		V
Noise	$V_{nw}^{(2)}$			50		$\mu V_{pp}$
Surface Magnetic Field	B	On sensing surface(S pole)		800		G
Detecting Width	W			5		mm
Resolution	T			0.475		mm

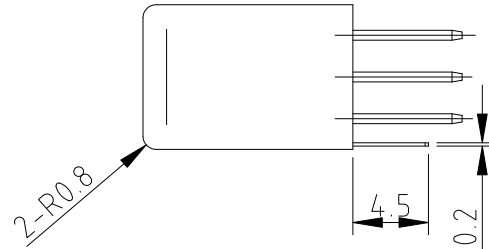
**Notes:**

- (1) According to the MultiDimension sensitivity measurement.
- (2) The amplifier's gain is 80dB@1kHz, no external magnetic field applied, measure the peak-to-peak voltage  $V_{pp}$ , then  $V_{nw} = V_{pp}/10000$ .

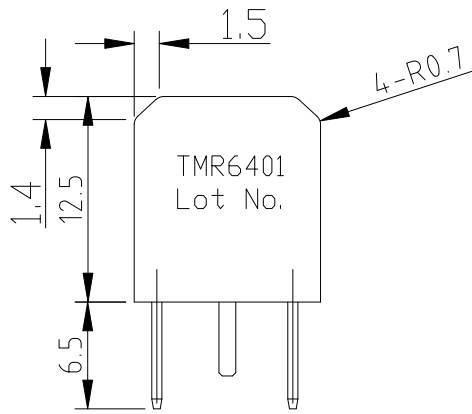
**Outline Drawing and Dimensions (Unit: mm)**



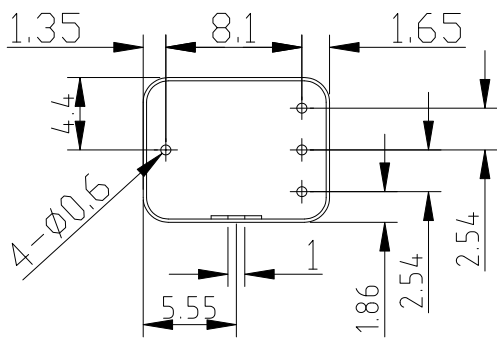
Top View



Side View

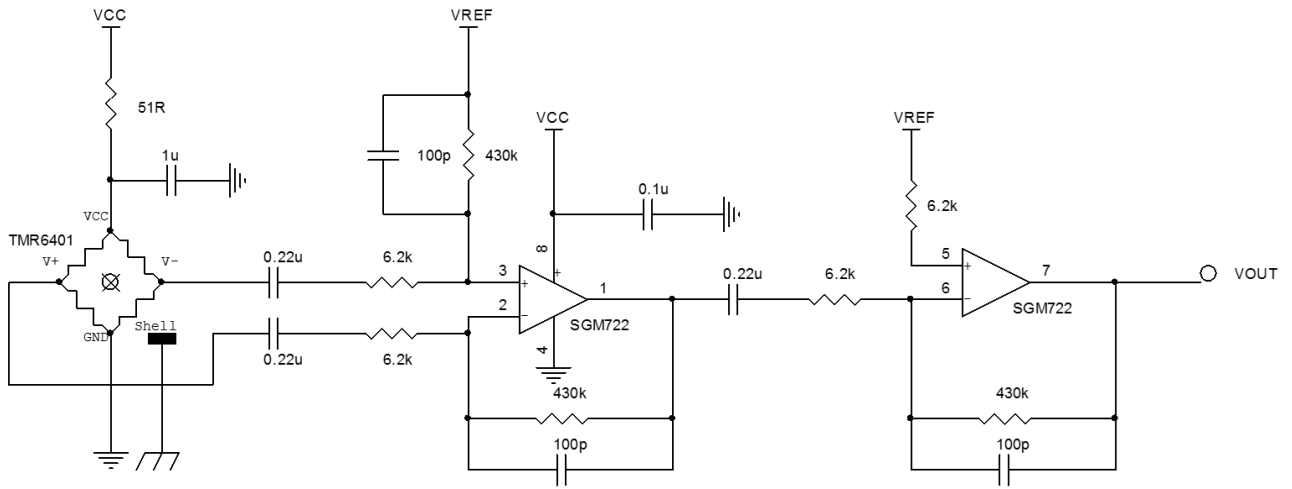


Front View



Bottom View

### Recommended Application Circuit



**Notes:**

Shell GND pin should be connected to the shielding ground.



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