ChenYang
Technologies GmbH & Co. KG

Dual Differential Magnetoresistive Sensor CY-SMR-04

Features

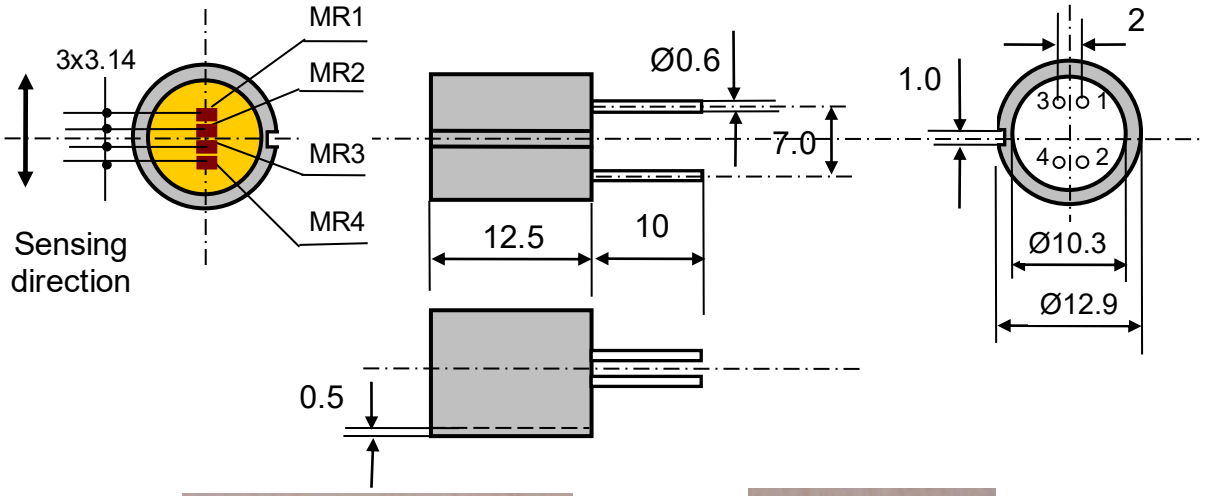
- The gear rotation direction can be detected by monitoring the phase shift direction of the two output signals A and B
- Wide sensing range, detecting frequency range 0 ~ 100kHz
- Good Signal-to-Noise ratio, high resolution, high sensitivity
- Contactless measurement, easy to use

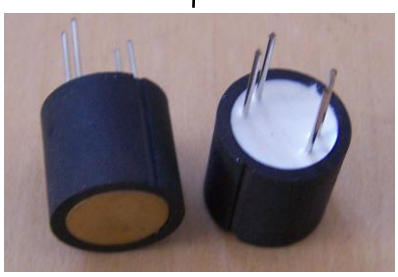
Typical applications

- Detection of gear rotation speed and direction in factory automation equipments
- Detection of the direction of linear motion servo
- Motor controller for vehicles
- Measurement of needle position in industrial knitting machines

The differential magnetoresistive sensor CY-SMR-04 consists of two groups of two series coupled magneto resistors (D-type InSb/NiSb semiconductor resistors whose value can be magnetically controlled). The magneto resistors are mounted onto an insulated ferrite substrate. The sensor is encapsulated in a metallic and plastic package and has 2 output signals. The phase shift between the two output signals is 90°. A permanent magnet, which supplies a biasing magnetic field, is fixed on the base of the sensor.

Outlines





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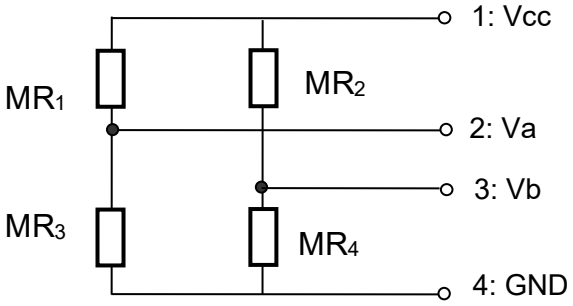
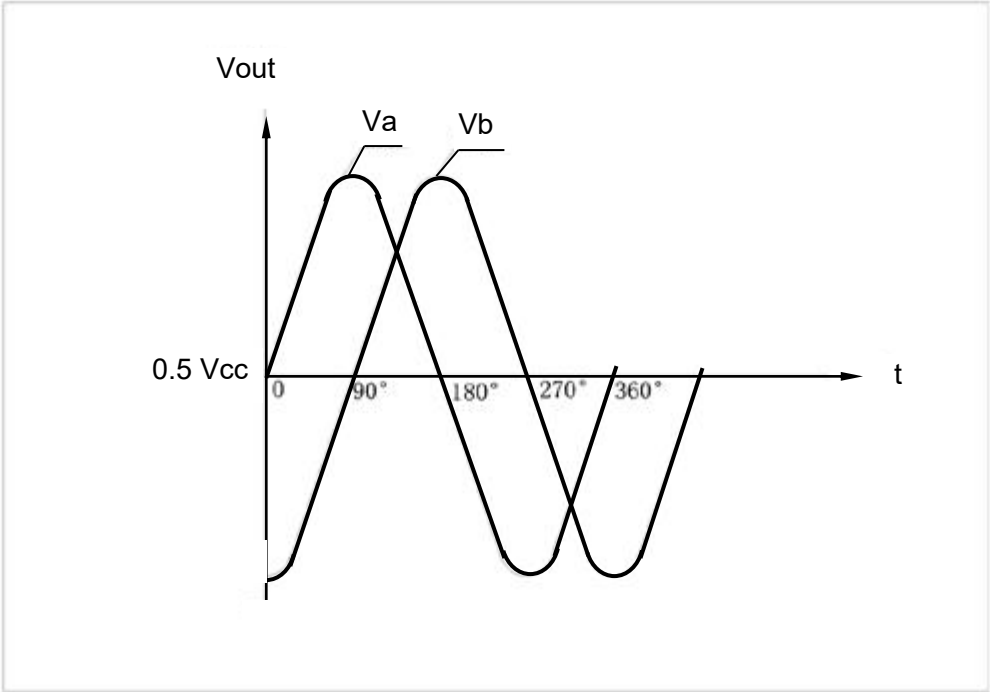
Inner Circuit



Output Signal Wave



Specifications

Maximum power supply V_{max}	10V DC
Nominal power supply	5V DC
Total resistance R_{14} (δ=∞, I≤mA, t=25°C) $R_{14} = (MR_1+MR_3)x(MR_2+MR_4)/(MR_1+MR_2+MR_3+MR_4)$	0.5kΩ –3kΩ
Center symmetry M=100% $(R_{1-2}-R_{2-3})/R_{1-2}$ (δ=∞)	≤10%
Open circuit output voltage $V_{out\,pp}$ (at Vin and gap δ=0.15mm)	≥450mV
Frequency range	0-100kHz
Target Gear Modulus	0.4mm
Phase difference between two output signals Va and Vb	90° ± 10°
Operating temperature	-20°C ~ +80°C
Storage temperature	-40°C ~ +85°C

Part number

Part number	Case style	Outline	Reference (verification required)
CY-SMR-04	Cylinder	Ø12.9 x 12.5mm	MuRata FR05CM12AL

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