

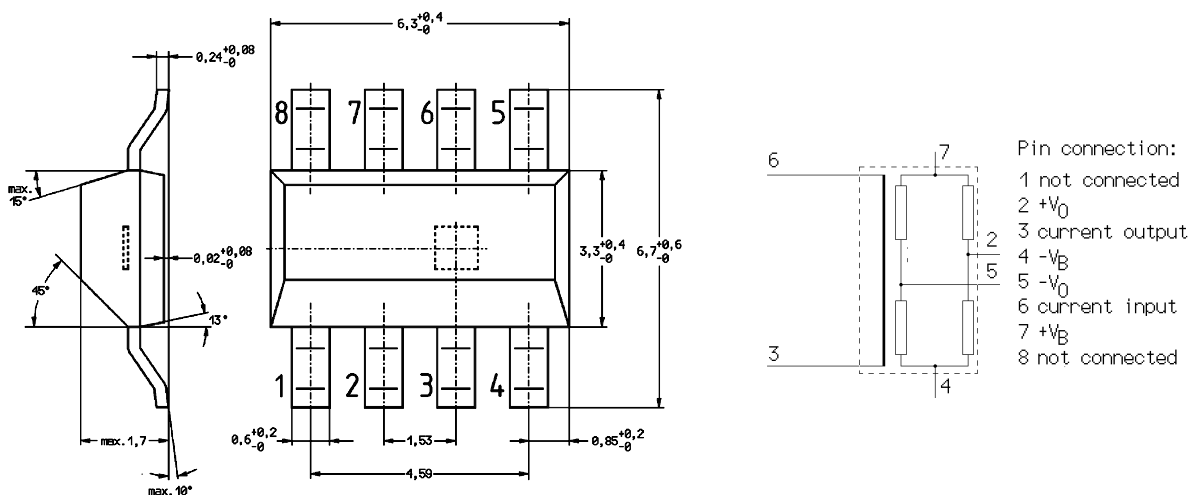
Function principle

Magnetoresistive materials can change their resistivity in an external magnetic field. The variation of the resistivity is determined by the rotation of magnetisation with respect to the direction of the current flow. Permalloy (Ni₈₁Fe₁₉) is commercially used as magnetoresistive material. The relative change of resistivity is 2-3 % for this material. The high sensitive and small size sensor consists of a silicon chip coated with thin film permalloy stripes. These stripes form a Wheatstone bridge, whose output voltage depends on the magnetic field.

Characteristic

The sensor chip measures the magnetic field generated by an internal current-carrying conductor. The current sensor has an integrated permanent magnet. No external auxiliary field H_x is required. A direct or alternating current I_M up to 5 A can be detected.

Package: mod. SM-8



Sensors in thin film technology

HL-Planartechnik GmbH

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Technical data

Absolute maximum ratings

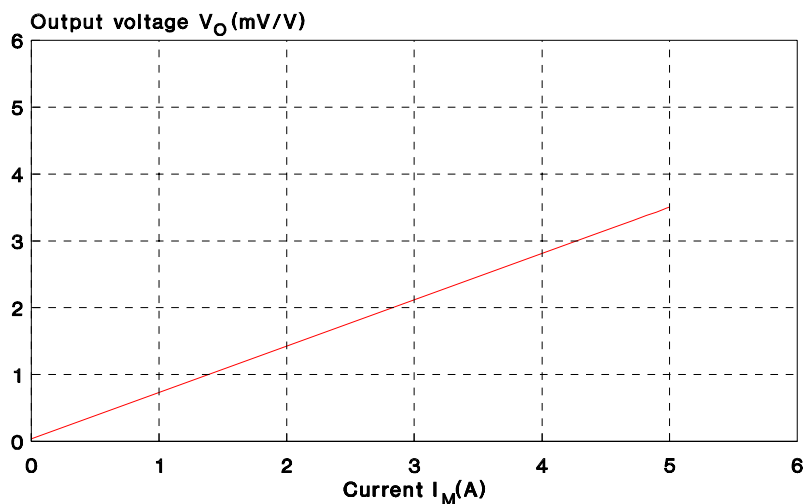
| Parameter | Symbol | Unit | Value |
|-----------------------------|-----------|------|--------------|
| Supply voltage | V_B | V | 12 |
| Measurable current | I_M | A | 5 |
| Operating temperature range | T_{amb} | °C | -40 ... +125 |
| Storage temperature range | T_{stg} | °C | -65 ... +150 |

Test conditions for Input-Output Insulation:

200V DC for 50ms between pin 3 and pin 2

Electrical characteristics ($T_{amb} = 25^\circ\text{C}$)

| Parameter | Symbol | Unit | Min. | Typ. | Max. |
|---|---------------|----------|------|------|---------|
| Bridge resistance | R_B | kOhm | 1.4 | 1.7 | 2.2 |
| Offset voltage | V_{OFF}/V_B | mV/V | - | - | ± 2 |
| Open circuit sensitivity | S | (mV/V)/A | - | 0.7 | - |
| Resistance of the conductor | R | mOhm | - | 0.7 | - |
| Operating frequency | f_{max} | kHz | - | - | 100 |
| Temperature coefficient of open circuit sensitivity | T_C | %/K | - | - | -0.3 |
| Input-Output Insulation | I_{IO} | nA | - | - | 100 |



KMC 05 output voltage V_o versus current I_M for an auxiliary field H_x created by an internal magnet

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