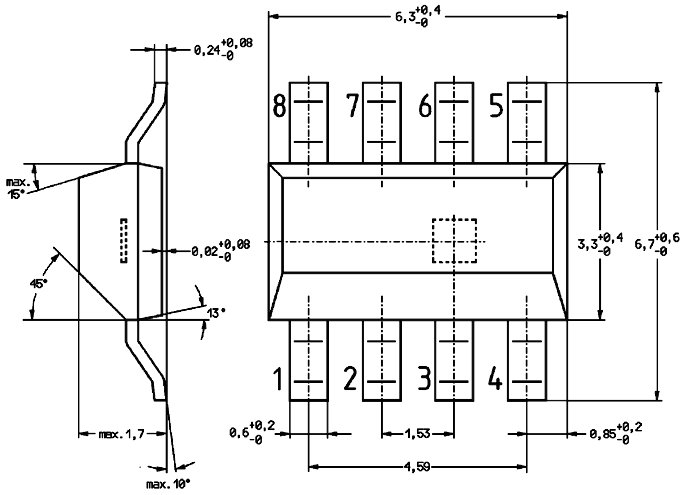
Function principle

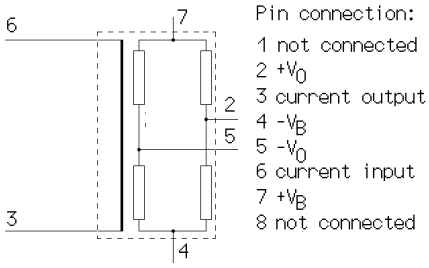
Magnetoresistive materials can change their resistivity in an external magnetic field. The variation of the resistivity is determined by the rotation of magnetisation with respect to the direction of the current flow. Permalloy ($Ni_{81}Fe_{19}$) is commercially used as magnetoresistive material. The 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

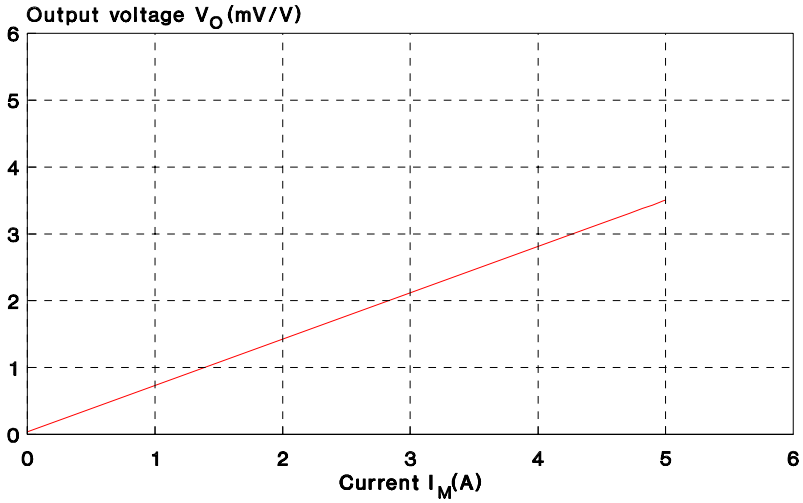
Parameter	Symbol	Unit	Value
Supply voltage	V_B	V	12
Measurable current	I_M	A	5
Operating temperature range	T_{amb}	°C	-40 ... +125
Storage temperature range	T_{stg}	°C	-65 ... +150

Test conditions for Input-Output Insulation:

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

Electrical characteristics (T_{amb}= 25°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	-
Resitance 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_{I-O}	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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