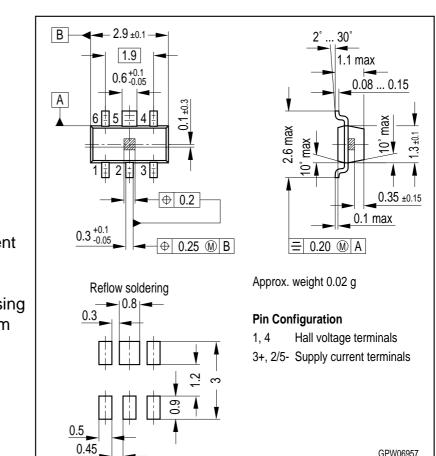# SIEMENS

Hall Sensor KSY 46

Preliminary Data

Features

- High sensitivity
- Small linearity error
- Low offset voltage
- Low TC of sensitivity resistance

Typical Applications

- Current and power measurement
- Magnetic field measurement
- Control of brushless DC motors
- Rotation and position sensing
- Measurement of diaphragm

Approx. weight 0.02 g

Pin Configuration

1, 4   Hall voltage terminals
3+, 2/5- Supply current terminals

GPW06957

Dimensions in mm

Type	Marking	Ordering Code
KSY 46	s46	on request

Packing: Taped on 18 cm reel, 3K parts per reel, date code on the label.

The KSY 46 is a MOVPE[1] Hall sensor made of monocrystalline GaAs-material, built into a SMT package (MW-6). The sensor is outstanding for its high magnetic field sensitivity and its very low temperature coefficients. While the sensor is operated with constant current, the output Hall Voltage is directly proportional to a magnetic field acting prependicular to the surface of the sensor. The 0.35×0.35 mm^2 chip is mounted onto a non-magnetic leadframe.

1) Metal Organic Vapour Phase Epitaxy

Maximum Ratings

Parameter	Symbol	Value	Unit
Operating temperature	T_A	− 40 … + 150	°C
Storage temperature	T_{stg}	− 50 … + 160	°C
Supply current	I_1	10	mA
Thermal conductivity, soldered in air	G_{thC} G_{thA}	≥ 2.2 ≥ 1.5	mW/K mW/K

Characteristics (T_A = 25 °C)

Nominal supply current	I_{1N}	7	mA
Open-circuit sensitivity	K_{B0}	150 … 265	V/AT
Open-circuit Hall voltage $I_1 = I_{1N}$, B = 0.1 T	V_{20}	105 … 185	mV
Ohmic offset voltage $I_1 = I_{1N}$, B = 0 T	V_{R0}	≤ ± 15	mV
Linearity of Hall voltage B = 0…0.5 T B = 0…1.0 T	F_L F_L	≤ ± 0.2 ≤ ± 0.7	% %
Input resistance $\quad B$ = 0 T	R_{10}	600 … 900	Ω
Output resistance $\quad B$ = 0 T	R_{20}	1000 … 1500	Ω
Temperature coefficient of the open-circuit Hall-voltage $I_1 = I_{1N}$, B = 0.1 T	TC_{V20}	~ − 0.03	%/K
Temperature coefficient of the internal resistance B = 0 T	$TC_{R10, R20}$	~ 0.3	%/K
Temperature coefficient of ohmic offset voltage $I_1 = I_{1N}$, B = 0 T	$TC_{VR 0}$	~ 0.3	%/K
Switch on-drift of the ohmic offset voltage $I_1 = I_{1N}$, B = 0 T	dV_0[1] ΔV_0[2]	≤ 0.3 ≤ 0.1	mV mV
Noise Figure	F	~ 10	dB

[1] dV_0 = | V_0 (t = 1 s) - V_0 (t = 0.1 s) |
[2] ΔV_0 = | V_0 (t = 3 m) - V_0 (t = 1 s) |

Connection of a Hall Sensor with a Power Source

Since the voltage on the component must not exceed 10 V, the connection to the constant current supply should only be done via a short circuit by-pass. The by-pass circuit-breaker shall not be opened before turning on the power source. This is to avoid damage to the Hall sensor due to power peaks.