

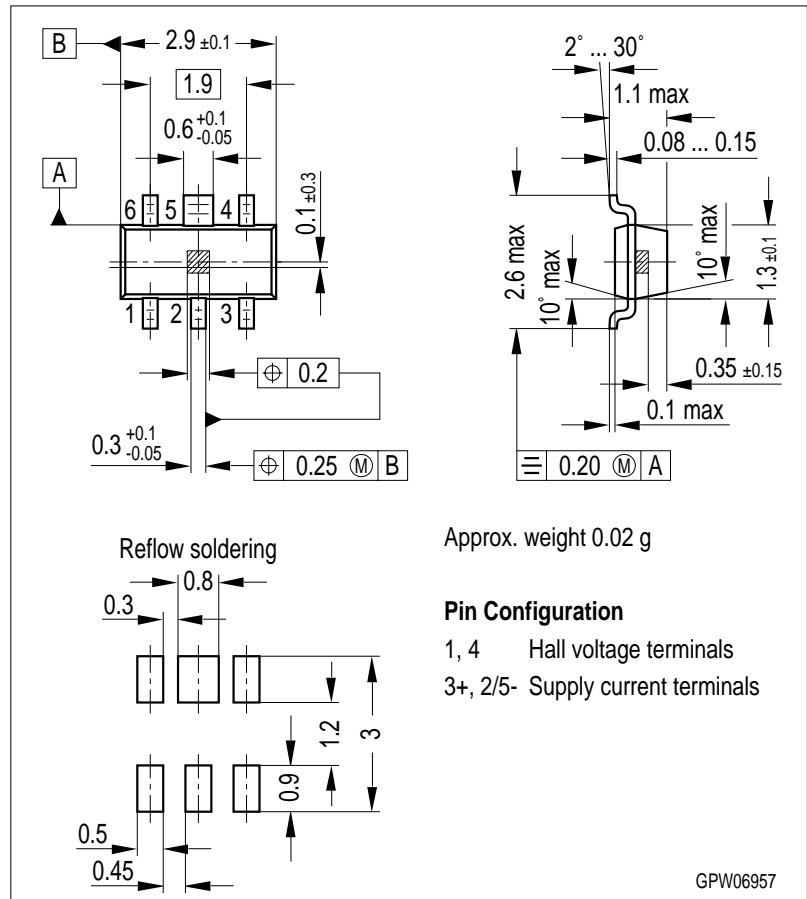
## Version 2.0

### 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



Dimensions in mm

Type	Marking	Ordering Code
KSY 46	s46	Q62705-K330

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

The KSY 46 is a MOVPE<sup>1)</sup> 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 perpendicular to the surface of the sensor. The  $0.35 \times 0.35 \text{ mm}^2$  chip is mounted onto a non-magnetic leadframe.

<sup>1)</sup> Metal Organic Vapour Phase Epitaxy

**Absolute Maximum Ratings**

Parameter	Symbol	Limit Values	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	$G_{thC}$ $G_{thA}$	$\geq 2.2$ $\geq 1.5$	mW/K mW/K

**Electrical Characteristics ( $T_A = 25\text{ °C}$ )**

Nominal supply current	$I_{1N}$	7	mA
Open-circuit sensitivity	$K_{B0}$	150 ... 265	V/AT
Open-circuit Hall voltage $I_1 = I_{1N}, B = 0.1\text{ T}$	$V_{20}$	105 ... 185	mV
Ohmic offset voltage $I_1 = I_{1N}, B = 0\text{ T}$	$V_{R0}$	$\leq \pm 15$	mV
Linearity of Hall voltage $B = 0 \dots 0.5\text{ T}$ $B = 0 \dots 1.0\text{ T}$	$F_L$ $F_L$	$\leq \pm 0.2$ $\leq \pm 0.7$	% %
Input resistance $B = 0\text{ T}$	$R_{10}$	600 ... 900	$\Omega$
Output resistance $B = 0\text{ T}$	$R_{20}$	1000 ... 1500	$\Omega$
Temperature coefficient of the open-circuit Hall-voltage $I_1 = I_{1N}, B = 0.1\text{ T}$	$TC_{V20}$	$\sim -0.03$	%/K
Temperature coefficient of the internal resistance $B = 0\text{ T}$	$TC_{R10, R20}$	$\sim 0.3$	%/K
Temperature coefficient of ohmic offset voltage $I_1 = I_{1N}, B = 0\text{ T}$	$TC_{VR0}$	$\sim 0.3$	%/K
Switch on-drift of the ohmic offset voltage $I_1 = I_{1N}, B = 0\text{ T}$	$dV_0^{1)}$ $\Delta V_0^{2)}$	$\leq 0.3$ $\leq 0.1$	mV mV
Noise Figure	$F$	$\sim 10$	dB

<sup>1)</sup>  $dV_0 = |V_0(t = 1\text{ s}) - V_0(t = 0.1\text{ s})|$ 
<sup>2)</sup>  $\Delta V_0 = |V_0(t = 3\text{ min}) - V_0(t = 1\text{ s})|$

### **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.