Hall Sensor KSY 14

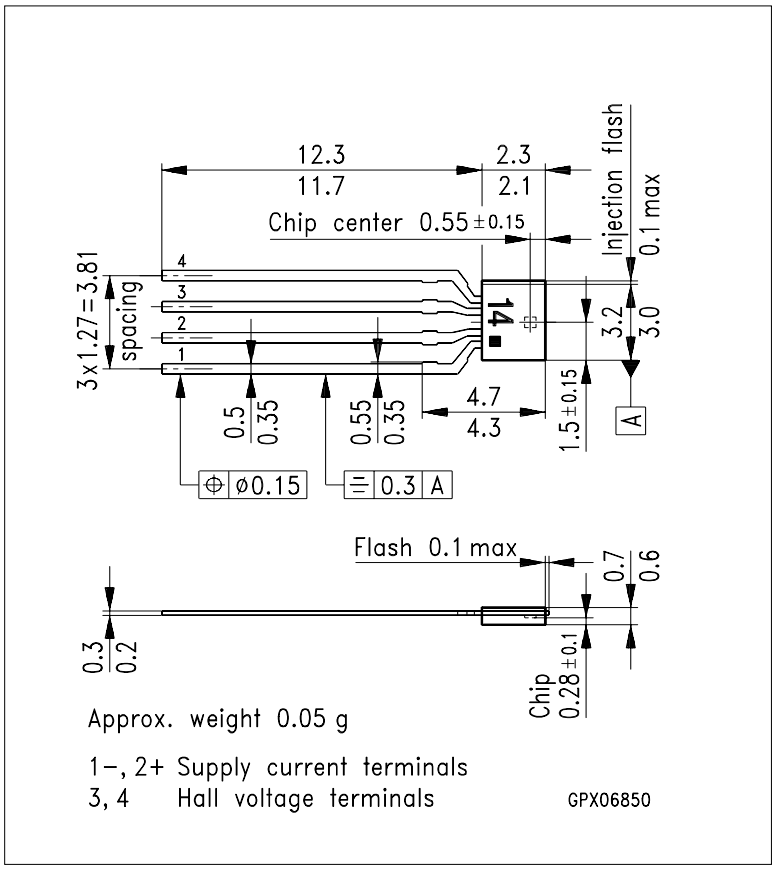
Version 2.0

Features

- High sensitivity
- High operating temperature
- Small linearity error
- Low offset voltage
- Low TC of sensitivity and internal resistance
- Ultra-flat plastic miniature package
- Low inductive zero component
- Package thickness 0.7 mm
- Connections from one side of the package

Typical Applications

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



Dimensions in mm

Type	Marking	Ordering Code
KSY 14	14	Q62705-K227

The KSY 14 is an ion-implanted Hall sensor generator in a mono-crystalline GaAs material, built into an extremely flat plastic package (SOH). It is outstanding for a high magnetic sensitivity and low temperature coefficients. The 0.35 × 0.35 mm² chip is mounted onto a non-magnetic leadframe.

Absolute Maximum Ratings

Parameter	Symbol	Limit Values	Unit
Operating temperature	T_A	– 40 … + 175	°C
Storage temperature	T_{stg}	– 50 … + 180	°C
Supply current	I_1	7	mA
Thermal conductivity soldered, in air	G_{thA} G_{thC}	≥ 1.5 ≥ 2.2	mW/K mW/K

Electrical Characteristics (T_A = 25 °C)

Nominal supply current	I_{1N}	5	mA
Open-circuit sensitivity	K_{B0}	190 … 260	V/AT
Open-circuit Hall voltage $I_1 = I_{1N}$, B = 0.1 T	V_{20}	95 … 130	mV
Ohmic offset voltage $I_1 = I_{1N}$, B = 0 T	V_{R0}	≤ ± 20	mV
Linearity of Hall voltage B = 0…0.5 T B = 0…1 T	F_L	 ≤ ± 0.2 ≤ ± 0.7	 % %
Input resistance B = 0 T	R_{10}	900 … 1200	Ω
Output resistance B = 0 T	R_{20}	900 … 1200	Ω
Temperature coefficient of the open-circuit Hall voltage $I_1 = I_{1N}$, B = 0.1 T	TC_{V20}	~ – 0.03 … – 0.07	%/K
Temperature coefficient of the internal resistance B = 0 T	$TC_{R10, R20}$	~ 0.1 … 0.18	%/K
Change of offset voltage within the temperature range	$\lvert \Delta V_{R0} \rvert$ [1]	≤ 2	mV
Inductive zero component I_{1N} = 0	A_2 [2]	0.16	cm²
Noise figure	F	~ 10	dB

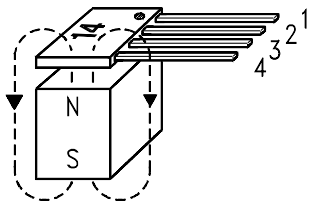
1) AQL: 0.65

2) With time varying induction there exists an inductive voltage V_{ind} between the Hall voltage terminals (supply current I_1 = 0):
$V_{ind} = A_2 \times dB/dt \times 10^{-4}$ with V(V), A_2 (cm²), B(T), t(s)

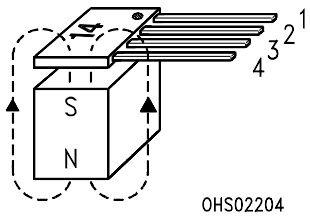
Connection of a Hall Sensor with a Power Source

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, in order to avoid damage to the Hall sensor due to power peaks.

Polarity of Hall Voltage



Pin 1 I_1 –
Pin 2 I_1 +
Pin 3 U_{20} –
Pin 4 U_{20} +



Pin 1 I_1 –
Pin 2 I_1 +
Pin 3 U_{20} +
Pin 4 U_{20} –