SIEMENS

Hall Sensor

KSY 44

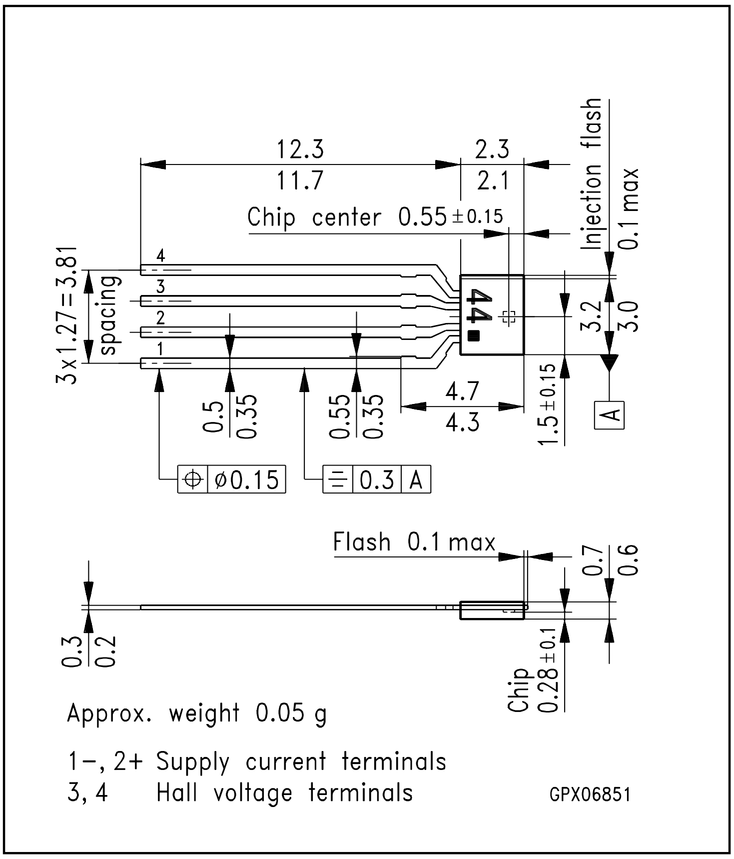
Preliminary Data

Features

- High sensitivity
- High operating temperature
- Small linearity error
- Low offset voltage
- Low TC of sensitivity
- Specified TC of offset voltage
- 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 44	44	Q62705-K265

The KSY 44 is a MOVPE[1)] Hall sensor 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 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…+ 175	°C
Storage temperature	T_{stg}	– 50…+ 180	°C
Supply current	I_1	10	mA
Thermal conductivity soldered, in air	G_{thA} G_{thC}	≥ 1.5 ≥ 2.2	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	 ≤ ± 0.2 ≤ ± 0.7	 % %
Input resistance B = 0 T	R_{10}	600…900	Ω
Output resistance 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_{VR0}	~ – 0.3	%/K
Inductive zero component, I_{1N} = 0	A_2 1)	0.16	cm^2
Switch-on drift of the ohmic offset voltage $I_1 = I_{1N}$, B = 0 T	dV_0 2) ΔV_0 3)	≤ 0.3 ≤ 0.1	mV mV
Noise figure	F	~ 10	dB

1) 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 (cm^2), B(T), t(s)
2) $dV_0 = |V_0(t = 1s) - V_0(t = 0.1\ s)|$
3) $\Delta V_0 = |V_0(t = 3m) - V_0(t = 1\ s)|$

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, 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}	–