

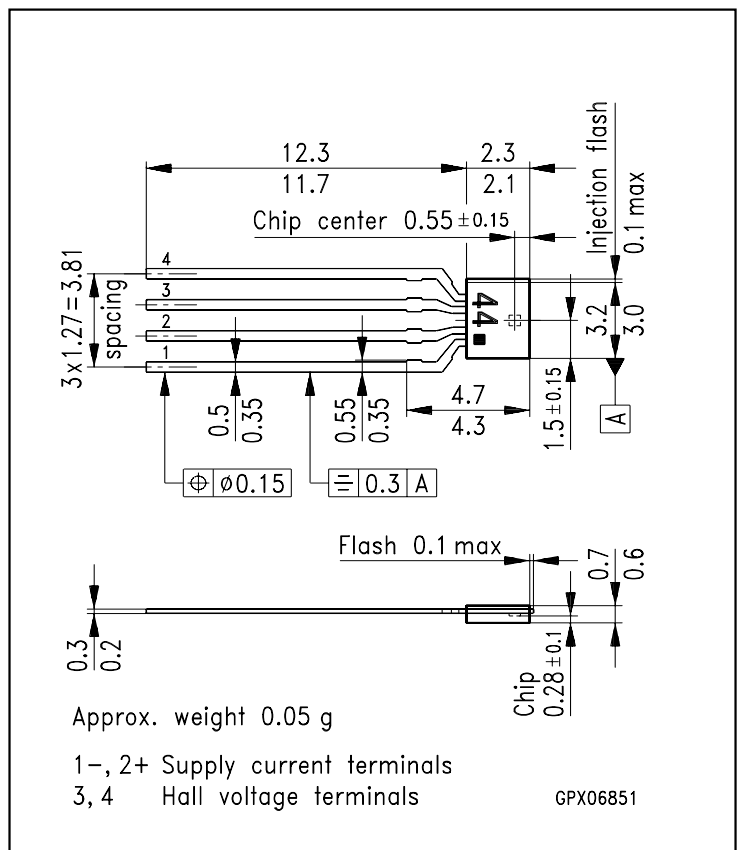
### Preliminary Data

#### 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<sup>1)</sup> 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  $0.35 \times 0.35$  mm<sup>2</sup> 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	$G_{thA}$ $G_{thC}$	$\geq 1.5$ $\geq 2.2$	mW/K mW/K

## 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 $B = 0...0.5\text{ T}$ $B = 0...1.0\text{ T}$	$F_L$	$\leq \pm 0.2$ $\leq \pm 0.7$	% %
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
Inductive zero component, $I_{1N} = 0$	$A_2^{1)}$	0.16	cm <sup>2</sup>
Switch-on drift of the ohmic offset voltage $I_1 = I_{1N}$ , $B = 0\text{ T}$	$dV_0^{2)}$ $\Delta V_0^{3)}$	$\leq 0.3$ $\leq 0.1$	mV mV
Noise figure	$F$	$\sim 10$	dB

1) With time varying induction there exists an inductive voltage  $V_{ind}$  between the Hall voltage terminals (supply current  $I_1 = 0$ ):

$$V_{ind} = A_2 \times dB/dt \times 10^{-4} \text{ with } V(V), A_2 (\text{cm}^2), B(T), t(s)$$

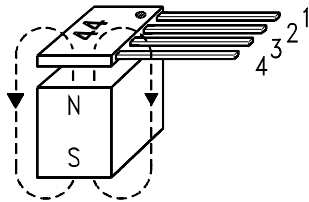
2)  $dV_0 = |V_0(t = 1\text{ s}) - V_0(t = 0.1\text{ s})|$

3)  $\Delta V_0 = |V_0(t = 3\text{ m}) - V_0(t = 1\text{ s})|$

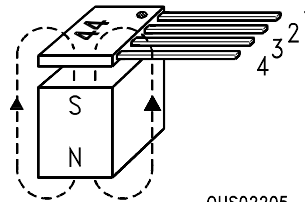
## Connection of a Hall Sensor with a Power Source

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, 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	$U_{20}$	+



OHS02205

Pin 1	$I_1$	-
Pin 2	$I_1$	+
Pin 3	$U_{20}$	+
Pin 4	$U_{20}$	-