

OH10008

GaAs Hall Device

Magnetic sensor

■ Features

- Hall voltage: typ. 105 mV ($V_C = 6\text{ V}$, $B = 0.1\text{ T}$)
- Input resistance: typ. 750 k Ω
- Satisfactory linearity of GaAs hall voltage with respect to the magnetic field
- Small temperature coefficient of the hall voltage: $\beta \leq -0.06\%/^{\circ}\text{C}$
- Mini type (4-pin) package with positioning projection. Allowing automatic insertion through the magazine package.

■ Applications

- Thin and small hall motors (Applicable to CD, VD, VCR, FDD, and other portable equipment)
- Automotive equipment
- Measurement equipment
- Applicable to wide-varying field (OA equipment, etc.)

■ Absolute Maximum Ratings $T_a = 25^{\circ}\text{C}$

Parameter	Symbol	Rating	Unit
Control voltage	V_C	12	V
Power dissipation	P_D	100	mW
Operating ambient temperature	T_{opr}	-30 to +125	$^{\circ}\text{C}$
Storage temperature	T_{stg}	-55 to +125	$^{\circ}\text{C}$

■ Electrical Characteristics $T_a = 25^{\circ}\text{C}$

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Hall voltage*1	V_H	$V_C = 6\text{ V}$, $B = 0.1\text{ T}$	80	105	130	mV
Unequilibrium ratio*2, 4	V_{HO}	$V_C = 6\text{ V}$, $B = 0\text{ T}$			± 19	mV
Input resistance	R_{IN}	$I_C = 1\text{ mA}$, $B = 0\text{ T}$	0.5	0.75		k Ω
Output resistance	R_{OUT}	$I_C = 1\text{ mA}$, $B = 0\text{ T}$		1.5	5	k Ω
Temperature coefficient of hall voltage	β	$I_C = 6\text{ mA}$, $B = 0.1\text{ T}$			-0.06	$\%/^{\circ}\text{C}$
Temperature coefficient of input resistance	α	$I_C = 1\text{ mA}$, $B = 0\text{ T}$			0.3	$\%/^{\circ}\text{C}$
Linearity of hall voltage*3	γ	$I_C = 6\text{ mA}$, $B = 0.1\text{ T}/0.5\text{ T}$			2	%

Note) *1: $V_H = \frac{|V_{H^+}| + |V_{H^-}|}{2}$

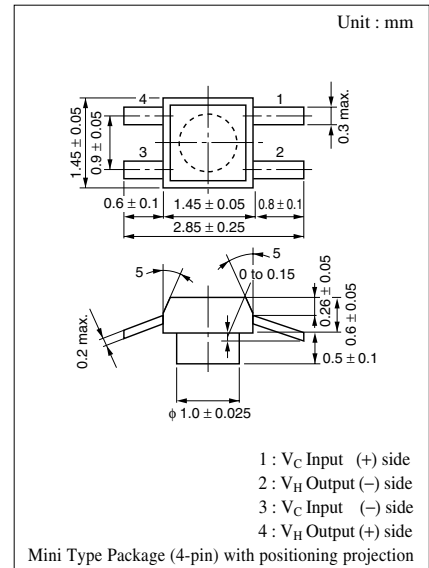
*2: Output pin voltage under no-load ($B = 0$) condition

*3: The linearity γ of V_H is a percentage of a difference between cumulative sensitivity of K_{H1} and K_{H5} which are measured respectively at $B = 0.1\text{ T}$ and 0.5 T to their average. That is,

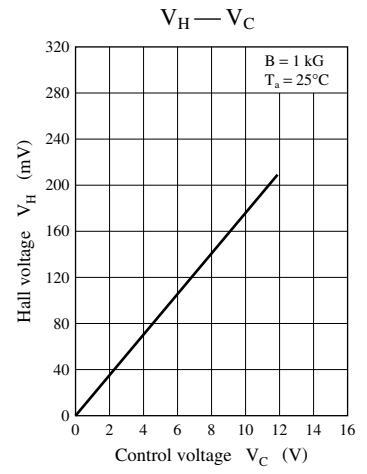
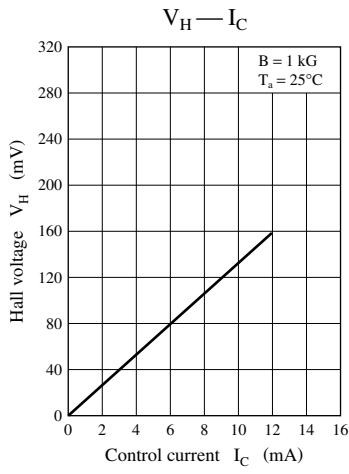
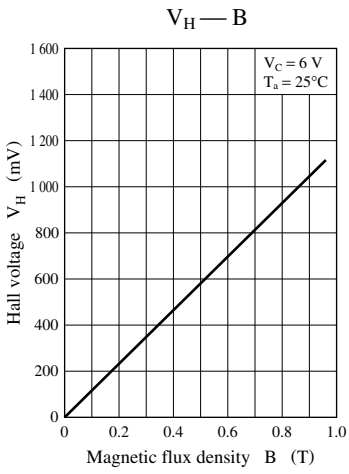
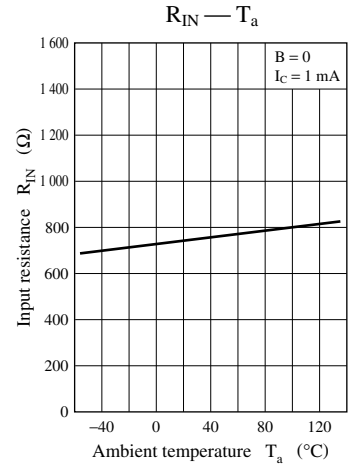
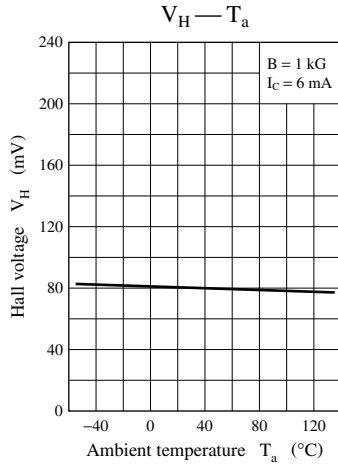
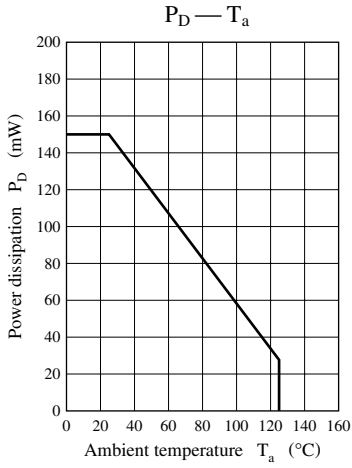
$$\gamma = \frac{K_{H5} - K_{H1}}{1/2(K_{H1} + K_{H5})} \quad \left(\text{the cumulative sensitivity } K_H = \frac{V_H}{I_C \cdot B} \right)$$

*4: V_{HO} rank classification

Class	A	B	C	D	E
V_{HO} (mV)	+19 to +9	+12 to +2	+5 to -5	-2 to -12	-9 to -19



Marking Symbol: B



■ Typical Drive Circuit

