OH004

GaAs hall element

Magnetic sensor

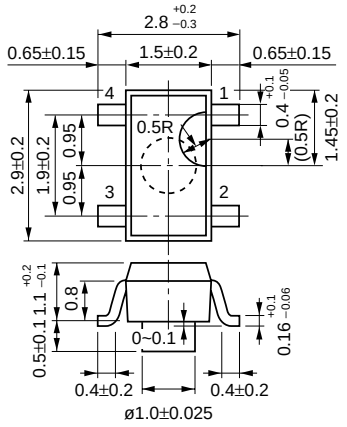
■ Features

- Hall voltage : typ. 150mV(V_C= 6V, B= 0.1T)
- Input resistance : typ. 0.85kΩ
- Satisfactory linearity of GaAs hall voltage for the magnetic field
- Small temperature coefficient of the hall voltage : β ≤ – 0.06%/˚C
- Mini type (4-pin) package with positioning projection. Automatic insertion with magazine package possible

■ Applications

- Various hall motor (VCR, player, VD, CD, and FDD)
- Automotive equipment
- Industrial equipment

Unit : mm



1 : V_H Output ⊖ side
2 : V_C Input ⊖ side
3 : V_H Output ⊕ side
4 : V_C Input ⊕ side

Mini Type Package (4-pin) with positioning projection

Marking Symbol : 4

■ Absolute Maximum Ratings (Ta= 25˚C)

Parameter	Symbol	Rating	Unit
Control voltage	V_C	12	V
Power dissipation	P_D	150	mW
Operating ambient temperature	T_{opr}	– 30 to +125	˚C
Storage temperature	T_{stg}	– 55 to +125	˚C

■ Electrical Characteristics (Ta= 25˚C)

Parameter	Symbol	Condition	min	typ	max	Unit
Hall voltage	V_H*1, 4	V_C= 6V, B= 0.1T	130	150	170	mV
Unequilibrium ratio	V_{HO}/V_H*2, 4	V_C= 6V, B= 0T/B= 0.1T			±12	%
Input Resistance	R_{IN}	I_C=1mA, B= 0T	0.50	0.85		kΩ
Output resistance	R_{OUT}	I_C=1mA, B= 0T			5	kΩ
Temperature coefficient of hall voltage	β	I_C= 6mA, B= 0.1T			– 0.06	%/˚C
Temperature coefficient of input resistance	α	I_C=1mA, B= 0T			0.3	%/˚C
Linearity of hall voltage	γ *3	I_C= 6mA, B= 0.1T/0.5T			2	%

*1 $V_H = \frac{|V_H^+| + |V_H^-|}{2}$

*2 Unbalance ratio is a percentage of V_{HO} for V_H.

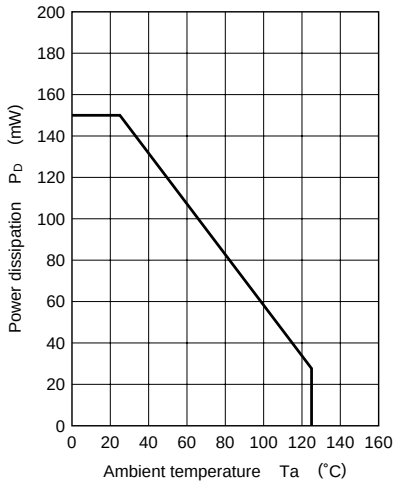
*3 The linearity γ of V_H is a percentage of the cumulative sensitivity of K_{H1} and K_{H5} measured at B= 0.1T and 0.5T for the average value.

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

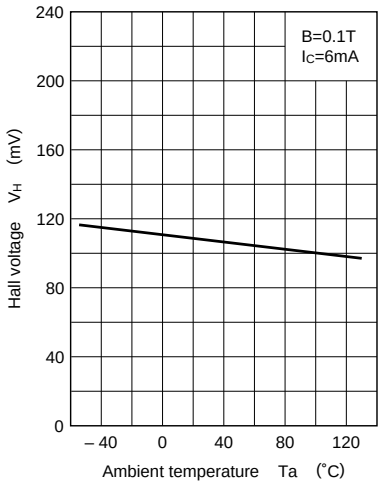
*4 V_H, V_{HO}/V_H rank classification

Class	HQ	HR	IQ	IR	KQ	KR
V_H (mV)	130 to 158	142 to 170	130 to 158	142 to 170	130 to 158	142 to 170
V_{HO}/V_H(%)	– 5 to + 5		+ 2 to +12		– 2 to –12	
Marking Symbol	4HQ	4HR	4IQ	4IR	4KQ	4KR

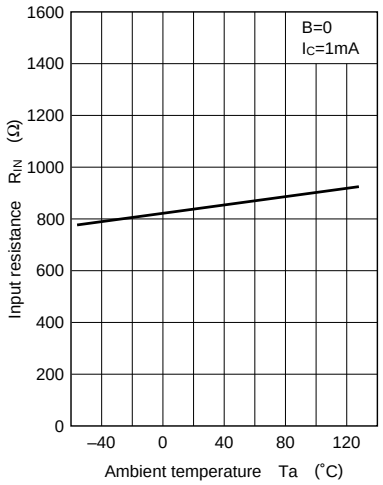
P_D – Ta



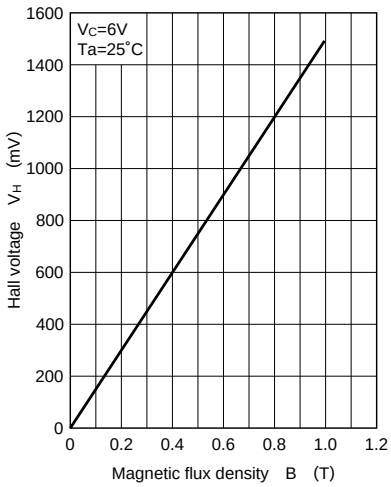
V_H – Ta



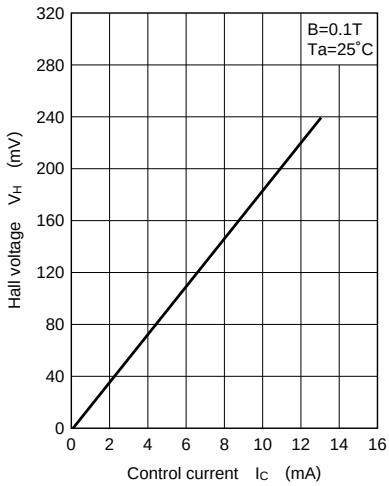
R_{IN} – Ta



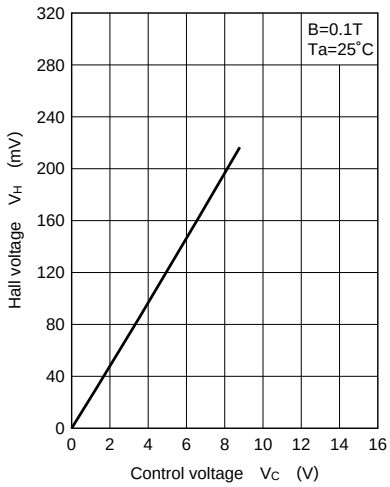
V_H – B



V_H – I_C



V_H – V_C



■ Typical Drive Circuit