

OH10003 (OH003)

GaAs Hall Device

Magnetic sensor

■ Features

- Hall voltage: typ. 150 mV ($V_C = 6\text{ V}$, $B = 0.1\text{ T}$)
- Input resistance: typ. 0.85 k Ω
- Satisfactory linearity of GaAs hall voltage with respect to the magnetic field
- Small temperature coefficient of the hall voltage: $\beta \leq -0.06\%/^{\circ}\text{C}$
- Sealed in the Mini type (4-pin) package. Allowing automatic insertion through the taping and the magazine package.

■ Applications

- Various hall motor (VCR, phonograph, VD, CD, and FDD)
- Automotive equipment
- Industrial 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	150	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, 4	V_H	$V_C = 6\text{ V}$, $B = 0.1\text{ T}$	130	150	170	mV
Unequilibrium ratio*2, 4	V_{HO}/V_H	$V_C = 6\text{ V}$, $B = 0\text{ T}/B = 0.1\text{ T}$			± 12	%
Input resistance	R_{IN}	$I_C = 1\text{ mA}$, $B = 0\text{ T}$	0.50	0.852		k Ω
Output resistance	R_{OUT}	$I_C = 1\text{ mA}$, $B = 0\text{ T}$			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: Unequilibrium ratio is a percentage of V_{HO} with respect to V_H .

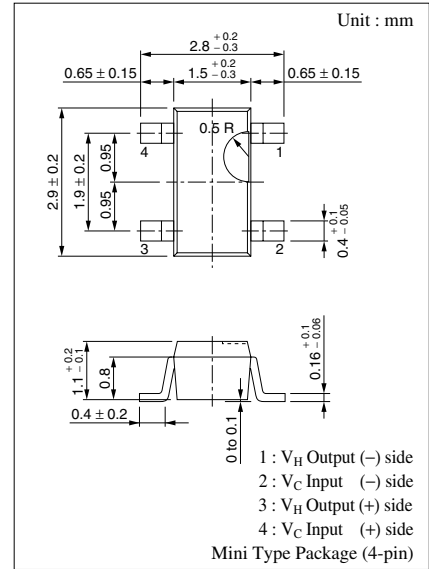
*3: The linearity γ of V_H is a percentage of a difference between cumulative sensitivity of K_{H1} and K_{H5} which are measured respectively at $B = 0.1\text{ T}$ and 0.5 T to their average. That is,

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

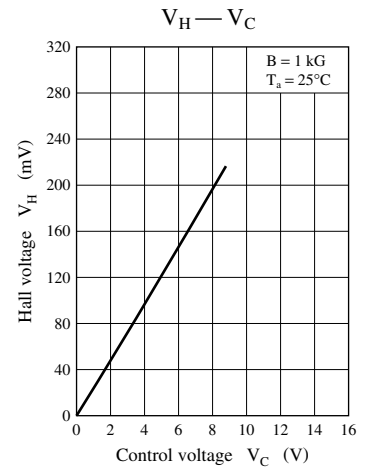
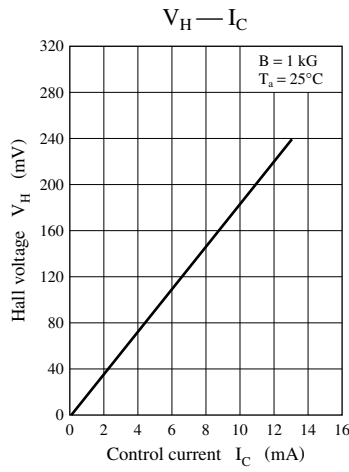
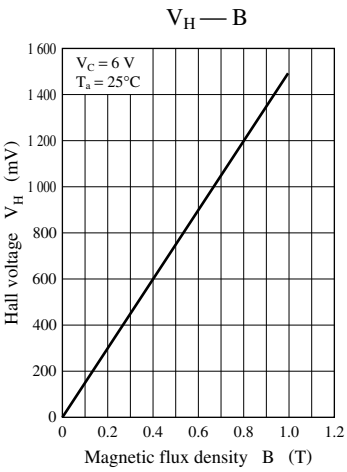
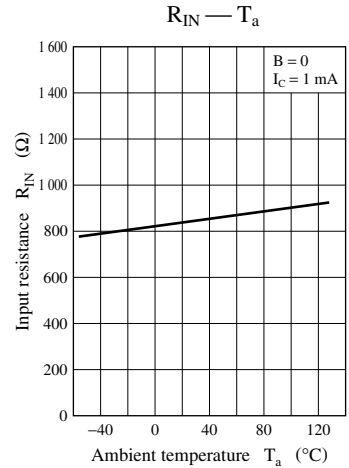
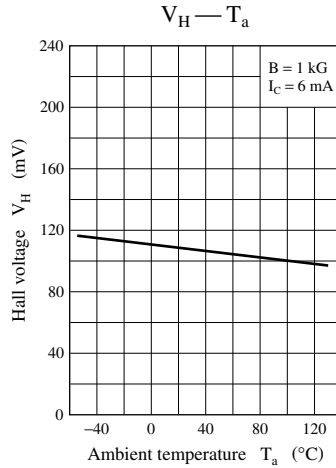
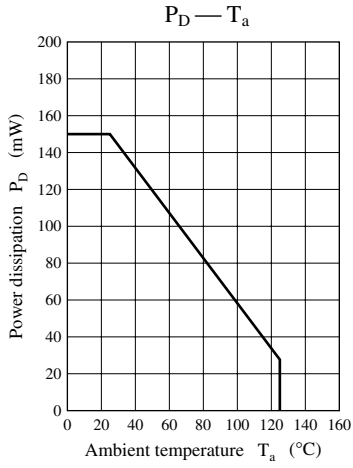
*4: V_H , V_{HO}/V_H rank classification

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	3HQ	3HR	3IQ	3IR	3KQ	3KR

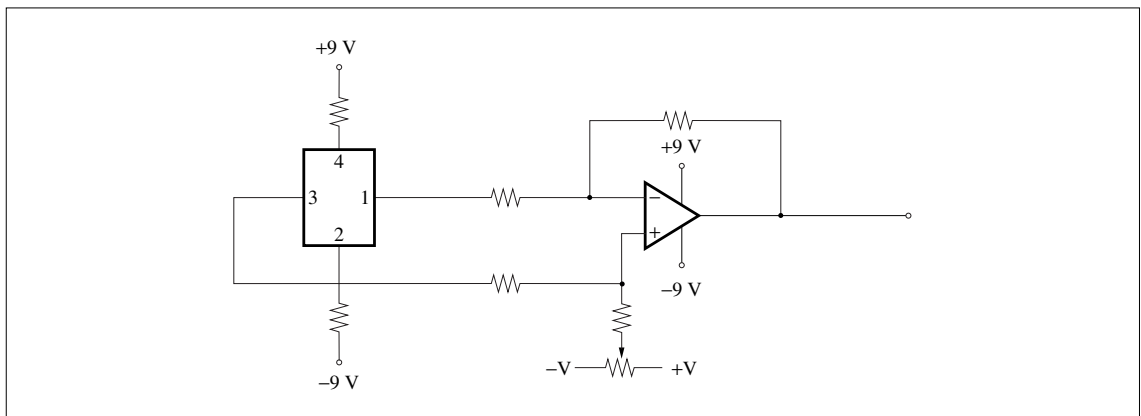
Note) The part number parenthesis shows conventional part number.



Marking Symbol: 3



■ Typical Drive Circuit



Caution for Safety

 **DANGER**

Gallium arsenide material (GaAs) is used in this product.

Therefore, do not burn, destroy, cut, crush, or chemically decompose the product, since gallium arsenide material in powder or vapor form is harmful to human health.

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