

# HQ-8220

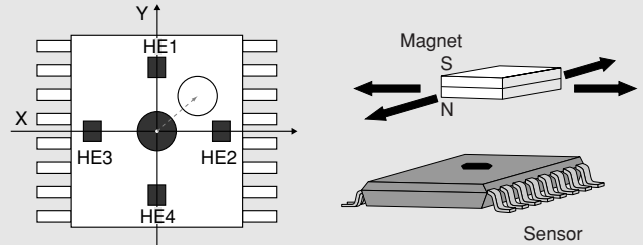
Shipped in packet-tape reel(5,000pcs per reel)

Notice : It is requested to read and accept "IMPORTANT NOTICE" written on the back of the front cover of this catalogue.

## ●PRINCIPLE

By comparing the output voltage of each Hall element, position of the magnet can be detected

Y direction	X direction	Detecting Position	
HE1=HE4	HE3=HE2	Center	
HE1>HE4	HE3<HE2	Upper right	



## ●Absolute Maximum Ratings

Item	Symbol	Limit	Unit
Max. Input Voltage	$V_C$	5	V
Max. Input Current	$I_C$	9	mA
Operating Temp. Range	Topr.	-40 ~ +125	°C
Storage Temp. Range	Tstg.	-40 ~ +150	°C

※1:パッケージ内の各個の素子毎の値です。

## ●Electrical Characteristics(T<sub>a</sub>=25°C)

Item	Symbol	Conditions	Min.	Typ.	Max.	Unit
Output Hall Voltage	$V_{H(i)}$ <sup>※2</sup>	B=50mT, V <sub>C</sub> =3V	90		130	mV
Relative Output Voltage Ratio	$V_{Hr}$ <sup>※3</sup>	B=50mT, V <sub>C</sub> =3V	95		105	%
Input Resistance	$R_{in(i)}$	B=0mT, I <sub>C</sub> =0.1mA	750		1150	Ω
Output Resistance	$R_{out(i)}$	B=0mT, I <sub>C</sub> =0.1mA	750		1150	Ω
Relative Resistance Ratio	$R_{inr}R_{outr}$ <sup>※4</sup>	B=0mT, I <sub>C</sub> =0.1mA	95		105	%
Offset Voltage	$V_{os}(Vu)/V_H$	B=0/50mT, V <sub>C</sub> =3V	-6		+6	%
Temp. Coefficient of V <sub>H</sub>	$\alpha V_H$ <sup>※5</sup>	B=50mT, V <sub>C</sub> =3V T <sub>a</sub> =25~125°C		-0.2		%/°C
Temp. Coefficient of R <sub>in</sub>	$\alpha R_{in}$ <sup>※6</sup>	B=0mT, I <sub>C</sub> =0.1mA T <sub>a</sub> =25~125°C		-0.2		%/°C

※2.  $V_H = V_{HM} - V_{os}(Vu)$  (VHM:meter indication)

※3.  $V_{H(i)}(i=1.4)$  is Hall output voltage of 4-Hall Elements of one package.

$$V_{Hr \min} = \min(V_{H(i)})/V_{Havg} \times 100, V_{Hr \max} = \max(V_{H(i)})/V_{Havg} \times 100$$

$$\text{Where } V_{Havg} = (V_H(1) + V_H(2) + V_H(3) + V_H(4))/4$$

※4.  $R_{in(i)}(i=1.4)$  is input resistance of 4-Hall Elements of one package.

$$R_{inr \max} = \min(R_{in(i)})/R_{inavg} \times 100, R_{inr \max} = \max(R_{in(i)})/R_{inavg} \times 100$$

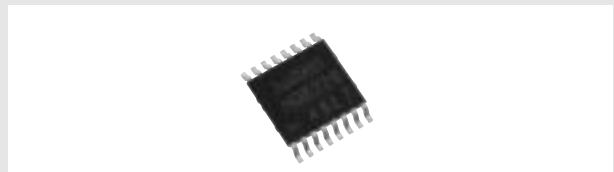
$$\text{Where } R_{inavg} = (R_{in(1)} + R_{in(2)} + R_{in(3)} + R_{in(4)})/4$$

R<sub>out</sub> is calculated as the same formula.

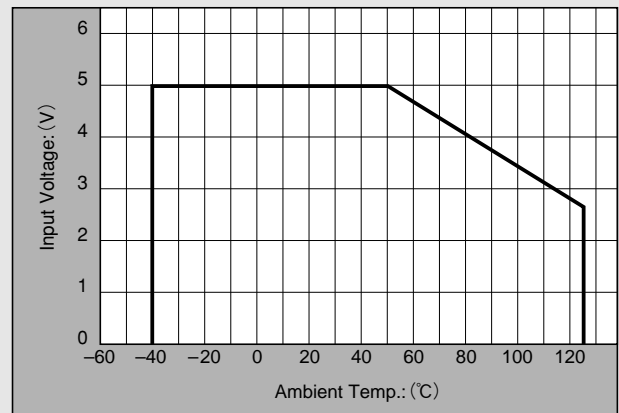
$$\text{※5. } \alpha V_H = \frac{1}{V_H(T_1)} \times \frac{V_H(T_2) - V_H(T_1)}{(T_2 - T_1)} \times 100$$

$$\text{※6. } \alpha R_{in} = \frac{1}{R_{in}(T_1)} \times \frac{R_{in}(T_2) - R_{in}(T_1)}{(T_2 - T_1)} \times 100$$

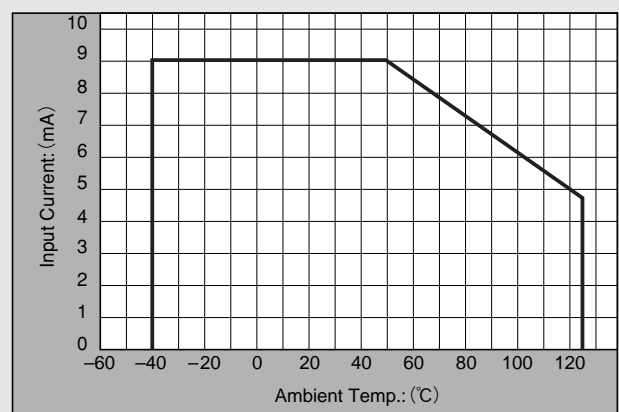
T<sub>1</sub> = 25°C, T<sub>2</sub> = 125°C



## ●Input Current Derating Curve



## ●Input Voltage Derating Curve

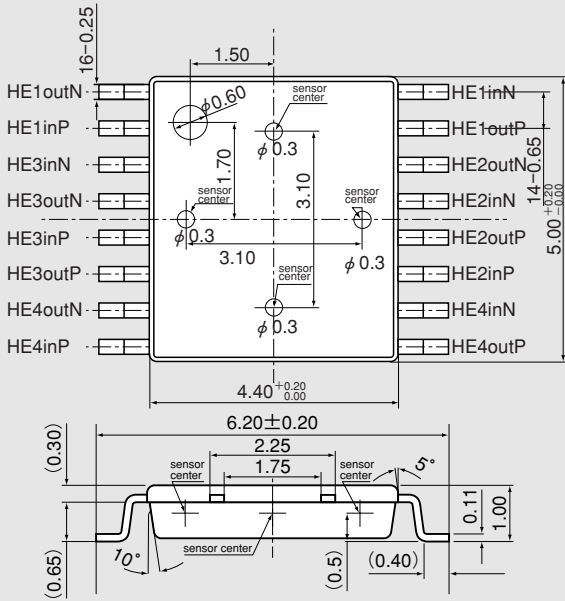


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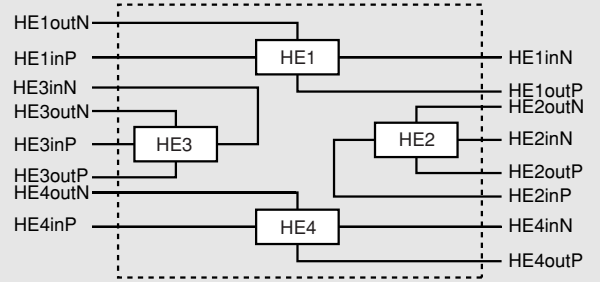
•Handling precautions required for preventing electrostatic discharge.

•This product contains gallium arsenide (GaAs) .Handling and discarding precautions required.

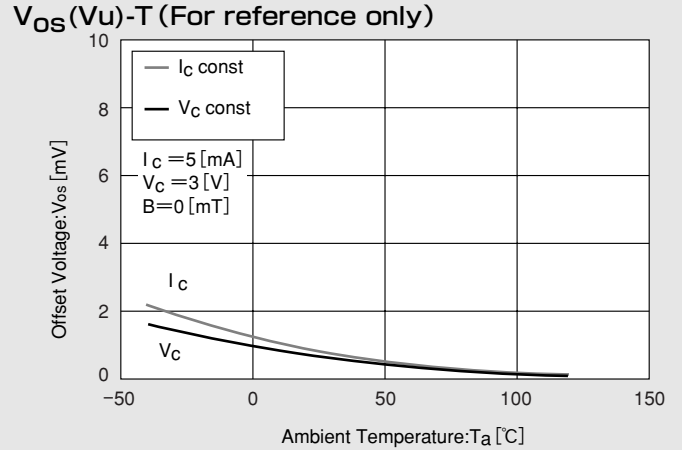
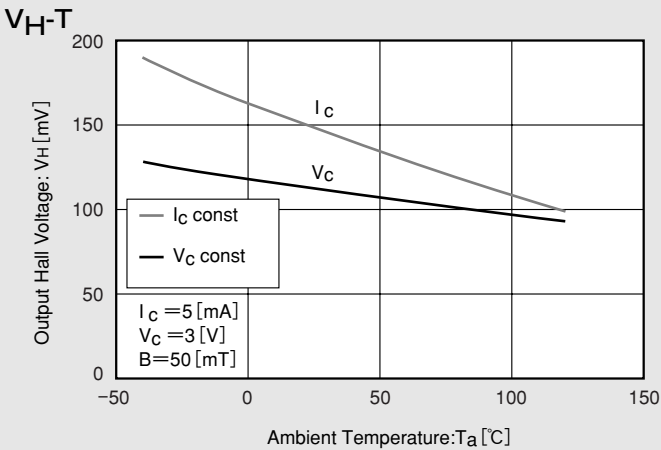
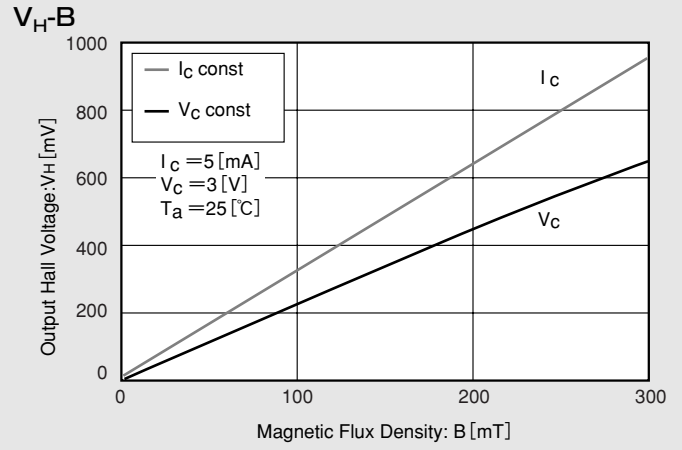
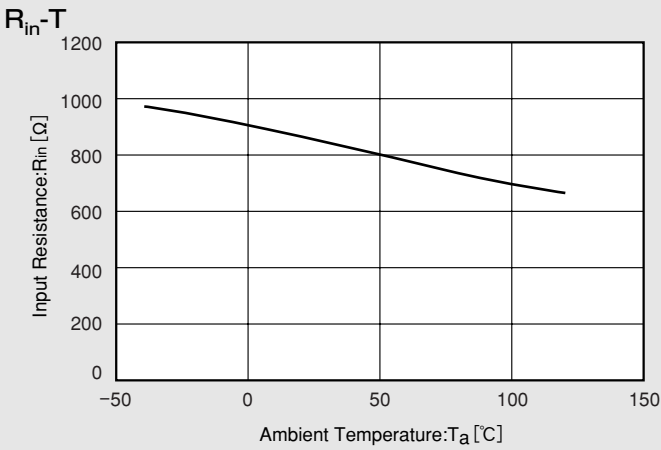
●Dimensional Drawing(Unit : mm)



●Pinning



●Characteristic Curves



※Magnetic Flux Density  
 1 [mT] = 10 [G]

in This Example:  $R_{in} = 850$  [Ω],  $V_{OS} = 0.8$  [mV] [ $V_C = 3$  [V]]

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June 2, 2010