TOSHIBA HALL SENSOR GaAs ION IMPLANTED PLANAR TYPE

THS126

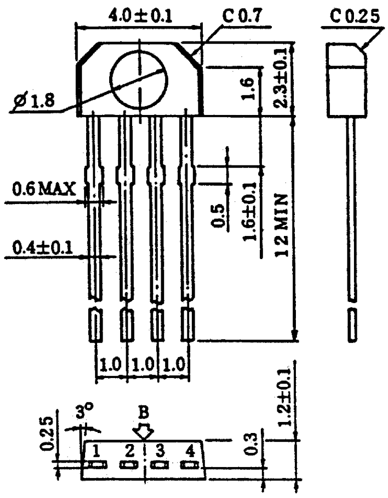
HIGH STABILITY MOTOR CONTROL.

DIGITAL TACHOMETER.

CRANK SHAFT POSITION SENSOR.

- Excellent Temperature Characteristics.
- Wide Operating Temperature Range. (; −55~125°C)
- Excellent Output Voltage Linearity.
- High Internal Resistance. : R_d = 1000Ω (Min.)
- Low Residual Voltage Ratio. : V_{HO} / V_H = ±5% (Max.)

Unit in mm



1 (+) − 3 (−) (INPUT)
2 (+) − 4 (−) (OUTPUT)

JEDEC	—
EIAJ	—
TOSHIBA	10-4B1A

Weight : 0.06g

MAXIMUM RATINGS (Ta = 25°C)

CHARACTERISTIC	SYMBOL	RATING	UNIT
Control Voltage	V_C	12	V
Power Dissipation	P_D	150	mW
Operating Temperature Range	T_{opr}	−55~125	°C
Storage Temperature Range	T_{stg}	−55~150	°C

ELECTRICAL CHARACTERISTICS (Ta = 25°C)

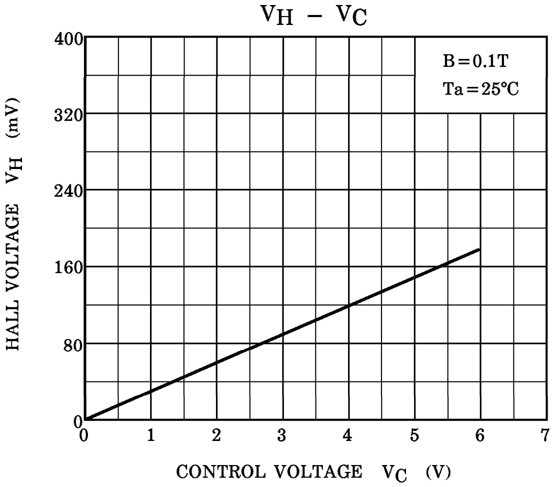
CHARACTERISTIC	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Internal Resistance (Input)	R_d	I_C = 1mA	1000	1250	1500	Ω
Residual Voltage Ratio	V_{HO} / V_H	V_C = 5V, B = 0 / B = 0.1T	—	—	±5	%
Hall Voltage (Note 1)	V_H	V_C = 5V, B = 0.1T	130	150	170	mV
Temperature Coefficient (Note 2)	V_{HT}	I_C = 5mA, B = 0.1T T1 = 25°C, T2 = 125°C	—	—	−0.06	% / °C
Linearity (Note 3)	ΔK_H	V_C = 5V, B1 = 0.05T, B2 = 0.1T	—	—	2	%
Specific Sensitivity (Note 4)	K*	V_C = 5V, B = 0.1T	—	30	—	$\times 10^{-2}$ / T
Internal Resistance (Output)	R_{OUT}	I_C = 1mA	1800	2375	3000	Ω

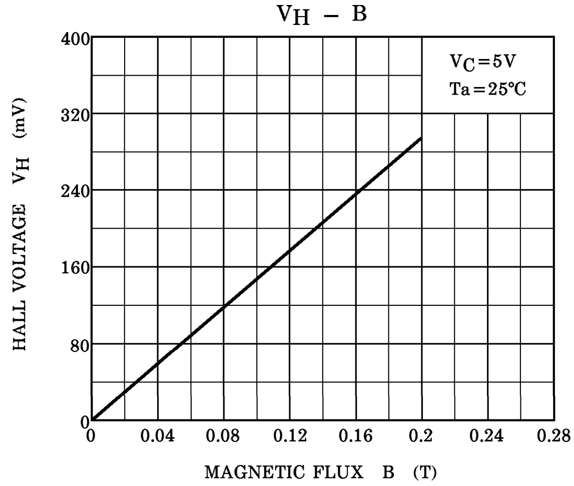
Note 1 : $V_H = V_{HM} - V_{HO}$ (V_{HM} is meter indication)

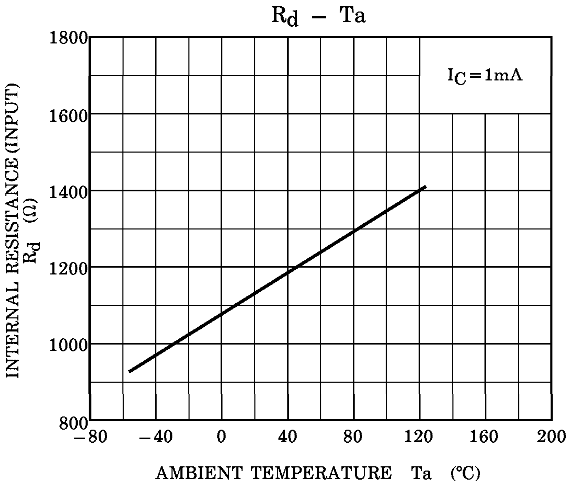
Note 2 : $V_{HT} = \frac{1}{V_{H(T1)}} \cdot \frac{V_{H(T2)} - V_{H(T1)}}{T2 - T1} \times 100$ (% / °C) V_{HO} : Residual Voltage

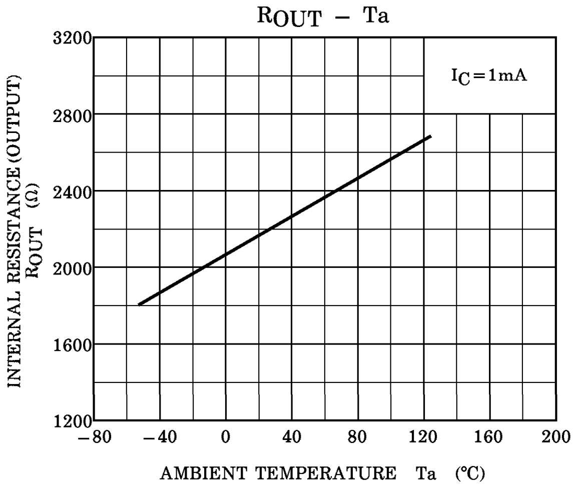
Note 3 : $\Delta K_H = \frac{K_{H(B2)} - K_{H(B1)}}{1/2\{K_{H(B1)} + K_{H(B2)}\}} \times 100$ (%), $K_H = \frac{V_H}{I_C \cdot B}$ K_H : Product Sensitivity

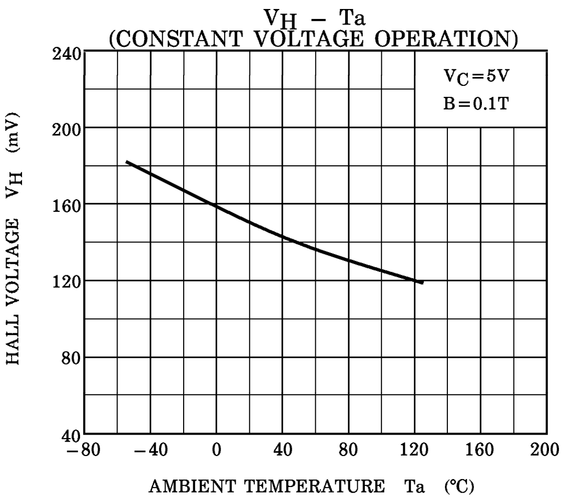
Note 4 : $K^* = V_H / (R_d \times I_C \times B) = K_H / R_d$


VH – VC
B = 0.1T
Ta = 25°C
HALL VOLTAGE VH (mV)
0
80
160
240
320
400
0 1 2 3 4 5 6 7
CONTROL VOLTAGE VC (V)


VH – B
VC = 5V
Ta = 25°C
HALL VOLTAGE VH (mV)
0
80
160
240
320
400
0 0.04 0.08 0.12 0.16 0.2 0.24 0.28
MAGNETIC FLUX B (T)


Rd – Ta
IC = 1mA
INTERNAL RESISTANCE (INPUT) Rd (Ω)
800
1000
1200
1400
1600
1800
−80 −40 0 40 80 120 160 200
AMBIENT TEMPERATURE Ta (°C)


ROUT – Ta
IC = 1mA
INTERNAL RESISTANCE (OUTPUT) ROUT (Ω)
1200
1600
2000
2400
2800
3200
−80 −40 0 40 80 120 160 200
AMBIENT TEMPERATURE Ta (°C)


VH – Ta
(CONSTANT VOLTAGE OPERATION)
VC = 5V
B = 0.1T
HALL VOLTAGE VH (mV)
40
80
120
160
200
240
−80 −40 0 40 80 120 160 200
AMBIENT TEMPERATURE Ta (°C)

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