

Terms and Symbols

<1>Common items

Term	Symbol	Definition
Absolute maximum ratings	–	Maximum limit which must not be exceeded even momentarily. When ratings have been determined for two or more parameters, none of them may reach this limit at the same time.
Power dissipation	P_D	Maximum value for electrical power that can be consumed continuously by the device during operation
Ambient temperature	T_a	Temperature surrounding the Hall device or Hall IC
operating temperature	T_{opr}	Acceptable ambient temperature range at which the device maybe operated continuously
Storage temperature	T_{str}	Acceptable ambient temperature range at which the device maybe stored
Soldering temperature	T_{sol}	Soldering temperature at which the specified portion on terminals maybe soldered for the specified period of time without causing deterioration of the performance of a semiconductor device.
Magnetic flux density	H	The magnetic flux per unit of surface area is called the magnetic flux density and is proportional to the strength of the magnetic field. In this catalog, the south (S) pole is designated as (+). The unit used is the tesla (T). When the gauss unit (G) is used, calculate according to $1T = 10000\text{ G}$.

*1 According to the specified condition of heat radiation

<2>Hall devices

Term	Symbol	Definition
Control voltage	V_C	Maximum permissible voltage* that can be continuously applied across the input terminals when the output terminal is released
Control IC	I_C	Maximum permissible current* which can be continuously passed between the input terminals when the output terminal is released
No-load Hall voltage	V_H	The voltage resulting when the no-load imbalance voltage is deducted from the voltage across the output terminals under the same conditions, when the input terminals of a Hall device have a specified current or voltage applied in a specified magnetic field.
Imbalanced voltage	V_{HO}	Voltage across a Hall device's output terminal when a specified current or voltage is applied to its input terminals
Imbalance ratio	V_{HO}/V_H	Ratio of no-load imbalance voltage to no-load Hall voltage
Input resistance	R_{IN}	Resistance between input terminals in the absence of a magnetic field when the output terminal is released.
Output resistance	R_{OUT}	Resistance between output terminals in the absence of a magnetic field when the input terminal is released.
Measuring resistance current	I_M	Specified current for measuring input and output resistance
Temperature coefficient of Hall voltage	V_{HF1}	Temperature coefficient of no-load Hall voltage
Temperature coefficient of input resistance	R_I	Temperature coefficient of input resistance
Hall sensitivity	K_H	V_H (mV) per unit current and unit magnetic flux density (normally mA/100 mT)
Linearity of Hall voltage	ΔK	Deviation from linearity of the dependency of a no-load Hall voltage on the magnetic field, expressed as a percentage
Drift of imbalanced voltage vs temperature	$ \Delta V_{HO} $	Shift of imbalance voltage from its initial value, in the temperature ranges of $T_a = -20^\circ\text{C}$ to $+25^\circ\text{C}$ or $T_a = +25^\circ\text{C}$ to $+125^\circ\text{C}$

*1 Unless specified otherwise, value given for voltage or current refer to direct current and peak values.

Terms and Symbols

<3> Hall ICs for noncontact switch

Term	Symbol	Definition
Supply voltage	V_{CC}	Value of voltage applied across the supply voltage terminal
output supply voltage	$v(a)$	Value of supply voltage applied across the output terminal
Output voltage	V_{OUT}	Value of voltage applied across the output terminal
output current	I_O	Value of the current flowing from the output terminal to the Hall IC
Operating magnetic flux density *1	B_{OP}	Minimum magnetic flux density at which output can be turned ON
	B_{RP}	Maximum magnetic flux density at which output can be turned OFF
Hysteresis breadth *1	B_H	$B_H = B_{OP} - B_{RP}$
Supply current	I_{CC}	Current flowing between V_{CC} and GND with no load
Low level output voltage	$vol.$	Voltage across the output terminal when a constant current is flowing through the output terminal in the ON state
output leakage current	I_{OH}	Voltage flowing from the output terminal into the Hall IC when a constant voltage is impressed to the output terminals in the OFF state
operating point temperature drift	ΔB_{OP}	Maximum permissible shift in operating temperature under ordinary conditions of use within the temperature ranges. $T_a = -20\text{ }^{\circ}\text{C}$ to $+80\text{ }^{\circ}\text{C}$

*1 The south (S) pole is defined as (+). Values are expressed in teslas (T). Gauss units (G) may be calculated as $1T = 10,000G$

<4> Hall ICs for fan motor

Term	Symbol	Definition
Supply voltage	V_{CC}	Value of voltage applied across the supply voltage terminal
output voltage	V_O	Maximum voltage that can be applied across the output terminal in the OFF state without damaging the IC
output current (peak)	$I_{O(MAX)}$	Maximum current that can be delivered momentarily to the output terminal in the ON state
output current (continuous)	I_n	Maximum current that can be delivered continuously to the output terminal in the ON state
Coil input voltage	V_{IN}	Maximum voltage that can be applied across the coil input terminals (pins 1 and 2)
Alarm output sink current	I_{SINK}	Maximum current that can be passed to the alarm output terminal in the ON state
Power dissipation	P_D	Permissible power loss for the Hall IC for fan motor
Output saturation voltage	$V_{OL(1)}$	Voltage in the output terminal when a constant current is passed to the output terminal in the ON state
Output cut-off current	I_{OC}	Current passed from the output terminal to the Hall IC when a constant voltage is impressed on the output terminal in the OFF condition
Supply current	I_{CC}	Current flowing between V_{CC} and GND under no-load conditions
	B_1	Maximum magnetic flux density at which output terminal 6 can be turned ON
operating magnetic flux density *1	B_2	Minimum magnetic flux density at which output terminal 7 can be turned ON
	V_{IN}	Maximum coil input voltage at which the ON state of any one of the output terminals can be maintained.
Alarm output leakage current	V_{SA1}	Voltage in the output terminals when a constant current is delivered to the warning output terminal in the ON state
Alarm output leakage current	I_{IAK}	Current delivered from the Alarm output terminal to the Hall IC when a constant voltage is impressed on the Alarm output terminal in the OFF condition

*1 The south (S) pole is defined as (+). Values are expressed in teslas (T). Gauss units (G) may be calculated as $1T = 10,000G$.