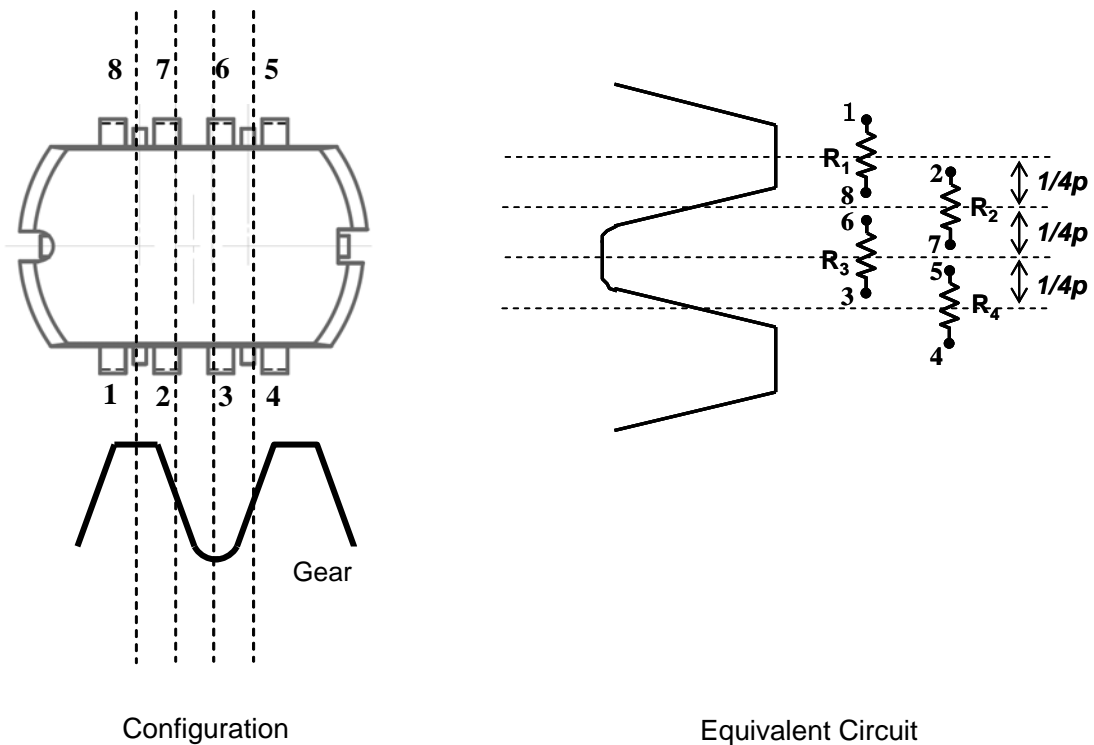


MS-P204

Semiconductor Magnetoresistive Element

Semiconductor Magnetoresistive Element Composition

MS-P204 is used for detecting gear rotation (module: M=2.0), combining bias magnet. MS-P204 generates A/B phase outputs (analog outputs), as the gear rotates. MS-P204 includes “four (4) resistance chips”, and they are arranged at equal intervals.



Absolute Maximum Ratings

Parameter	Symbol	Min.	Max.	Unit	Notes
Junction Temperature	T _j	-40	150	°C	
Storage Temperature	T _{stg}	-40	150	°C	

Note) Stresses beyond these listed values may cause permanent damage to the device.

Operating Conditions

Parameter	Symbol	Min.	Typ.	Max.	Unit	Notes
Max. Input Power	PD			865	mW	T _a =25°C
Operating Temperature	T _{opr}	-40		125	°C	

Note) Stresses beyond these listed values may cause permanent damage to the device.

Magnetic & Electrical Characteristics (Ta=25°C)

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit	Note
Resistance	R(0)	Ic=1mA B=0T	290		420	Ω	*1
Resistance Change Ratio	ΔR/R	Ic=1mA B=0/0.45T	130			%	*2
Phase-A Voltage	VA(0)	Calculation by the resistances at B=0T.	2.25	2.5	2.75	V	*3
Phase-B Voltage	VB(0)	Calculation by the resistances at B=0T.	2.25	2.5	2.75	V	*3
Phase-A Voltage	VA(B)	Calculation by the resistances at B=0.45T.	2.25	2.5	2.75	V	*4
Phase-B Voltage	VB(B)	Calculation by the resistances at B=0.45T.	2.25	2.5	2.75	V	*4

(1T=10kGauss)

*1 R(0): The resistance from 1pin to 8pin at B=0T, the resistance from 2pin to 7pin at B=0T, the resistance from 3pin to 6pin at B=0T and the resistance from 4pin to 5pin at B=0T.

*2 $\Delta R/R = (R(B)-R(0))/R(0)$ R(B): the resistance at B=0.45T

*3 VA(0): The voltage at 6pin (or 8pin) *This value is calculated by R(0) results.

<Calculation conditions>

1. Connecting 6pin and 8pin
2. Vc=5V between 1pin and 3pin
3. B=0T.

VB(0): The voltage at 5pin (or 7pin) *This value is calculated by R(0) results.

<Calculation conditions>

1. Connecting 5pin and 7pin
2. Vc=5V between 2pin and 4pin
3. B=0T.

*4 VA(B): The voltage at 6pin (or 8pin) *This value is calculated by R(B) results.

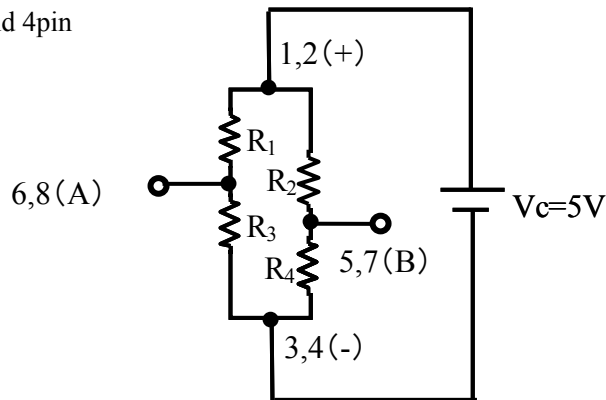
<Calculation conditions>

1. Connecting 6pin and 8pin
2. Vc=5V between 1pin and 3pin
3. B=0.45T.

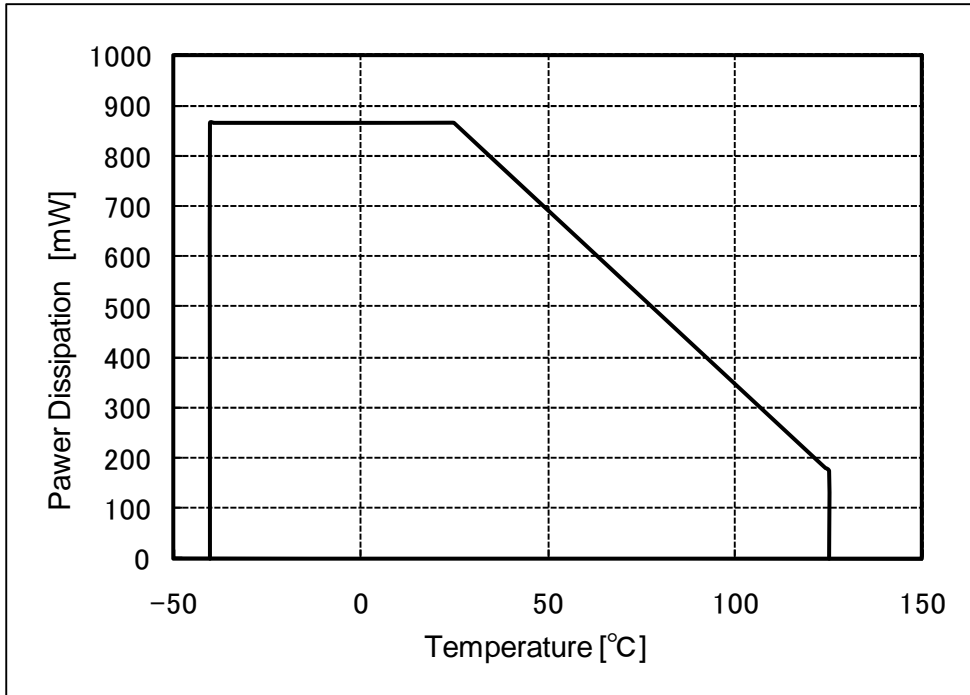
VB(B): The voltage at 5pin (or 7pin) *This value is calculated by R(B) results.

<Calculation conditions>

1. Connecting 5pin and 7pin
2. Vc=5V between 2pin and 4pin
3. B=0.45T.

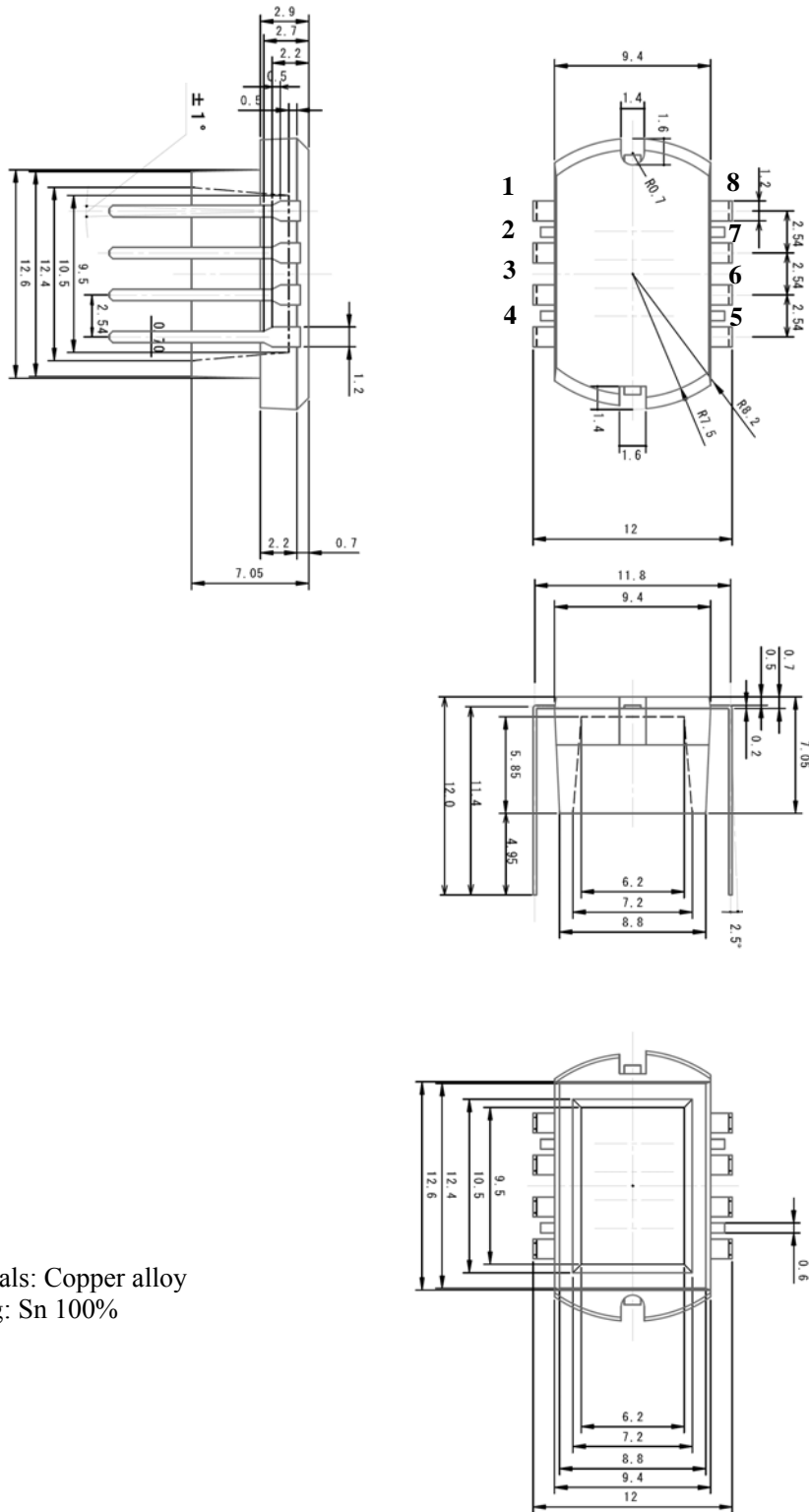


Power Dissipation



Package Information

Dimensional Outline Drawing (Unit:mm)



Material of terminals: Copper alloy
 Material of plating: Sn 100%

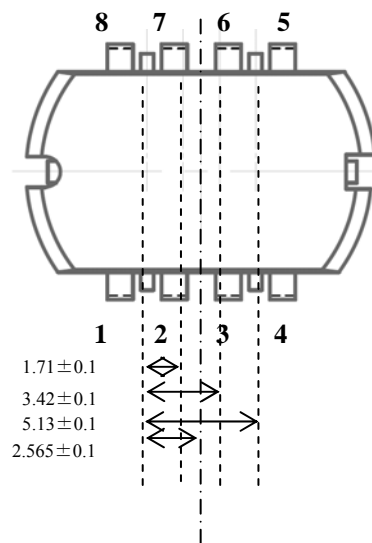
*The tolerances of dimensions with no mentions is $\pm 0.1\text{mm}$

Reliability Test

No.	Parameter	Test Condition	n	Time	Criteria (Ta=25°C)
1	Temperature Humidity Storage	Ta=85°C Relative Humidity=85%	22	1000hr	1. Rin(0) and Rout(0) are within ±20% of initial value. 2. VA(0), VB(0), VA(B) and VB(B) are 2.25V to 2.75V 3. ΔR/R is over 130%
2	Operating Life Test	Ta=125°C (Tj=150°C)	22	1000hr	Same as the Above
3	High Temperature Storage	Ta=150°C	22	1000hr	Same as the Above
4	Heat Cycle	-55°C → 25°C → 150°C 30min. ← 5min. ← 30min.	22	100Cycle	Same as the Above

Sensor Arrangement (reference)

Unit: mm



This distance is not guaranteed.
These are not tested in the final test.

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