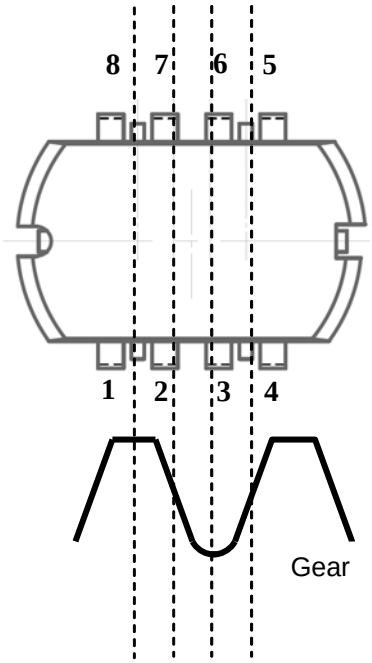
MS-P204

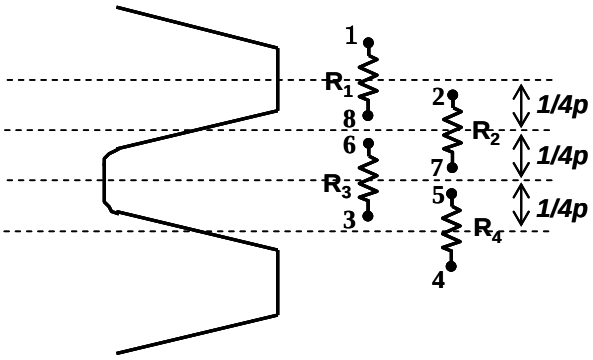
Semiconductor Magnetoresistive Element

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.



Configuration



Equivalent Circuit

Absolute Maximum Ratings

Parameter	Symbol	Min.	Max.	Unit	Notes
Junction Temperature	Tj	-40	150	°C	
Storage Temperature	Tstg	-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	Ta=25°C
Operating Temperature	Topr	-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	$V_A(0)$	Calculation by the resistances at B=0T.	2.25	2.5	2.75	V	*3
Phase-B Voltage	$V_B(0)$	Calculation by the resistances at B=0T.	2.25	2.5	2.75	V	*3
Phase-A Voltage	$V_A(B)$	Calculation by the resistances at B=0.45T.	2.25	2.5	2.75	V	*4
Phase-B Voltage	$V_B(B)$	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.

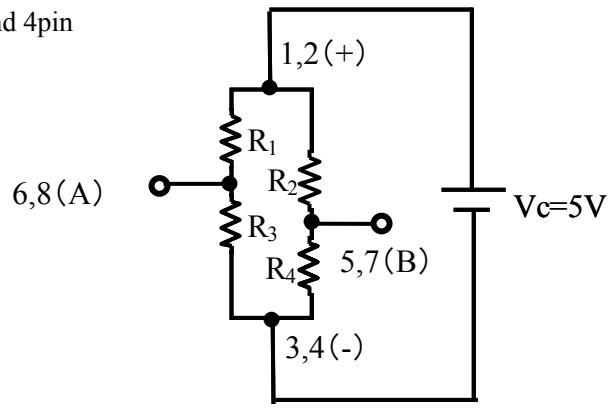
*2 ΔR/R = (R(B)-R(0))/R(0) R(B): the resistance at B=0.45T

*3 $V_A(0)$: 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.

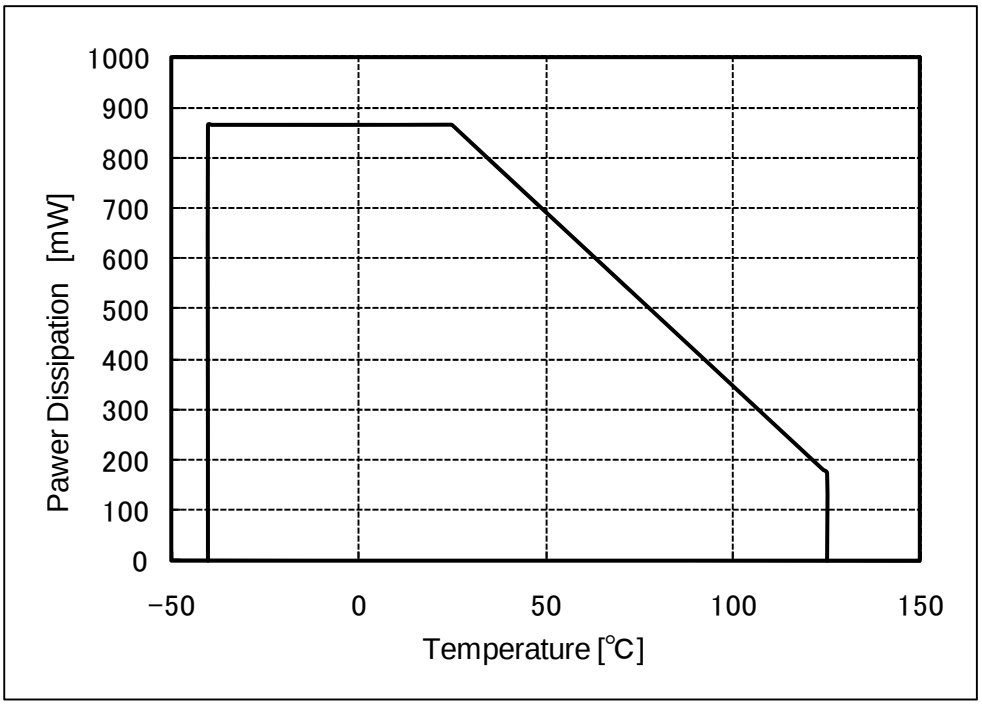
$V_B(0)$: The voltage at 5pin (or 7pin) *This value is calculated by R(0) results.
<Calculation conditions>
1. Connecting 5pin and 7pin
2. Vc=5V between 2pin and 4pin
3. B=0T.

*4 $V_A(B)$: 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.

$V_B(B)$: 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.

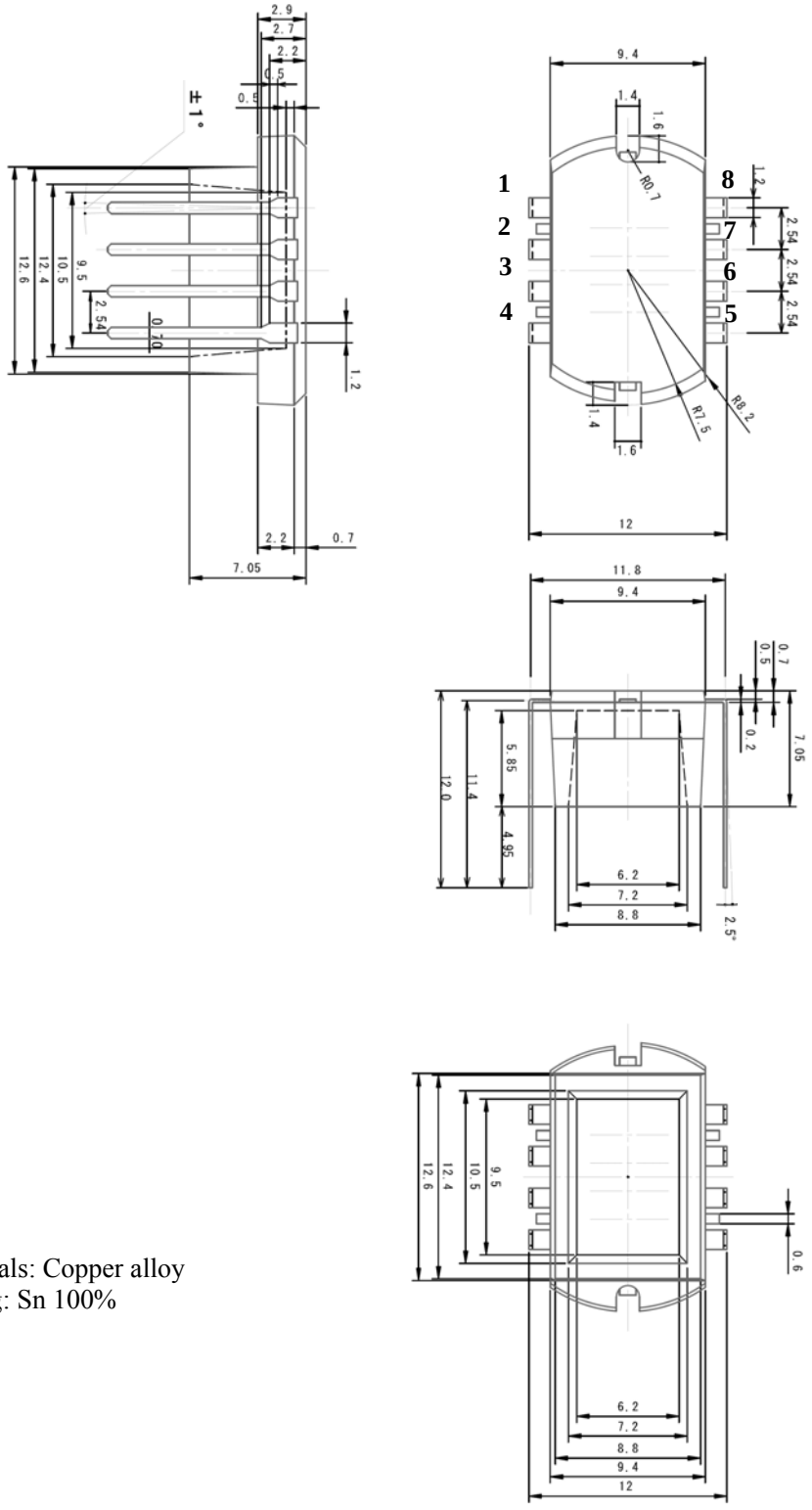


Power Dissipation



Package Information

Dimensional Outline Drawing (Unit:mm)



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

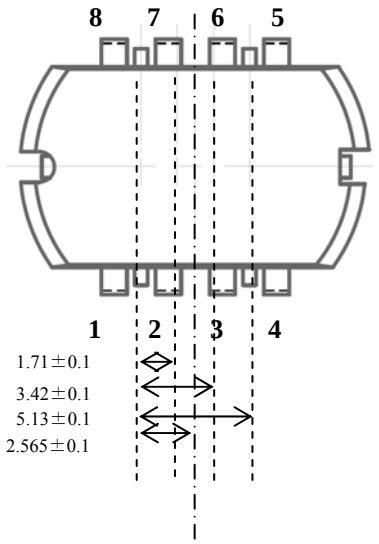
*The tolerances of dimensions with no mentions is ±0.1mm

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. $V_A(0)$,$V_B(0)$,$V_A(B)$ and $V_B(B)$ are 2.25V to 2.75V 3. ΔR/R is over 130%
2	Operating Life Test	Ta=125℃ (Tj=150°C)	22	1000hr	Same as the Above
3	High Temperature Storage	Ta=150℃	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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