

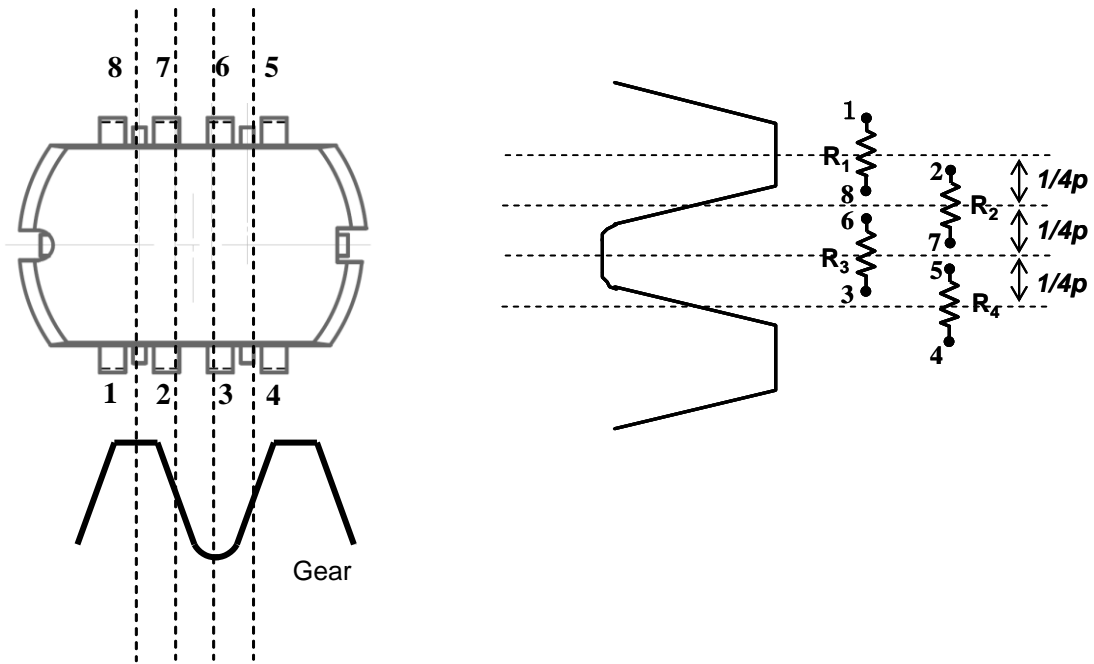
= Preliminary Datasheet =

**MS-P254**

Semiconductor Magnetoresistive Element

**Semiconductor Magnetoresistive Element Composition**

MS-P254 is used for detecting gear rotation (module: M=2.5), combining bias magnet. MS-P254 generates A/B phase outputs (analog outputs), as the gear rotates. MS-P254 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	T <sub>j</sub>	-40	150	°C	
Storage Temperature	T <sub>stg</sub>	-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 <sub>a</sub> =25°C
Operating Temperature	T <sub>opr</sub>	-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 <sub>A</sub> (0)	Calculation by the resistances at B=0T.	2.25	2.5	2.75	V	*3
Phase-B Voltage	V <sub>B</sub> (0)	Calculation by the resistances at B=0T.	2.25	2.5	2.75	V	*3
Phase-A Voltage	V <sub>A</sub> (B)	Calculation by the resistances at B=0.45T.	2.25	2.5	2.75	V	*4
Phase-B Voltage	V <sub>B</sub> (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<sub>A</sub>(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<sub>B</sub>(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<sub>A</sub>(B): The voltage at 6pin (or 8pin) \*This value is calculated by R(B) results.

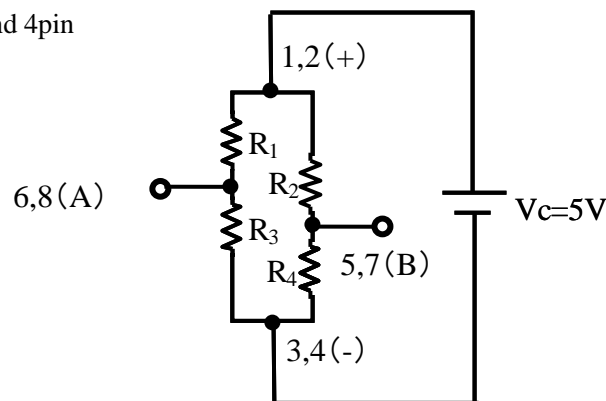
<Calculation conditions>

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

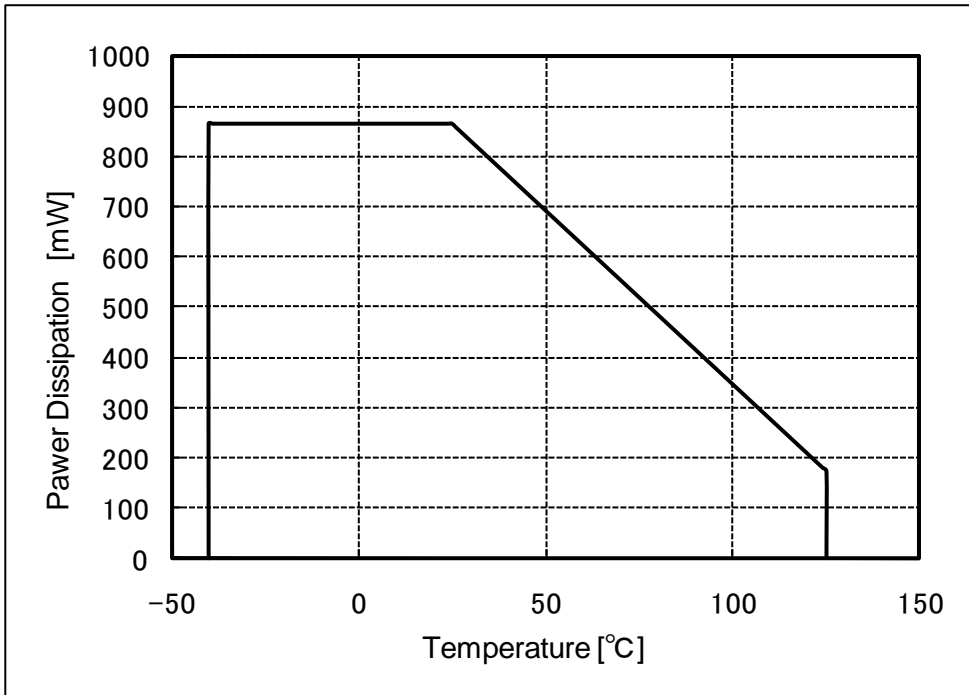
V<sub>B</sub>(B): The voltage at 5pin (or 7pin) \*This value is calculated by R(B) results.

<Calculation conditions>

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

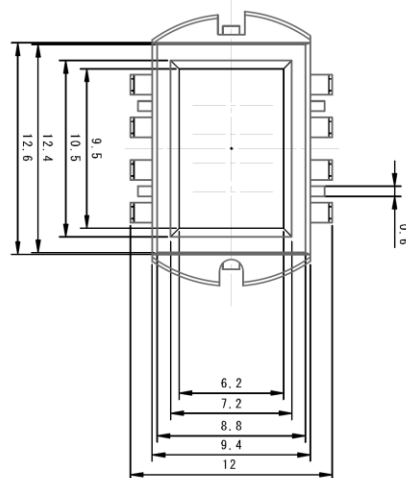
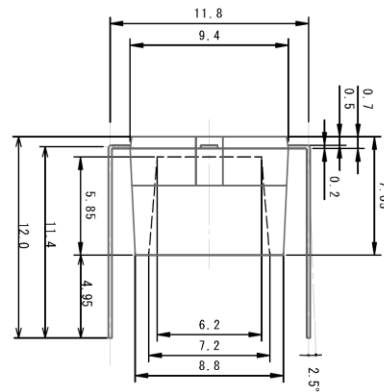
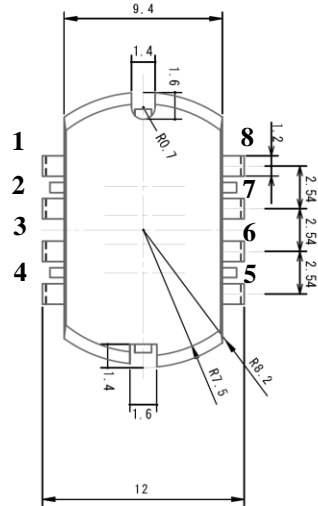
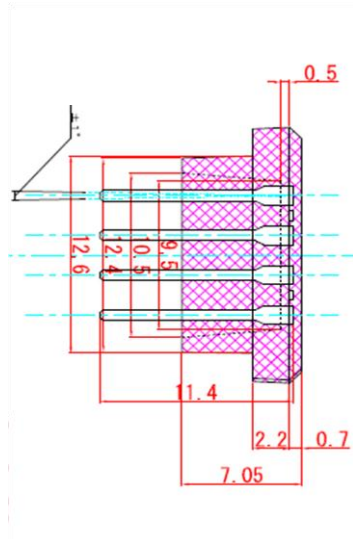


**Power Dissipation**



**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  $\pm 0.1$ mm

**Reliability Test**

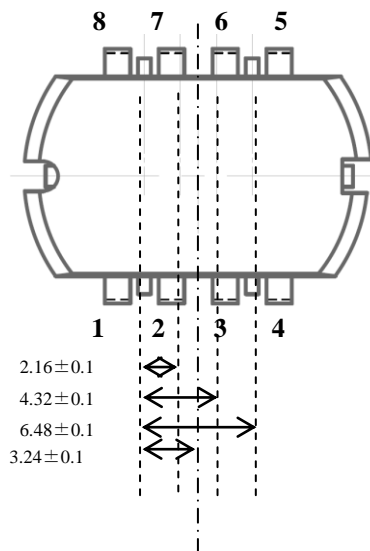
No.	Parameter	Test Condition	n	Time	Criteria (Ta=25°C)
1	Temperature Humidity Storage	Ta=85°C Relative Humidity=85%	22	1000hr	1. Rin(0) and Rout(0) are within ±20% of initial value. 2. VA(0),VB(0),VA(B) and VB(B) are 2.25V to 2.75V 3. ΔR/R is over 130%
2	Operating Life Test	Ta=125°C (Tj=150°C)	22	1000hr	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

**Marking**

Marking is not performed in this product.

**Sensor Arrangement (reference)**

Unit: mm



The distance between endmost element and the package center is  $3.24 \pm 0.1$ mm.

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

The distance between endmost element and each resistive element is  $2.16 \pm 0.1$ mm,  $4.32 \pm 0.1$ mm,  $6.48 \pm 0.1$ mm.

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

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