

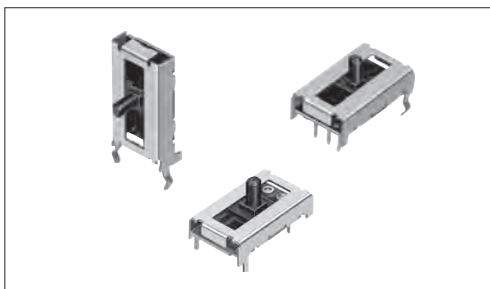
# RD7

## Linear Type (Exclusively Used to Detect the Angle of Vehicle Head Lights)

Exclusive for headlight angle detection with high accuracy and space-saving design



### Typical Specifications



Items	Specifications
Rated Voltage	12V DC
Operating life	2N max.
Total resistance	100,000 cycles
Operating temperature range	-40°C to +105°C

### Product Line

Travel (mm)	Control part orientation	Total resistance	Linearity	Minimum order unit (pcs.)		Model No.	Drawing No.
				Japan	Export		
8	Horizontal type	4.7kΩ	±1%	2,000	4,000	RD708A029A	1
	Vertical type	5kΩ		1,500	3,000	RD7081015A	2
9				1,800	3,600	RD7091008A	3
12	Horizontal type	2.2kΩ		2,000	4,000	RD712A028A	1
	Vertical type	10kΩ		1,800	3,600	RD7121008A	4

### Note

For linearity, various specifications will be available, depending on the applications. Please consult with us when placing your orders.

### Packing Specifications

Tray


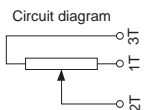
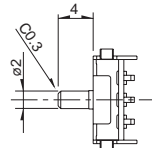
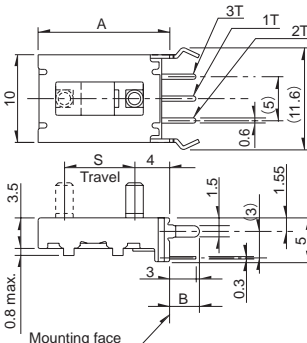
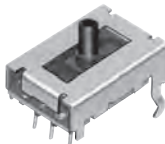
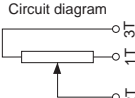
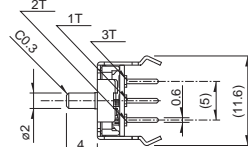
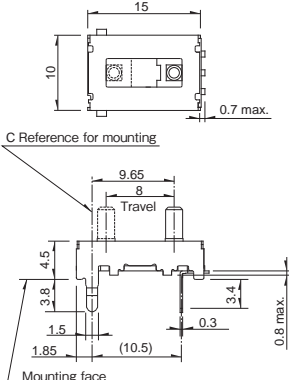

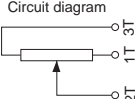
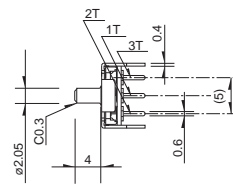
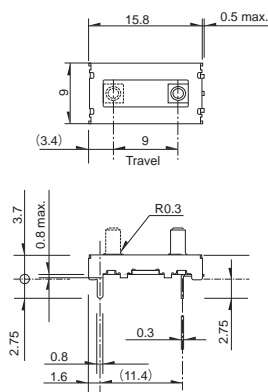
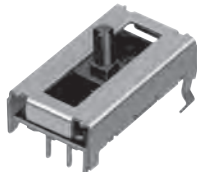
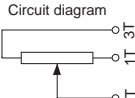
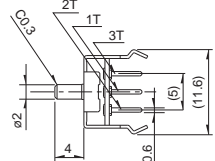
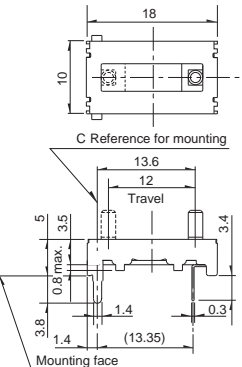
Model No.	Control part orientation	Number of packages (pcs.)		Export package measurements (mm)
		1 case /Japan	1 case /export packing	
<b>RD708</b>	Horizontal type	2,000	4,000	527×363×215
	Vertical type	1,500	3,000	507×363×216
<b>RD709</b>		1,800	3,600	508×364×192
<b>RD712</b>	Horizontal type	2,000	4,000	527×363×118
	Vertical type	1,800	3,600	507×363×216

Refer to P.426 for product specifications.  
Refer to P.427 for soldering conditions.

# RD7/Linear Type (Exclusively Used to Detect the Angle of Vehicle Head Lights)

## Dimensions

Unit:mm

No.	Photo	Style												
1	<div>RD708A RD712A</div> 	<div><table><tr><th>Dimension Model</th><th>S</th><th>A</th><th>B</th></tr><tr><td>RD708A</td><td>8</td><td>15</td><td>3.4</td></tr><tr><td>RD712A</td><td>12</td><td>19</td><td>3.8</td></tr></table></div>	Dimension Model	S	A	B	RD708A	8	15	3.4	RD712A	12	19	3.8
Dimension Model	S	A	B											
RD708A	8	15	3.4											
RD712A	12	19	3.8											
2	<div>RD7081</div> 	<div></div>												
3	<div>RD7091</div> 	<div></div>												
4	<div>RD7121</div> 	<div></div>												







Resistive  
Position Sensors

Rotary Type

Linear Type

# Resistive Position Sensors

## List of Varieties

Type		Linear Type			
Series		RDC1010	RDC10		※ RD7
Photo					
Direction of lever		Vertical			Horizontal Vertical
Linearity guarantee range		9.2mm	12mm 21mm 31mm 46mm	85mm	6mm 9mm 6mm 7mm 9mm
Travel		10mm	14mm 22mm 32mm 47mm	87mm	8mm 12mm 8mm 9mm 12mm
Operating temperature range		−30℃ to +85℃			−40℃ to +105℃
Operating life		50,000 cycles	200,000 cycles	100,000 cycles	100,000 cycles
Available for automotive use		—	●	—	●
Life cycle (availability)					
Mechanical performance	Operating force	0.25N max.			2N max.
Electrical performance	Total resistance tolerance	±30%			±20%
	Linearity (%)	±0.5		±1	±1
	Rated voltage (V DC)	5			12
Environmental performance	Cold	−40℃ 240h			−40℃ 96h
	Dry heat	80℃ 240h	90℃ 240h	85℃ 240h	105℃ 96h
	Damp heat	60℃, 90 to 95%RH 240h			40℃, 90 to 95%RH 96h
Terminal style		Insertion	Lead terminal/ Insertion	Insertion	Insertion
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### Notes

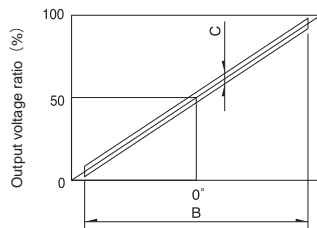
1. ※ The RD7 series are used to detect vehicle headlight angles.
2. ● Indicates applicability to all products in the series.

## Resistive Position Sensors / Product Specifications

### Method for Regulating the Linearity

#### Model RDC50 / RDC90 / RD6R1A

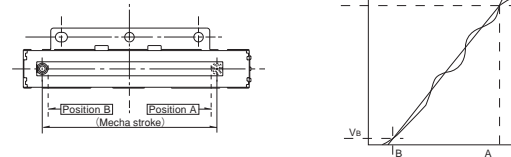
1. Reference taper : 100%/A
2. Index point (0°) is 50% output point (RDC50/RDC90)  
The center (0°) is in the configuration diagram condition (RD6R1A)



Series	A	B	C
<b>RDC50</b>	333.3°	±160°	±2%
<b>RDC90</b>	80°	±30°	±3%
	260°	±122°	
<b>RD6R1A</b>	320°	±155°	±2%

#### Model RDC10 / RD7

With rated voltage applied between terminals 1 and 3, the straight line which connects the measured output values  $V_B$  and  $V_A$  at specified reference positions B and A is assumed to be an ideal straight line, so that deviation against the ideal straight line when the voltage applied between terminals 1 and 3 is assumed to be 100% can be expressed as a percentage.



## Resistive Position Sensors / Measurement and Test Methods

### Resistive Position Sensor

#### [Total Resistance]

Unless otherwise specified, total resistance is the resistance measured between resistor terminals 1 and 3.

#### [Rating Voltage]

The rating voltage corresponding to the rated power shall be determined by the following equation. When the resulting rated voltage exceeds the maximum operating voltage of a specific resistor, the maximum operating voltage shall be taken as the rated voltage.

$$E = \sqrt{P \cdot R}$$

E : Rated voltage (V)  
P : Rated power (W)  
R : Total nominal resistance (Ω)

## Resistive Position Sensors / Soldering Conditions

### Reference for Manual Soldering

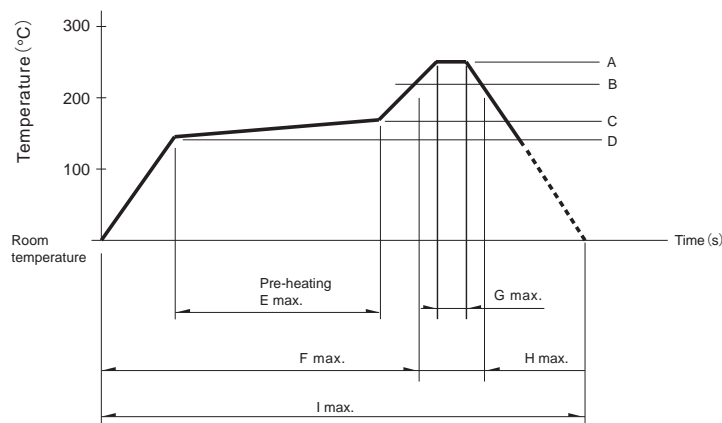
Series	Tip temperature	Soldering time
<b>RDC50, RDC90</b>	350±5°C	3 <sup>+1</sup> <sub>0</sub> s
<b>RDC10, RD7</b>	350°C max.	3s max.

### Reference for Dip Soldering

Series	Preheating		Dip soldering		No. of solders
	Soldering surface temperature	Heating time	Soldering temperature	Soldering time	
<b>RDC501, RDC502</b>	100 to 150°C	1 min. max.	260±5°C	10±1s	1 time
<b>RD7</b>	100°C max.	1 min. max.	260°C max.	5s max.	1 time

### Example of Reflow Soldering Condition

- Cleaning sensors should not be attempted.
- Type of solder to be used Use cream solder that contains 10 to 15 wt % flux.
- Number of solder applications - apply solder only once
- Recommended reflow conditions



Series	A	B	C	D	E	F	G	H	I	No. of reflows
<b>RDC503 RDC506</b>	250°C	230°C	180°C	150°C	2 min.	—	5s	40s	4 min.	1 time
<b>RDC90</b>	255°C	230°C	—	—	—	2 min.	10s	1 min.	4 min.	1 time

### Notes

- When using an infrared reflow oven, solder may not always be applied as intended.  
Be sure to use a hot air reflow oven or a type that uses infrared rays in combination with hot air.
- The temperatures given above are the maximum temperatures at the terminals of the sensor when employing a hot air reflow method. The temperature of the PC board and the surface temperature of the sensor may vary greatly depending on the PC board material, its size and thickness. Ensure that the surface temperature of the sensor does not rise to 250°C or greater.
- Conditions vary to some extent depending on the type of reflow bath used. Be sure to give due consideration to this prior to use.

Resistive  
Position Sensors

Rotary Type

Linear Type