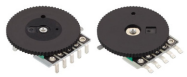
Potentiometers

Rotary Potentiometer (Knob operating type)

List of Varieties

Series		RK10J
Photo		
Dimensions		10mm Size
Number of resistor elements		Dual-unit Single-unit
Soldering		Manual Reflow
Mounting board types		Insertion (t: 2mm) Surface mounting
Operating temperature range		-10℃ to +60℃
Operating life (cycles)		10,000
Electrical performance	Total resistance	10kΩ
	Resistance taper	1B 15A
	Total resistance tolerance	±30%
	Rated power	0.03W
	Maximum operating voltage	50V AC 50V AC, 20V DC
	For DC use	20V DC Not applicable
	Insulation resistance	100MΩ min. 100V DC
	Voltage proof	100V AC for 1 minute
Mechanical performance	Total rotational angle	270° ±10°
	Rotational torque	0.5 to 10mN·m
	Stopper strength	70mN·m
	Push-pull strength	5N
Automotive		—

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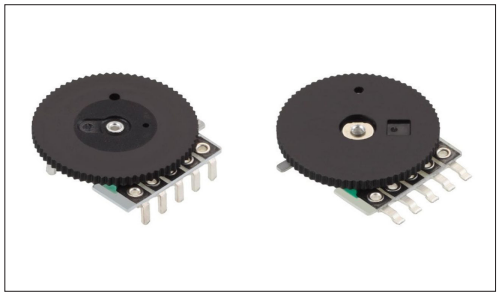
With Knob Type
RK10J Series

Thin-profile design compatible with reflow and dip mounting methods.



- Total resistance tolerance:±30%
- Maximum operating voltage:50V AC, 20V DC
- Rotational torque:0.5 to 10mN·m
- Operating life:10,000 cycles
- Operating temperature range:-10℃ to +60℃

Applications:Home:Major home appliances,Office equipment
Audio_TV:Visual,Audio

■ Product List

Products No.	Number of resistor elements	Soldering	Knob types	Mounting board types	For DC use	Total resistance	Resistance taper	Automotive	Drawing No.
RK10J11E0034	Single-unit	Manual	Outer size: φ14 Knob thickness: t0.9mm Color: Black	Insertion (t: 2mm)	20V DC	10kΩ	1B	—	1
RK10J12E0A0A	Dual-unit	Manual	Outer size: φ14 Knob thickness: t0.9mm Color: Black	Insertion (t: 2mm)	Not applicable	10kΩ	15A	—	2
RK10J11R0A0L	Single-unit	Reflow	Outer size: φ14 Knob thickness: t1.0mm Color: Black	Surface mounting	20V DC	10kΩ	1B	—	3
RK10J12R0A0B	Dual-unit	Reflow	Outer size: φ14 Knob thickness: t1.0mm Color: Black	Surface mounting	Not applicable	10kΩ	15A	—	4

⚠Note

1. This catalog shows only outline specifications. When using the products, please obtain formal specifications for supply.
2. Please place purchase orders per minimum order unit (integer).
3. Products other than those listed in above products are also available. Please contact us for details.

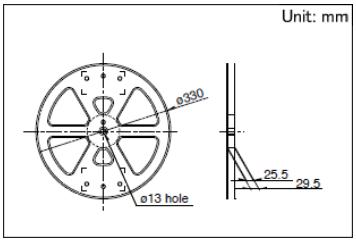
■ Packing Specifications

Bulk

Products No.	Number of packages(pcs.)		Export package measurements (mm)
	1 case / Japan	1 case / export packing	
RK10J11E0034 **RK10J12E0A0A**	3,000	2,400	371 x 250 x 190

Taping

Products No.	Number of packages(pcs.)			Tape width (mm)	Export package measurements (mm)
	1 reel	1 case / Japan	1 case / export packing		
RK10J11R0A0L **RK10J12R0A0B**	1,000	3,000	3,000	24	401 x 397 x 139

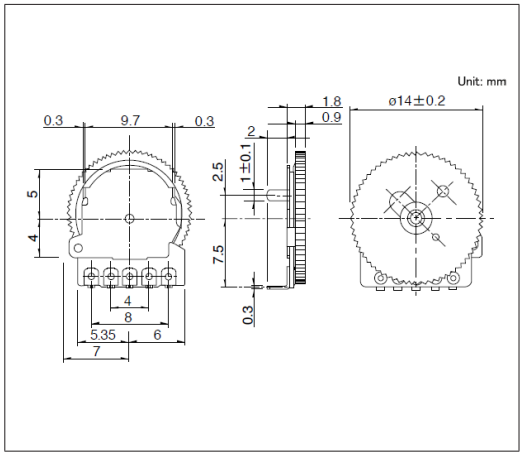


With Knob Type

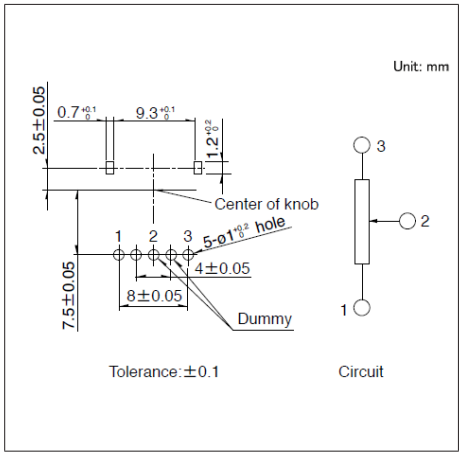
RK10J Series

Drawing No.1

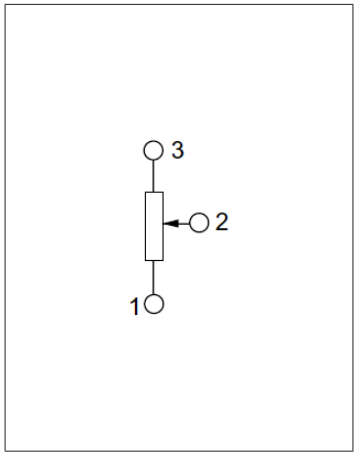
■ Dimensions



■ Mounting Hole Dimensions



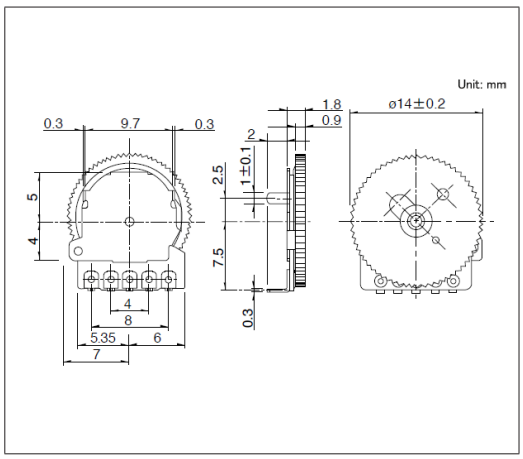
■ Circuit Diagram



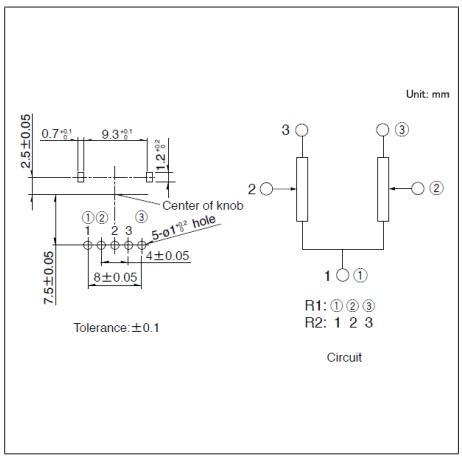
Viewed from mounting side.

Drawing No.2

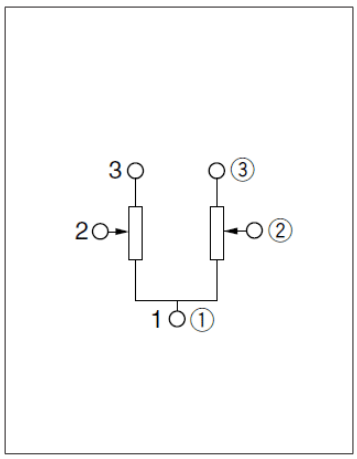
■ Dimensions



■ Mounting Hole Dimensions



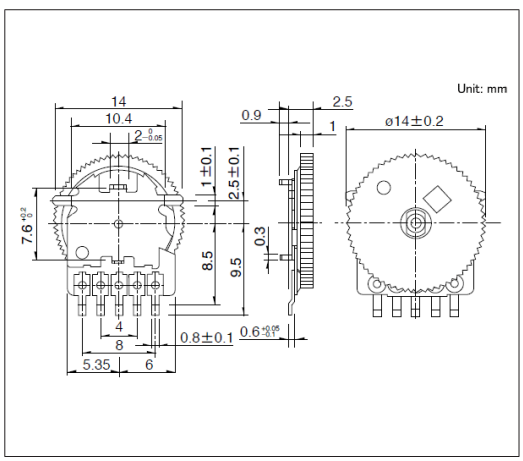
■ Circuit Diagram



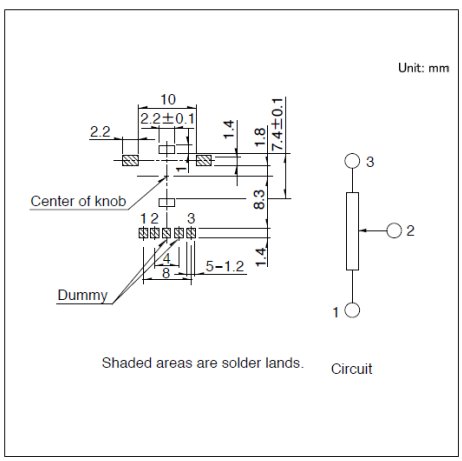
Viewed from mounting side.

Drawing No.3

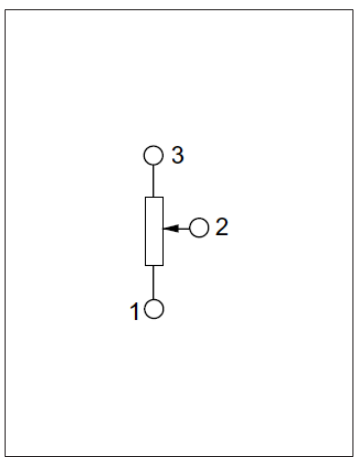
■ Dimensions



■ Mounting Hole Dimensions



■ Circuit Diagram



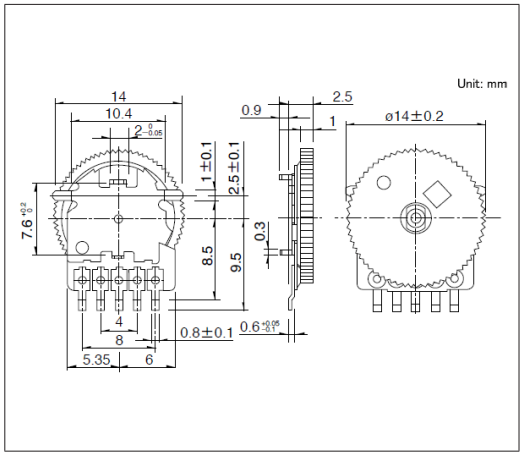
Viewed from mounting side.

With Knob Type

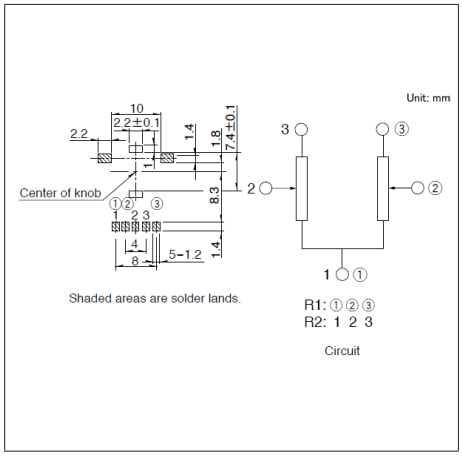
RK10J Series

Drawing No.4

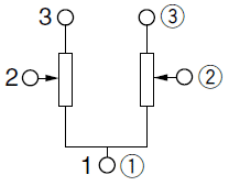
■ Dimensions



■ Mounting Hole Dimensions



■ Circuit Diagram



Viewed from mounting side.

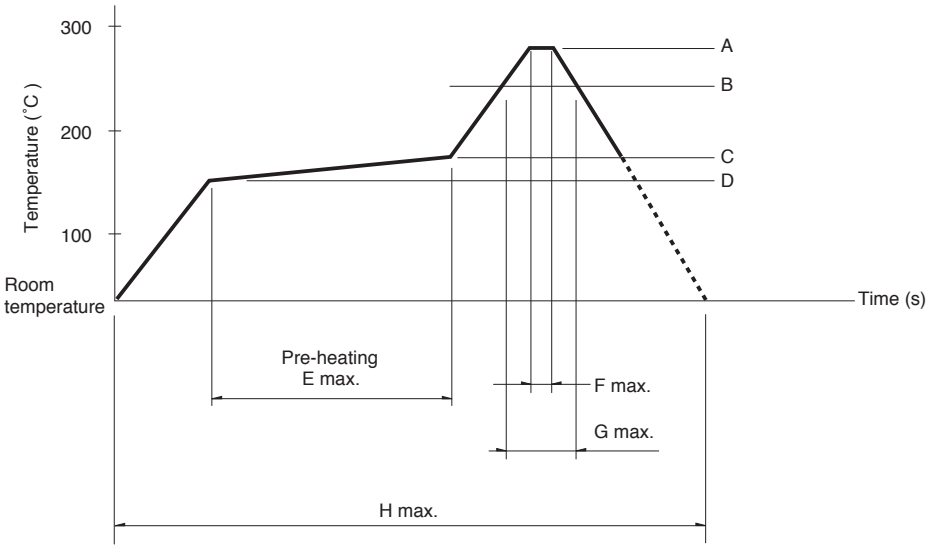
Rotary Potentiometer (Knob operating type) / Soldering Conditions

■ Reference for Manual Soldering

Series	Tip temperature	Soldering time	No. of solders
RK10J	350℃ max.	3s max.	1 time

■ Example of Reflow Soldering Condition

Temperature profile



Series	A	B	C	D	E	F	G	H	No. of reflows
RK10J1□R	250℃	200℃	150℃	150℃	2 min.	3s	40s	4 min.	2 time max.

⚠Note

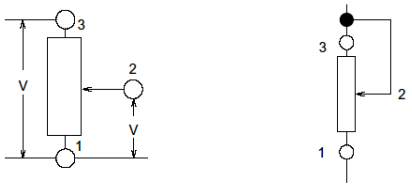
1. When using an infrared reflow oven, solder may sometimes not be applied. Be sure to use a hot air reflow oven or a type that uses infrared rays in combination with hot air.
2. The temperatures given above are the maximum temperatures at the terminals of the potentiometer when employing a hot air reflow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

Potentiometers / Cautions

Recommended Circuit Configuration

Please use the potentiometer in the voltage adjustment circuit (Fig. A). Avoid using it in the current adjustment circuit (Fig. B) as it is affected by the contact resistance between the resistive element and the wiper.

A.Voltage divider type B.Current controller type



Direct Voltage

When direct voltage is flown through this part, terminal to terminal insulation may deteriorate depending on the use environment. This is due to a migration phenomenon. Contact us if you are planning to use this part under direct voltage.

Impedance on the Output Side

There is a possibility that might de affected by contact resistance of resistive element and wiper in case of low impedance of output side in voltage regulation circuit. For this reason, we require that you adjust to impedance of output side more than 100 times of total resistance.

Residual Resistance

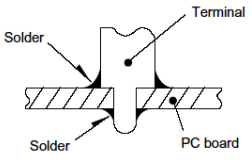
Although electric poles of resistors are generally formed by silver printing, we provide carbon coating over the silver poles to enhance reliability against sulfurization. Contact us if you wish to use the part in a low residual resistance state.

Dew Condensation

Avoid using the potentiometer where dew or water drops might occur on the surface of the resistor, etc. Deterioration of insulation or shorting may occur.

Soldering

To avoid potential contact issues, please do not solder wires to the top surface of the printed circuit board as shown in the diagram.
Solder all metal lugs into a substrate before use.



Stress Being Applied to the Terminals

Always pay special attention not to apply excessive stress when handling the terminals. Also, be sure to design appropriate soldering conditions.

Looseness of the Shaft

When lengthy shaft lengths are being employed, the looseness (deviation) tends to grow in proportion to the shaft length. Conducting a test under actual operating conditions is recommended.

Potentiometers / Cautions

Chassis Mounting

The use of a nut to fasten this part may lead to excessive tightening and can deteriorate the rotary contact performance, or strip the threads. Handle with care when tightening the nut.

Use of Chemicals

Since synthetic resins such as polycarbonate are being used as the material for the insulated type shafts, avoid using this part under gassy environments of such chemicals as ammonia, amines, alkali water solutions, aromatic hydrocarbons, ketones, esters and halogenated hydrocarbons, especially, under their intensive gas environments.

Operation at Low Temperature

When these products are expected to be used under low temperature environments such as applications for car radios and car stereos, we can customize them for easier and more smooth rotary movements. When placing orders, indicate whether the low temperature specification is necessary or not.

Storage

1. Store the products as delivered, at a normal temperature and humidity, without direct sunshine and corrosive gas ambient. Use them at an earliest possible timing, not later than six months upon receipt.

2. After breaking the seal, keep the products in a plastic bag to shut out ambient air, store them in the same environment as above, and use them up as soon as possible.

3. Do not stack too many switches.

The above operation notes are quoted from the
“Precaution and Guideline of Potentiometer for Electrical Devices” , which is a technical report issued by the Japan Electronics and Information Technology Industries Association RCR-2191A (in March 2002).
For details, see the above technical report.