Potentiometers

Rotary Potentiometer (Ring type)

List of Varieties

Series		RK39A	RK45C
Photo			
Dimensions		39mm size	45mm size
Number of resistor elements		Single-unit	
Number of positions		6/17	17
Total rotational angle		180° ±5° 220° ±5° 270° ±5° (290° max.)	220° ±5° (290° max.)
Detent torque		40±16mN·m 50±20mN·m	40±16mN·m
Operating temperature range		-40℃ to +85℃	
Operating life (cycles)		30,000	
Electrical performance	Total resistance	5kΩ	
	Resistance taper	B	
	Total resistance tolerance	±20%	
	Rated power	0.05W	
	Maximum operating voltage	50V AC, 30V DC	
	Insulation resistance	10MΩ min. 50V DC	
	Voltage proof	50V AC for 1 minute	
Mechanical performance	Stopper strength	1N·m	
	Push-pull strength	100N (Push)、50N (Pull)	
	Vibration	10 to 55 to 10Hz/min., the amplitude is 1.5mm for all the frequencies, in the 3 direction of X, Y and Z for 2 hours respectively	
Automotive		●	●

⚠Note

● Indicates applicability to all products in the series, while ○ indicates applicability to some products in the series.

Potentiometers | Rotary Potentiometer (Ring type)

39mm Size LED Illuminated Type
RK39A Series

LED-illuminated volume optimized for knob designs in various set devices.

Automotive

- Total resistance tolerance:±20%
- Maximum operating voltage:50V AC, 30V DC
- Operating life:30,000 cycles
- Operating temperature range:-40℃ to +85℃

Applications:Automotive:Navigation/audio systems, HVAC

■ Product List

Products No.	Total rotational angle	Detent	Detent torque	Total resistance	Resistance taper	Automotive	Drawing No.
RK39A1A00007	220°±5° (290°max.)	17-position	40±16mN·m	5kΩ	B	●	1
RK39A1A00027	180°±5° (290° max.)	17-position	50±20mN·m	5kΩ	B	●	2
RK39A1A00028	270°±5° (290°max.)	6-position	50±20mN·m	5kΩ	B	●	1

⚠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.
4. We can also provide LED colors other than the above mentioned. Contact us if you have such requirements.

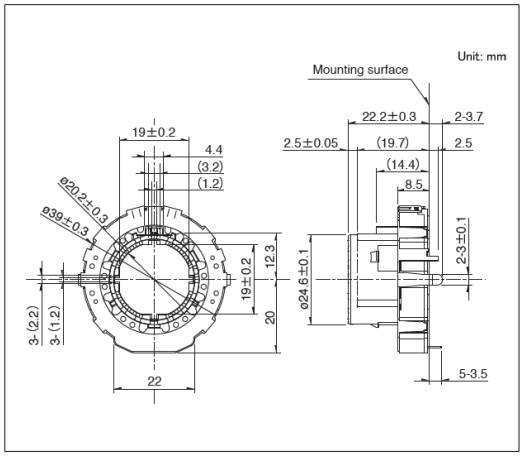
■ Packing Specifications

Tray

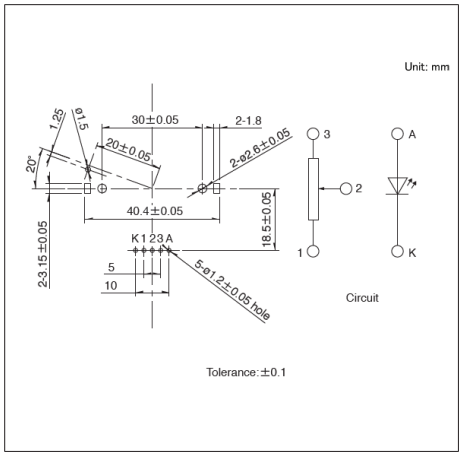
Number of packages(pcs.)		Export package measurements (mm)
1 case / Japan	1 case / export packing	
250	500	540 x 360 x 380

Drawing No.1

■ Dimensions



■ Mounting Hole Dimensions

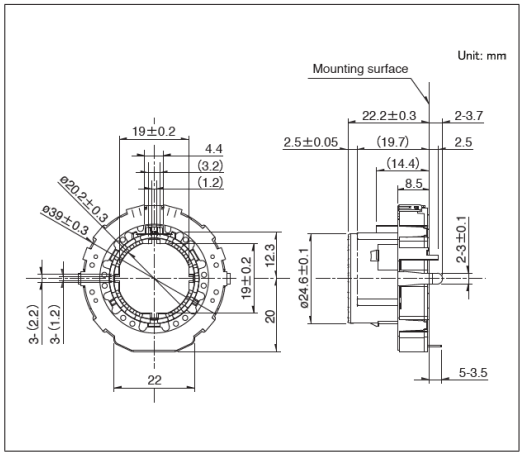


39mm Size LED Illuminated Type

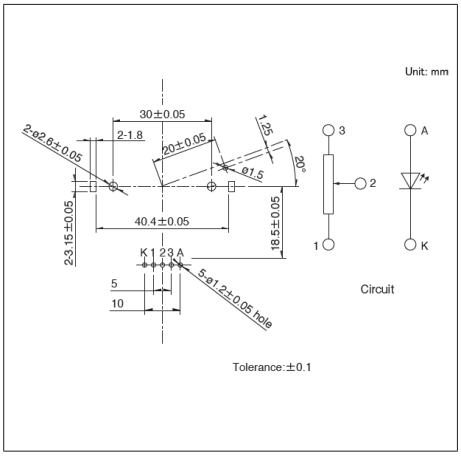
RK39A Series

Drawing No.2

■ Dimensions



■ Mounting Hole Dimensions



Potentiometers | Rotary Potentiometer (Ring type)

45mm Size LED Illuminated Type
RK45C Series

LED-illuminated volume optimized for knob designs in various set devices.

Automotive

- Total resistance tolerance:±20%
- Maximum operating voltage:50V AC, 30V DC
- Operating life:30,000 cycles
- Operating temperature range:-40℃ to +85℃

Applications:Automotive:Navigation/audio systems, HVAC

■ Product List

Products No.	Total rotational angle	Detent	Detent torque	Total resistance	Resistance taper	Automotive	Drawing No.
RK45C1A00003	220°±5° (290°max.)	17-position	40±16mN·m	5kΩ	B	●	1

Note

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3. Products other than those listed in above products are also available. Please contact us for details.
4. We can also provide LED colors other than the above mentioned. Contact us if you have such requirements.

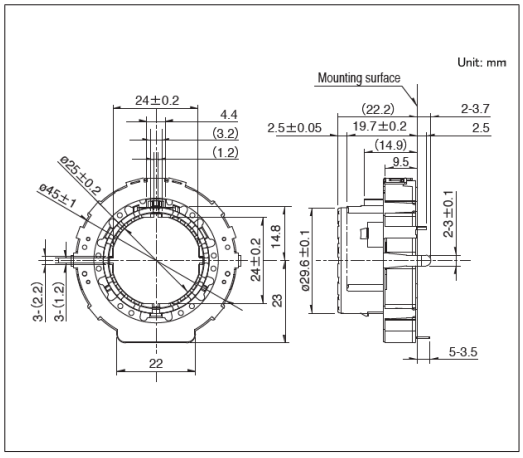
■ Packing Specifications

Tray

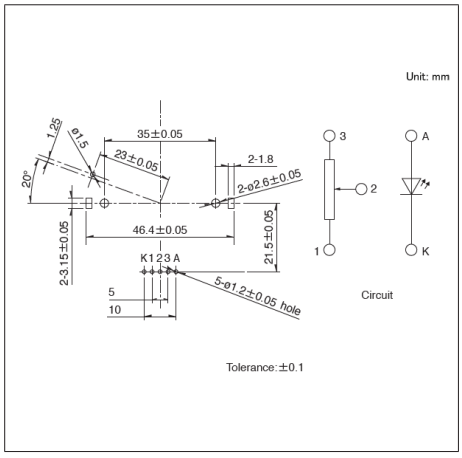
Number of packages(pcs.)		Export package measurements (mm)
1 case / Japan	1 case / export packing	
200	400	540 x 360 x 380

Drawing No.1

■ Dimensions



■ Mounting Hole Dimensions



Viewed from mounting face.

Rotary Potentiometer (Ring type) / Soldering Conditions

■ Reference for Manual Soldering

Series	Tip temperature	Soldering time	No. of solders
RK39A, RK45C	350℃ max.	3s max.	1 time

■ Reference for Dip Soldering

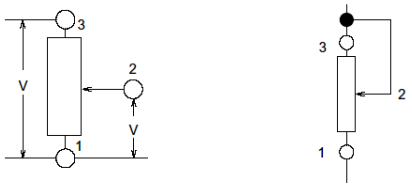
Series	Preheating		Dip soldering		No. of solders
	Soldering surface temperature	Heating time	Soldering temperature	Soldering time	
RK39A, RK45C	100℃ max.	2 min. max.	260℃ max.	5s max.	2 times max.

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

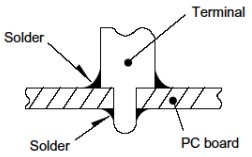
Although electric poles of resistors are generally formed by silver printing, we provide carbon coating over the silver poles to enhance reliability against sulfurization. Contact us if you wish to use the part in a low residual resistance state.

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.