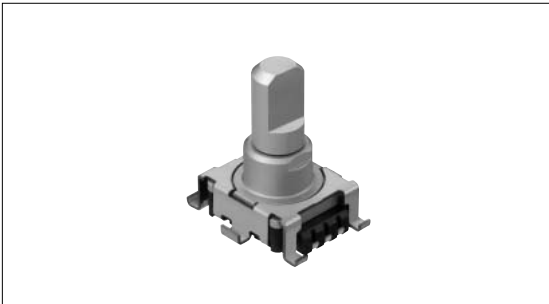


Metal Shaft Potentiometer
11mm Size Metal Shaft Reflow Type
RK119 Series



1.5mm-travel push-on switch achieved in a low-profile of only 5mm height.



■ Typical Specifications

Items	Specifications
Total resistance tolerance	±20%
Maximum operating voltage	50V AC, 10V DC
Total rotational angle	300 ^{+10°} _{-5°}
Rotational torque	7.5±3.5mN•m
Operating life	15,000cycles
Operating temperature range	−40°C to +85°C

Rotary
Potentiometers
Slide
Potentiometers

■ Product Line

Single-shaft without switch type

Number of resistor elements	Mounting direction	Shaft type	Length of the shaft (mm)	Total resistance (kΩ)	Resistance taper	Switch travel (mm)	Minimum order unit (pcs.)	Products No.	Drawing No.
Single-unit	Vertical type	Flat	20	10	1B	Without	300	RK1191110001	1
						0.5		RK1191114001	2
						1.5		RK1191124001	3

Metal
Shaft
Insulated
Shaft
Knob
Operating

Note

Products other than those listed in above products are also available. Please contact us for details.

Unit:mm

Metal Shaft
Insulated Shaft
Knob Operating

Product Varieties

In addition to the recommended products, the following specifications can also be accommodated.

Total Resistance Variety

Total resistance (kΩ)	10	20	50
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Resistance Taper

Resistance taper	15A	1B	3B
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Detent and Attached Switch

Variety	Items	Detent	Attached switches travel	
Single-shaft, Single-unit		Without	0.5mm	1.5mm

Dimensions of Shaft

Flat type

Unit:mm

Technical drawing of a shaft with dimensions L_1 , L_B , l , and a cross-section with a 60° angle and a 4.5 mm diameter. The shaft is shown in full CCW position.

Technical drawing of a shaft with dimensions L_1 , L_B , l , and a cross-section with a 60° angle and a 4.5 mm diameter. The shaft is shown in full CCW position.

Detail dimensions (mm)		
L_1	$\text{※}L_B$	l
(15)	5	7
(20)	5	10

Notes

- ※L₂ does not support M7(with Screws).
- Marked are specifications recommended by ALPS.

Specification for Switch

Mechanical Characteristics

Type	Travel (mm)	Pole-position	Rating	Changeover torque (Operating force)
Momentary push type	0.5±0.3	SPST	DC 5V 0.1A (1mA 5V DC min.rating)	5±2N
	1.5±0.5			4±2N

Electrical Characteristics

Type	Contact resistance	Insulation resistance	Voltage proof
Momentary push type	100mΩ for initial period, 200mΩ after operating life	100MΩ min. Measured with a 250V DC megger.	300V AC 1 minute min.

Durability

Operating life under load	Travel 0.5mm	The switch under a rated resistive load shall be subjected to a total of 100,000 cycles of operation at a speed of 600 to 1,000 cycles per hour. The contact resistance after testing should not exceed 200mΩ.
	Travel 1.5mm	The switch under a rated resistive load shall be subjected to a total of 20,000 cycles of operation at a speed of 600 to 1,000 cycles per hour. The contact resistance after testing should not exceed 200mΩ.

Note

The operating current should be 10mA or greater.

Refer to P.346, 502 for resistance taper.

Orders other than for recommended products

When ordering product varieties that are not listed in the Product Line, please specify by referring to the below example.

Sample Part Number

R	K	1	1	9	1	1	1	0	—	F	1	5	—	C	0	—	B	1	0	3
---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---

Switch Travel (mm)

Code	Switch
1	0.5
2	1.5

*For "without switch" type, select 1.

Switch

Code	Switch
0	Without switch
4	With push-on switch

Length of the shaft (L.) (mm)

Code	Length of the shaft
15	15
20	20

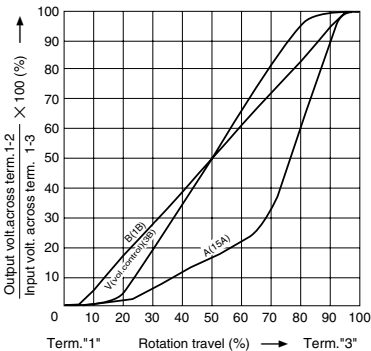
Detent

Code	Detent
C0	Without

Resistance taper

Code	Resistance taper
A	15A
B	1B
V	3B

B:For tone & general
V:For vol.



Total resistance

Code	Total resistance (kΩ)
103	10
203	20
503	50

Note

marked are specifications recommended by ALPS.

List of Varieties

Rotary
Potentiometers
Slide
Potentiometers

Metal
Shaft
Insulated
Shaft
Knob
Operating

Type		9mm size metal shaft snap-in		9mm size metal shaft multi-ganged		11mm size metal shaft low-profile	11mm size metal shaft reflow	16mm size metal shaft
Number of drive shafts		Single-shaft			Dual-shaft	Single-shaft		
Model		RK09L1		RK0971 RK0981	RK0972	RK117111	RK119	RK1631□1 RK1631□A
Photo								
Fixing method of bushing		The bushing can be screwed down		Bushing screw clamp		Bushing guide type		Bushing screw clamp
Terminal mounting		Horizontal type	Vertical type	Horizontal type		Vertical type		Horizontal type
Attached switch		Without		Rotary switch ※1		Momentary push switch		Without
				Push-on push-off switch※1				
				Momentary push switch※1				
Gang error applicable to Dual-unit parts for audio volume control purposes				－40dB to 0dB 3dB max.		—————		－40dB to 0dB 3dB max.
Solder heat resistance	Manual soldering	350℃ max. 3s max.					350±10℃ 3 ⁺¹ ₀ s	350℃ max. 3s max. Motor terminal: 350° max 2s max.
	Dip soldering	260±5℃, 5±1s					—————	
	Reflow soldering	—————					Please see P.347	—————
Operating emperature range		－10℃ to +70℃		－20℃ to +70℃		－30℃ to +70℃	－40℃ to +85℃	－10℃ to +70℃
Electrical performance	Rated power	0.05W						
	Residual resistance	$\begin{matrix} R \leq 10k\Omega & 20\Omega \text{ max.} \\ 10k\Omega < R \leq 50k\Omega & 30\Omega \text{ max.} \\ 50k\Omega \leq R & \text{Nominal total resistance of 0.1\% or less} \end{matrix}$					$\begin{matrix} R \leq 10k\Omega & 50\Omega \text{ max.} \\ 10k\Omega < R \leq 50k\Omega & 80\Omega \text{ max.} \\ 50k\Omega < R & \text{Nominal total resistance of 0.2\% or less} \end{matrix}$	$\begin{matrix} R \leq 10k\Omega & 20\Omega \text{ max.} \\ 10k\Omega < R \leq 50k\Omega & 30\Omega \text{ max.} \\ 50k\Omega < R & \text{Nominal total resistance of 0.1\% or less} \end{matrix}$
	Maximum attenuation (Volume control)	$\begin{matrix} 5k\Omega \leq R < 10k\Omega & 70\text{dB min.} \\ 10k\Omega \leq R < 50k\Omega & 80\text{dB min.} \\ 50k\Omega \leq R < 100k\Omega & 90\text{dB min.} \\ 100k\Omega \leq R & 100\text{dB min.} \end{matrix}$						
	Insulation resistance	100MΩ min. 250V DC						100MΩ min. 500V DC
	Voltage proof	300V AC for 1minute						500V AC for 1minute
Mechanical performance	Stopper strength	0.5N・m (With push-lock mechanism type: 0.4N・m)					0.5N・m	0.9N・m
	Push-pull strength	80N max.		100N max.				
	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 and for 2 hours respectively						
Environmental performance	Cold	－20℃±2℃ for 96h		－30±2℃ for 96h			－40±2℃ for 240h	－20±2 for 96h
	Dry heat	70±2℃ for 96h					85±2℃ for 240h	70±2℃ for 96h
	Damp heat	40±2℃, 90 to 95%RH for 96h					60±2℃, 90 to 95%RH for 240h	40±2℃, 90 to 95%RH for 96h
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Push-on Switch Specifications

Items	RK097		RK117		RK119	
Contact arrangement	Single pole and single throw (Push on)					
Travel (mm)	0.5	1.5	0.5	1.5	0.5±0.3	1.5±0.5
Operating force (N)	4 ⁺⁴ ₋₂	5±2	6±3	5±2		4±2
Rating	0.5A 12V DC		3A 16V DC		0.1A 5V DC (1mA 5V DC min.ratings)	
Contact resistance	100mΩfor initial period;200mΩafter operating life					
Operating life	10,000 times min.	20,000 times min.	10,000 times min.	20,000 times min.	100,000 times min.	20,000 times min.

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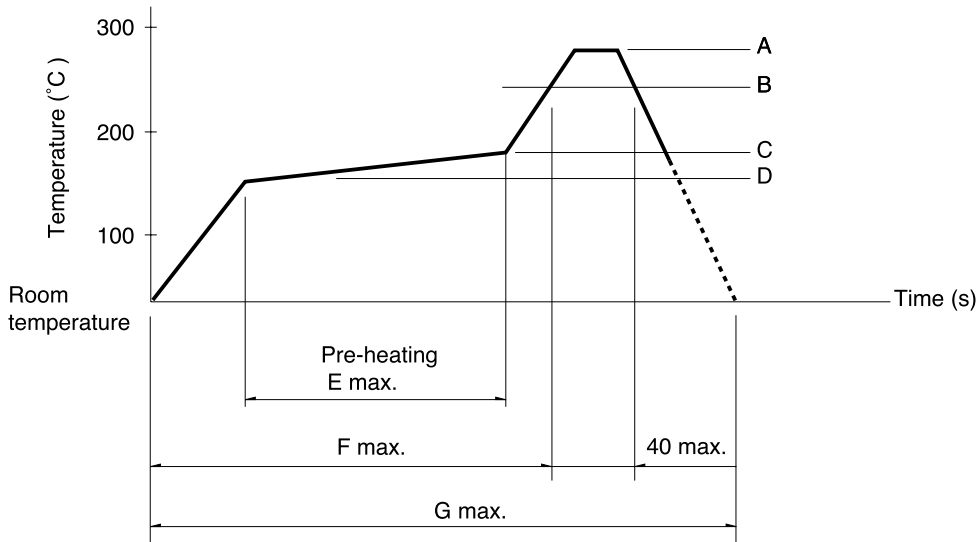
Notes

- ※1. For the switch attached, the single-shaft or inner shaft of the dual-shaft type can be chosen.
- The operating temperature range for automotive applications can be raised upon request. Please contact us for requirements of this kind.

Soldering Conditions

Example of Reflow Soldering Condition

1. Heating method: Double heating method with infrared heater.
2. Temperature measurement: Thermocouple 0.1 to 0.2 ϕ CA (K) or CC (T) at soldering portion (copper foil surface). A heat resisting tape should be used for fixed measurement.
3. Temperature profile



Series(Reflow type)	A (°C) 3s max.	B (°C)	C (°C)	D (°C)	E (s)	F (s)	G (s)
RK119	260	230	180	150	120	—	240

Notes

1. The condition mentioned above is the temperature on the mounting surface of a PC board. There are cases where the PC board's temperature greatly differs from that of the switch, depending on the PC board's material, size, thickness, etc. The above-stated conditions shall also apply to switch surface temperatures.
2. Soldering conditions differ depending on reflow soldering machines. Prior verification of soldering condition is highly recommended.

Rotary
Potentiometers

Slide
Potentiometers

Metal
Shaft

Insulated
Shaft

Knob
Operating