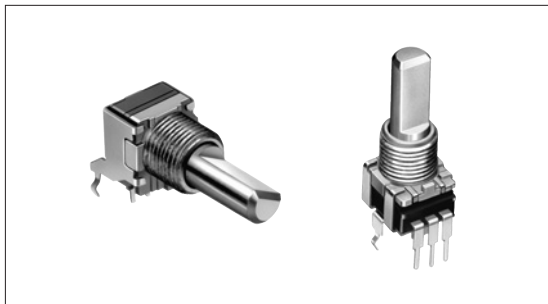


Metal Shaft Potentiometer 9mm Size Metal Shaft Snap-in Type

RK09L Series



Single-unit and dual-unit type suits a variety of controls.



Features

- Snap-in structure assures easy mounting.
- Closed structure improves dust and flux resistance.
- Available in horizontal and vertical type.

Applications

- For various control in audio equipment products - DVD players/recorders, mini component systems, portable audio equipment
- For various control in mixing consoles and electronic musical instruments

Rotary Potentiometers

Slide Potentiometers

Multi Control Devices

Sensors

Metal Shaft

Insulated Shaft

Hollow Type

Knob Operating

Typical Specifications

Items	Specifications
Total resistance tolerance	±20%
Maximum operating voltage	50V AC , 10V DC
Total rotational angle	300±5°
Rotational torque	2 to 25mN·m
Operating life	15,000cycles
Operating temperature range	-10°C to +70°C

Recommended Products List

Number of resistor elements	Mounting direction	Shaft type	Length of the shaft (mm)	Center detent	Total resistance (kΩ)	Resistance taper	Minimum packing unit (pcs.)	Products No.	Drawing No.			
Single-unit	Horizontal type	Flat	15	Without	10	15A	100	RK09L1120A2S	1			
				With		1B		RK09L1120036				
	12.5		Without	15A		RK09L1120A69						
				15		Without		50		RK09L1140A5E	2	
	20		With					10	RK09L1140A66			
				25		Without		5	RK09L1140A5P			
	Dual-unit		Horizontal type for tone					15	With	50		1B
				Without		100			RK09L114001T			
Horizontal type for vol.		25	Without	50	15A	RK09L1140A65						
				10	3B	RK09L122002M						
Vertical type for tone		15	With	50	1B	RK09L1220A1B						
				20	Without	50	15A	RK09L12B0A31	4			
Vertical type for vol.		15	Without			10	15A	RK09L12B0A3Z				
				20	Without	50	1B	RK09L124000Z				
20	Without	10	15A			RK09L1240A0W						
		20	Without	10	15A	RK09L12D0A1W						
20	Without			10	15A	RK09L12D0A1T						

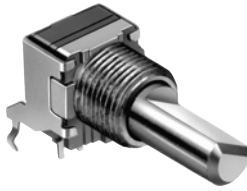
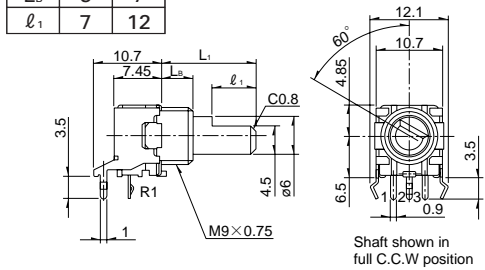
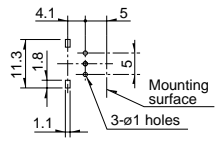

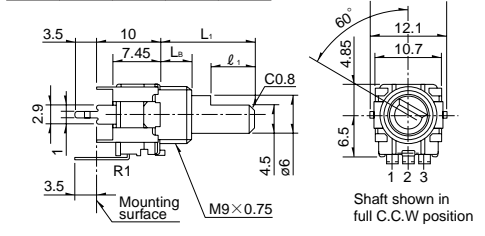
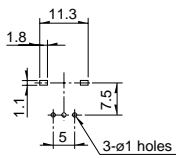
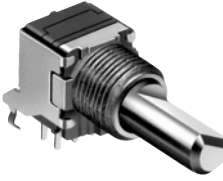
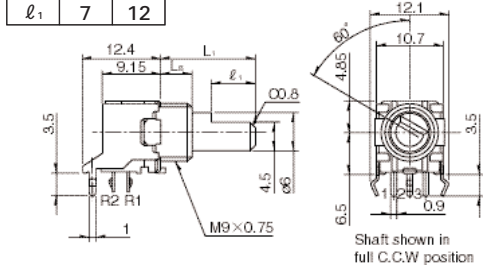
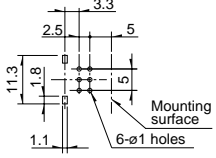

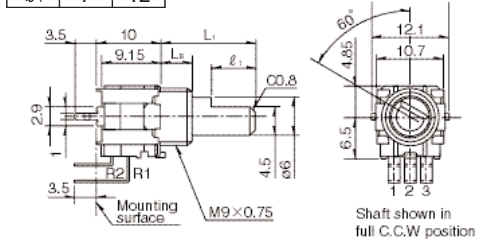
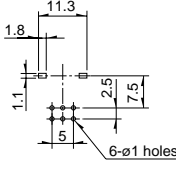
Note

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

Refer to P.13 for product varieties.
Refer to P.52 for product specifications.

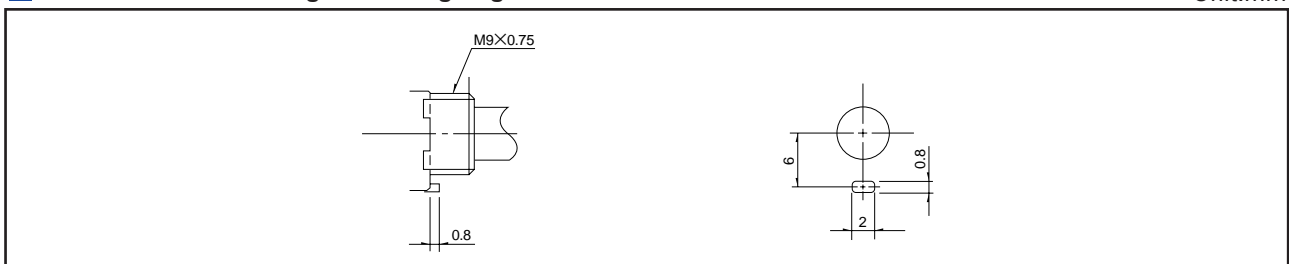
Dimensions

Unit:mm

No.	Photo	Style	PC board mounting hole dimensions (Viewed from mounting side)															
1	<p>Single-shaft, single-unit Horizontal type RK09L1120</p> 	<table border="1"> <tr><td>L₁</td><td>15</td><td>20</td></tr> <tr><td>L_B</td><td>5</td><td>7</td></tr> <tr><td>ℓ₁</td><td>7</td><td>12</td></tr> </table>  <p>Shaft shown in full C.C.W position</p>	L ₁	15	20	L _B	5	7	ℓ ₁	7	12	 <p>3-ø1 holes</p>						
L ₁	15	20																
L _B	5	7																
ℓ ₁	7	12																
2	<p>Single-shaft, single-unit Vertical type RK09L1140</p> 	<table border="1"> <tr><td>L₁</td><td>12.5</td><td>15</td><td>20</td><td>25</td></tr> <tr><td>L_B</td><td>5</td><td>5</td><td>7</td><td>7</td></tr> <tr><td>ℓ₁</td><td>7</td><td>7</td><td>12</td><td>12</td></tr> </table>  <p>Shaft shown in full C.C.W position</p>	L ₁	12.5	15	20	25	L _B	5	5	7	7	ℓ ₁	7	7	12	12	 <p>3-ø1 holes</p>
L ₁	12.5	15	20	25														
L _B	5	5	7	7														
ℓ ₁	7	7	12	12														
3	<p>Single-shaft, dual-unit Horizontal type RK09L1220 (For tone) RK09L12B0 (For vol.)</p> 	<table border="1"> <tr><td>L₁</td><td>15</td><td>25</td></tr> <tr><td>L_B</td><td>5</td><td>7</td></tr> <tr><td>ℓ₁</td><td>7</td><td>12</td></tr> </table>  <p>Shaft shown in full C.C.W position</p>	L ₁	15	25	L _B	5	7	ℓ ₁	7	12	 <p>6-ø1 holes</p>						
L ₁	15	25																
L _B	5	7																
ℓ ₁	7	12																
4	<p>Single-shaft, dual-unit Vertical type RK09L1240 (For tone) RK09L12D0 (For vol.)</p> 	<table border="1"> <tr><td>L₁</td><td>15</td><td>20</td></tr> <tr><td>L_B</td><td>5</td><td>7</td></tr> <tr><td>ℓ₁</td><td>7</td><td>12</td></tr> </table>  <p>Shaft shown in full C.C.W position</p>	L ₁	15	20	L _B	5	7	ℓ ₁	7	12	 <p>6-ø1 holes</p>						
L ₁	15	20																
L _B	5	7																
ℓ ₁	7	12																

Dimensions of Bushing and Fixing Lug

Unit:mm



Product Varieties

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

Total Resistance Variety

Total resistance (kΩ)	5	10	20	50	100
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Resistance Taper

Resistance taper	15A	1B	3B	15C
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Shaft Variety

Unit:mm

Shaft shown in full CCW position

Detail dimensions

L ₁	L _B	l ₁
12.5	5	7
15	5	7
17.5	5	7
20	7	12
25	7	12

Note

marked are specifications recommended by ALPS.

Rotary Potentiometers

Slide Potentiometers

Multi Control Devices

Sensors

Metal Shaft

Insulated Shaft

Hollow Type

Knob Operating

Refer to P.14, 211 for resistance taper.

Orders For Specifications Not Listed In The Recommended Products

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

Sample Part Number



Model type

Code	Model type
112	Single-unit horizontal type
114	Single-unit vertical type
122	Dual-unit horizontal type for tone
124	Dual-unit vertical type for tone
12B	Dual-unit horizontal type for vol.
12D	Dual-unit vertical type for vol.

Shaft type

Code	Shaft type
F	Flat

* Only available in flat format.

Length of the shaft (L₁) (mm)

Code	Length of the shaft	Code	Length of the shaft	Code	Length of the shaft
12	12.5	17	17.5	25	25
15	15	20	20		

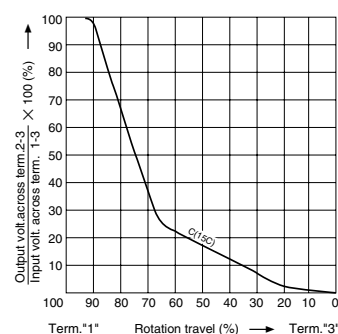
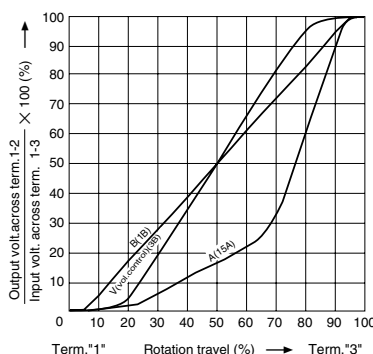
Detent

Code	Center detent
C0	Without
C1	With

Resistance taper

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

B:For tone & general(model type : 112,114,122,124)
V:For vol.(model type : 112,114,12B,12D)



Total resistance

Code	Total resistance (kΩ)	Code	Total resistance (kΩ)
502	5	503	50
103	10	104	100
203	20		

Note

marked are specifications recommended by ALPS.

Rotary Potentiometers

Slide Potentiometers

Multi Control Devices

Sensors

Metal Shaft

Insulated Shaft

Hollow Type

Knob Operating

Product Specifications

Model		RK09L	RK097 RK098	RK117	RK119	RK163 RK168
Items	Operating temperature range	-10°C to +70°C	-20°C to +70°C	-30°C to +70°C	-40°C to +85°C	-10°C to +70°C
Electrical performance	Total resistance tolerance	±20%				
	Rated power	0.05W				
	Maximum operating voltage	50V AC, 10V DC				RK163: 150V AC, 5V, DC RK168: 50V AC
	Residual resistance	$R \leq 10k\Omega$ $10k\Omega < R < 50k\Omega$ $50k\Omega \leq R$	20Ω max. 30Ω max. Nominal total resistance of 0.1% or less		$R \leq 10k\Omega$ 50Ω max. $10k\Omega < R \leq 50k\Omega$ 80Ω max. $50k\Omega < R$ Nominal total resistance of 0.2% or less	$R \leq 10k\Omega$ 20Ω max. $10k\Omega < R \leq 50k\Omega$ 30Ω max. $50k\Omega < R$ Nominal total resistance of 0.1% or less
	Maximum attenuation (Volume control)		$5k\Omega \leq R < 10k\Omega$ $10k\Omega \leq R < 50k\Omega$ $50k\Omega \leq R < 100k\Omega$ $100k\Omega \leq R$	70dB min. 80dB min. 90dB min. 100dB min.		
	Insulation resistance	100MΩ min. 250V DC				RK163: 100MΩ min. 500V DC RK168: 100MΩ min. 250V DC
	Voltage proof	300V AC (for 1minute)				RK163: 500V AC for minute RK168: 300V AC for minute
Mechanical performance	Total rotational angle	$300 \pm 5^\circ$	$300 \pm 5^\circ$ (Shaft movement type is $300 \pm 5^\circ$)		$300 \pm 10^\circ$	RK163: $300 \pm 3^\circ$ RK168: $300 \pm 5^\circ$
	Rotational torque	2 to 25mN·m		5 to 20mN·m	7.5 ± 3.5 mN·m	RK163: 3 to 25mN·m RK168: 10 to 40mN·m
	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				
	Solder heat resistance	Manual soldering	350°C max. 3s max.			$350 \pm 10^\circ C$ 3 ± 0.5 s
Dip soldering		$260 \pm 5^\circ C$, 5 ± 1 s			—	
Reflow soldering		—			Please see P.35	—
Endurance	Operating life	15,000cycles				
Environmental performance	Cold	$-20^\circ C \pm 2^\circ C$ for 96h	$-30 \pm 2^\circ C$ for 96h		$-40 \pm 2^\circ C$ for 240h	$-20 \pm 2^\circ C$ for 96h
	Dry heat	$70 \pm 2^\circ C$ for 96h			$85 \pm 2^\circ C$ for 240h	$70 \pm 2^\circ C$ for 96h
	Damp heat	$40 \pm 2^\circ C$, 90 to 95%RH for 96h			$60 \pm 2^\circ C$, 90 to 95%RH for 240h	$40 \pm 2^\circ C$, 90 to 95%RH for 96h

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	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)	0.5A 16V DC (1mA 16V DC min.ratings)
Contact resistance	100mΩ for initial period; 200mΩ after 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.

Note

The operating temperature range for automotive applications can be raised upon request. Please contact us for requirements of this kind.

Attached Parts

The following parts are included with the product.

Unit:mm

Applicable products	Bearing screw diameter	Hexagonal nut	Flat washer
RK09L RK168 RK097 RK203	M9		
RK271	M8		
RK097 RK098 RK163	M7		
RK097 RK098	M6		

Rotary Potentiometers

Slide Potentiometers

Multi Control Devices

Sensors

Metal Shaft

Insulated Shaft

Hollow Type

Knob Operating