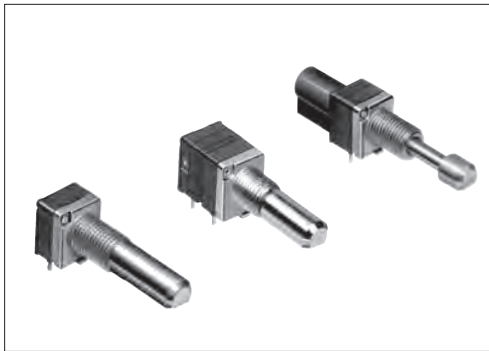


RK097 9mm Size Metal Shaft Multi-ganged Type

9.5mm width potentiometer ideal for various types of control



Typical Specifications



Items	Specifications
Total resistance tolerance	±20%
Maximum operating voltage	50V AC, 10V DC
Total rotational angle	300°±5° (For shaft movable type, 300° \pm $\frac{10}{5}$ °)
Rotational torque	2 to 25mN·m
Operating life	15,000 cycles
Operating temperature range	-20°C to +70°C -40°C to +85°C (Vehicle-compatible)

Product Line

Single-shaft without switch type

Number of resistor elements	Shaft type	Length of the shaft L ₁ (mm)	Center detent	Total resistance (kΩ)	Resistance taper	Minimum order unit (pcs.)		Products No.	Drawing No.
						Japan	Export		
Single-unit	Flat	20	Without	10	15A	1,200 (A type)	2,400 (A type)	RK097111080R	1
			With		1B				
Dual-unit for tone			With		1B	800 (B type)	1,600 (B type)	RK0971210DBH	2
Dual-unit for vol.			Without		15A	800 (B type)	1,600 (B type)	RK09712200HA	

Single-shaft with rotary switch type

Number of resistor elements	Shaft type	Length of the shaft L ₁ (mm)	Center detent	Total resistance (kΩ)	Resistance taper	Minimum order unit (pcs.)		Products No.	Drawing No.
						Japan	Export		
Single-unit	Flat	20	Without	10	1B	700 (C type)	1,400 (C type)	RK09711110EL	3
Dual-unit					15A			RK0971221Z0X	4

Single-shaft momentary push (0.5mm travel) switch type

Number of resistor elements	Shaft type	Length of the shaft L ₁ (mm)	Center detent	Total resistance (kΩ)	Resistance taper	Minimum order unit (pcs.)		Products No.	Drawing No.
						Japan	Export		
Single-unit	Flat	15	With	10	1B	700 (C type)	1,400 (C type)	RK0971114Z1N	5
Dual-unit for vol.		20	Without		15A			RK0971224Z01	6

Notes

1. Other varieties are also available. Refer to "Other Specifications" (P.291, 292).
2. For automotive use, please contact us with detailed specifications.

Refer to P.291 for other specifications.
 Refer to P.293 for attached parts.
 Refer to P.295 for ordering products not listed.
 Refer to P.311 for soldering conditions.

Product Line

Single-shaft with push-lock mechanism type

Number of resistor elements	Shaft type	Length of the shaft L ₁ (mm)	Center detent	Total resistance (k Ω)	Resistance taper	Minimum order unit (pcs.)		Products No.	Drawing No.
						Japan	Export		
Single-unit	Flat	25	Without	10	1B	700 (C type)	1,400 (C type)	RK097111T065	7
			With						
Dual-unit for vol.			Without		15A	600 (D type)	1,200 (D type)	RK097122T017	8

Single-shaft with push-lock switch type

Number of resistor elements	Shaft type	Length of the shaft L ₁ (mm)	Center detent	Total resistance (k Ω)	Resistance taper	Minimum order unit (pcs.)		Products No.	Drawing No.
						Japan	Export		
Single-unit	Flat	25	Without	5	1B	700 (C type)	1,400 (C type)	RK097111U00S	9

Dual-shaft, dual-unit without switch type

Number of resistor elements	Shaft	Shaft type	Length of the shaft L ₁ L ₂ (mm)	Center detent	Total resistance (k Ω)	Resistance taper	Minimum order unit (pcs.)		Products No.	Drawing No.
							Japan	Export		
Dual-unit (Single-shaft, Single-unit)	The outer shaft	Slotted	15	Without	10	15A	700 (C type)	1,400 (C type)	RK097221005C	10
	The inner shaft	Flat	25							

Notes

- Other varieties are also available. Refer to "Other Specifications" (P.291, 292).
- For automotive use, please contact us with detailed specifications.

Packing Specifications

Tray


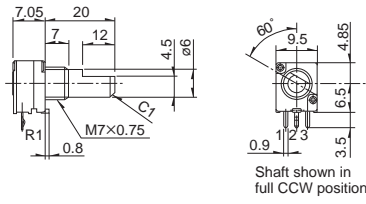
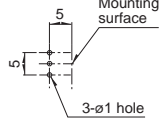

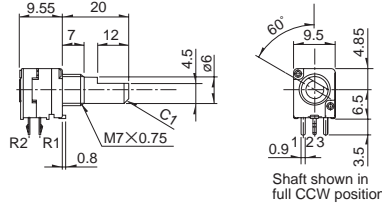
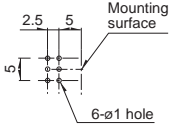

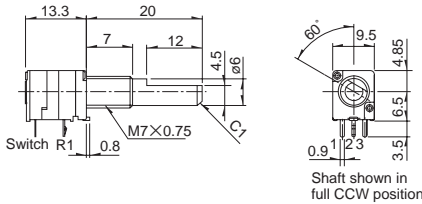
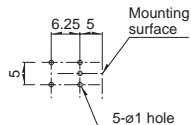

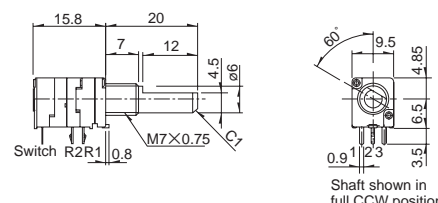
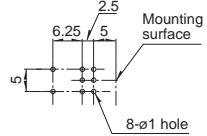
Minimum order unit type	Number of packages (pcs.)		Export package measurements (mm)
	1 case /Japan	1 case /export packing	
A type	1,200	2,400	463×375×185
B type	800	1,600	540×373×207
C type	700	1,400	540×373×181
D type	600	1,200	540×373×225

Refer to P.291 for other specifications.
 Refer to P.293 for switch specifications.
 Refer to P.293 for attached parts.
 Refer to P.295 for ordering products not listed.
 Refer to P.311 for soldering conditions.

RK097 9mm Size Metal Shaft Multi-ganged Type

Dimensions

Unit:mm

No.	Photo	Style	PC board mounting hole dimensions (Viewed from mounting side)
1		 <p>Shaft shown in full CCW position</p>	
2		 <p>Shaft shown in full CCW position</p>	
3		 <p>Shaft shown in full CCW position</p>	
4		 <p>Shaft shown in full CCW position</p>	

Rotary Potentiometers
Slide Potentiometers

Metal Shaft

Insulated Shaft


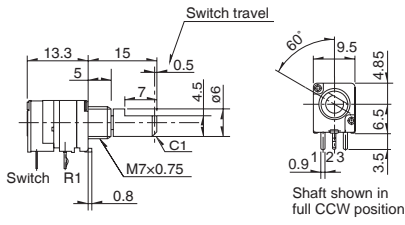
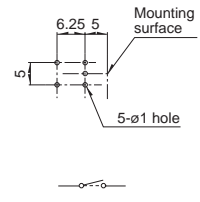

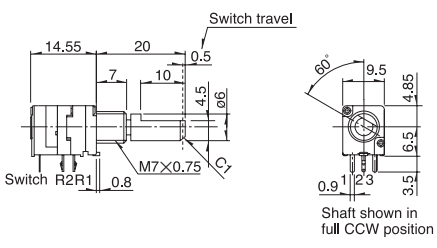
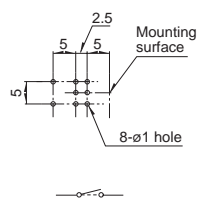

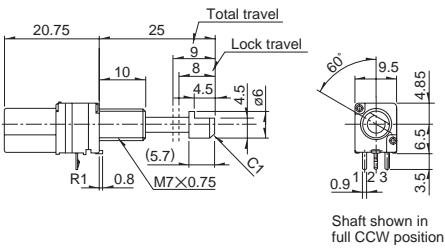
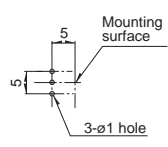

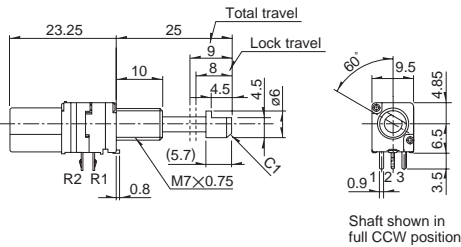
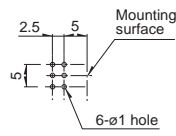
Knob Operating

Through Shaft Type

Ring Type

■ Dimensions

Unit:mm

No.	Photo	Style	PC board mounting hole dimensions (Viewed from mounting side)
5	<p>Single-shaft, single-unit with momentary push switch travel 0.5mm RK0971114-5R4211</p> 	 <p>Switch travel</p> <p>13.3 15 0.5 5 7 4.5 0.6 0.8 C1 M7x0.75 R1</p> <p>90° 9.5 4.85 6.5 3.5 0.9 1 2 3</p> <p>Shaft shown in full CCW position</p>	 <p>6.25 5 Mounting surface</p> <p>5 5-ø1 hole</p>
6	<p>Single-shaft, dual-unit with momentary push switch travel 0.5mm RK0971214-5R4211 (For tone) RK0971224-5R4211 (For vol.)</p> 	 <p>Switch travel</p> <p>14.55 20 0.5 7 10 4.5 0.6 0.8 C1 M7x0.75 R2 R1</p> <p>90° 9.5 4.85 6.5 3.5 0.9 1 2 3</p> <p>Shaft shown in full CCW position</p>	 <p>2.5 5 5 Mounting surface</p> <p>5 8-ø1 hole</p>
7	<p>Single-shaft, single-unit with push-lock mechanism RK097111T</p> 	 <p>Total travel</p> <p>Lock travel</p> <p>20.75 25 9 10 8 4.5 0.6 0.8 C1 M7x0.75 R1</p> <p>90° 9.5 4.85 6.5 3.5 0.9 1 2 3</p> <p>Shaft shown in full CCW position</p>	 <p>5 Mounting surface</p> <p>5 3-ø1 hole</p>
8	<p>Single-shaft, dual-unit with push-lock mechanism RK097122T (For vol.)</p> 	 <p>Total travel</p> <p>Lock travel</p> <p>23.25 25 9 10 8 4.5 0.6 0.8 C1 M7x0.75 R2 R1</p> <p>90° 9.5 4.85 6.5 3.5 0.9 1 2 3</p> <p>Shaft shown in full CCW position</p>	 <p>2.5 5 Mounting surface</p> <p>5 6-ø1 hole</p>

Rotary Potentiometers
Slide Potentiometers

Metal Shaft

Insulated Shaft

Knob Operating


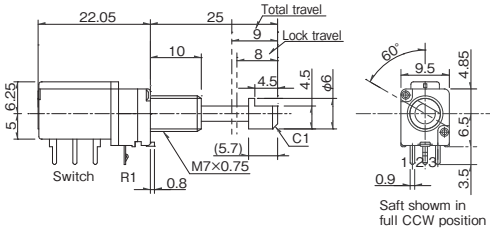
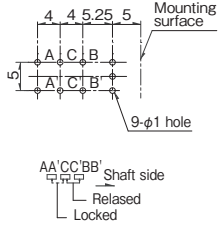

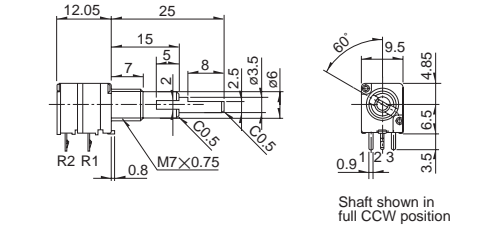
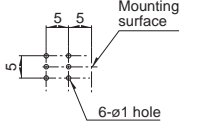
Through Shaft Type

Ring Type

RK097 9mm Size Metal Shaft Multi-gang Type

Dimensions

Unit:mm

No.	Photo	Style	PC board mounting hole dimensions (Viewed from mounting side)
9	 <p>Single-shaft, single-unit with push-lock switch RK097111U-5R252</p>		
10	 <p>Dual-shaft, dual-unit RK0972210</p>		

Rotary
Potentiometers

Slide
Potentiometers

Metal Shaft

Insulated
Shaft

Knob
Operating

Through
Shaft Type

Ring
Type

9mm Size Metal Shaft Multi-ganged Type / Other Specifications

In addition to the Product Line, we accommodate the following specifications. Combinations not included in the Product Line are treated as semi-standard products.

Total Resistance Variety

Total resistance (kΩ)	5	10	20	50	100
-----------------------	---	----	----	----	-----

Resistance Taper

Resistance taper	15A	1B	3B	15C
------------------	-----	----	----	-----

Notes

Can be fitted with center-taps.

Dimensions of Terminal

Unit:mm

* Mounting height (H): 6.5mm (10mm and 12.5mm also available upon request.)
 * For single-unit type with tap is only available with H=6.5mm.
 * Tap is on the terminal 3 side only.

Dimensions of Bushings

Unit:mm

Bushing	M7	M9
Dimensions		
Applications	For single and dual-shaft	For dual-shaft only

Single-shaft Dimension

Flat type

Unit:mm

Style (Shaft diameter: $\phi 6$)

Shaft shown in full CCW position.

L_1	L_B	l
15	5	7
20	7	12 (10)
25	10	12
30	10	12

Dimensions in parentheses apply to models with a push-on switch

Note

Marked are specifications recommended by Alps Alpine.

Refer to P.295 for ordering products not listed.

9mm Size Metal Shaft Multi-ganged Type / Other Specifications

In addition to the Product Line, we accommodate the following specifications. Combinations not included in the Product Line are treated as semi-standard products.

Dimension of Dual-shaft Type

Flat type for inner shaft, slotted type for outer shaft

Unit:mm

Style (Inner-shaft: $\phi 6$ Outer-shaft: $\phi 8$)

L_1	L_2	L_B	l_1	l_2
20	10	5	8	4
25	15	7	8	5
30	20	10	8	5
35	25	10	8	5

Style (Inner-shaft: $\phi 3.5$ Outer-shaft: $\phi 6$)

L_1	L_2	L_B	l_1	l_2
20	10	5	8	4
25	15	7	8	5
30	20	10	8	5
35	25	10	8	5

Applications Both switchless and rotary switch models are available.

Shaft Dimensions of with Push-lock Mechanism/Switch

Unit:mm

$\ast L_1$	L_B	A	l
25	10	(5.7)	4.5
30	10	(10.7)	7
35	10	(15.7)	12

\ast Dimensions in unlocked state

Example of uses

Note

Marked are specifications recommended by Alps Alpine.

Rotary Potentiometers

Metal Shaft

Insulated Shaft

Knob Operating

Through Shaft Type

Ring Type

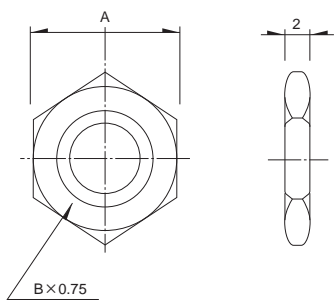
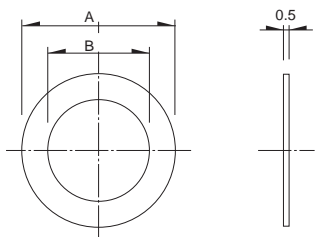
9mm Size Metal Shaft Multi-ganged Type / Switch Specifications

Switch type		Rotary switch	Momentary push switch	Push-lock switch
		5R1211	5R4211	5R2522
Contact arrangement		Single pole and single throw	Single pole and single throw	Double pole and double throw
Travel		50° max.	0.5 ^{+0.7} _{-0.3} mm	8±0.5mm
Changeover force		50mN·m max.	4 ⁺⁴ ₋₂ N	8N max.
Operating life under load		10,000 cycles		
Electrical performance	Rating	3A 16V DC (10mA 16V DC min. ratings)	0.5A 12V DC (10mA 12V DC min. ratings)	0.3A 12V DC
	Contact resistance	100mΩ max. for initial period, 200mΩ max. after operating life.		
	Insulation resistance	100MΩ min. 250V DC		
	Voltage proof	300V AC for 1 minute		

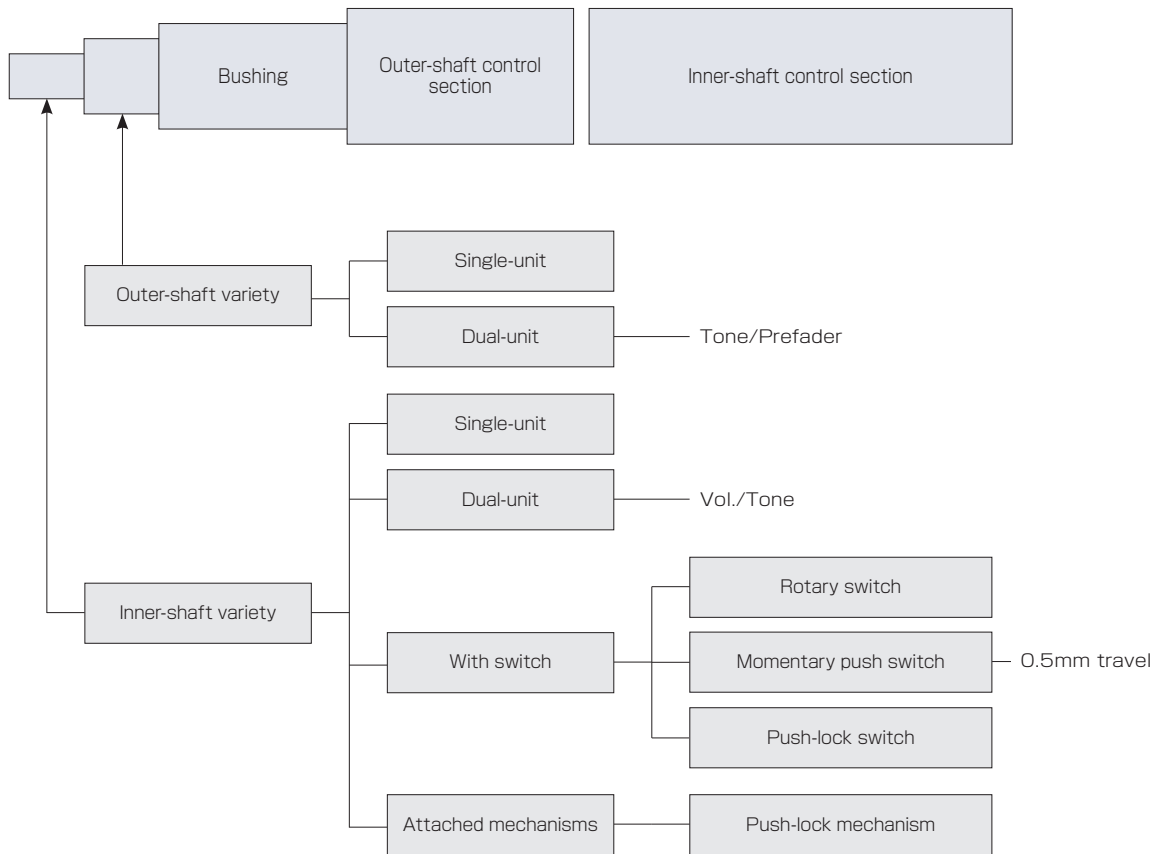
9mm Size Metal Shaft Multi-ganged Type / Attached Parts

The following parts are included with the product.

Unit:mm

Nut			Washer		
					
Bearing screw diameter	Dimension		Bearing screw diameter	Dimension	
	A	B		A	B
M7	11	M7	φ12	φ7.2	
M9	11	M9	φ14	φ9.1	

9mm Size Metal Shaft Multi-ganged Type / Configuration Chart



Note

The single-shaft type product lineups are the same as those in the inner-shaft variety.

- Rotary Potentiometers
- Slide Potentiometers
- Metal Shaft
- Insulated Shaft
- Knob Operating
- Through Shaft Type
- Ring Type

9mm Size Metal Shaft Multi-ganged Type / Ordering Products Not Listed

In addition to the Product Line, we accommodate the following specifications. Combinations not included in the Product Line are treated as semi-standard products. Please refer to the notation example below.

Sample Part Number



Model type

Code	Model type
111	Single-shaft single-unit
121	Single-shaft dual-unit for tone
122	Single-shaft dual-unit for vol.

Switch specifications

Code	Switch specifications
0	Without switch
1	With rotary switch
4	With momentary push switch (0.5mm travel)
T	With push-lock mechanism
U	Push-lock switch

Shaft type

Code	Shaft type
F	Flat (shaft diameter : 6)

* Shaft diameter 3.5 is individually specified.

Length of the shaft L₁ (mm)

Code	Length of the shaft	Code	Length of the shaft
15	15	25	25
20	20	30	30

Detent

Code	Detent
C0	Without
C1	Center

* With rotary switch; for applications in types other than push-lock mechanism.

Resistance taper

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

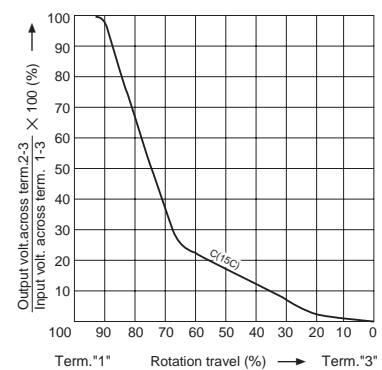
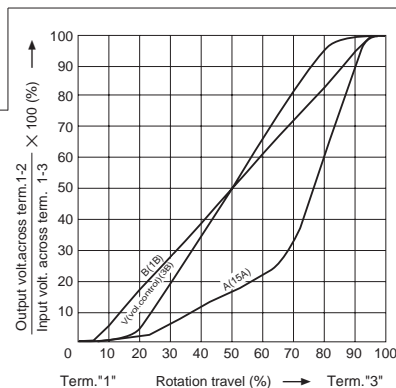
* The resistance taper for rotary switches are individually defined.
 B: For tone & general (model type : 111, 121)
 V: For vol. (model type : 111, 122)

Total resistance

Code	Total resistance (k Ω)	Code	Total resistance (k Ω)
502	5	503	50
103	10	104	100
203	20	—	—

Notes

- Marked are specifications recommended by Alps Alpine.
- The above specification is only applicable to the one-shaft single-unit model and dual-unit ganged model.



Rotary Potentiometers

Slide Potentiometers

Metal Shaft

Insulated Shaft









Knob Operating

Through Shaft Type

Ring Type

Metal Shaft Potentiometers

List of Varieties

Type	9mm size			
Series	RK09L		RK0971	RK0972
	Single-shaft			Dual-shaft
Number of resistor elements	Single/dual			Dual
Photo				
Control part orientation	Horizontal	Vertical	Horizontal	
Fixing method of bushing	Screw			
Operating temperature range	-10°C to +70°C		-20°C to +70°C -40°C to +85°C (Vehicle-compatible)	
Operating life	15,000 cycles			
Available for automotive use	—	—	○	○
Life cycle (availability)				
Electrical performance	Total resistance (kΩ)	10, 20, 50, 100		
	Resistance taper	15A, 1B, 3B, 15C		
	Rated Power	0.05W		
	Residual resistance	$R \leq 10k\Omega$ 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)	$5k\Omega \leq R < 10k\Omega$ 70dB min. $10k\Omega \leq R < 50k\Omega$ 80dB min. $50k\Omega \leq R$ 90dB min.	$5k\Omega \leq R < 10k\Omega$ 70dB min. $10k\Omega \leq R < 50k\Omega$ 80dB min. $50k\Omega \leq R < 100k\Omega$ 90dB min. $100k\Omega \leq R$ 100dB min.	
	Gang error applicable to Dual-unit parts for audio volume control purposes	-40dB to 0dB 3dB max.		
	Insulation resistance	100MΩ min. 250V DC		
	Voltage proof	300V AC for 1 minute		
	Center-taps	Without	Without / With	
	Mechanical performance	Detent	Without, Center	
Stopper strength		0.5N·m	0.5N·m (With push-lock mechanism: 0.4N·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		
Shaft style	Flat type			Inner-shaft: flat type Outer-shaft: slotted type
Terminal style	Insertion			
Attached switch	—	—	Rotary switch Push-on switch Push-lock switch	—
Page	282		286	287

Metal Shaft Potentiometers Soldering Conditions	311
Potentiometers Cautions	384
Potentiometers Measurement and Test Methods	386
Potentiometers Resistance Taper	388

Notes

- 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 details.
- Indicates applicability to some products in the series.

Reference for Manual Soldering

Series		Tip temperature	Soldering time	No. of solders
RK09L, RK097		350°C max.	3s max.	1 time
RK271		350°C max.	5s max.	1 time
RK501		350±10°C	5 ⁺¹ ₀ s	1 time
RK163		350°C max.	5s max.	1 time
RK168	Potentiometer terminal	300°C max.	3s max.	1 time
	Motor terminal	350°C max.	2s max.	

Reference for Dip Soldering

Series	Preheating		Dip soldering		No. of solders
	Soldering surface temperature	Heating time	Soldering temperature	Soldering time	
RK09L, RK097	100°C max.	2 min. max.	260±5°C	5±1s	2 times max.
RK501	120±10°C	2 min. max.	260±5°C	5±1s	2 times

Mouser Electronics

Authorized Distributor

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[RK0971111TZ17](#) [RK0971111TD44](#) [RK097221005C](#) [RK0971110D7F](#) [RK0971111Z32](#) [RK0971210097](#) [RK09712100AV](#)
[RK0971210Z2M](#) [RK09712200MT](#) [RK0971221Z11](#) [RK097122TZ0A](#) [RK097221004C](#) [RK0971110F25C1B103](#)
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[B203](#) [RK0971111UZ0D](#) [RK0971111-F30-CO-B103](#) [RK0971111Z05](#) [RK0972210C1F](#) [RK0971221-F15-C0-A503](#)