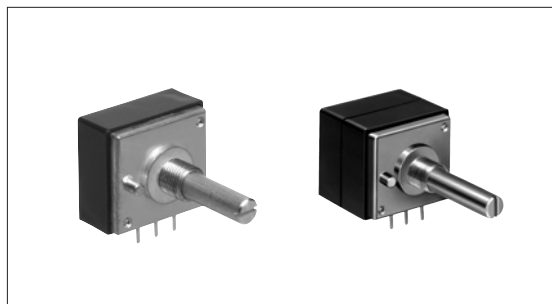


Metal Shaft Potentiometer 27mm Size Metal Shaft Type

RK27 Series



High performance potentiometer with excellent operational feel.



Features

- A high class potentiometer offering excellent operational feel and high accuracy (gang error characteristics, resistance taper, etc.) ideal for audio applications.

Applications

- For level controlling in high class audio equipment
- For various control in mixing consoles

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	30V AC
Total rotational angle	300±3°
Rotational torque	8 to 35mN·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.	Draw ing No.
Single-unit	Horizontal type	Slotted	25	31	100	15A	100	RK2711120026	1
				Without				RK271111001T	
Dual-unit		20	25	Without				RK27112A00AK	2
								RK27112A00CC	
		Flat	20					25	RK27112A0A16
RK27112A00B9									

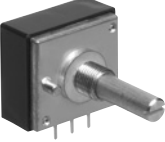
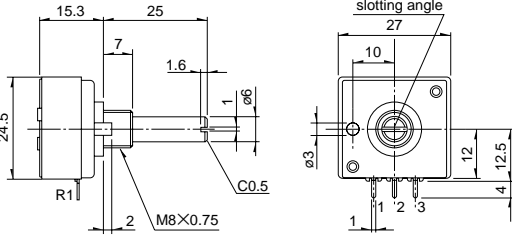
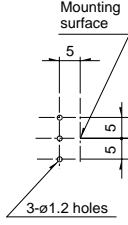
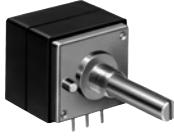
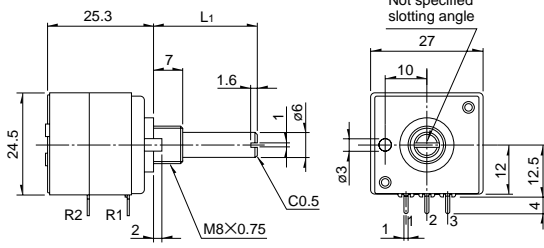
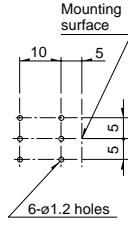
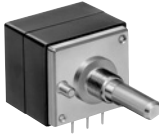
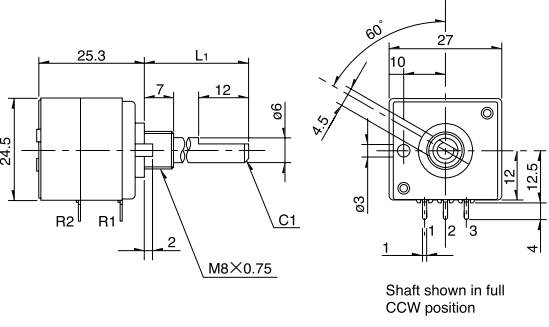
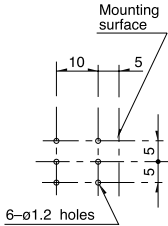
Note

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

Refer to P.45 for product varieties.
Refer to P.53 for product specifications.

Dimensions

Unit:mm

No.	Photo	Style	PC board mounting hole dimensions (Viewed from mounting side)
1			
2		<p>L₁ 20 25</p> 	
3		<p>L₁ 20 25</p> 	

Rotary Potentiometers
 Slide Potentiometers
 Multi Control Devices
 Sensors

Metal Shaft
 Insulated Shaft
 Hollow Type
 Knob Operating

Product Varieties

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

Products Specification

Type	Model	Mounting height (mm)	Detent variety	Gang error
Single-shaft, single-unit	RK27111	12.5	Center 21 31 41	_____ -60dB to 0dB within 3dB -80dB to -60dB within 5dB possible depending on total resistance and taper.
Single-shaft, dual-unit	RK27112			
Single-shaft, quad-unit	RK27114			

Rotary Potentiometers

Slide Potentiometers

Multi Control Devices

Sensors

Total Resistance Variety

Total resistance (kΩ)	5	10	20	50	100	250

Resistance Taper

Resistance taper	15A	3B

Metal Shaft

Insulated Shaft

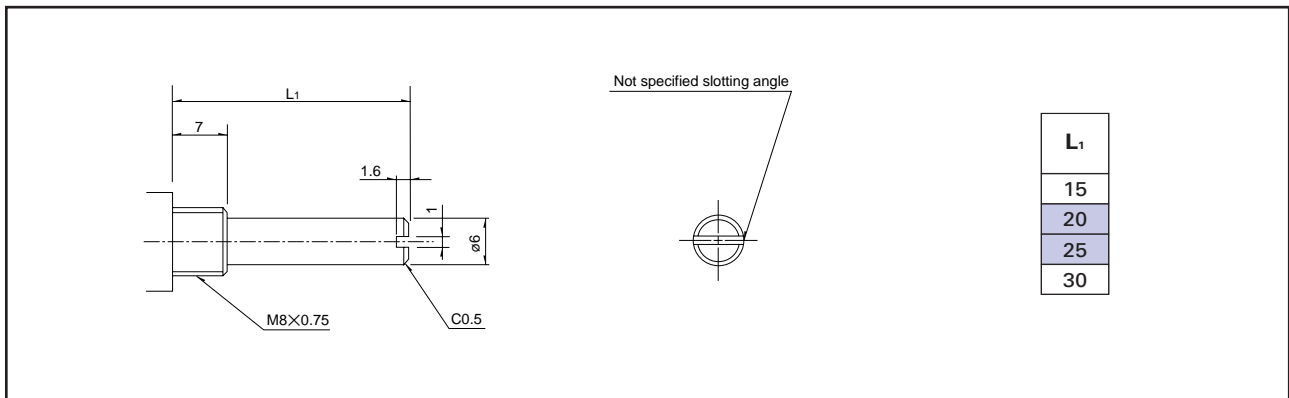
Hollow Type

Knob Operating

Dimensions of Shaft

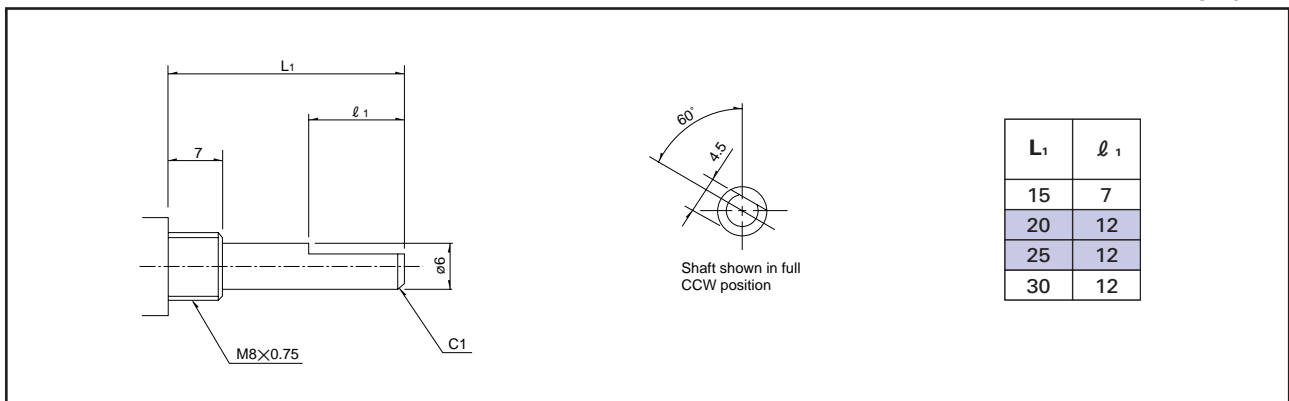
1 Slotted type

Unit:mm



2 Flat type

Unit:mm



Note

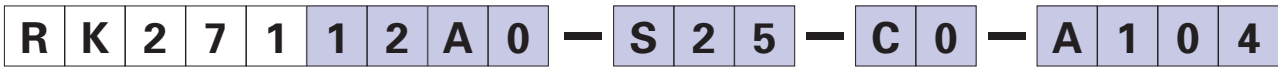
marked are specifications recommended by ALPS.

Refer to P.54 for attached parts.
Refer to P.46, 211 for resistance taper.

Orders Other Than 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
111	Single unit
112	Single unit, with detent
12A	Dual unit for vol.

Shaft type

Code	Shaft type
F	Flat
S	Slotted

Length of the shaft (L₁) (mm)

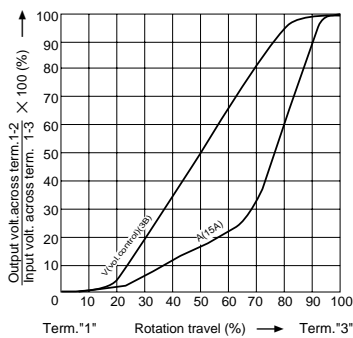
Code	Length of the shaft
15	15
20	20
25	25
30	30

Detent

Code	Detent
C0	Without
C1	Center
21	21
31	31
41	41

Resistance taper

Code	Resistance taper
A	15A
V	3B



Total resistance

Code	Total resistance (kΩ)	Code	Total resistance (kΩ)
502	5	503	50
103	10	104	100
203	20	254	250

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		RK203	RK20B	RK271	RK501	
Items						
Operating temperature range		-30°C to +80°C	-10°C to +105°C	-10°C to +70°C		
Electrical performance	Total resistance tolerance	±20%				
	Rated power	0.05W	0.06W	0.05W	0.1W	
	Maximum operating voltage	50V AC 30V DC	20V DC	30V AC	150V AC	
	Residual resistance	_____		R ≤ 10kΩ 20Ω max. 10kΩ < R ≤ 50kΩ 30Ω max. 50kΩ < R 0.1% or less of nominal total resistance	_____	
	Maximum attenuation (Volume control)	_____		5kΩ ≤ R < 10kΩ 70dB min. 10kΩ ≤ R < 50kΩ 80dB min. 50kΩ ≤ R < 100kΩ 90dB min. 100kΩ ≤ R 100dB min.	120dB min.	
	Insulation resistance	100MΩ min. 250V DC		100MΩ min. 500V DC		
	Voltage proof	300V AC (for 1minute)		500V AC (for 1minute)		
Mechanical performance	Total rotational angle	240° max.	360°	300±3° Motor-driven 300±5°	300±3°	
	Rotational torque (mN·m)	Shall be in accordance with individual specifications.	20 to 80	8 to 35 Motor-driven 15 to 45	13 to 43	
	Stopper strength (N·m)	0.5	_____	0.9	1.5	
	Push-pull strength	100N max.			150N 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	300°C max. 3s max.	350°C max., 3s max.	350°C max. 5s max. Motor terminal: 350°C max. 2s max.	350±10°C, 5 ⁺¹ / ₀ s
		Dip soldering	260±5°C, 5±1s	260°C max., 5s max.	_____	260±5°C, 5±1s
Reflow soldering		_____				
Endurance	Operating life	30,000cycles	15,000cycles			
Environmental test	Cold	-40±2°C for 192h	-30±3°C for 96h	-30±3°C for 96h	-20±3°C for 240h	
	Long-term heat resistance	+85±2°C for 192h	+105±2°C for 96h	+70±2°C for 96h	+70±2°C for 240h	
	Moisture resistance	+60±3°C, 90 to 95%RH for 240h	+60±2°C, 90 to 95%RH for 240h	+40±2°C, 90 to 95%RH for 96h	+60±2°C, 90 to 95%RH for 240h	

Rotary Potentiometers

Slide Potentiometers

Multi Control Devices

Sensors

Metal Shaft

Insulated Shaft

Hollow Type

Knob Operating

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

Customer : ALPS ELECTRIC EUROPA GmbH

No. F3861062M

Date : Nov. 18, 1994

Attention:

Your ref. No:

Your Part. No: STRK2:102 21 1133 FARNELL

SPECIFICATIONS

ALPS :

MODEL RK27111220K

Spec. No. :

Sample No. : F3861062M

RECEIPT STATUS

RECEIVED

By Date

Signature

Name

Title

ALPS ELECTRIC CO., LTD.

HEAD OFFICE
1-7, YUKIGAYA-OH TSUKA-CHO.
OH TA-KU, TOKYO 145 JAPAN

DSG'D y. Saito

APP'D M. Saito

ENG. DEPT. DIVISION

Sales

No. F3861062M

SPECIFICATIONS

1. THIS SPECIFICATIONS APPLY TO RK27112A0 POTENTIOMETERS.

2. CONTENTS OF THIS SPECIFICATIONS.

4K272A-200
K272A000F

3. MARKING

-MARKING ON ALL UNITS
DATE CODE, RESIST. VALUE, TAPER

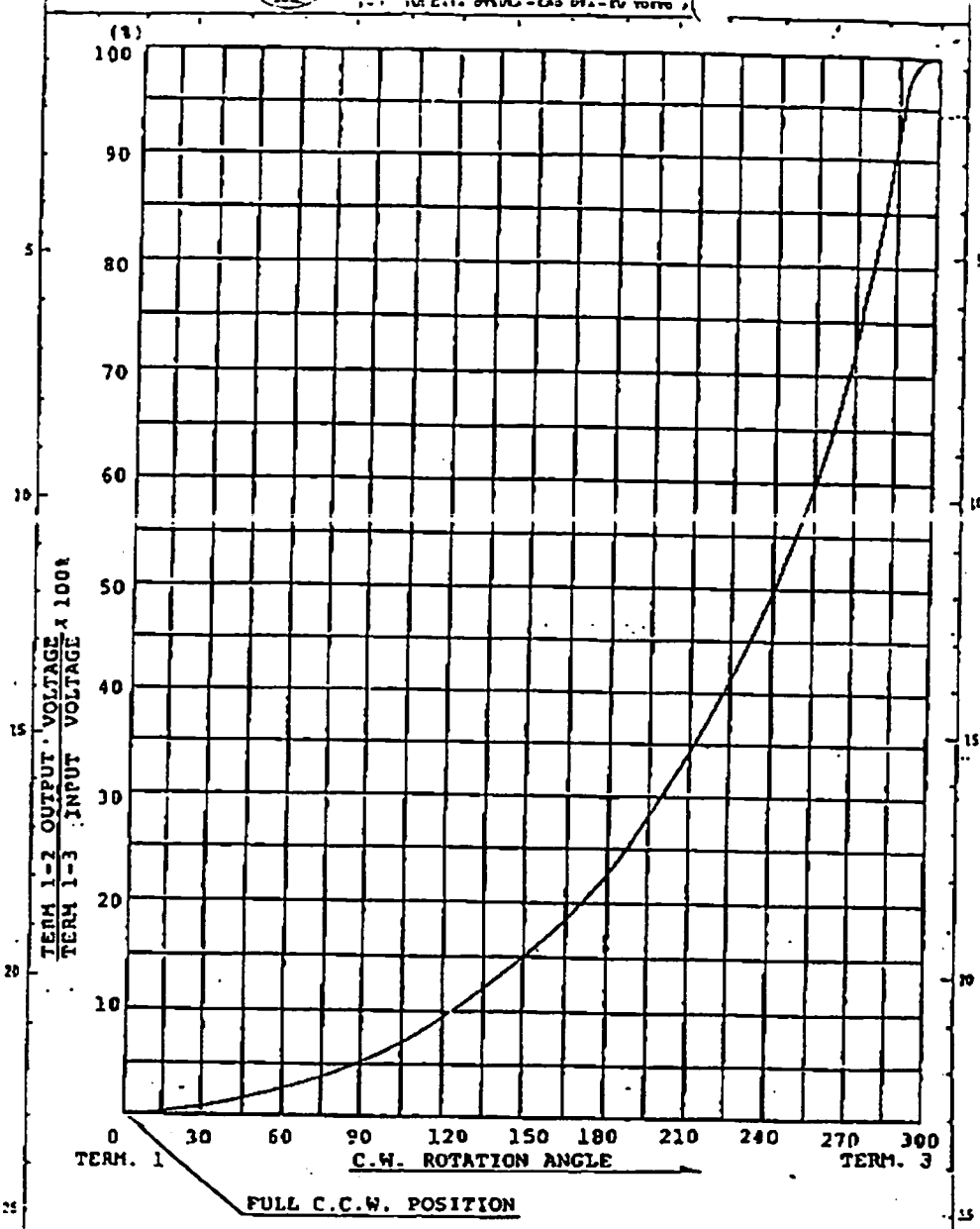
4. REMARKS

-FURNISH PACKAGE
NUT: 1, WASHER: 1
NOTES

-Silver printed patterns are coated with carbon as a protection against sulphur-
ation.
-Marking => in specifications shows standard and condition for application.

CLASS NO.	TITLE								
	SPECIFICATIONS								
ELECTRICAL 20 kΩ (10K05R±2MD)									
1. Total resistance tolerance: Nominal ±20% 2. Rated voltage: 30V A.C. This potentiometer is designed for A.C. voltage only. 3. Resistance taper: See taper figure 4. Maximum attenuation level on full C.V. position:									
<table border="1"> <thead> <tr> <th>Nominal total resistance value</th> <th>Max. att. level</th> </tr> </thead> <tbody> <tr> <td>R ≥ 100k Ω</td> <td>100dB min.</td> </tr> <tr> <td>100k Ω > R ≥ 50k Ω</td> <td>80dB min.</td> </tr> <tr> <td>50k Ω > R ≥ 10k Ω</td> <td>60dB min.</td> </tr> </tbody> </table>		Nominal total resistance value	Max. att. level	R ≥ 100k Ω	100dB min.	100k Ω > R ≥ 50k Ω	80dB min.	50k Ω > R ≥ 10k Ω	60dB min.
Nominal total resistance value	Max. att. level								
R ≥ 100k Ω	100dB min.								
100k Ω > R ≥ 50k Ω	80dB min.								
50k Ω > R ≥ 10k Ω	60dB min.								
5. Insertion loss on full C.V. position: 0.1dB max. 6. Slider noise: less than 47mV (by method of JIS C 8443) 7. Insulation resistance: 100MΩ min. at 500V D.C. 8. Dielectric strength: Units shall be designed to withstand 500V A.C. 50Hz R.M.S. between resistance element and case for a period of one minute without damage or arcing 9. Gang error:									
<table border="1"> <thead> <tr> <th>Nominal total resistance value</th> <th>Gang error</th> </tr> </thead> <tbody> <tr> <td>R ≥ 50 kΩ</td> <td>3 dB max. between -70 less than -60 dB 2 dB max. between -60 ~ 0 dB</td> </tr> <tr> <td>50 kΩ > R ≥ 20 kΩ</td> <td>3 dB max. between -60 less than -40 dB 2 dB max. between -40 ~ 0 dB</td> </tr> <tr> <td>20 kΩ > R ≥ 10 kΩ</td> <td>3 dB max. between -60 ~ 0 dB</td> </tr> </tbody> </table>		Nominal total resistance value	Gang error	R ≥ 50 kΩ	3 dB max. between -70 less than -60 dB 2 dB max. between -60 ~ 0 dB	50 kΩ > R ≥ 20 kΩ	3 dB max. between -60 less than -40 dB 2 dB max. between -40 ~ 0 dB	20 kΩ > R ≥ 10 kΩ	3 dB max. between -60 ~ 0 dB
Nominal total resistance value	Gang error								
R ≥ 50 kΩ	3 dB max. between -70 less than -60 dB 2 dB max. between -60 ~ 0 dB								
50 kΩ > R ≥ 20 kΩ	3 dB max. between -60 less than -40 dB 2 dB max. between -40 ~ 0 dB								
20 kΩ > R ≥ 10 kΩ	3 dB max. between -60 ~ 0 dB								
Measure between R1&H2 (term 1-2 output V) (term 1-3 in out V)									

CLASS NO.	TITLE		
	SPECIFICATIONS		
MECHANICAL			
1. Total rotation angle: 300° ± 3° 2. Operation torque: 80 ~ 350gf·cm (Rotational speed at 60°/sec., at 20°C) 3. Shaft end stop strength: 8kgf·cm min. 4. Resistance to soldering heat: After soldering (less than 350°C and quicker than 5 seconds) there shall be no evidence of poor contact between resistance element and terminals, or any physical damages as a result of the test 5. Bushing nut tightening strength: Tightening torque to be no greater than 15 kgf·cm. *Pay attention otherwise the strength may not be assured. 6. Shaft push / pull strength: No damages with an application of push or pull force 10kgf for 10 seconds			
ENDURANCE			
1. Rotational life: 15,000 cycles min.			
NOTE			
1. The items except above mentioned items shall meet or exceed JIS C 8443.			
ALPS ELECTRIC CO., LTD.			
APPD	CHND	DSGD	TITLE
Dec. 2 '93	Dec. 1, '93	Nov. 19, '93	
DATE	APPD	TRAD	DSGD
	K.S. J.Y. S.S.		
DOCUMENT NO.			4K272A-200



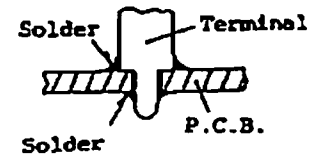
At 180° C.W shaft rotation from full C.C.W position voltage percent shall fall within the limits of 15~30 percent.

SYNO	DATE	APPD	CHKD.	DSCD.	NAME
	May 31 '85	M. I. T. K. S. S.	May 31 '85	May 30 '85	RESISTANCE TAPER
					HSA02

CLASS NO 7 TITLE

Caution for soldering

Please avoid soldering on upper surface of P.C.B. as shown.

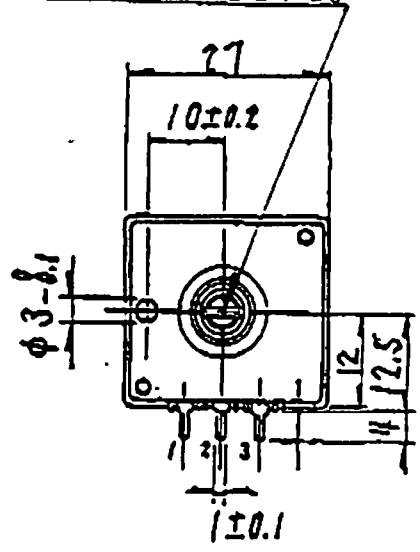
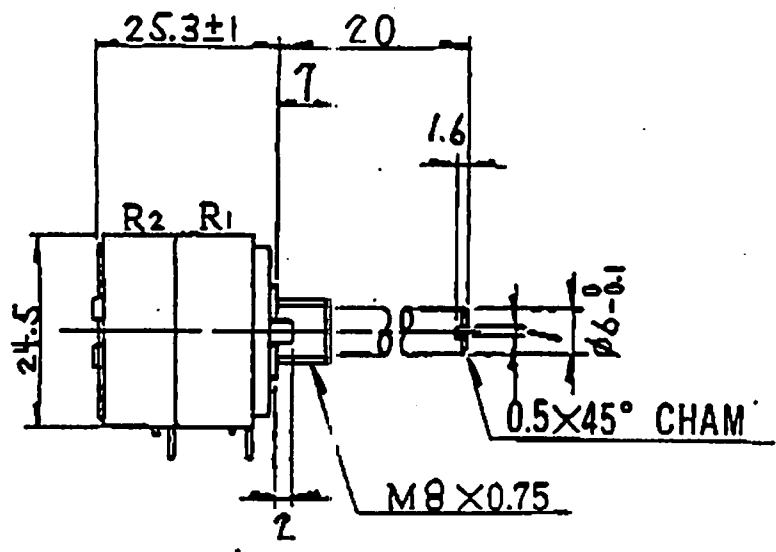


ALPS ELECTRIC CO., LTD.				
SYNO	DATE	APPD	CHKD.	DSCD.
		R.3.1 88.4.-1	W.1.3 88.1.-1	T.3 72.1 88.1
				DOCUMENT NO. ()

23:02 98 09:08 FAX 1743587 ALPS Duesseld 1743587 004

SHAFT SLOT IS OPTIONAL ANGLE

スリ割角度は任意とする。



P.W.B.MOUNTING DETAIL

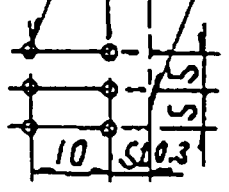
TOLERANCE ± 0.1
VIEWED FROM MOUNTING SIDE

取付穴寸法図

許容差±0.1 (挿入側より)

6-φ1.2^{+0.2} HOLES

取付面 MOUNTING SURFACE



許容差の指定なき寸法の公差		
TOLERANCES UNLESS OTHERWISE SPEC		
BASIC DIMENSIONS	TOLERANCE	
L ≤ 10	± 0.3	
10 < L < 100	± 0.5	
100 ≤ L	± 0.8	
角度	ANGULAR DIMENSION	± 5°

部	番	名	材	料	規	格	処	理	22.5g	3HT1A4
			三角法	単位 mm	尺取					
			承認	原案	設計	図名	1軸2連小型ディテナVR組立図			
			58.4	56.422	58.421	図番	-K272A000F			
			29	4月	2日	作成				