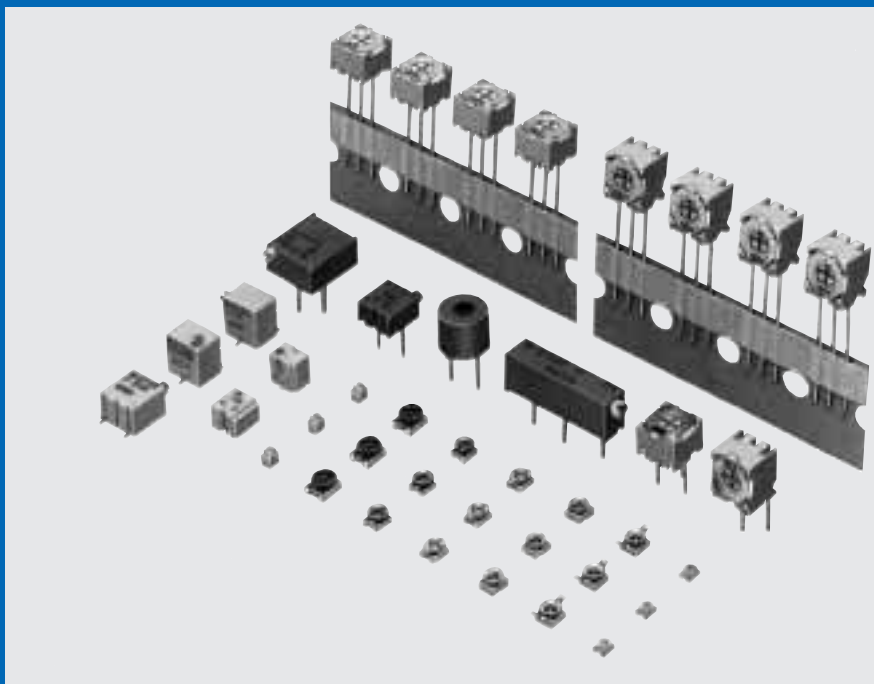




TRIMMER POTENTIOMETER

TRIMMER POTENTIAL- METER



muRata

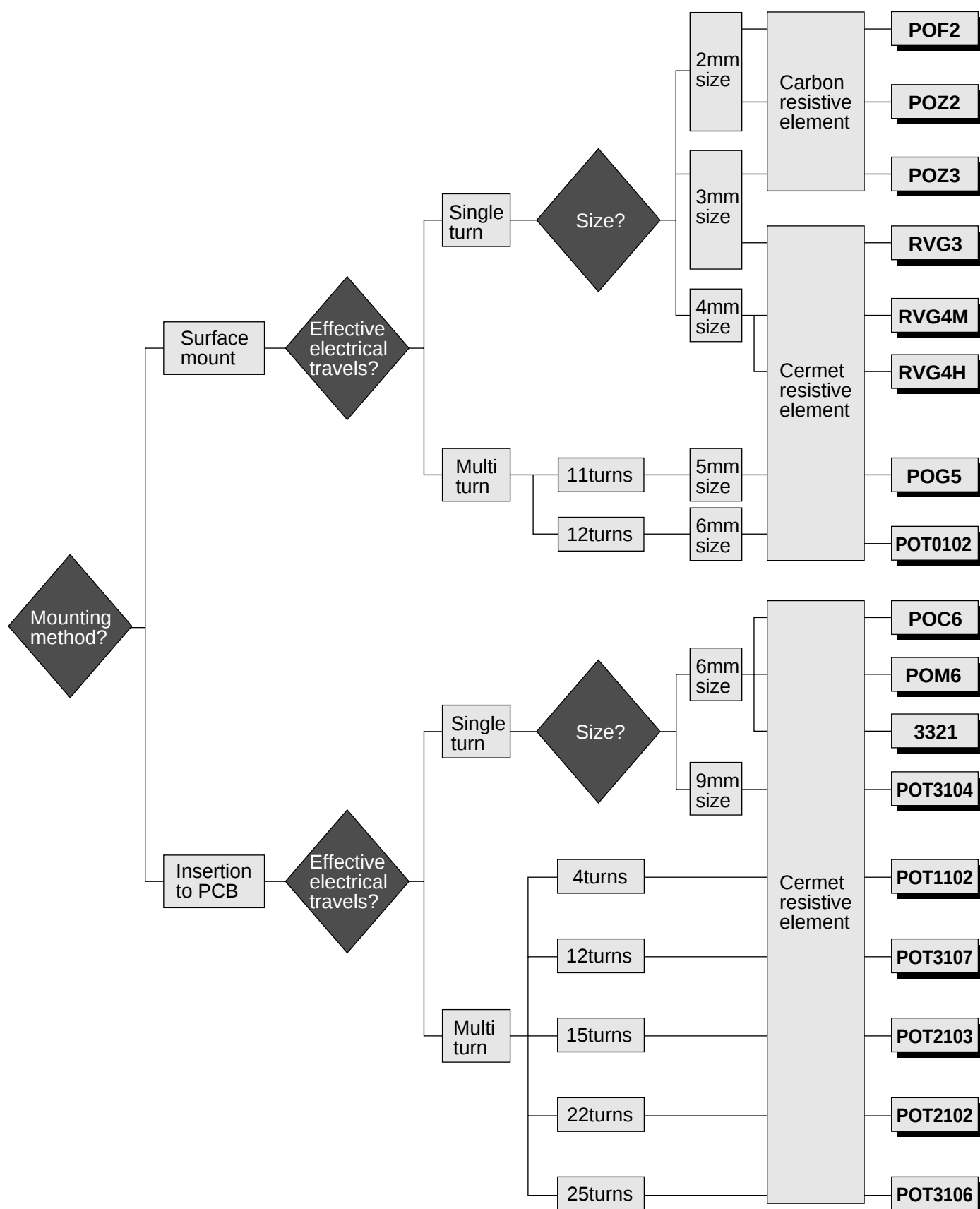
*Innovator
in Electronics*

Murata
Manufacturing Co., Ltd.

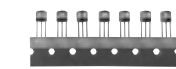
Cat.No.R50E-9

What kind of Trimmer Potentiometer are you looking for?

You will find the suitable one from Murata's numerous product line on trimmer potentiometer.



■MURATA'S TRIMMER POTENTIOMETERS OUTLINE

Model Number	Number of turns (Turns)	Power Rating (W)	Resistive Element	Open of Sealed	Product External dimension (mm)	Page No.
POZ2	1	0.1	Carbon	Open	 2.7X2.1X0.9	3-4
POZ3	1	0.1	Carbon	Open	 3.6X3.1X1.85  5.4X3.1X2.1	5-7
RVG3	1	0.1	Cermet	Open	 3.5X3.0X1.5 (RVG3S08)/1.85 (RVG3A08) 	8-9
RVG4M	08 58	1 0.25	Cermet	Sealed	 4.7X4.0X2.0	10-11
RVG4H	1	0.1	Cermet	Open	 4.5X3.8X1.5	12-13
POF2	1	0.001	Carbon	Sealed	 2.0X2.0X2.3	14-15
POG5	11	0.25	Cermet	Sealed	 4.9X4.8X3.7 	16-17
POT0102	12	0.25	Cermet	Sealed	 6.4X6.7X4.0  	18-19
POC6	1	0.5	Cermet	Sealed	 6.9X6.9X5.2 	20-23
POM6	1	0.5	Cermet	Sealed	  φ6.6X6.1	24-25
3321	1	0.5	Cermet	Sealed	   φ6.6X4.6	26-27
POT3104	1	0.5	Cermet	Sealed	    9.6X9.6X4.9	28-29
POT1102	4	0.5	Cermet	Sealed	    φ7.6X6.6	30-31
POT3107	12	0.25	Cermet	Sealed	   6.4X6.7X4.0	32-33
POT2103	15	0.75	Cermet	Sealed	 6.4X4.6X19.1 	34-35
POT2102	22	1.0	Cermet	Sealed	 8.0X5.0X31.8 	36-37
POT3106	25	0.5	Cermet	Sealed	   10.0X9.5X5.1	38-39

- Packaging specificationsP39-41
- Recommendable adjustment tools.....P41

- NoticeP43-44
- Test methodsP45-46

■QUALIFIED STANDARDS

The products listed here has been produced by the QS9000 and ISO9002 certified factory.

MURATA FACTORY	Qualified Date	Standard	Qualified Number
KANAZU MURATA MFG CO., LTD.	JUNE.1.1998	UNDERWRITERS LABORATORIES INC.	A6734

* No ODCs (Ozone Depleting Chemicals) are used on Murata's all trimmer potentiometers.



CHIP TRIMMER POTENTIOMETER

muRata

Carbon Chip Trimmer Potentiometer **POZ2** Series

Ultra thin 1.0mm max. height ! Surface mount with 2mm package achieve excellent performances.

■FEATURES

1. Ultra-small and thin external dimensions of 2.1(W) × 2.7(L) × 1.0max.(T)mm.
2. Au plated termination achieve a high density P.C.B. mounting.
3. Cross-shaped driver slot allows for in-process automatic adjustment and it provides superior adjustability.
4. Two pieces parts construction achieve low cost and excellent quality.
5. Special resin substrate allow high peak temperature for reflow soldering.

■APPLICATIONS

Pick-up module, LCD, Cellular-phone, PHS, Pagers, DVC, Digital camera, Portable audio, etc

■PART NUMBERING

(Please specify the part number when ordering.)

(Ex.) POZ2 AN - 1 - 103 N - T00

① ② ③ ④ ⑤ ⑥

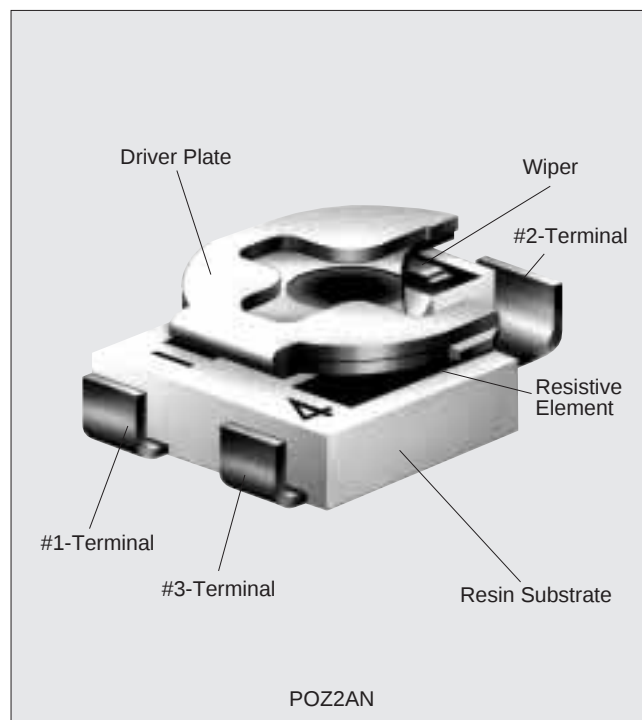
- ① Model number
 - ② Figure number AN : Top adjustment
 - ③ Options 1 : Standard
 - ④ Resistance code
 - ⑤ Total resistance tolerance N : ±30%
 - ⑥ Packaging code
- Taping : T00.....3,000pcs./reel (180mm dia.)
Bulk : No codes...1,000pcs./bag

■RATINGS

Item	POZ2
Standard Total Resistance Range	500Ω to 1MΩ
Total Resistance Tolerance	±30% of standard total resistance value
Taper	B (Linear)
Power Rating	1/10W (50°C)
Max. Working Voltage	50Vdc
Operating Temperature Range	-25°C to +85°C
Rotational Torque	1.0-14.7mNm (10-150gf·cm)
Effective Rotational Angle	240°±10°

■OTHERS

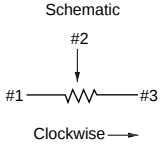
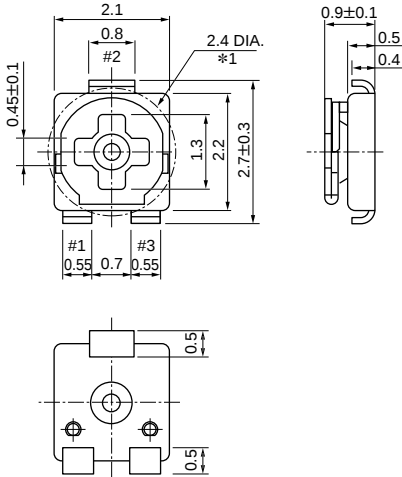
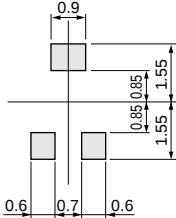
- See pages 43 to 44 for Notice
- See page 45 for test methods



■ENVIRONMENTAL CHARACTERISTICS

Item	POZ2
Humidity Exposure	Res. Change : +10, -2%
High Temperature Exposure	Res. Change : R≤100kΩ...+2, -10% 100kΩ<R...+2, -15%
Humidity Load Life	Res. Change : ±10%
Load Life	Res. Change : R≤100kΩ...+2, -10% 100kΩ<R...+2, -15%
Temperature Cycle	Res. Change : ±5%
Temperature Coefficient of Resistance	±500ppm/°C
Rotational Life	Res. Change : ±10% (10 cycles)

PART NUMBER TABLE

Standard Total Resistance Values	Model Number
	Top adjustment  POZ2AN Series
500Ω	POZ2AN-1-501N
1kΩ	POZ2AN-1-102N
2kΩ	POZ2AN-1-202N
3kΩ	POZ2AN-1-302N
5kΩ	POZ2AN-1-502N
10kΩ	POZ2AN-1-103N
20kΩ	POZ2AN-1-203N
30kΩ	POZ2AN-1-303N
50kΩ	POZ2AN-1-503N
100kΩ	POZ2AN-1-104N
200kΩ	POZ2AN-1-204N
300kΩ	POZ2AN-1-304N
500kΩ	POZ2AN-1-504N
1MΩ	POZ2AN-1-105N
Outline dimensions  [in mm Standard tolerance : ±0.2]	 *1. Driver Plate Rotation Area:
Standard PCB layout [in mm Standard tolerance : ±0.1]	

* E6 resistance values are also available.



CHIP TRIMMER POTENTIOMETER

muRata

Carbon Chip Trimmer Potentiometer **POZ3** Series

Utilizes new unique two piece construction to achieve low cost trimmer while maintaining excellent performance

■FEATURES

1. Excellent solderability characteristics are achieved via special plating techniques on each termination.
2. Specially designed substrate prevents wicking of flux onto the top of the part body.
3. Enlarged bottom termination enhance soldering strength while reducing the necessary land area required promoting high-density PCB mounting (POZ3AN Only)
4. Funnel shaped, adjustment slot allows for in-process automatic adjustment.
5. Flat surface is provided for smooth pick and place. (POZ3KN Only)
6. Heat-Resistant type is available. (POZ3AN-51)
7. The standard position of driver plate is adjusted at the center normally, but another position is also available.
8. This product meets Pb-free.

■APPLICATIONS

Cordless telephones, CD-Players, CD-ROMs, Car stereos, TFT-LCD TV sets, Headphone stereos

■PART NUMBERING

(Please specify the part number when ordering.)

(Ex.) **POZ3** **AN** - **1** - **103** **N** - **T00**

- 1 Model number
- 2 Figure number AN : Top adjustment KN : Rear adjustment
- 3 Options 1 : Standard
- 4 Resistance code
- 5 Total resistance tolerance N : $\pm 30\%$
- 6 Packaging code

Taping : T00.....2,000pcs./reel (180mm dia.) for POZ3AN

T04.....1,500pcs./reel (180mm dia.) for POZ3KN

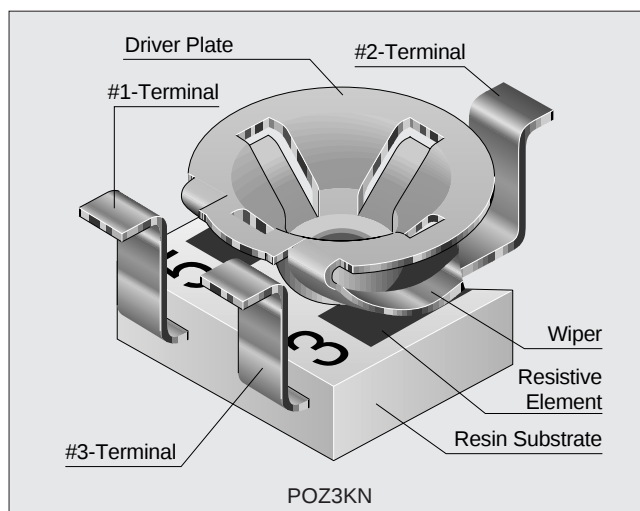
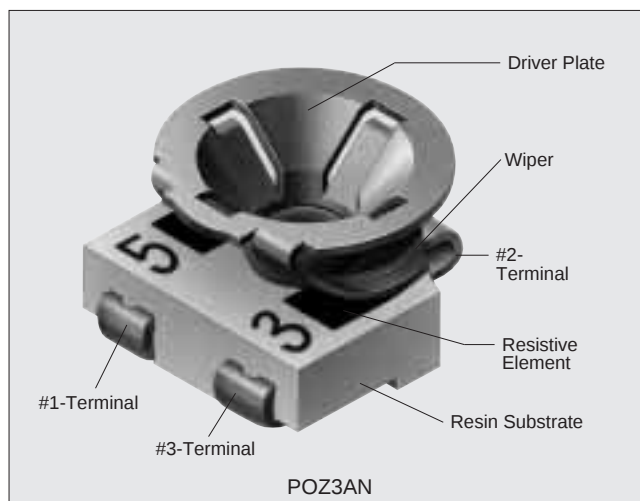
Bulk : No codes...1,000pcs./bag

■RATINGS

Item	POZ3
Standard Total Resistance Range	200Ω to 2MΩ
Total Resistance Tolerance	$\pm 30\%$ of standard total resistance value
Taper	B (Linear)
Power Rating	1/10W (50°C)
Max. Working Voltage	50Vdc
Operating Temperature Range	-25°C to +85°C
Rotational Torque	2.0—19.6mNm (20—200gf·cm)
Effective Rotational Angle	230° $\pm 10^\circ$

■OTHERS

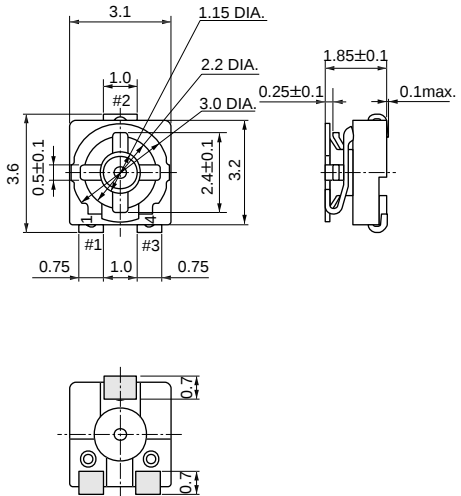
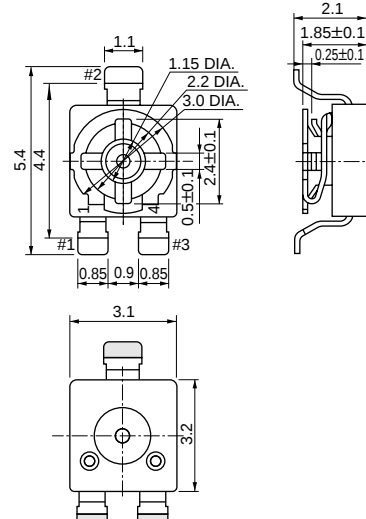
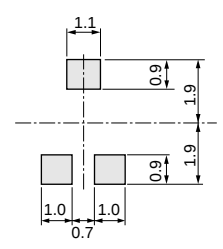
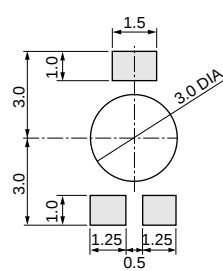
- See pages 43 to 44 for Notice
- See page 45 for test methods



■ENVIRONMENTAL CHARACTERISTICS

Item	POZ3
Humidity Exposure	Res. Change : +10, -2%
High Temperature Exposure	Res. Change : $R \leq 100k\Omega \dots +2, -10\%$ $100k\Omega < R \dots +2, -15\%$
Humidity Load Life	Res. Change : $\pm 10\%$
Load Life	Res. Change : $R \leq 100k\Omega \dots +2, -10\%$ $100k\Omega < R \dots +2, -15\%$
Temperature Cycle	Res. Change : $\pm 5\%$
Temperature Coefficient of Resistance	$\pm 500\text{ppm}/^\circ\text{C}$
Rotational Life	Res. Change : $\pm 10\%$ (10 cycles)

PART NUMBER TABLE

Standard Total Resistance Values	Model Number	
	Top adjustment (For automatic adjustment)	Rear adjustment (For automatic adjustment)
	 POZ3AN Series	 POZ3KN Series
200Ω	POZ3AN-1-201N	POZ3KN-1-201N
300Ω	POZ3AN-1-301N	POZ3KN-1-301N
500Ω	POZ3AN-1-501N	POZ3KN-1-501N
1kΩ	POZ3AN-1-102N	POZ3KN-1-102N
2kΩ	POZ3AN-1-202N	POZ3KN-1-202N
3kΩ	POZ3AN-1-302N	POZ3KN-1-302N
5kΩ	POZ3AN-1-502N	POZ3KN-1-502N
10kΩ	POZ3AN-1-103N	POZ3KN-1-103N
20kΩ	POZ3AN-1-203N	POZ3KN-1-203N
30kΩ	POZ3AN-1-303N	POZ3KN-1-303N
50kΩ	POZ3AN-1-503N	POZ3KN-1-503N
100kΩ	POZ3AN-1-104N	POZ3KN-1-104N
200kΩ	POZ3AN-1-204N	POZ3KN-1-204N
300kΩ	POZ3AN-1-304N	POZ3KN-1-304N
500kΩ	POZ3AN-1-504N	POZ3KN-1-504N
1MΩ	POZ3AN-1-105N	POZ3KN-1-105N
2MΩ	POZ3AN-1-205N	POZ3KN-1-205N
Outline dimensions	 Schematic #2 #1 — #3 Clockwise → [in mm] Standard tolerance : ±0.3	
Standard PCB layout	 [in mm] Standard tolerance : ±0.1	

* E6 resistance values are also available.



TRIMMER POTENTIOMETER

muRata

Cermet Chip Trimmer Potentiometer RVG3 Series

Surface mount with 3mm package achieve excellent performances

■FEATURES

1. Funnel shaped slot allows for in-process automatic adjustment and it provides superior adjustability
2. 3mm miniature package lead a high density PCB mounting.
3. Plated termination achieve a high resistance to solder leaching.
4. RVG3A08 series is recommended for both reflow and flow soldering method (Need cleaning for flow soldering method.)
5. RVG3S08 series is thin (1.5mm) automatic adjustment with stopper type.

■APPLICATIONS

Camcorders, Video disk players, TFT-LCD TV sets, Headphone stereos, Cordless telephones, Micro-motors, Optical cameras

■PART NUMBERING

(Please specify the part number when ordering.)

(Ex.)

RVG	3A08	-	103	VM	-	TP
-----	------	---	-----	----	---	----

①
②
③
④
⑤

① Model

② Model number

③ Resistance code

④ Total resistance tolerance VM : $\pm 25\%$

⑤ Packaging code

Taping : TL2,500pcs./reel (180mm dia.) for RVG3S08

TP2,000pcs./reel (180mm dia.) for RVG3A08

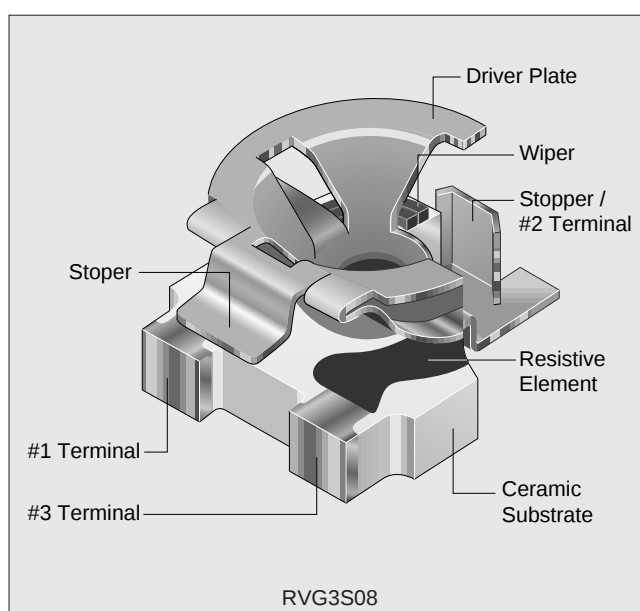
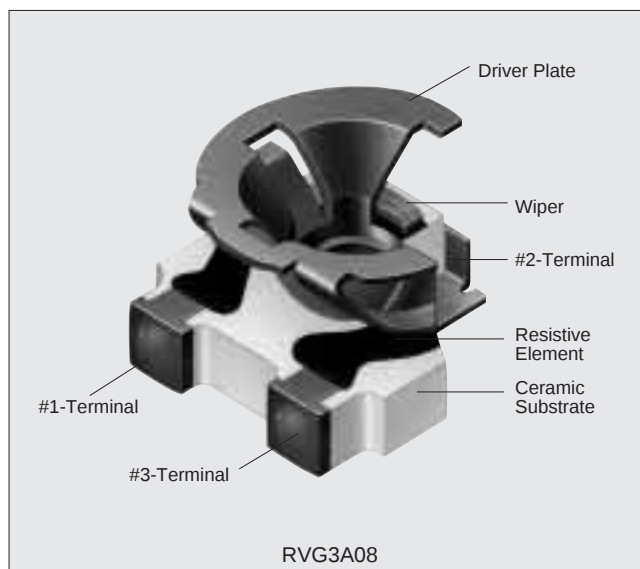
Bulk : No codes...1,000pcs./bag

■RATINGS

Item	RVG3
Standard Total Resistance Range	100Ω to 2MΩ
Total Resistance Tolerance	$\pm 25\%$ of standard total resistance value
Taper	B (Linear)
Power Rating	1/10W (70°C)
Max. Working Voltage	50Vdc
Operating Temperature Range	-55°C to +125°C
Rotational Torque	2.0–24.5mNm (20–250gf·cm)
Effective Rotational Angle	270° $\pm 10^\circ$
Stop Strength	29.4mNm (300gf·cm) min. : RVG3S08 only

■OTHERS

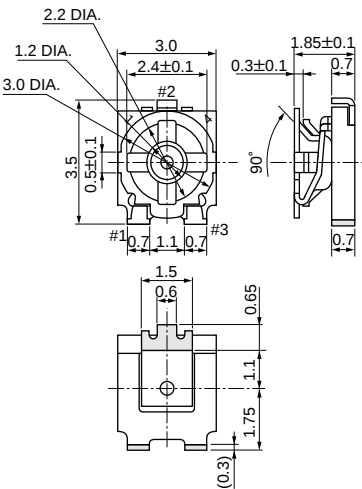
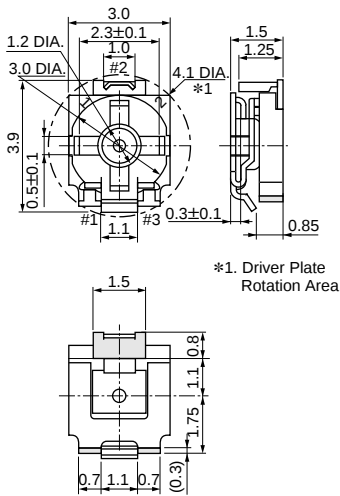
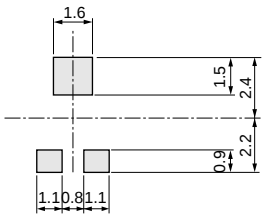
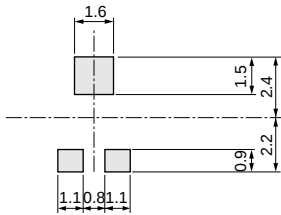
- See pages 43 to 44 for Notice
- See page 45 for test methods



■ENVIRONMENTAL CHARACTERISTICS

Item	RVG3
Humidity Exposure	Res. Change : $\pm 3\%$
High Temperature Exposure	Res. Change : $\pm 3\%$
Humidity Load Life	Res. Change : $\pm 3\%$
Load Life	Res. Change : $\pm 3\%$
Temperature Cycle	Res. Change : $\pm 3\%$
Temperature Coefficient of Resistance	$\pm 250\text{ppm}/^\circ\text{C}$
Rotational Life	Res. Change : $\pm 10\%$ (10 cycles)

PART NUMBER TABLE

Standard Total Resistance Values	Model Number	
	Top adjustment (For automatic adjustment)	Top adjustment (For automatic adjustment with Stopper)
	 RVG3A08 Series	 RVG3S08 Series
100Ω	RVG3A08-101VM	RVG3S08-101VM
200Ω	RVG3A08-201VM	RVG3S08-201VM
300Ω	RVG3A08-301VM	RVG3S08-301VM
500Ω	RVG3A08-501VM	RVG3S08-501VM
1kΩ	RVG3A08-102VM	RVG3S08-102VM
2kΩ	RVG3A08-202VM	RVG3S08-202VM
3kΩ	RVG3A08-302VM	RVG3S08-302VM
5kΩ	RVG3A08-502VM	RVG3S08-502VM
10kΩ	RVG3A08-103VM	RVG3S08-103VM
20kΩ	RVG3A08-203VM	RVG3S08-203VM
30kΩ	RVG3A08-303VM	RVG3S08-303VM
50kΩ	RVG3A08-503VM	RVG3S08-503VM
100kΩ	RVG3A08-104VM	RVG3S08-104VM
200kΩ	RVG3A08-204VM	RVG3S08-204VM
300kΩ	RVG3A08-304VM	RVG3S08-304VM
500kΩ	RVG3A08-504VM	RVG3S08-504VM
1MΩ	RVG3A08-105VM	RVG3S08-105VM
2MΩ	RVG3A08-205VM	RVG3S08-205VM
Outline dimensions	 Schematic #2 #1 — #3 Clockwise → [in mm] Standard tolerance : ±0.3	 *1. Driver Plate Rotation Area
Standard PCB layout	 [in mm] Standard tolerance : ±0.1	

* E6 resistance values are also available.



TRIMMER POTENTIOMETER

muRata

Cermet Chip Trimmer Potentiometer RVG4M Series

Recommended for both flow and reflow soldering method while maintaining sealed construction after adjustment

FEATURES

1. Available for flow and reflow soldering method while maintaining unique sealed construction.
2. Simple construction by 3 piece parts achieve high reliability.
3. Available for cleaning after soldering (See pages 43 to 44 for details.)
4. Plated termination achieve a high resistance to solder leaching.
5. High grade version is available (RVG4M58)

APPLICATIONS

FDDs, HDDs, Measuring equipments, Encoders, Professional use cameras

PART NUMBERING

(Please specify the part number when ordering.)

(Ex.) RVG 4M08 - 103 VM - TG

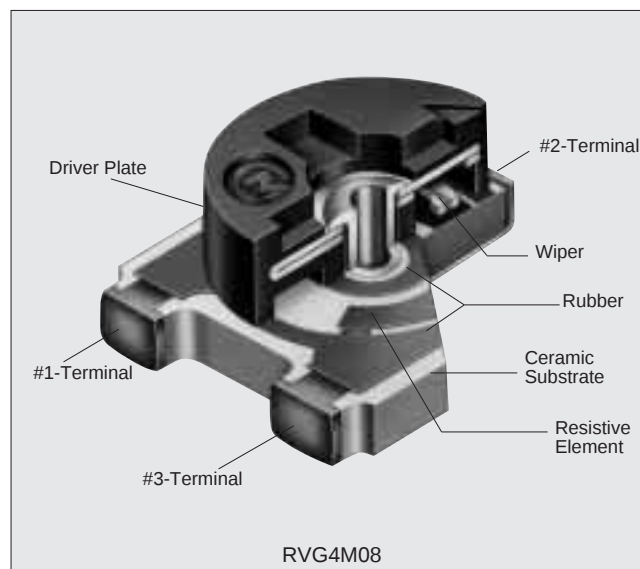
- ① Model
 ② Model number
 4M08 : Standard type
 4M58 : High grade type
 ③ Resistance code
 ④ Total resistance tolerance
 VM : $\pm 25\%$...Standard for 4M08
 M : $\pm 20\%$...Standard for 4M58
 ⑤ Packaging code
 Taping : TG500pcs./reel (180mm dia.)
 Bulk : No codes...500pcs./bag

RATINGS

Item	RVG4M08	RVG4M58
Standard Total Resistance Range	200 Ω to 2M Ω	100 Ω to 2M Ω
Total Resistance Tolerance	$\pm 25\%$ of standard total resistance value	$\pm 20\%$ of standard total resistance value
Taper	B (Linear)	B (Linear)
Power Rating	1/10W (70°C)	1/4W (70°C)
Max. Working Voltage	50Vdc	200Vdc
Operating Temperature Range	-55°C to +125°C	-55°C to +125°C
Rotational Torque	2.0–24.5mNm (20–250gf·cm)	1.0–14.7mNm (10–150gf·cm)
Effective Rotational Angle	240° $\pm 10^\circ$	240° $\pm 10^\circ$

OTHERS

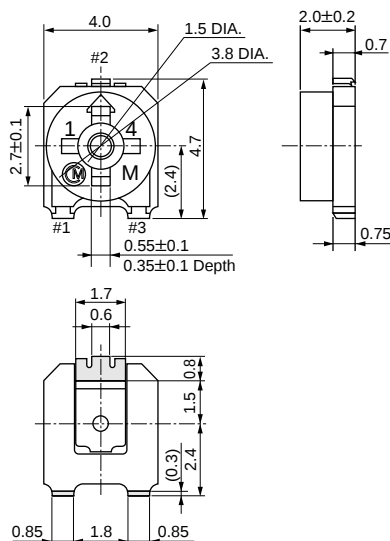
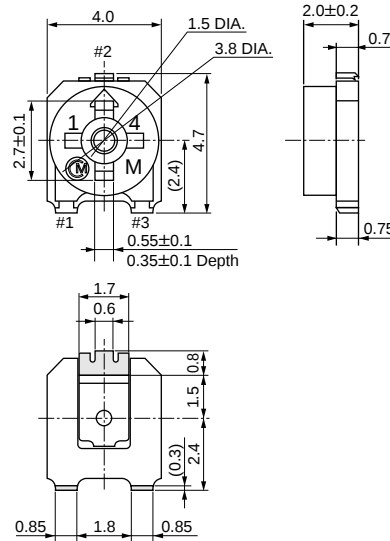
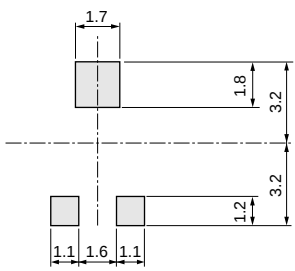
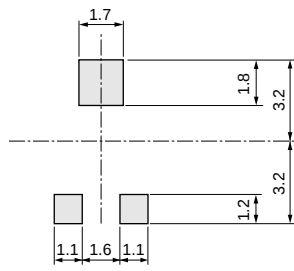
- See pages 43 to 44 for Notice
- See page 45 for test methods
- Consult us for the details of sealed construction



ENVIRONMENTAL CHARACTERISTICS

Item	RVG4M08	RVG4M58
Humidity Exposure	Res. Change : $\pm 3\%$	Res. Change : $\pm 2\%$
High Temperature Exposure	Res. Change : $\pm 3\%$	Res. Change : $\pm 2\%$
Humidity Load Life	Res. Change : $\pm 3\%$	Res. Change : $\pm 3\%$
Load Life	Res. Change : $\pm 3\%$	Res. Change : $\pm 3\%$
Temperature Cycle	Res. Change : $\pm 3\%$	Res. Change : $\pm 2\%$
Temperature Coefficient of Resistance	$\pm 250\text{ppm}/^\circ\text{C}$	$\pm 100\text{ppm}/^\circ\text{C}$ ($200\Omega \leq R < 100\text{k}\Omega$) $\pm 150\text{ppm}/^\circ\text{C}$ ($100\Omega, 100\text{k}\Omega \leq R$)
Rotational Life	Res. Change : $\pm 10\%$ (20 cycles)	Res. Change : $\pm 5\%$ (100 cycles)

PART NUMBER TABLE

Standard Total Resistance Values	Model Number	
	Top adjustment (Sealed/Standard type)	Top adjustment (Sealed/High grade type)
	 RVG4M08 Series	 RVG4M58 Series
100Ω	—	RVG4M58-101VM
200Ω	RVG4M08-201VM	RVG4M58-201VM
300Ω	RVG4M08-301VM	RVG4M58-301VM
500Ω	RVG4M08-501VM	RVG4M58-501VM
1kΩ	RVG4M08-102VM	RVG4M58-102VM
2kΩ	RVG4M08-202VM	RVG4M58-202VM
3kΩ	RVG4M08-302VM	RVG4M58-302VM
5kΩ	RVG4M08-502VM	RVG4M58-502VM
10kΩ	RVG4M08-103VM	RVG4M58-103VM
20kΩ	RVG4M08-203VM	RVG4M58-203VM
30kΩ	RVG4M08-303VM	RVG4M58-303VM
50kΩ	RVG4M08-503VM	RVG4M58-503VM
100kΩ	RVG4M08-104VM	RVG4M58-104VM
200kΩ	RVG4M08-204VM	RVG4M58-204VM
300kΩ	RVG4M08-304VM	RVG4M58-304VM
500kΩ	RVG4M08-504VM	RVG4M58-504VM
1MΩ	RVG4M08-105VM	RVG4M58-105VM
2MΩ	RVG4M08-205VM	RVG4M58-205VM
Outline dimensions	 Schematic  Clockwise → [in mm Standard tolerance : ±0.3]	
Standard PCB layout	 [in mm Standard tolerance : ±0.1]	

* E6 resistance values are also available.



TRIMMER POTENTIOMETER

muRata

Chip Trimmer Potentiometer RVG4H Series

Typical 4mm Square SMD Trimmer Potentiometer.

■FEATURES

The RVG4H series terminations have a better solder ability as well as higher solder leaching resistance of #1-#3 terminals with its nickel barrier layer construction, and have ultra-low profile design ($t=1.5\text{mm}$) and light weight ($w\approx 60\text{mg}$).

■APPLICATIONS

Small TV set, VCR camera, Microcassette recorder, Personal computer, Printer, Pager, Medical equipment, Telephone Micro motor, and other consumer and industrial equipment.

■PART NUMBERING

(Please specify the part number when ordering.)

(Ex.)

RVG	4H01	-	103	VM	-	TC
-----	------	---	-----	----	---	----

① ② ③ ④ ⑤

① Model

② Model number

③ Resistance code

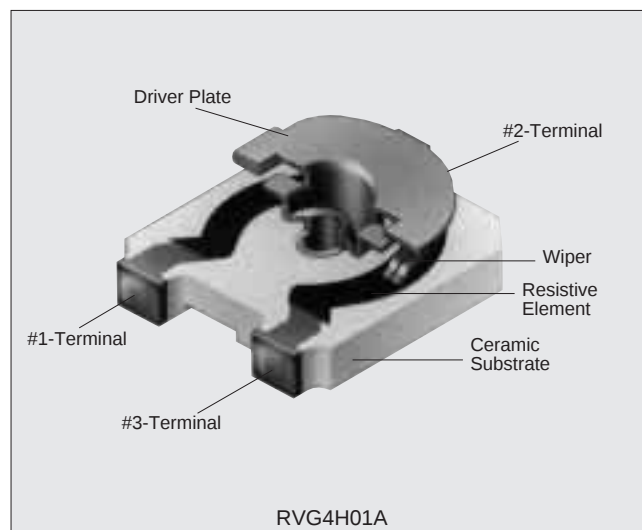
④ Total resistance tolerance

VM : $\pm 25\%$

⑤ Packaging code

Taping : TC1000pcs./reel (180mm dia.)

Bulk : No codes...500pcs./bag



■RATINGS

Item	RVG4H
Standard Total Resistance Range	100Ω to 2MΩ
Total Resistance Tolerance	± 25
Taper	B (Linear)
Power Rating	1/10W (70°C)
Max. Working Voltage	50Vdc
Operating Temperature Range	-55°C to +125°C
Rotational Torque	2.0–24.5mNm (20–250gf·cm)
Effective Rotational Angle	270° $\pm 10^\circ$

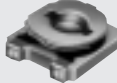
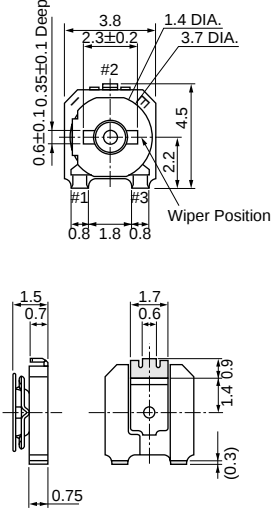
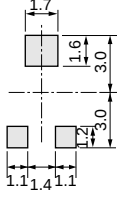
■OTHERS

- See pages 43 to 44 for Notice
- See page 45 for test methods

■ENVIRONMENTAL CHARACTERISTICS

Item	RVG4H
Humidity Exposure	Res. Change : $\pm 3\%$
High Temperature Exposure	Res. Change : $\pm 3\%$
Humidity Load Life	Res. Change : $\pm 3\%$
Load Life	Res. Change : $\pm 3\%$
Temperature Cycle	Res. Change : $\pm 3\%$
Temperature Coefficient of Resistance	$\pm 250\text{ppm}/^\circ\text{C}$
Rotational Life	Res. Change : $\pm 10\%$ (20 cycles)

PART NUMBER TABLE

Standard Total Resistance Values	Model Number
	3-Terminal (Low Profile) Reflow Soldering only
	
100Ω	RVG4H01-101VM
200Ω	RVG4H01-201VM
300Ω	RVG4H01-301VM
500Ω	RVG4H01-501VM
1kΩ	RVG4H01-102VM
2kΩ	RVG4H01-202VM
3kΩ	RVG4H01-302VM
5kΩ	RVG4H01-502VM
10kΩ	RVG4H01-103VM
20kΩ	RVG4H01-203VM
30kΩ	RVG4H01-303VM
50kΩ	RVG4H01-503VM
100kΩ	RVG4H01-104VM
200kΩ	RVG4H01-204VM
300kΩ	RVG4H01-304VM
500kΩ	RVG4H01-504VM
1MΩ	RVG4H01-105VM
2MΩ	RVG4H01-205VM
Outline dimensions	 Top view dimensions: 3.8, 2.3±0.2, 1.4 DIA., 3.7 DIA., 4.5, 2.2, 0.6±0.1, 0.35±0.1 Deep, #1, #2, #3, 0.8, 1.8, 0.8, Wiper Position. Side view dimensions: 1.5, 0.7, 0.75. Cross-sectional view dimensions: 1.7, 0.6, 1.4, 0.9, (0.3). Schematic: #1—#3, #2, Clockwise → [in mm Standard tolerance : ±0.3]
Standard PCB layout	 PCB layout dimensions: 1.7, 1.6, 3.0, 3.0, 1.1, 1.4, 1.1. [in mm Standard tolerance : ±0.1]

* Consult us for special resistance.



TRIMMER POTENTIOMETER

muRata

Carbon Chip Trimmer Potentiometer POF2 Series

Ultra-small chip trimmer potentiometer for hearing aid.

■FEATURES

1. Ultra-small : 2.0 (W) × 2.0 (L) × 2.3 (T) mm.
2. Sealed construction with stopper
3. Linear and log. resistance curve is available.
4. Mountable by automatic placer.
5. Can be reflow soldered.

■APPLICATIONS

Hearing aid, Sensors

■PART NUMBERING

(Please specify the part number when ordering.)

(Ex.) **POF2AN** - **01** **1** **1** - **103** **N** - **T00**
 ① ② ③ ④ ⑤ ⑥ ⑦

① Model

② Resistance curve code 01=Linear type
 24, 28=log. type
 25, 29=log. log. type

③ Marking color code 1 : Standard (Red)

④ Options 1 : Standard

⑤ Resistance code

⑥ Nominal resistance tolerance N : ±30%

⑦ Packaging code

Taping : T00.....500pcs./reel (180mm dia.)

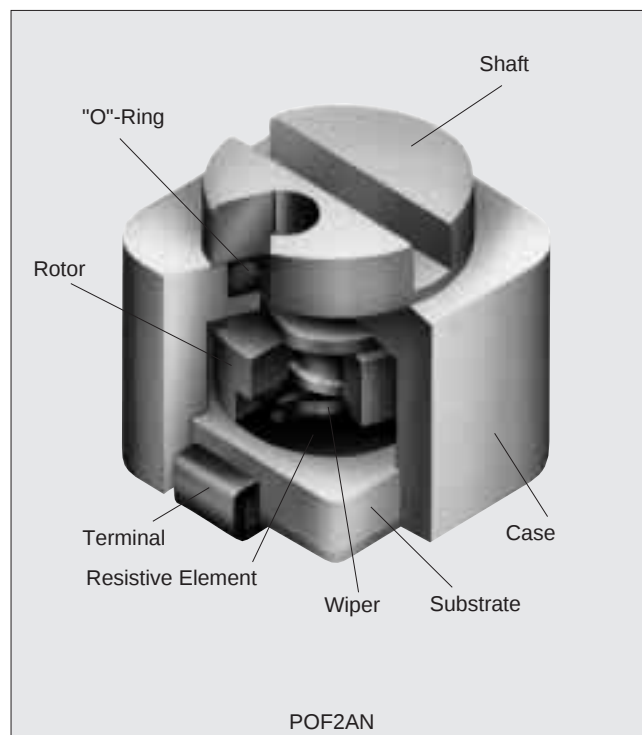
Bulk : No codes...100pcs./bag

■RATINGS

Standard Total Resistance Range	Linear type : 500Ω - 1MΩ log. type : 1kΩ - 500kΩ log. log. type : 1kΩ - 500kΩ
Total Resistance Tolerance	±30% of standard total resistance value
Power Rating	50°C : 1mW 60°C : 0W
Max. Working Voltage	5Vdc
Operating Temperature Range	-25°C to +60°C
Resistance Curve	Linear, log. curve, log. log. curve
Temperature Coefficient of Resistance	±500ppm/°C
Insulation Resistance	1MΩ min. (100Vdc)
Effective Rotational Angle	210°±10°
Rotational Torque	1.47mNm (15gf·cm) max.
Stop Strength	4.9mNm (50gf·cm) min.

■OTHERS

- See pages 43 to 44 for Notice
- See pages 46 to 47 for test methods



■ENVIRONMENTAL CHARACTERISTICS

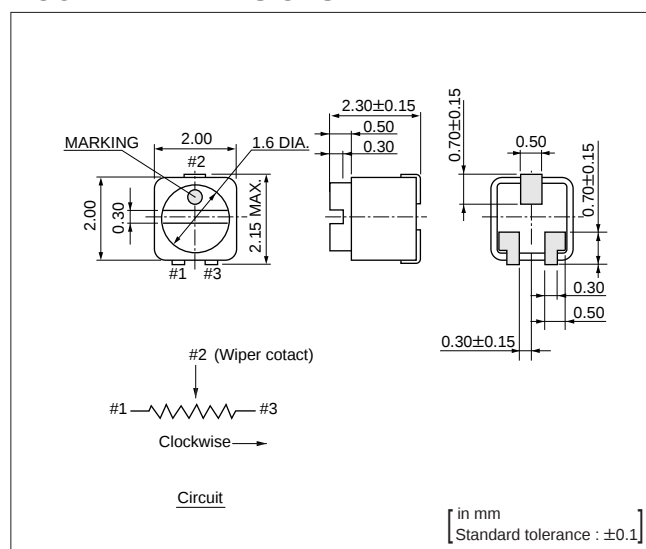
Temperature Cycle	ΔTR ±5%
Humidity Exposure	ΔTR +15, -2%
Vibration	ΔV.S. S. ±5%
Shock	ΔV.S. S. ±5%
Load Life	ΔTR +2, -10%
Low Temperature Exposure	ΔTR ±3%
Rotational Life (100 cycles)	ΔTR ±10%

ΔTR : Total Resistance Change
ΔV.S.S. : Voltage Setting Stability

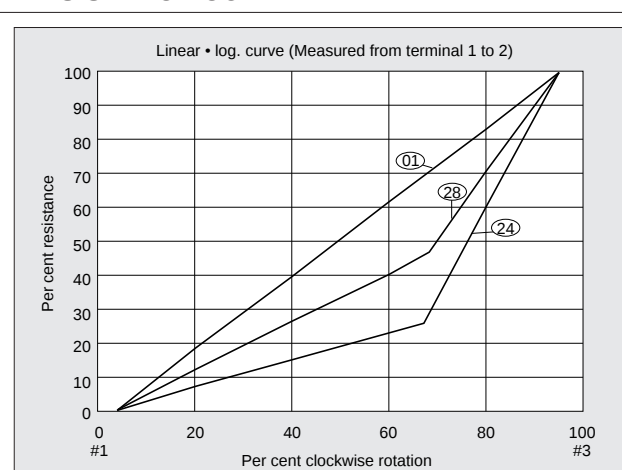
■PART NUMBER TABLE

Standard Total Resistance Values	Model Number				
	Linear type	Log. type	Log. type	Log. Log. type	Log. Log. type
					
500Ω	POF2AN-0111-501N	—	—	—	—
1kΩ	POF2AN-0111-102N	POF2AN-2411-102N	POF2AN-2811-102N	POF2AN-2511-102N	POF2AN-2911-102N
2kΩ	POF2AN-0111-202N	POF2AN-2411-202N	POF2AN-2811-202N	POF2AN-2511-202N	POF2AN-2911-202N
5kΩ	POF2AN-0111-502N	POF2AN-2411-502N	POF2AN-2811-502N	POF2AN-2511-502N	POF2AN-2911-502N
10kΩ	POF2AN-0111-103N	POF2AN-2411-103N	POF2AN-2811-103N	POF2AN-2511-103N	POF2AN-2911-103N
20kΩ	POF2AN-0111-203N	POF2AN-2411-203N	POF2AN-2811-203N	POF2AN-2511-203N	POF2AN-2911-203N
50kΩ	POF2AN-0111-503N	POF2AN-2411-503N	POF2AN-2811-503N	POF2AN-2511-503N	POF2AN-2911-503N
100kΩ	POF2AN-0111-104N	POF2AN-2411-104N	POF2AN-2811-104N	POF2AN-2511-104N	POF2AN-2911-104N
200kΩ	POF2AN-0111-204N	POF2AN-2411-204N	POF2AN-2811-204N	POF2AN-2511-204N	POF2AN-2911-204N
500kΩ	POF2AN-0111-504N	POF2AN-2411-504N	POF2AN-2811-504N	POF2AN-2511-504N	POF2AN-2911-504N
1MΩ	POF2AN-0111-105N	—	—	—	—

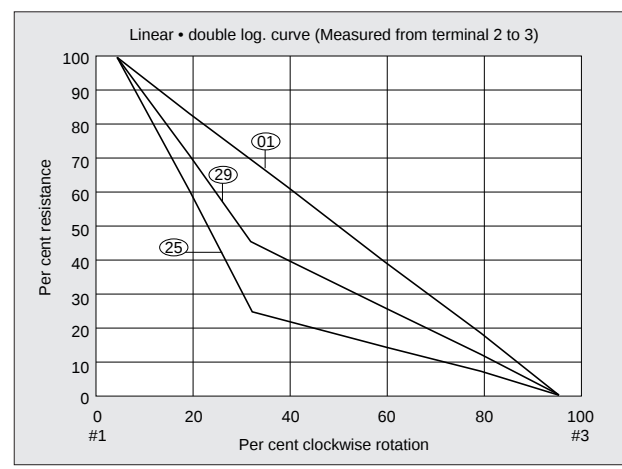
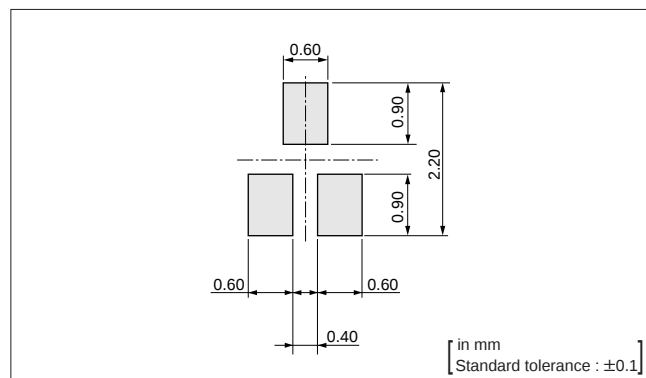
■OUTLINE DIMENSIONS



■RESISTANCE CURVE



■STANDARD PCB LAYOUT





TRIMMER POTENTIOMETER

muRata

11-Turns Cermet Trimmer Potentiometer POG5 Series

Surface mount with 5mm package achieve high resolution, 11-turns recommended for reflow soldering method

FEATURES

1. High resolution resulting from 11-turns design enables precise adjustment.
2. 5mm miniature size lead a high density PCB mounting.
3. Compatible with VPS reflow soldering method.
4. Compatible with ultrasonic cleaning.
(See pages 43 to 44 for details.)
5. Clutch mechanism prevents excessive wiper rotation.

APPLICATIONS

Measuring instruments, Sensors, CPUs, Industrial machines

PART NUMBERING

(Please specify the part number when ordering.)

(Ex.) POG5 AN - 1 - 103 K - T00

① Model

② Figure number

AN : Top adjustment

HN : Side adjustment

③ Options 1 : Standard

④ Resistance code

⑤ Total resistance

tolerance K : $\pm 10\%$

⑥ Packaging code

Taping : T00

250pcs./reel (180mm dia.)...POG5AN type

500pcs./reel (180mm dia.)...POG5HN type

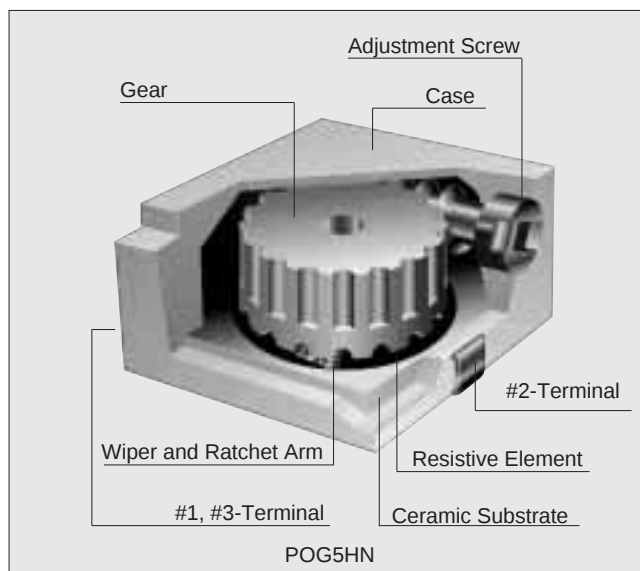
Bulk : No codes...50pcs./bag

RATINGS

Standard Total Resistance Range	10 Ω to 2M Ω
Total Resistance Tolerance	$\pm 10\%$ of standard total resistance value
Power Rating	70 $^{\circ}\text{C}$ — 0.25W 125 $^{\circ}\text{C}$ — 0W
Max. Working Voltage	300Vdc
Max. Wiper Current	100mA max.
Operating Temperature Range	-55 $^{\circ}\text{C}$ to +125 $^{\circ}\text{C}$
Effective Electrical Number of Turn	11 ± 2 turns
Residual Resistance	1% or 2 Ω max. Whichever is greater
Contact Resistance Variation	3% or 3 Ω max. Whichever is greater
Dielectric Strength	600Vac
Insulation Resistance	100M Ω min. (500Vdc)
Torque	17.6mNm (180gf·cm) max.

OTHERS

- See pages 43 to 44 for Notice
- See pages 46 to 47 for test methods



ENVIRONMENTAL CHARACTERISTICS

Temperature Coefficient of Resistance	R $\leq 100\Omega$... $\pm 200\text{ppm}/^{\circ}\text{C}$ R $\geq 200\Omega$... $\pm 100\text{ppm}/^{\circ}\text{C}$
Temperature Cycle	ΔTR $\pm 2\%$ $\Delta\text{V.S. S.}$ $\pm 1\%$
Humidity Exposure	ΔTR $\pm 2\%$ IR 10M Ω min.
Vibration	ΔTR $\pm 1\%$ $\Delta\text{V.S. S.}$ $\pm 1\%$
Shock	ΔTR $\pm 1\%$ $\Delta\text{V.S. S.}$ $\pm 1\%$
Load Life	ΔTR $\pm 3\%$ or 3 Ω max., whichever is greater $\Delta\text{V.S. S.}$ $\pm 1\%$
Low Temperature Exposure	ΔTR $\pm 1\%$ $\Delta\text{V.S. S.}$ $\pm 1\%$
High Temperature Exposure	ΔTR $\pm 2\%$ $\Delta\text{V.S. S.}$ $\pm 1\%$
Rotational Life (100 cycles)	No intermittence on resistance change

ΔTR : Total Resistance Change
 $\Delta\text{V.S. S.}$: Voltage Setting Stability
 IR : Insulation Resistance

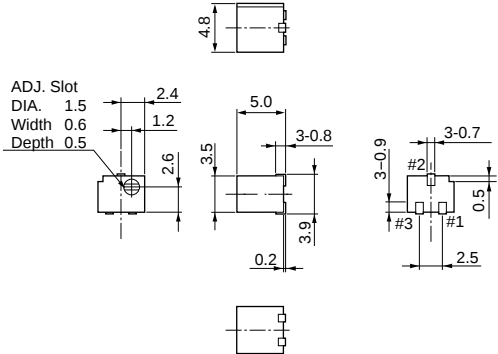
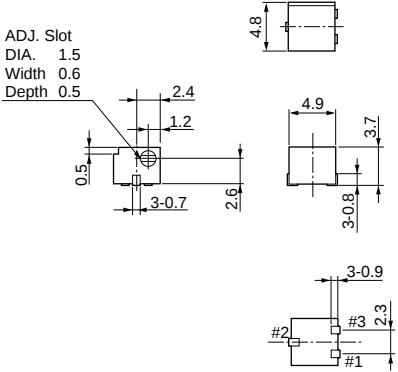
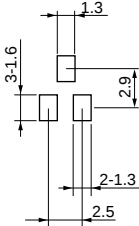
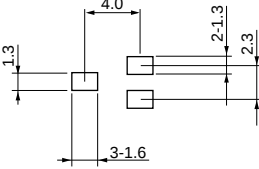
MINIMUM QUANTITY (order in sets only)

250 pcs./reel...POG5AN type

500 pcs./reel...POG5HN type

50 pcs./bag

PART NUMBER TABLE

Standard Total Resistance Values	Model Number	
	Top Adjustment (POG5AN)	Side Adjustment (POG5HN)
		
10Ω	POG5AN-1-100K	POG5HN-1-100K
20Ω	POG5AN-1-200K	POG5HN-1-200K
50Ω	POG5AN-1-500K	POG5HN-1-500K
100Ω	POG5AN-1-101K	POG5HN-1-101K
200Ω	POG5AN-1-201K	POG5HN-1-201K
500Ω	POG5AN-1-501K	POG5HN-1-501K
1kΩ	POG5AN-1-102K	POG5HN-1-102K
2kΩ	POG5AN-1-202K	POG5HN-1-202K
5kΩ	POG5AN-1-502K	POG5HN-1-502K
10kΩ	POG5AN-1-103K	POG5HN-1-103K
20kΩ	POG5AN-1-203K	POG5HN-1-203K
50kΩ	POG5AN-1-503K	POG5HN-1-503K
100kΩ	POG5AN-1-104K	POG5HN-1-104K
200kΩ	POG5AN-1-204K	POG5HN-1-204K
500kΩ	POG5AN-1-504K	POG5HN-1-504K
1MΩ	POG5AN-1-105K	POG5HN-1-105K
2MΩ	POG5AN-1-205K	POG5HN-1-205K
Outline dimensions	 ADJ. Slot DIA. 1.5 Width 0.6 Depth 0.5 Schematic #1—#2—#3 Clockwise → [in mm Standard tolerance : ±0.3]	 ADJ. Slot DIA. 1.5 Width 0.6 Depth 0.5 [in mm Standard tolerance : ±0.3]
Standard PCB layout	 [in mm Standard tolerance : ±0.1]	 [in mm Standard tolerance : ±0.1]



TRIMMER POTENTIOMETER

muRata

12-Turns Cermet Trimmer Potentiometer POT0102 Series

High resolution, 12-turns design yields precise adjustment

■FEATURES

1. Applicable to V.P.S reflow soldering.
2. High resolution resulting from 12-turns design enables precise adjustment.
3. Compact size. (6.4×6.7×4.0mm)
4. Sealed construction is applicable for ultrasonic cleaning after soldering.
(See pages 43 to 44 for details.)
5. Precise adjustment can be obtained easily, because of its multi turn structure.

■APPLICATIONS

Measuring equipment, Fax., CPU., Printer, Sensors, Industrial machines.

■PART NUMBERING

(Please specify the part number when ordering.)

(Ex.)

POT	0102	W	-	1	-	103	-	M2
-----	------	---	---	---	---	-----	---	----

① ② ③ ④ ⑤ ⑥

- ① Model
- ② Model number
- ③ Terminal style
- ④ Options 1 : Standard
- ⑤ Resistance code
- ⑥ Packaging code

Magazine : M2

70pcs./ magazine...POT0102W type

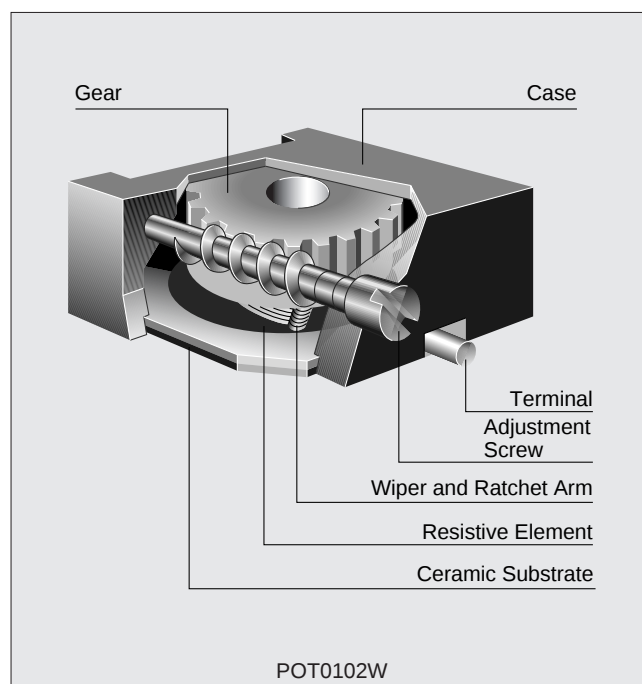
60pcs./ magazine...POT0102X/P type

■RATINGS

Standard Total Resistance Range	10Ω to 1MΩ
Total Resistance Tolerance	±10% of standard total resistance value
Power Rating	85°C — 0.25W 125°C — 0W
Max. Working Voltage	200Vdc
Max. Wiper Current	100mA max.
Operating Temperature Range	−55°C to +125°C
Effective Electrical Number of Turn	12±2 turns
Residual Resistance	2Ω max.
Contact Resistance Variation	3% or 3Ω max. Whichever is greater
Dielectric Strength	600Vac
Insulation Resistance	1000MΩ min. (500Vdc)
Torque	21.2mNm (216gf.cm) max.

■OTHERS

- See pages 43 to 44 for Notice
- See pages 46 to 47 for test methods



■ENVIRONMENTAL CHARACTERISTICS

Temperature Coefficient of Resistance	±100ppm/°C
Temperature Cycle	ΔTR ±1% ΔV.S. S. ±1%
Humidity Exposure	ΔTR ±2% IR 100MΩ min.
Vibration (20G)	ΔTR ±1% ΔV.S. S. ±1%
Shock (100G)	ΔTR ±1% ΔV.S. S. ±1%
Load Life	ΔTR ±2% ΔV.S. S. ±1%
Low Temperature Exposure	ΔTR ±1% ΔV.S. S. ±1%
High Temperature Exposure	ΔTR ±2% ΔV.S. S. ±1%
Rotational Life (200 cycles)	No intermittence on resistance change

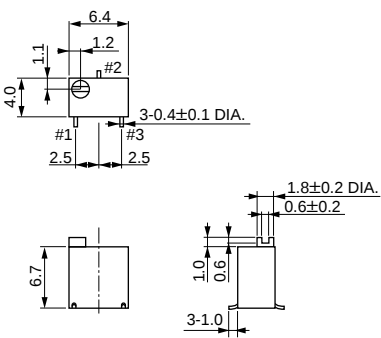
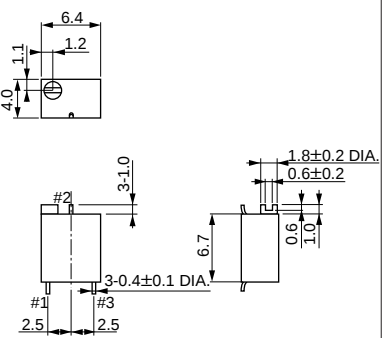
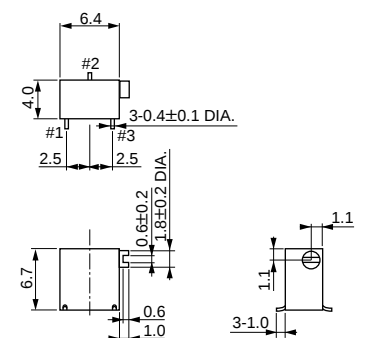
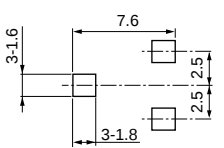
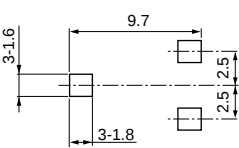
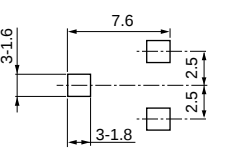
ΔTR : Total Resistance Change
ΔV.S.S. : Voltage Setting Stability
IR : Insulation Resistance

■MINIMUM QUANTITY (order in sets only)

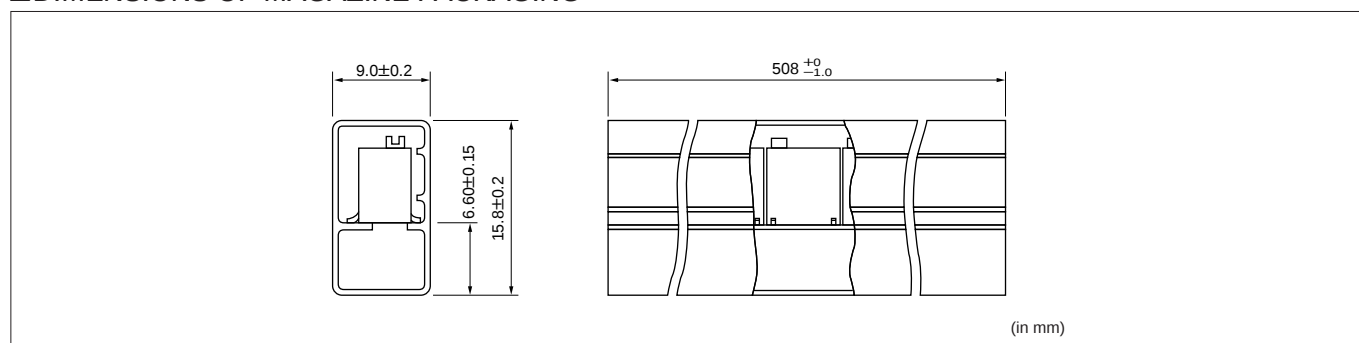
70 pcs./magazine...POT0102W type

60 pcs./magazine...POT0102X/P type

■PART NUMBER TABLE

Standard Total Resistance Values	Model Number		
	Top Adjustment (W)	Side Adjustment (P)	Side Adjustment (X)
			
10Ω	POT0102W-1-100-M2	POT0102P-1-100-M2	POT0102X-1-100-M2
20Ω	POT0102W-1-200-M2	POT0102P-1-200-M2	POT0102X-1-200-M2
50Ω	POT0102W-1-500-M2	POT0102P-1-500-M2	POT0102X-1-500-M2
100Ω	POT0102W-1-101-M2	POT0102P-1-101-M2	POT0102X-1-101-M2
200Ω	POT0102W-1-201-M2	POT0102P-1-201-M2	POT0102X-1-201-M2
500Ω	POT0102W-1-501-M2	POT0102P-1-501-M2	POT0102X-1-501-M2
1kΩ	POT0102W-1-102-M2	POT0102P-1-102-M2	POT0102X-1-102-M2
2kΩ	POT0102W-1-202-M2	POT0102P-1-202-M2	POT0102X-1-202-M2
5kΩ	POT0102W-1-502-M2	POT0102P-1-502-M2	POT0102X-1-502-M2
10kΩ	POT0102W-1-103-M2	POT0102P-1-103-M2	POT0102X-1-103-M2
20kΩ	POT0102W-1-203-M2	POT0102P-1-203-M2	POT0102X-1-203-M2
25kΩ	POT0102W-1-253-M2	POT0102P-1-253-M2	POT0102X-1-253-M2
50kΩ	POT0102W-1-503-M2	POT0102P-1-503-M2	POT0102X-1-503-M2
100kΩ	POT0102W-1-104-M2	POT0102P-1-104-M2	POT0102X-1-104-M2
200kΩ	POT0102W-1-204-M2	POT0102P-1-204-M2	POT0102X-1-204-M2
250kΩ	POT0102W-1-254-M2	POT0102P-1-254-M2	POT0102X-1-254-M2
500kΩ	POT0102W-1-504-M2	POT0102P-1-504-M2	POT0102X-1-504-M2
1MΩ	POT0102W-1-105-M2	POT0102P-1-105-M2	POT0102X-1-105-M2
Outline dimensions			
Standard PCB layout			

■DIMENSIONS OF MAGAZINE PACKAGING





TRIMMER POTENTIOMETER

muRata

Single-turn Cermet Trimmer Potentiometer POC6 Series

6mm package achieve excellent performances! Single-turn and Sealed Construction

FEATURES

1. Enlarged, color coded rotor provides ease of adjustment.
2. Deep, funnel shaped rotor adjustment slot allows for automated adjustment and use of "Zero" plus adjustment driver.
3. 11-scales indicators easily show rotor adjustment position.
4. Sealed construction allows for ultrasonic cleaning.
5. Round lead shape for radial taping provides ease of "cut & clinch" and increased life of cutting tool.
6. Construction materials used meet UL94V-0 standards.

APPLICATIONS

DY, CRT Display, Professional cameras, CATV, FAX, Power Supply, Printers, Sensors, Industrial machines

PART NUMBERING

(Please specify the part number when ordering.)

(Ex.) **POC6** **ME** - **1** - **103** **K** - **R00**

① ② ③ ④ ⑤ ⑥

① Model number

② Figure number

AP/DP/GP/HP/EP :

Top and side adjustment, Triangular terminal arrangement

ME/QE :

Top and side adjustment, Straight terminal arrangement

③ Options 1 : Standard 10 : Bulk + Straight terminal arrangement

④ Resistance code

⑤ Total resistance tolerance K : $\pm 10\%$

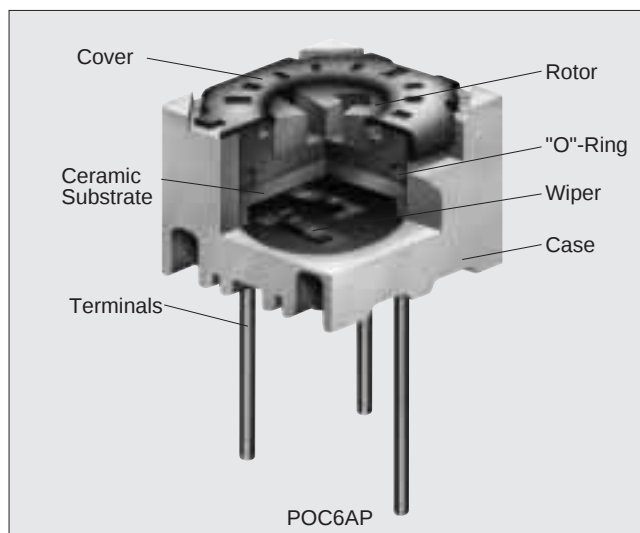
⑥ Packaging code

R00 : Radial taping ···1,000pcs./pack

No codes : Bulk ·········50pcs./bag

RATINGS

Standard Total Resistance Range	10 Ω to 5M Ω
Total Resistance Tolerance	$\pm 10\%$ of standard total resistance value
Power Rating	70°C — 0.5W 125°C — 0W
Max. Working Voltage	300Vdc
Max. Wiper Current	100mA max.
Operating Temperature Range	-55°C to +125°C
Effective Rotational Angle	240° $\pm 5^\circ$
Residual Resistance	1% or 2 Ω max. whichever is greater
Contact Resistance Variation	3% or 3 Ω max. Whichever is greater
Dielectric Strength	600Vac
Insulation Resistance	1000M Ω min.
Torque	0.98 to 19.6mNm (10 to 200gf·cm)
Stop Strength	49mNm (500gf·cm) max.



ENVIRONMENTAL CHARACTERISTICS

Temperature Coefficient of Resistance	$\pm 100\text{ppm}/^\circ\text{C}$
Temperature Cycle	ΔTR $\pm 2\%$ $\Delta\text{V.S.S.}$ $\pm 1\%$
Humidity Exposure	ΔTR $\pm 2\%$ $\Delta\text{V.S.S.}$ $\pm 1\%$ IR 100M Ω min.
Vibration (20G)	ΔTR $\pm 1\%$ $\Delta\text{V.S.S.}$ $\pm 1\%$
Shock (100G)	ΔTR $\pm 1\%$ $\Delta\text{V.S.S.}$ $\pm 1\%$
Load Life	ΔTR $\pm 2\%$ $\Delta\text{V.S.S.}$ $\pm 2\%$
Low Temperature Exposure	ΔTR $\pm 2\%$ $\Delta\text{V.S.S.}$ $\pm 1\%$
High Temperature Exposure	ΔTR $\pm 2\%$ $\Delta\text{V.S.S.}$ $\pm 1\%$
Rotational Life (200 cycles)	No intermittence on resistance change

ΔTR : Total Resistance Change

$\Delta\text{V.S.S.}$: Setting Stability

IR : Insulation Resistance

OTHERS

● See pages 43 to 44 for Notice

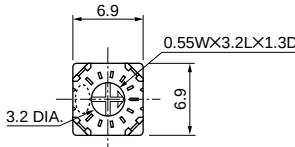
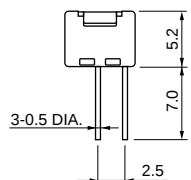
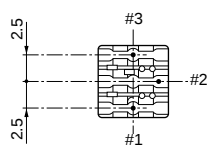
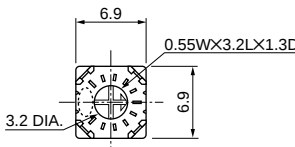
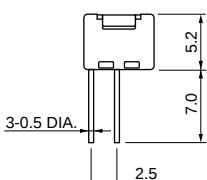
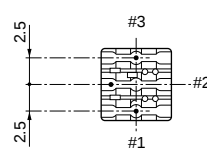
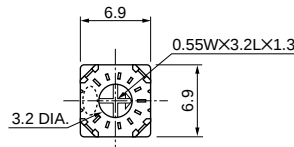
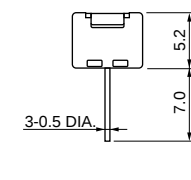
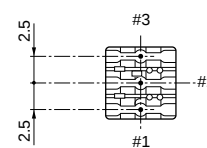
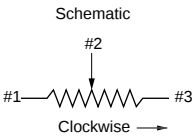
● See pages 46 to 47 for test methods

MINIMUM QUANTITY (order in sets only)

50 pcs./bag···Bulk package

1,000 pcs./pack···Radial taping package

PART NUMBER TABLE

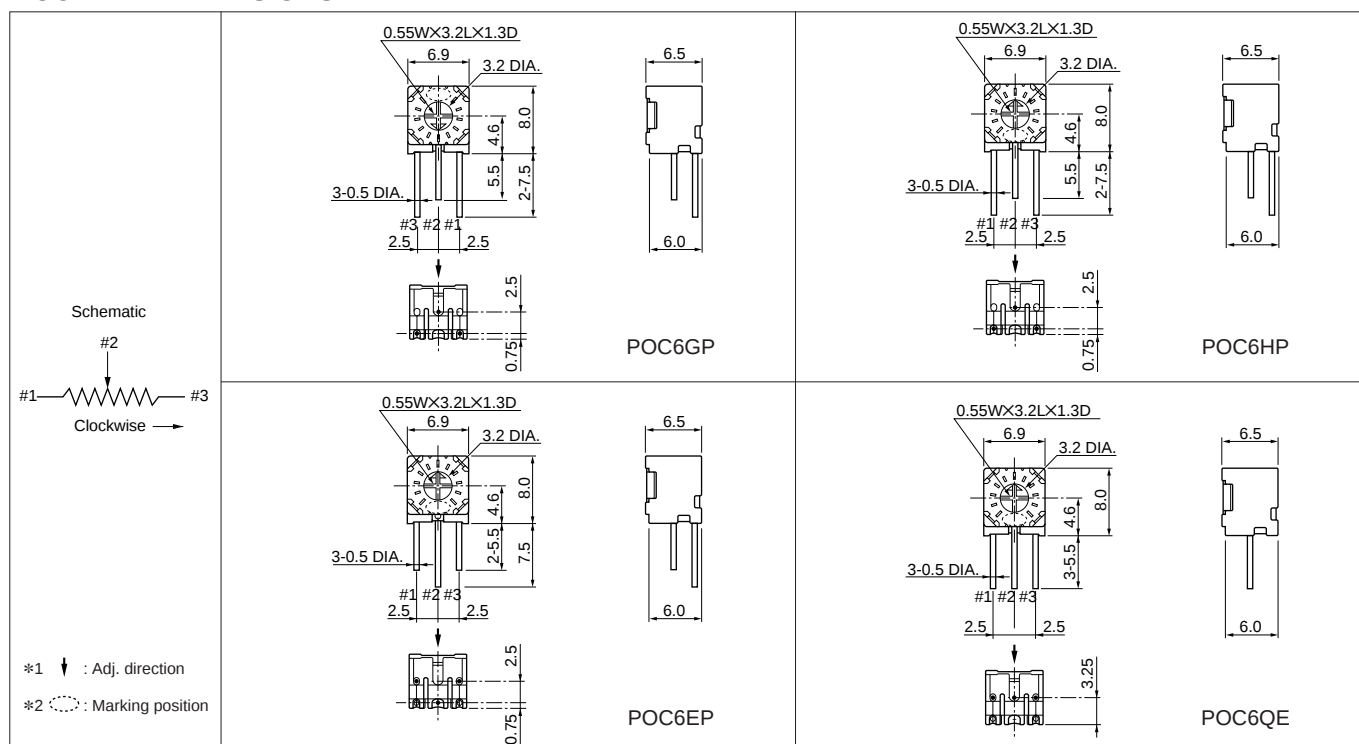
Standard Total Resistance Values	Model Number		
	Top Adjustment (Bulk)	Top Adjustment (Bulk)	Top Adjustment (Bulk)
			
10Ω	POC6AP-1-100K	POC6DP-1-100K	POC6ME-10-100K
20Ω	POC6AP-1-200K	POC6DP-1-200K	POC6ME-10-200K
25Ω	POC6AP-1-250K	POC6DP-1-250K	POC6ME-10-250K
50Ω	POC6AP-1-500K	POC6DP-1-500K	POC6ME-10-500K
100Ω	POC6AP-1-101K	POC6DP-1-101K	POC6ME-10-101K
200Ω	POC6AP-1-201K	POC6DP-1-201K	POC6ME-10-201K
250Ω	POC6AP-1-251K	POC6DP-1-251K	POC6ME-10-251K
500Ω	POC6AP-1-501K	POC6DP-1-501K	POC6ME-10-501K
1kΩ	POC6AP-1-102K	POC6DP-1-102K	POC6ME-10-102K
2kΩ	POC6AP-1-202K	POC6DP-1-202K	POC6ME-10-202K
2.5kΩ	POC6AP-1-252K	POC6DP-1-252K	POC6ME-10-252K
5kΩ	POC6AP-1-502K	POC6DP-1-502K	POC6ME-10-502K
10kΩ	POC6AP-1-103K	POC6DP-1-103K	POC6ME-10-103K
20kΩ	POC6AP-1-203K	POC6DP-1-203K	POC6ME-10-203K
25kΩ	POC6AP-1-253K	POC6DP-1-253K	POC6ME-10-253K
50kΩ	POC6AP-1-503K	POC6DP-1-503K	POC6ME-10-503K
100kΩ	POC6AP-1-104K	POC6DP-1-104K	POC6ME-10-104K
200kΩ	POC6AP-1-204K	POC6DP-1-204K	POC6ME-10-204K
250kΩ	POC6AP-1-254K	POC6DP-1-254K	POC6ME-10-254K
500kΩ	POC6AP-1-504K	POC6DP-1-504K	POC6ME-10-504K
1MΩ	POC6AP-1-105K	POC6DP-1-105K	POC6ME-10-105K
2MΩ	POC6AP-1-205K	POC6DP-1-205K	POC6ME-10-205K
5MΩ	POC6AP-1-505K	POC6DP-1-505K	POC6ME-10-505K
Outline dimensions	  	  	  
Schematic  *  : Marking position			

[in mm
Standard tolerance : ±0.3]

■PART NUMBER TABLE

Standard Total Resistance Values	Model Number			
	Side Adjustment (Bulk)	Side Adjustment (Bulk)	Side Adjustment (Bulk)	Side Adjustment (Bulk)
				
10Ω	POC6GP-1-100K	POC6HP-1-100K	POC6EP-1-100K	POC6QE-10-100K
20Ω	POC6GP-1-200K	POC6HP-1-200K	POC6EP-1-200K	POC6QE-10-200K
25Ω	POC6GP-1-250K	POC6HP-1-250K	POC6EP-1-250K	POC6QE-10-250K
50Ω	POC6GP-1-500K	POC6HP-1-500K	POC6EP-1-500K	POC6QE-10-500K
100Ω	POC6GP-1-101K	POC6HP-1-101K	POC6EP-1-101K	POC6QE-10-101K
200Ω	POC6GP-1-201K	POC6HP-1-201K	POC6EP-1-201K	POC6QE-10-201K
250Ω	POC6GP-1-251K	POC6HP-1-251K	POC6EP-1-251K	POC6QE-10-251K
500Ω	POC6GP-1-501K	POC6HP-1-501K	POC6EP-1-501K	POC6QE-10-501K
1kΩ	POC6GP-1-102K	POC6HP-1-102K	POC6EP-1-102K	POC6QE-10-102K
2kΩ	POC6GP-1-202K	POC6HP-1-202K	POC6EP-1-202K	POC6QE-10-202K
2.5kΩ	POC6GP-1-252K	POC6HP-1-252K	POC6EP-1-252K	POC6QE-10-252K
5kΩ	POC6GP-1-502K	POC6HP-1-502K	POC6EP-1-502K	POC6QE-10-502K
10kΩ	POC6GP-1-103K	POC6HP-1-103K	POC6EP-1-103K	POC6QE-10-103K
20kΩ	POC6GP-1-203K	POC6HP-1-203K	POC6EP-1-203K	POC6QE-10-203K
25kΩ	POC6GP-1-253K	POC6HP-1-253K	POC6EP-1-253K	POC6QE-10-253K
50kΩ	POC6GP-1-503K	POC6HP-1-503K	POC6EP-1-503K	POC6QE-10-503K
100kΩ	POC6GP-1-104K	POC6HP-1-104K	POC6EP-1-104K	POC6QE-10-104K
200kΩ	POC6GP-1-204K	POC6HP-1-204K	POC6EP-1-204K	POC6QE-10-204K
250kΩ	POC6GP-1-254K	POC6HP-1-254K	POC6EP-1-254K	POC6QE-10-254K
500kΩ	POC6GP-1-504K	POC6HP-1-504K	POC6EP-1-504K	POC6QE-10-504K
1MΩ	POC6GP-1-105K	POC6HP-1-105K	POC6EP-1-105K	POC6QE-10-105K
2MΩ	POC6GP-1-205K	POC6HP-1-205K	POC6EP-1-205K	POC6QE-10-205K
5MΩ	POC6GP-1-505K	POC6HP-1-505K	POC6EP-1-505K	POC6QE-10-505K

■OUTLINE DIMENSIONS



[in mm
Standard tolerance : ±0.3]

PART NUMBER TABLE

Standard Total Resistance Values	Model Number	
	Top Adjustment (Radial taping)	Side Adjustment (Radial taping)
10Ω	POC6ME-1-100K-R00	POC6QE-1-100K-R00
20Ω	POC6ME-1-200K-R00	POC6QE-1-200K-R00
25Ω	POC6ME-1-250K-R00	POC6QE-1-250K-R00
50Ω	POC6ME-1-500K-R00	POC6QE-1-500K-R00
100Ω	POC6ME-1-101K-R00	POC6QE-1-101K-R00
200Ω	POC6ME-1-201K-R00	POC6QE-1-201K-R00
250Ω	POC6ME-1-251K-R00	POC6QE-1-251K-R00
500Ω	POC6ME-1-501K-R00	POC6QE-1-501K-R00
1kΩ	POC6ME-1-102K-R00	POC6QE-1-102K-R00
2kΩ	POC6ME-1-202K-R00	POC6QE-1-202K-R00
2.5kΩ	POC6ME-1-252K-R00	POC6QE-1-252K-R00
5kΩ	POC6ME-1-502K-R00	POC6QE-1-502K-R00
10kΩ	POC6ME-1-103K-R00	POC6QE-1-103K-R00
20kΩ	POC6ME-1-203K-R00	POC6QE-1-203K-R00
25kΩ	POC6ME-1-253K-R00	POC6QE-1-253K-R00
50kΩ	POC6ME-1-503K-R00	POC6QE-1-503K-R00
100kΩ	POC6ME-1-104K-R00	POC6QE-1-104K-R00
200kΩ	POC6ME-1-204K-R00	POC6QE-1-204K-R00
250kΩ	POC6ME-1-254K-R00	POC6QE-1-254K-R00
500kΩ	POC6ME-1-504K-R00	POC6QE-1-504K-R00
1MΩ	POC6ME-1-105K-R00	POC6QE-1-105K-R00
2MΩ	POC6ME-1-205K-R00	POC6QE-1-205K-R00
5MΩ	POC6ME-1-505K-R00	POC6QE-1-505K-R00
Outline dimensions		

[in mm
Standard tolerance : ±0.3]



TRIMMER POTENTIOMETER

Murata

Single-turn Cermet Trimmer Potentiometer POM6 Series

6mm package achieve excellent performances. Sealed construction.

FEATURES

1. Enlarged adjustment part (Rotor) provides superior adjustability.
2. 11-scales are easy to see adjustment position.
3. Colored adjustment part (Rotor) provides superior adjustability.
4. Available for ultrasonic cleaning after soldering.
(See pages 43 to 44 for details.)
5. Flammability : UV94V-0

APPLICATIONS

DY, CRT display, Power supply, Professional cameras, CATV, FAX, Printers, Sensors, Industrial machines

PART NUMBERING

(Please specify the part number when ordering.)

(Ex.) **POM6** **ME** - **1** - **103** **M** - **R00**

① ② ③ ④ ⑤ ⑥

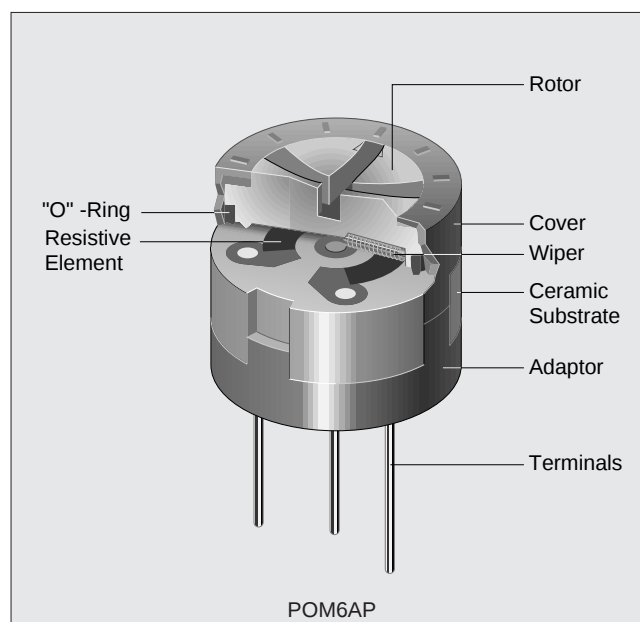
- ① Model number
- ② Figure number AP : Triangular terminal arrangement
 ME : straight terminal arrangement
- ③ Options 1 : Standard
- ④ Resistance code
- ⑤ Total resistance tolerance M : $\pm 20\%$
- ⑥ Packaging code
R00 : Radial taping $\cdots 1,000\text{pcs./pack}$
No codes : Bulk $\cdots 100\text{pcs./bag}$

RATINGS

Standard Total Resistance Range	10 Ω to 5M Ω
Total Resistance Tolerance	$\pm 20\%$ of standard total resistance value
Power Rating	70 $^{\circ}\text{C}$ - 0.5W 125 $^{\circ}\text{C}$ - 0W
Max. Working Voltage	300Vdc
Max. Wiper Current	100mA max.
Operating Temperature Range	-55 $^{\circ}\text{C}$ to +125 $^{\circ}\text{C}$
Effective Rotational Angle	230 $^{\circ}\pm 5^{\circ}$
Residual Resistance	2 Ω max.
Contact Resistance Variation	3% or 3 Ω max. whichever is greater
Dielectric Strength	600Vac
Insulation Resistance	1000M Ω min. (500Vdc)
Torque	1.96 to 19.6mNm (20 to 200gf $\cdot$ cm)
Stop Strength	49mNm (500gf $\cdot$ cm) min.

OTHERS

- See pages 43 to 44 for Notice
- See pages 46 to 47 for test methods
- Tolerance or $\pm 10\%$ of nominal resistance is available
(consult Murata representative for details)



ENVIRONMENTAL CHARACTERISTICS

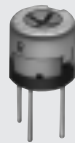
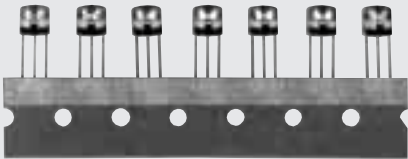
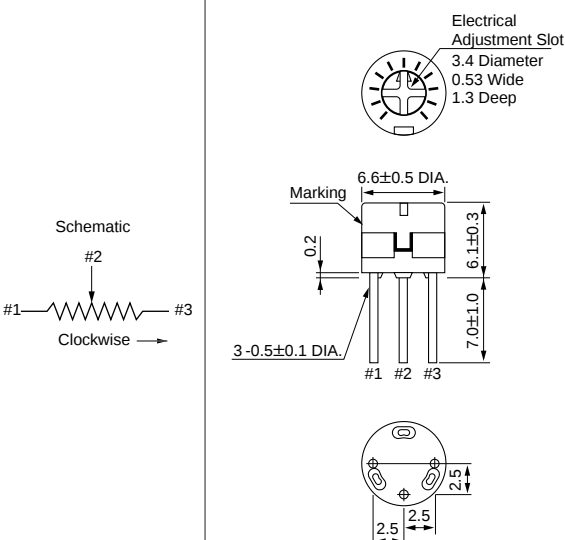
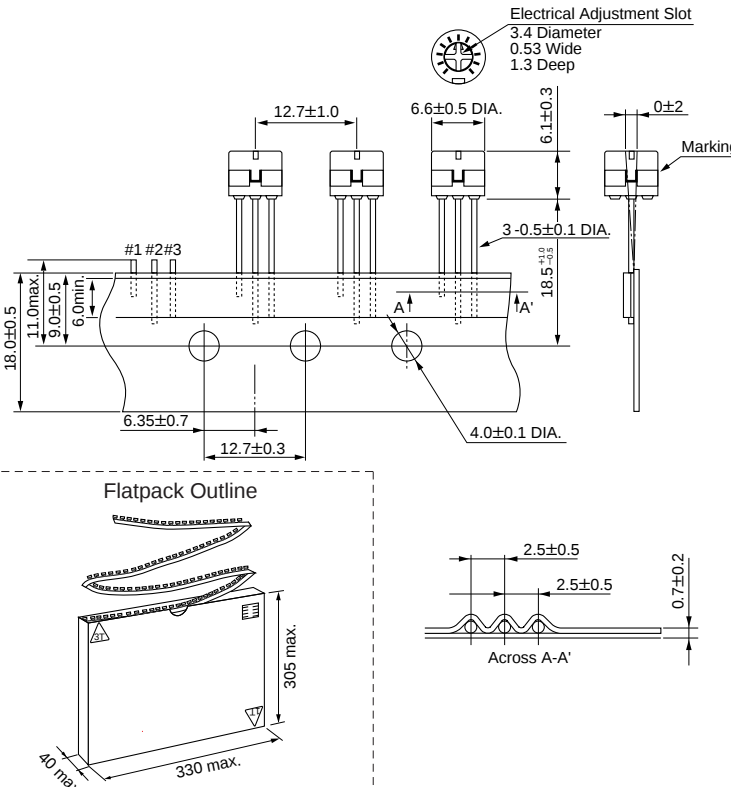
Temperature Coefficient of Resistance	$\pm 100\text{ppm}/^{\circ}\text{C}$
Temperature Cycle	ΔTR $\pm 2\%$ $\Delta\text{V.S.S.}$ $\pm 1\%$
Humidity Exposure	ΔTR $\pm 2\%$ IR 100M Ω min.
Vibration (20G)	ΔTR $\pm 1\%$ $\Delta\text{V.S.S.}$ $\pm 1\%$
Shock (100G)	ΔTR $\pm 1\%$ $\Delta\text{V.S.S.}$ $\pm 1\%$
Load Life	ΔTR $\pm 2\%$ $\Delta\text{V.S.S.}$ $\pm 2\%$
Low Temperature Exposure	ΔTR $\pm 2\%$ $\Delta\text{V.S.S.}$ $\pm 1\%$
High Temperature Exposure	ΔTR $\pm 2\%$ $\Delta\text{V.S.S.}$ $\pm 1\%$
Rotational Life (200 cycles)	No intermittence on resistance change

ΔTR : Total Resistance Change
 $\Delta\text{V.S.S.}$: Voltage Setting Stability
 IR : Insulation Resistance

MINIMUM QUANTITY (order in sets only)

100 pcs./bag $\cdots$ Bulk package
 1,000 pcs./pack $\cdots$ Radial taping package

PART NUMBER TABLE

Standard Total Resistance Values	Model Number	
	Top Adjustment (Bulk)	Top Adjustment (Radial taping)
		
10Ω	POM6AP-1-100M	POM6ME-1-100M-R00
20Ω	POM6AP-1-200M	POM6ME-1-200M-R00
25Ω	POM6AP-1-250M	POM6ME-1-250M-R00
50Ω	POM6AP-1-500M	POM6ME-1-500M-R00
100Ω	POM6AP-1-101M	POM6ME-1-101M-R00
200Ω	POM6AP-1-201M	POM6ME-1-201M-R00
250Ω	POM6AP-1-251M	POM6ME-1-251M-R00
500Ω	POM6AP-1-501M	POM6ME-1-501M-R00
1kΩ	POM6AP-1-102M	POM6ME-1-102M-R00
2kΩ	POM6AP-1-202M	POM6ME-1-202M-R00
2.5kΩ	POM6AP-1-252M	POM6ME-1-252M-R00
5kΩ	POM6AP-1-502M	POM6ME-1-502M-R00
10kΩ	POM6AP-1-103M	POM6ME-1-103M-R00
20kΩ	POM6AP-1-203M	POM6ME-1-203M-R00
25kΩ	POM6AP-1-253M	POM6ME-1-253M-R00
50kΩ	POM6AP-1-503M	POM6ME-1-503M-R00
100kΩ	POM6AP-1-104M	POM6ME-1-104M-R00
200kΩ	POM6AP-1-204M	POM6ME-1-204M-R00
250kΩ	POM6AP-1-254M	POM6ME-1-254M-R00
500kΩ	POM6AP-1-504M	POM6ME-1-504M-R00
1MΩ	POM6AP-1-105M	POM6ME-1-105M-R00
2MΩ	POM6AP-1-205M	POM6ME-1-205M-R00
5MΩ	POM6AP-1-505M	POM6ME-1-505M-R00
Outline dimensions	 Electrical Adjustment Slot 3.4 Diameter 0.53 Wide 1.3 Deep Marking 6.6±0.5 DIA. 0.2 3-0.5±0.1 DIA. #1 #2 #3 7.0±1.0 6.1±0.3 Schematic #1 #2 #3 Clockwise →	 Electrical Adjustment Slot 3.4 Diameter 0.53 Wide 1.3 Deep 12.7±1.0 6.6±0.5 DIA. 6.1±0.3 0±2 Marking 3-0.5±0.1 DIA. 18.5^{+1.0}_{-0.5} 4.0±0.1 DIA. 12.7±0.3 6.35±0.7 9.0±0.5 11.0max. 18.0±0.5 #1 #2 #3 A-A' Flatpack Outline 305 max. 330 max. 40 max. 2.5±0.5 2.5±0.5 Across A-A' 0.7±0.2

[in mm
Standard tolerance : ±0.3]



TRIMMER POTENTIOMETER

Murata

Single-turn Cermet Trimmer Potentiometer **3321** Series

Sealed construction with 6mm round

FEATURES

1. 6 standard terminal styles.
2. Compatible with ultrasonic cleaning
(See pages 43 to 44 for details).
3. single-turn cermet ; 6.6mm round.
4. Flammability : UV94V-0.

APPLICATIONS

TVs, HDTVs, Professional cameras, Facsimile machines,
Printers, CPUs, Switching power supplies

PART NUMBERING

(Please specify the part number when ordering.)

(Ex.)

3321

H

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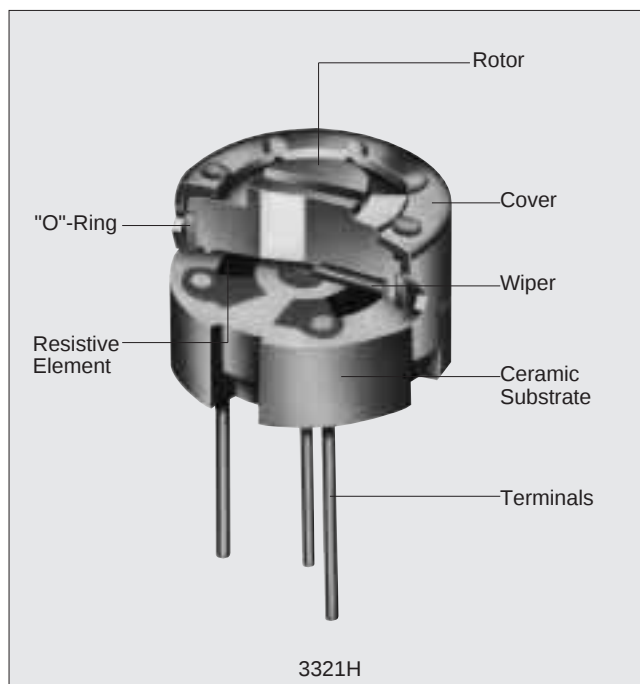
1

 -

103

① ② ③ ④

- ① Model number
- ② Terminal style
- ③ Options 1 : Standard
- ④ Resistance code



RATINGS

Standard Total Resistance Range	10Ω to 5MΩ
Total Resistance Tolerance	±20% of standard total resistance value
Power Rating	70°C — 0.5W 125°C — 0W
Max. Working Voltage	300Vdc
Max. Wiper Current	100mA max.
Operating Temperature Range	−55°C to +125°C
Effective Rotational Angle	230°±5°
Residual Resistance	2Ω max.
Contact Resistance Variation	3% or 3Ω max. Whichever is greater
Dielectric Strength	600Vac
Insulation Resistance	1000MΩ min. (500Vdc)
Torque	1.96 to 19.6mNm (20 to 200gf·cm)
Stop Strength	49mNm (500gf·cm) min.

OTHERS

- See pages 43 to 44 for Notice
- See pages 46 to 47 for test methods
- ±10% of total resistance tolerance is available
(Consult Murata representative for details)

ENVIRONMENTAL CHARACTERISTICS

Temperature Coefficient of Resistance	±100ppm/°C
Temperature Cycle	ΔTR ±2% ΔV.S. S. ±1%
Humidity Exposure	ΔTR ±2% IR 100MΩ min.
Vibration (20G)	ΔTR ±1% ΔV.S. S. ±1%
Shock (100G)	ΔTR ±1% ΔV.S. S. ±1%
Load Life	ΔTR ±2% ΔV.S. S. ±2%
Low Temperature Exposure	ΔTR ±2% ΔV.S. S. ±1%
High Temperature Exposure	ΔTR ±2% ΔV.S. S. ±1%
Rotational Life (200 cycles)	No intermittence on resistance change

ΔTR : Total Resistance Change
ΔV.S.S. : Voltage Setting Stability
IR : Insulation Resistance

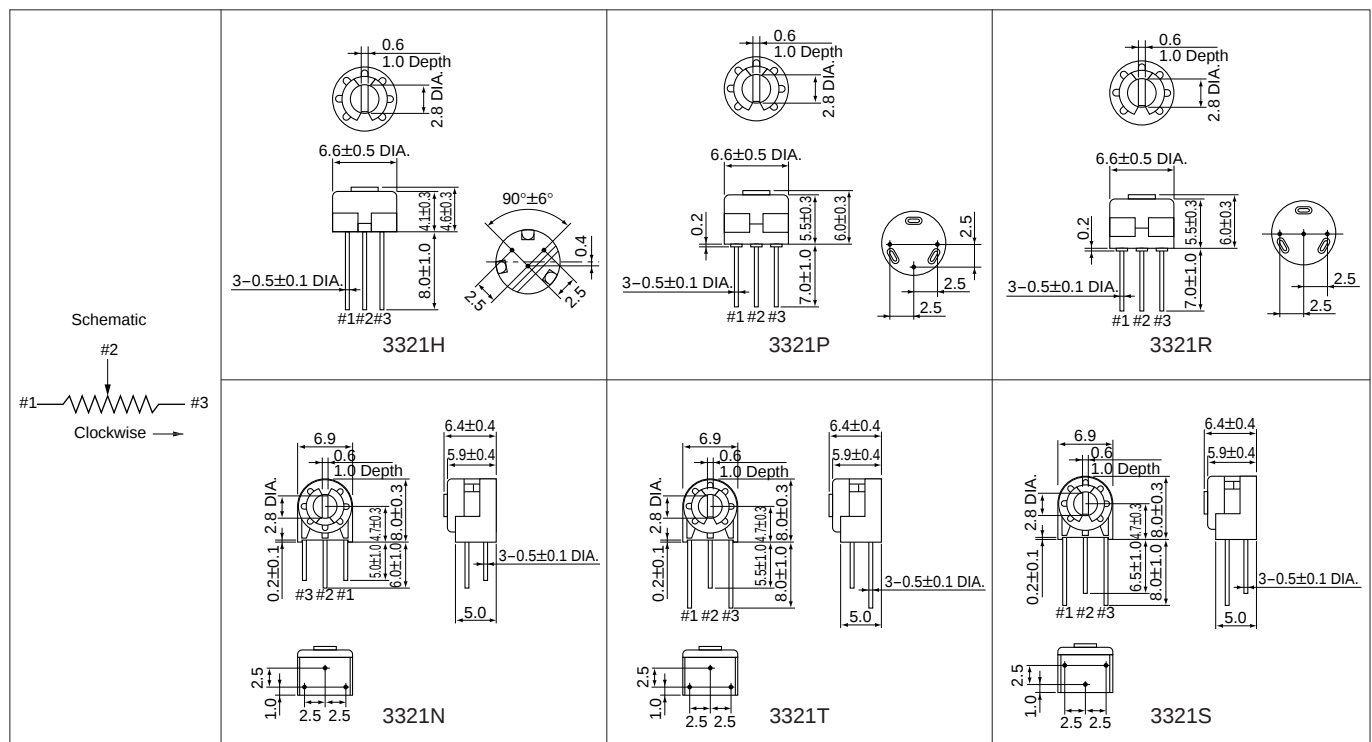
MINIMUM QUANTITY (order in sets only)

100 pcs./bag

PART NUMBER TABLE

Standard Total Resistance Values	Model Number					
	Top Adjustment (H)	Top Adjustment (P)	Top Adjustment (R)	Side Adjustment (N)	Side Adjustment (T)	Side Adjustment (S)
10Ω	3321H-1-100	3321P-1-100	3321R-1-100	3321N-1-100	3321T-1-100	3321S-1-100
20Ω	3321H-1-200	3321P-1-200	3321R-1-200	3321N-1-200	3321T-1-200	3321S-1-200
25Ω	3321H-1-250	3321P-1-250	3321R-1-250	3321N-1-250	3321T-1-250	3321S-1-250
50Ω	3321H-1-500	3321P-1-500	3321R-1-500	3321N-1-500	3321T-1-500	3321S-1-500
100Ω	3321H-1-101	3321P-1-101	3321R-1-101	3321N-1-101	3321T-1-101	3321S-1-101
200Ω	3321H-1-201	3321P-1-201	3321R-1-201	3321N-1-201	3321T-1-201	3321S-1-201
250Ω	3321H-1-251	3321P-1-251	3321R-1-251	3321N-1-251	3321T-1-251	3321S-1-251
500Ω	3321H-1-501	3321P-1-501	3321R-1-501	3321N-1-501	3321T-1-501	3321S-1-501
1kΩ	3321H-1-102	3321P-1-102	3321R-1-102	3321N-1-102	3321T-1-102	3321S-1-102
2kΩ	3321H-1-202	3321P-1-202	3321R-1-202	3321N-1-202	3321T-1-202	3321S-1-202
2.5kΩ	3321H-1-252	3321P-1-252	3321R-1-252	3321N-1-252	3321T-1-252	3321S-1-252
5kΩ	3321H-1-502	3321P-1-502	3321R-1-502	3321N-1-502	3321T-1-502	3321S-1-502
10kΩ	3321H-1-103	3321P-1-103	3321R-1-103	3321N-1-103	3321T-1-103	3321S-1-103
20kΩ	3321H-1-203	3321P-1-203	3321R-1-203	3321N-1-203	3321T-1-203	3321S-1-203
25kΩ	3321H-1-253	3321P-1-253	3321R-1-253	3321N-1-253	3321T-1-253	3321S-1-253
50kΩ	3321H-1-503	3321P-1-503	3321R-1-503	3321N-1-503	3321T-1-503	3321S-1-503
100kΩ	3321H-1-104	3321P-1-104	3321R-1-104	3321N-1-104	3321T-1-104	3321S-1-104
200kΩ	3321H-1-204	3321P-1-204	3321R-1-204	3321N-1-204	3321T-1-204	3321S-1-204
250kΩ	3321H-1-254	3321P-1-254	3321R-1-254	3321N-1-254	3321T-1-254	3321S-1-254
500kΩ	3321H-1-504	3321P-1-504	3321R-1-504	3321N-1-504	3321T-1-504	3321S-1-504
1MΩ	3321H-1-105	3321P-1-105	3321R-1-105	3321N-1-105	3321T-1-105	3321S-1-105
2MΩ	3321H-1-205	3321P-1-205	3321R-1-205	3321N-1-205	3321T-1-205	3321S-1-205
5MΩ	3321H-1-505	3321P-1-505	3321R-1-505	3321N-1-505	3321T-1-505	3321S-1-505

OUTLINE DIMENSIONS



[in mm
Standard tolerance : ±0.3]



TRIMMER POTENTIOMETER

muRata

Single-turn Cermet Trimmer Potentiometer **POT3104** Series

Sealed construction with 9.6mm square

■FEATURES

1. Single-turn, cermet construction in 9.6mm square.
2. Flammability:UL94V-0.
3. Compatible with ultrasonic cleaning
(See pages 43 to 44 for details).

■APPLICATIONS

TVs, HDTVs, Professional cameras, Facsimile machines,
Printers, CPUs, Switching power supplies

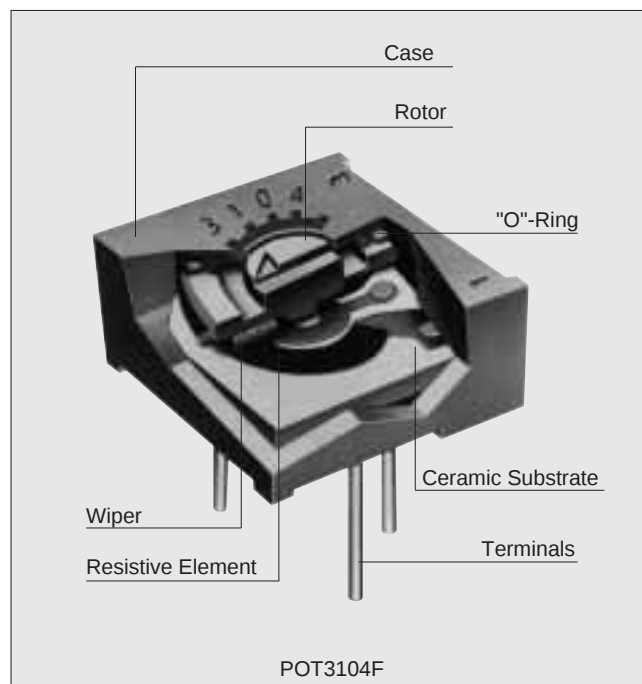
■PART NUMBERING

(Please specify the part number when ordering.)

(Ex.)

POT	3104	P	-	1	-	103
-----	------	---	---	---	---	-----

- ① Model
② Model number
③ Terminal style
④ Options 1 : Standard
⑤ Resistance code



■RATINGS

Standard Total Resistance Range	10Ω to 2MΩ
Total Resistance Tolerance	±10% of standard total resistance value
Power Rating	70°C — 0.5W 125°C — 0W
Max. Working Voltage	300Vdc
Max. Wiper Current	100mA max.
Operating Temperature Range	−55°C to +125°C
Effective Rotational Angle	280°±15°
Residual Resistance	2Ω max.
Contact Resistance Variation	1% or 1Ω max. whichever is greater
Dielectric Strength	900Vac
Insulation Resistance	1000MΩ min. (500Vdc)
Torque	35.3mNm (360gf·cm) max.
Stop Strength	68.6mNm (700gf·cm) min.

■OTHERS

- See pages 43 to 44 for Notice
- See pages 46 to 47 for test methods

■ENVIRONMENTAL CHARACTERISTICS

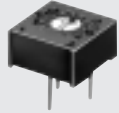
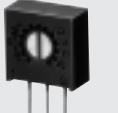
Temperature Coefficient of Resistance	±100ppm/°C
Temperature Cycle	ΔTR ±2% ΔV.S. S. ±1%
Humidity Exposure	ΔTR ±2% IR 100MΩ min.
Vibration (20G)	ΔTR ±1% ΔV.S. S. ±1%
Shock (100G)	ΔTR ±1% ΔV.S. S. ±1%
Load Life	ΔTR ±2% ΔV.S. S. ±2%
Low Temperature Exposure	ΔTR ±1% ΔV.S. S. ±1%
High Temperature Exposure	ΔTR ±2% ΔV.S. S. ±1%
Rotational Life (200 cycles)	No intermittence on resistance change

ΔTR : Total Resistance Change
ΔV.S.S.: Voltage Setting Stability
IR : Insulation Resistance

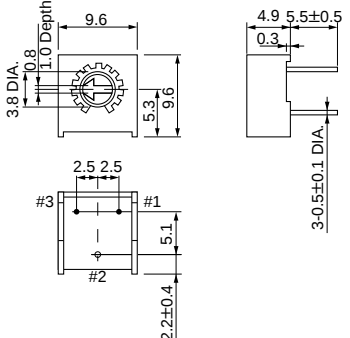
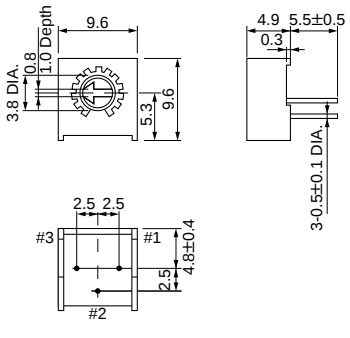
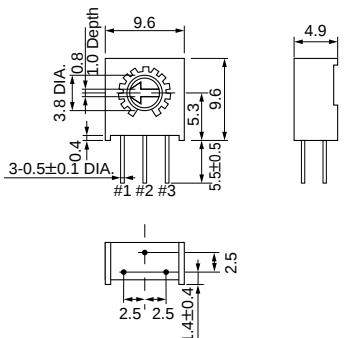
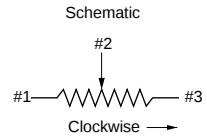
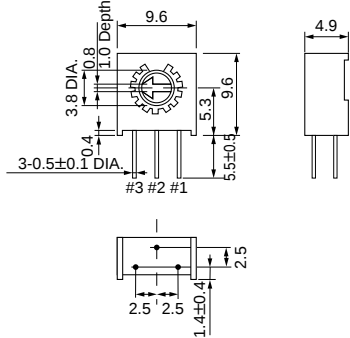
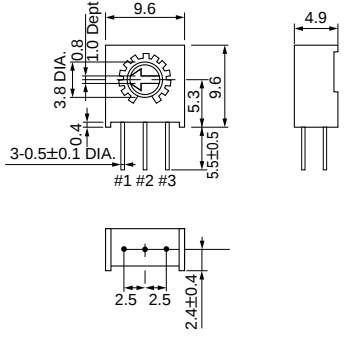
■MINIMUM QUANTITY (order in sets only)

100 pcs./bag

PART NUMBER TABLE

Standard Total Resistance Values	Model Number				
	Top Adjustment (F)	Top Adjustment (P)	Side Adjustment (H)	Side Adjustment (X)	Side Adjustment (W)
					
10Ω	POT3104F-1-100	POT3104P-1-100	POT3104H-1-100	POT3104X-1-100	POT3104W-1-100
20Ω	POT3104F-1-200	POT3104P-1-200	POT3104H-1-200	POT3104X-1-200	POT3104W-1-200
50Ω	POT3104F-1-500	POT3104P-1-500	POT3104H-1-500	POT3104X-1-500	POT3104W-1-500
100Ω	POT3104F-1-101	POT3104P-1-101	POT3104H-1-101	POT3104X-1-101	POT3104W-1-101
200Ω	POT3104F-1-201	POT3104P-1-201	POT3104H-1-201	POT3104X-1-201	POT3104W-1-201
500Ω	POT3104F-1-501	POT3104P-1-501	POT3104H-1-501	POT3104X-1-501	POT3104W-1-501
1kΩ	POT3104F-1-102	POT3104P-1-102	POT3104H-1-102	POT3104X-1-102	POT3104W-1-102
2kΩ	POT3104F-1-202	POT3104P-1-202	POT3104H-1-202	POT3104X-1-202	POT3104W-1-202
5kΩ	POT3104F-1-502	POT3104P-1-502	POT3104H-1-502	POT3104X-1-502	POT3104W-1-502
10kΩ	POT3104F-1-103	POT3104P-1-103	POT3104H-1-103	POT3104X-1-103	POT3104W-1-103
20kΩ	POT3104F-1-203	POT3104P-1-203	POT3104H-1-203	POT3104X-1-203	POT3104W-1-203
25kΩ	POT3104F-1-253	POT3104P-1-253	POT3104H-1-253	POT3104X-1-253	POT3104W-1-253
50kΩ	POT3104F-1-503	POT3104P-1-503	POT3104H-1-503	POT3104X-1-503	POT3104W-1-503
100kΩ	POT3104F-1-104	POT3104P-1-104	POT3104H-1-104	POT3104X-1-104	POT3104W-1-104
200kΩ	POT3104F-1-204	POT3104P-1-204	POT3104H-1-204	POT3104X-1-204	POT3104W-1-204
250kΩ	POT3104F-1-254	POT3104P-1-254	POT3104H-1-254	POT3104X-1-254	POT3104W-1-254
500kΩ	POT3104F-1-504	POT3104P-1-504	POT3104H-1-504	POT3104X-1-504	POT3104W-1-504
1MΩ	POT3104F-1-105	POT3104P-1-105	POT3104H-1-105	POT3104X-1-105	POT3104W-1-105
2MΩ	POT3104F-1-205	POT3104P-1-205	POT3104H-1-205	POT3104X-1-205	POT3104W-1-205

OUTLINE DIMENSIONS

 POT3104F	 POT3104P	 POT3104H
Schematic  #1 #2 #3 Clockwise →	 POT3104X	 POT3104W

[in mm
Standard tolerance : ±0.3]



TRIMMER POTENTIOMETER

muRata

4-Turns Cermet Trimmer Potentiometer **POT1102** Series

Sealed, 4-turns construction enables precise wiper setting

■FEATURES

1. Cermet with 4-turns construction in round style.
2. Unique planetary drive enables precise wiper setting.
3. Clutch mechanism prevents excessive wiper rotation.
4. Compatible with ultrasonic cleaning
(See pages 43 to 44 for details).

■APPLICATIONS

Measuring instruments, Facsimile machines, CPUs, PPCs, Printers, Industrial machines

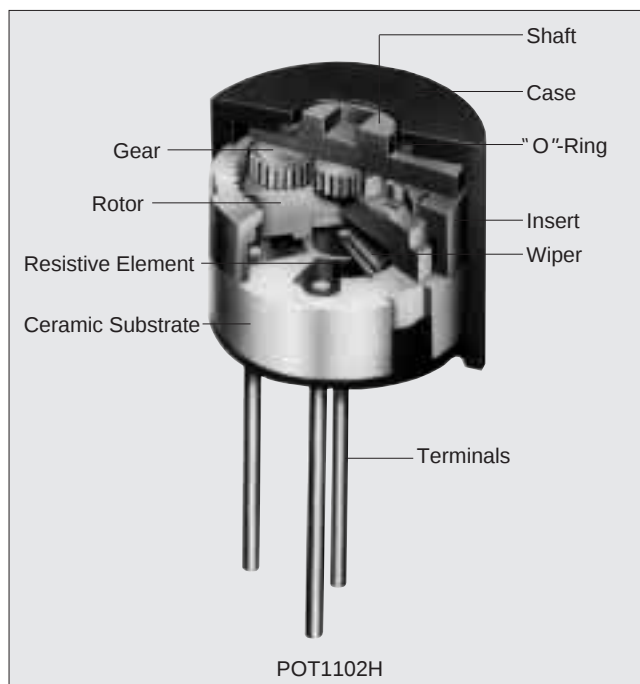
■PART NUMBERING

(Please specify the part number when ordering.)

(Ex.)

POT	1102	H	-	1	-	103
-----	------	---	---	---	---	-----

- ① Model
② Model number
③ Terminal style
④ Options 1 : Standard
⑤ Resistance code



■RATINGS

Standard Total Resistance Range	10Ω to 2MΩ
Total Resistance Tolerance	±10% of standard total resistance value
Power Rating	70°C — 0.5W 125°C — 0W
Max. Working Voltage	300Vdc
Max. Wiper Current	100mA max.
Operating Temperature Range	−55°C to +125°C
Effective Number of Turns	4±0.5 turns.
Residual Resistance	2Ω max.
Contact Resistance Variation	3% or 3Ω max. Whichever is greater
Dielectric Strength	600Vac
Insulation Resistance	1000MΩ min. (500Vdc)
Torque	14.7mNm (150gf·cm) max.

■OTHERS

- See pages 43 to 44 for Notice
- See pages 46 to 47 for test methods

■ENVIRONMENTAL CHARACTERISTICS

Temperature Coefficient of Resistance	±100ppm/°C
Temperature Cycle	ΔTR ±2% ΔV.S. S. ±1%
Humidity Exposure	ΔTR ±2% IR 100MΩ min.
Vibration (20G)	ΔTR ±1% ΔV.S. S. ±1%
Shock (100G)	ΔTR ±1% ΔV.S. S. ±1%
Load Life	ΔTR ±3% ΔV.S. S. ±2%
Low Temperature Exposure	ΔTR ±3% ΔV.S. S. ±1.5%
High Temperature Exposure	ΔTR ±3% ΔV.S. S. ±1.5%
Rotational Life (200 cycles)	No intermittence on resistance change

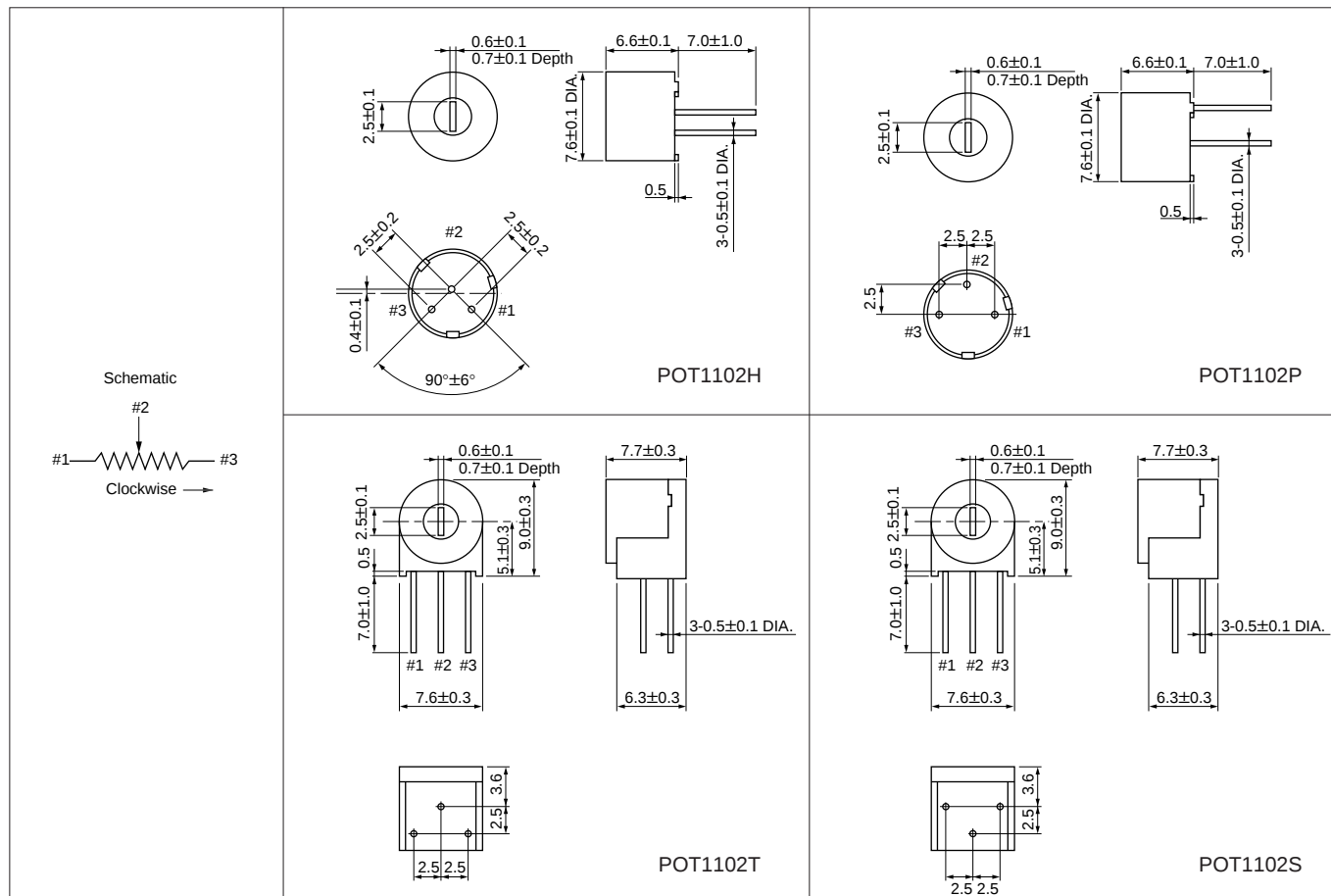
ΔTR : Total Resistance Change
ΔV.S.S. : Voltage Setting Stability
IR : Insulation Resistance

■MINIMUM QUANTITY (order in sets only)
50 pcs./bag

■PART NUMBER TABLE

Standard Total Resistance Values	Model Number			
	Top Adjustment (H)	Top Adjustment (P)	Side Adjustment (T)	Side Adjustment (S)
				
10Ω	POT1102H-1-100	POT1102P-1-100	POT1102T-1-100	POT1102S-1-100
20Ω	POT1102H-1-200	POT1102P-1-200	POT1102T-1-200	POT1102S-1-200
50Ω	POT1102H-1-500	POT1102P-1-500	POT1102T-1-500	POT1102S-1-500
100Ω	POT1102H-1-101	POT1102P-1-101	POT1102T-1-101	POT1102S-1-101
200Ω	POT1102H-1-201	POT1102P-1-201	POT1102T-1-201	POT1102S-1-201
500Ω	POT1102H-1-501	POT1102P-1-501	POT1102T-1-501	POT1102S-1-501
1kΩ	POT1102H-1-102	POT1102P-1-102	POT1102T-1-102	POT1102S-1-102
2kΩ	POT1102H-1-202	POT1102P-1-202	POT1102T-1-202	POT1102S-1-202
5kΩ	POT1102H-1-502	POT1102P-1-502	POT1102T-1-502	POT1102S-1-502
10kΩ	POT1102H-1-103	POT1102P-1-103	POT1102T-1-103	POT1102S-1-103
20kΩ	POT1102H-1-203	POT1102P-1-203	POT1102T-1-203	POT1102S-1-203
50kΩ	POT1102H-1-503	POT1102P-1-503	POT1102T-1-503	POT1102S-1-503
100kΩ	POT1102H-1-104	POT1102P-1-104	POT1102T-1-104	POT1102S-1-104
200kΩ	POT1102H-1-204	POT1102P-1-204	POT1102T-1-204	POT1102S-1-204
500kΩ	POT1102H-1-504	POT1102P-1-504	POT1102T-1-504	POT1102S-1-504
1MΩ	POT1102H-1-105	POT1102P-1-105	POT1102T-1-105	POT1102S-1-105
2MΩ	POT1102H-1-205	POT1102P-1-205	POT1102T-1-205	POT1102S-1-205

■OUTLINE DIMENSIONS





TRIMMER POTENTIOMETER

muRata

12-Turns Cermet Trimmer Potentiometer POT3107 Series

High resolution, 12-turns design yields precise adjustment

FEATURES

1. High resolution, 12-turns cermet.
2. Listed on the QPL for style RJ26 per MIL-R-22097.
3. Small size (6.4X6.7X4.0mm).
4. Compatible with ultrasonic cleaning
(See pages 43 to 44 for details).
5. Clutch mechanism prevents excessive wiper rotation.

APPLICATIONS

Measuring instruments, Facsimile machines, CPUs, PPCs, Printers, Sensors, Industrial machines

PART NUMBERING

(Please specify the part number when ordering.)

(Ex.)

POT	3107	Y	31	103	T1
-----	------	---	----	-----	----

① Model

② Model number

③ Terminal style

④ Options 1 : Standard
 31 : Radial taping package

⑤ Resistance code

⑥ Packaging code

T1 : Radial taping ···1,000pcs./pack

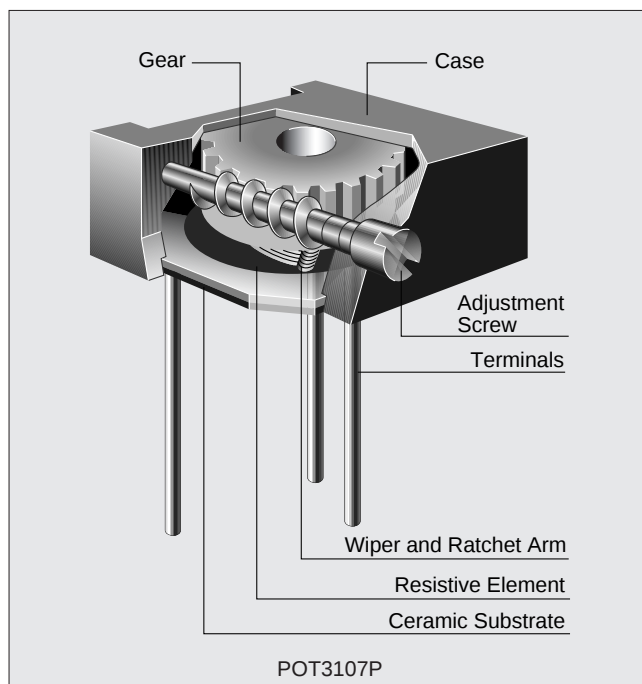
No codes : Bulk ············ 50pcs./bag

RATINGS

Standard Total Resistance Range	10Ω to 1MΩ
Total Resistance Tolerance	±10% of standard total resistance value
Power Rating	85°C — 0.25W 125°C — 0W
Max. Working Voltage	200Vdc
Max. Wiper Current	100mA max.
Operating Temperature Range	−55°C to +125°C
Effective Number of Turns	12±2 turns.
Residual Resistance	2Ω max.
Contact Resistance Variation	3% or 3Ω max. Whichever is greater
Dielectric Strength	600Vac
Insulation Resistance	1000MΩ min. (500Vdc)
Torque	21.2mNm (216gf·cm) max.

OTHERS

- See pages 43 to 44 for Notice
- See pages 46 to 47 for test methods
- See page 39 for outline dimensions of radial taping type (POT3107Y and z)



ENVIRONMENTAL CHARACTERISTICS

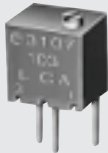
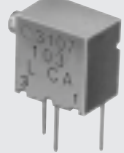
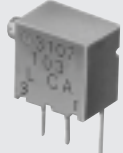
Temperature Coefficient of Resistance	±100ppm/°C
Temperature Cycle	ΔTR ±1% ΔV.S. S. ±1%
Humidity Exposure	ΔTR ±2% IR 100MΩ min.
Vibration (20G)	ΔTR ±1% ΔV.S. S. ±1%
Shock (100G)	ΔTR ±1% ΔV.S. S. ±1%
Load Life	ΔTR ±2% ΔV.S. S. ±2%
Low Temperature Exposure	ΔTR ±1% ΔV.S. S. ±1%
High Temperature Exposure	ΔTR ±2% ΔV.S. S. ±1%
Rotational Life (200 cycles)	No intermittence on resistance change

ΔTR : Total Resistance Change
ΔV.S.S. : Voltage Setting Stability
IR : Insulation Resistance

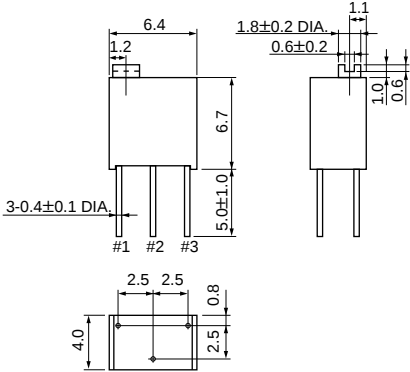
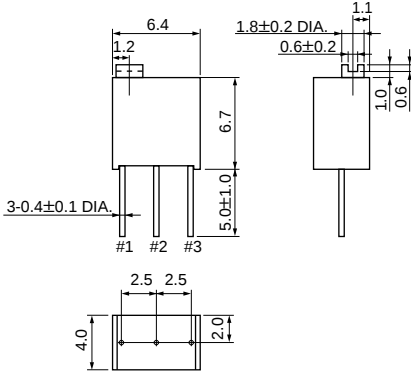
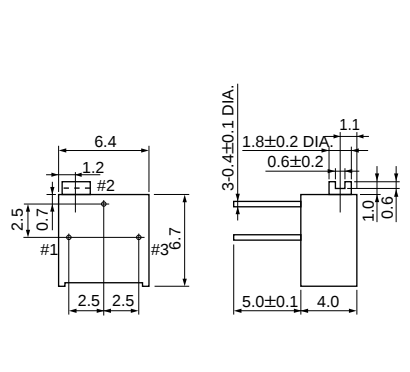
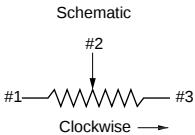
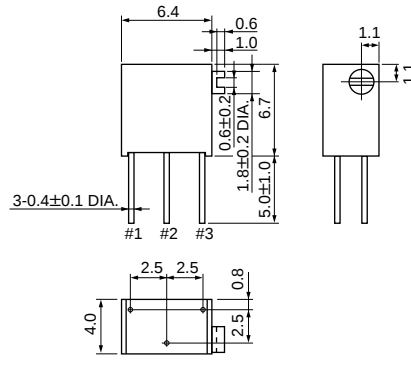
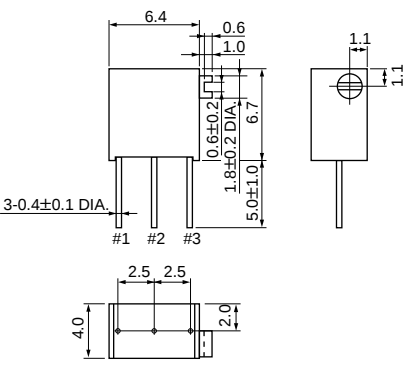
MINIMUM QUANTITY (order in sets only)

50 pcs./bag···Bulk package
1,000 pcs./pack···Radial taping package

PART NUMBER TABLE

Standard Total Resistance Values	Model Number				
	Top Adjustment (W)	Top Adjustment (Y)	Side Adjustment (P)	Side Adjustment (X)	Side Adjustment (Z)
					
10Ω	POT3107W-1-100	POT3107Y-1-100	POT3107P-1-100	POT3107X-1-100	POT3107Z-1-100
20Ω	POT3107W-1-200	POT3107Y-1-200	POT3107P-1-200	POT3107X-1-200	POT3107Z-1-200
50Ω	POT3107W-1-500	POT3107Y-1-500	POT3107P-1-500	POT3107X-1-500	POT3107Z-1-500
100Ω	POT3107W-1-101	POT3107Y-1-101	POT3107P-1-101	POT3107X-1-101	POT3107Z-1-101
200Ω	POT3107W-1-201	POT3107Y-1-201	POT3107P-1-201	POT3107X-1-201	POT3107Z-1-201
500Ω	POT3107W-1-501	POT3107Y-1-501	POT3107P-1-501	POT3107X-1-501	POT3107Z-1-501
1kΩ	POT3107W-1-102	POT3107Y-1-102	POT3107P-1-102	POT3107X-1-102	POT3107Z-1-102
2kΩ	POT3107W-1-202	POT3107Y-1-202	POT3107P-1-202	POT3107X-1-202	POT3107Z-1-202
5kΩ	POT3107W-1-502	POT3107Y-1-502	POT3107P-1-502	POT3107X-1-502	POT3107Z-1-502
10kΩ	POT3107W-1-103	POT3107Y-1-103	POT3107P-1-103	POT3107X-1-103	POT3107Z-1-103
20kΩ	POT3107W-1-203	POT3107Y-1-203	POT3107P-1-203	POT3107X-1-203	POT3107Z-1-203
25kΩ	POT3107W-1-253	POT3107Y-1-253	POT3107P-1-253	POT3107X-1-253	POT3107Z-1-253
50kΩ	POT3107W-1-503	POT3107Y-1-503	POT3107P-1-503	POT3107X-1-503	POT3107Z-1-503
100kΩ	POT3107W-1-104	POT3107Y-1-104	POT3107P-1-104	POT3107X-1-104	POT3107Z-1-104
200kΩ	POT3107W-1-204	POT3107Y-1-204	POT3107P-1-204	POT3107X-1-204	POT3107Z-1-204
250kΩ	POT3107W-1-254	POT3107Y-1-254	POT3107P-1-254	POT3107X-1-254	POT3107Z-1-254
500kΩ	POT3107W-1-504	POT3107Y-1-504	POT3107P-1-504	POT3107X-1-504	POT3107Z-1-504
1MΩ	POT3107W-1-105	POT3107Y-1-105	POT3107P-1-105	POT3107X-1-105	POT3107Z-1-105

OUTLINE DIMENSIONS

 POT3107W	 POT3107Y	 POT3107P
Schematic  #1 #2 #3 Clockwise →	 POT3107X	 POT3107Z

[in mm
Standard tolerance : ±0.3]



TRIMMER POTENTIOMETER

muRata

15-Turns Cermet Trimmer Potentiometer POT2103 Series

Precise adjustment, 19mm-long package, 0.75W power rating

■FEATURES

1. Recommended for applications requiring side adjustment.
2. Rectangular parallelepiped, 15-turns space saving design (4.6X6.4X19.1mm).
3. Compatible with ultrasonic cleaning (See pages 43 to 44 for details).
4. Clutch mechanism prevents excessive wiper rotation.

■APPLICATIONS

Measuring instruments, Facsimile machines, CPUs, PPCs, Printers, Sensors, Industrial machines

■PART NUMBERING

(Please specify the part number when ordering.)

(Ex.)

POT	2103	P	-	1	-	103
-----	------	---	---	---	---	-----

①

②

③

④

⑤

① Model

② Model number

③ Terminal style

④ Options 1 : Standard 2 : Panel mount type

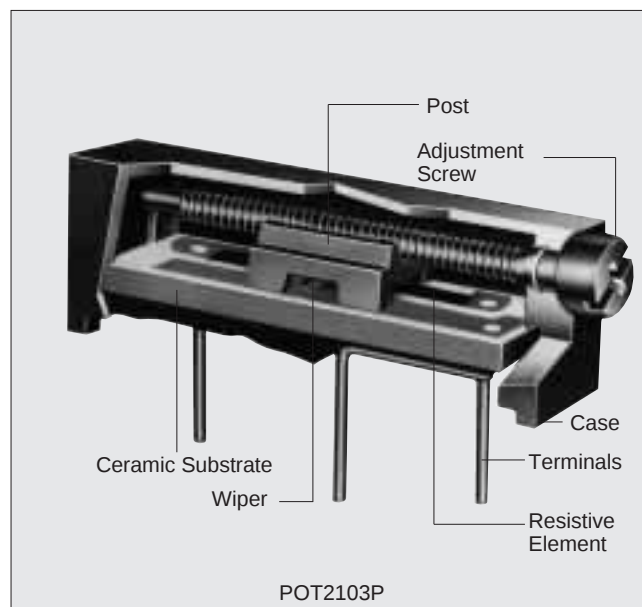
⑤ Resistance code

■RATINGS

Standard Total Resistance Range	10Ω to 2MΩ
Total Resistance Tolerance	±10% of standard total resistance value
Power Rating	70°C — 0.75W 125°C — 0W
Max. Working Voltage	300Vdc
Max. Wiper Current	100mA max.
Operating Temperature Range	−55°C to +125°C
Effective Number of Turns	15±3 turns.
Residual Resistance	2Ω max.
Contact Resistance Variation	3% or 3Ω max. Whichever is greater
Dielectric Strength	1000Vac
Insulation Resistance	1000MΩ min. (500Vdc)
Torque	14.7mNm (150gf·cm) max.

■OTHERS

- See pages 43 to 44 for Notice
- See pages 46 to 47 for test methods
- Panel mount option available (See page 31 for details)



■ENVIRONMENTAL CHARACTERISTICS

Temperature Coefficient of Resistance	±100ppm/°C
Temperature Cycle	ΔTR ±2% ΔV.S. S. ±1%
Humidity Exposure	ΔTR ±2% IR 100MΩ min.
Vibration (20G)	ΔTR ±1% ΔV.S. S. ±1%
Shock (50G)	ΔTR ±1% ΔV.S. S. ±1%
Load Life	ΔTR ±3% ΔV.S. S. ±1%
Low Temperature Exposure	ΔTR ±1% ΔV.S. S. ±1%
High Temperature Exposure	ΔTR ±2% ΔV.S. S. ±1%
Rotational Life (200 cycles)	No intermittence on resistance change

ΔTR : Total Resistance Change

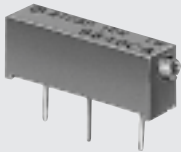
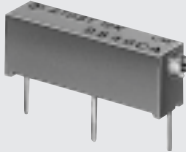
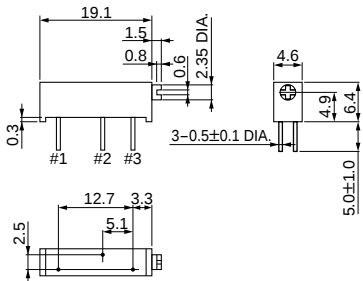
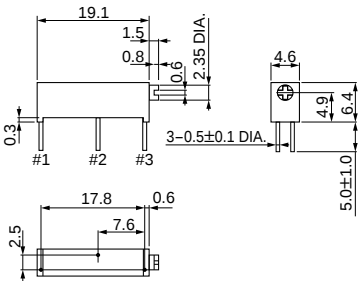
ΔV.S.S. : Voltage Setting Stability

IR : Insulation Resistance

■MINIMUM QUANTITY (order in sets only)

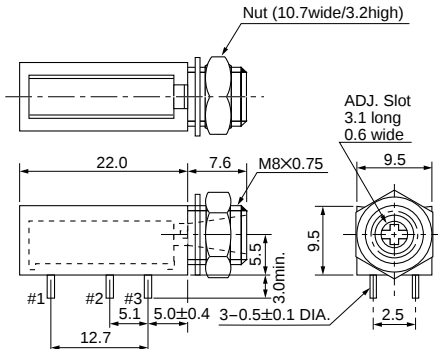
50 pcs./bag

■PART NUMBER TABLE

Standard Total Resistance Values	Model Number	
	Side Adjustment (P)	Side Adjustment (Y)
		
10Ω	POT2103P-1-100	POT2103Y-1-100
20Ω	POT2103P-1-200	POT2103Y-1-200
50Ω	POT2103P-1-500	POT2103Y-1-500
100Ω	POT2103P-1-101	POT2103Y-1-101
200Ω	POT2103P-1-201	POT2103Y-1-201
500Ω	POT2103P-1-501	POT2103Y-1-501
1kΩ	POT2103P-1-102	POT2103Y-1-102
2kΩ	POT2103P-1-202	POT2103Y-1-202
5kΩ	POT2103P-1-502	POT2103Y-1-502
10kΩ	POT2103P-1-103	POT2103Y-1-103
20kΩ	POT2103P-1-203	POT2103Y-1-203
50kΩ	POT2103P-1-503	POT2103Y-1-503
100kΩ	POT2103P-1-104	POT2103Y-1-104
200kΩ	POT2103P-1-204	POT2103Y-1-204
500kΩ	POT2103P-1-504	POT2103Y-1-504
1MΩ	POT2103P-1-105	POT2103Y-1-105
2MΩ	POT2103P-1-205	POT2103Y-1-205
Outline dimensions		

[in mm
Standard tolerance : ±0.3]

■PANEL MOUNT TYPE

POT2103□-2-RC  * Use "-2" for panel mount option □ : Terminal style RC : Resistance code	
---	--

[in mm
Standard tolerance : ±0.3]



TRIMMER POTENTIOMETER

muRata

22-Turns Cermet Trimmer Potentiometer POT2102 Series

Precise adjustment, 32mm-long package, 1W power rating

■FEATURES

1. Recommended for side adjustment use.
2. High power rating : 1W at 70°C.
3. Compatible with ultrasonic cleaning
(See pages 43 to 44 for details).
4. Clutch mechanism prevents excessive wiper rotation.

■APPLICATIONS

Measuring instruments, Facsimile machines, CPUs, PPCs, Printers, Sensors, Industrial machines

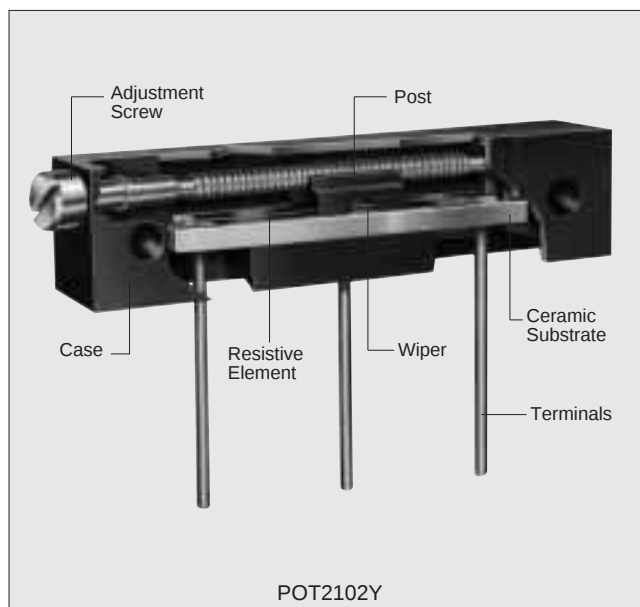
■PART NUMBERING

(Please specify the part number when ordering.)

(Ex.)

POT	2102	Y	1	103
-----	------	---	---	-----

- ① Model
② Model number
③ Terminal style
④ Options 1 : Standard 2 : Panel mount type
⑤ Resistance code



■RATINGS

Standard Total Resistance Range	10Ω to 2MΩ (1, 2, 5 Step)
Total Resistance Tolerance	±10% of standard total resistance value
Power Rating	70°C — 1W 150°C — 0W
Max. Working Voltage	300Vdc
Max. Wiper Current	100mA max.
Operating Temperature Range	−55°C to +150°C
Effective Number of Turns	22±5 turns.
Residual Resistance	2Ω max.
Contact Resistance Variation	3% or 3Ω max. Whichever is greater
Dielectric Strength	1000Vac
Insulation Resistance	1000MΩ min. (500Vdc)
Torque	19.6mNm (200gf·cm) max.

■OTHERS

- See pages 43 to 44 for Notice
- See pages 46 to 47 for test methods
- Panel mount option available
(See page 33 for details)

■ENVIRONMENTAL CHARACTERISTICS

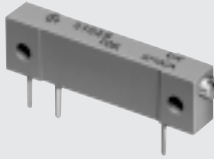
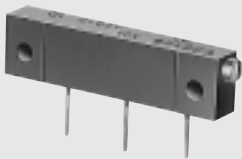
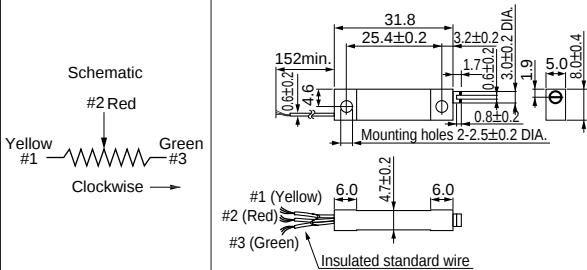
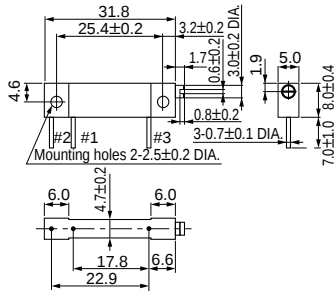
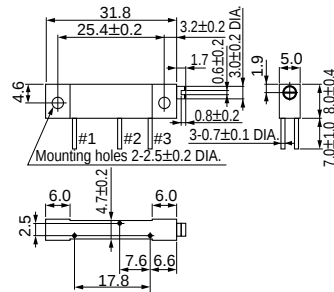
Temperature Coefficient of Resistance	±100ppm/°C
Temperature Cycle	ΔTR ±2% ΔV.S. S. ±1%
Humidity Exposure	ΔTR ±2% IR 100MΩ min.
Vibration (20G)	ΔTR ±1% ΔV.S. S. ±1%
Shock (50G)	ΔTR ±1% ΔV.S. S. ±1%
Load Life	ΔTR ±3% ΔV.S. S. ±1%
Low Temperature Exposure	ΔTR ±1% ΔV.S. S. ±1%
High Temperature Exposure	ΔTR ±2% ΔV.S. S. ±1%
Rotational Life (200 cycles)	No intermittence on resistance change

ΔTR : Total Resistance Change
ΔV.S.S. : Voltage Setting Stability
IR : Insulation Resistance

■MINIMUM QUANTITY (order in sets only)

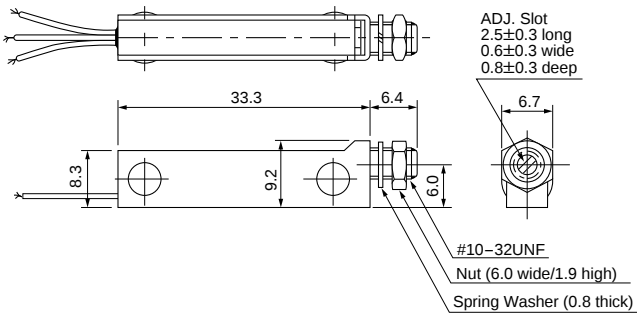
30 pcs./bag

■PART NUMBER TABLE

Standard Total Resistance Values	Model Number		
	Side Adjustment (L)	Side Adjustment (S)	Side Adjustment (Y)
			
10Ω	POT2102L-1-100	POT2102S-1-100	POT2102Y-1-100
20Ω	POT2102L-1-200	POT2102S-1-200	POT2102Y-1-200
50Ω	POT2102L-1-500	POT2102S-1-500	POT2102Y-1-500
100Ω	POT2102L-1-101	POT2102S-1-101	POT2102Y-1-101
200Ω	POT2102L-1-201	POT2102S-1-201	POT2102Y-1-201
500Ω	POT2102L-1-501	POT2102S-1-501	POT2102Y-1-501
1kΩ	POT2102L-1-102	POT2102S-1-102	POT2102Y-1-102
2kΩ	POT2102L-1-202	POT2102S-1-202	POT2102Y-1-202
5kΩ	POT2102L-1-502	POT2102S-1-502	POT2102Y-1-502
10kΩ	POT2102L-1-103	POT2102S-1-103	POT2102Y-1-103
20kΩ	POT2102L-1-203	POT2102S-1-203	POT2102Y-1-203
50kΩ	POT2102L-1-503	POT2102S-1-503	POT2102Y-1-503
100kΩ	POT2102L-1-104	POT2102S-1-104	POT2102Y-1-104
200kΩ	POT2102L-1-204	POT2102S-1-204	POT2102Y-1-204
500kΩ	POT2102L-1-504	POT2102S-1-504	POT2102Y-1-504
1MΩ	POT2102L-1-105	POT2102S-1-105	POT2102Y-1-105
2MΩ	POT2102L-1-205	POT2102S-1-205	POT2102Y-1-205
Outline dimensions	 Schematic #2 Red Yellow #1 Green #3 Clockwise → Mounting holes 2-2.5±0.2 DIA. Insulated standard wire	 Mounting holes 2-2.5±0.2 DIA.	 Mounting holes 2-2.5±0.2 DIA.

[in mm
Standard tolerance : ±0.3]

■PANEL MOUNT TYPE

POT2102□-2-RC  * Use "-2" for panel mount option □ : Terminal style RC : Resistance code		 ADJ. Slot 2.5±0.3 long 0.6±0.3 wide 0.8±0.3 deep #10-32UNF Nut (6.0 wide/1.9 high) Spring Washer (0.8 thick)
---	--	---

[in mm
Standard tolerance : ±0.4]



TRIMMER POTENTIOMETER

muRata

25-Turns Cermet Trimmer Potentiometer POT3106 Series

Precise adjustment ; square, 9.5mm package

■FEATURES

1. 25-turns cermet : square, 9.5mm package.
2. 5 terminal styles, top and side adjustment.
3. Compatible with ultrasonic cleaning
(See pages 43 to 44 for details).
4. Clutch mechanism prevents excessive wiper rotation.

■APPLICATIONS

Measuring instruments, Facsimile machines, CPUs, PPCs, Printers, Sensors

■PART NUMBERING

(Please specify the part number when ordering.)

(Ex.)

POT	3106	W	-	31	-	103	-	T1
-----	------	---	---	----	---	-----	---	----

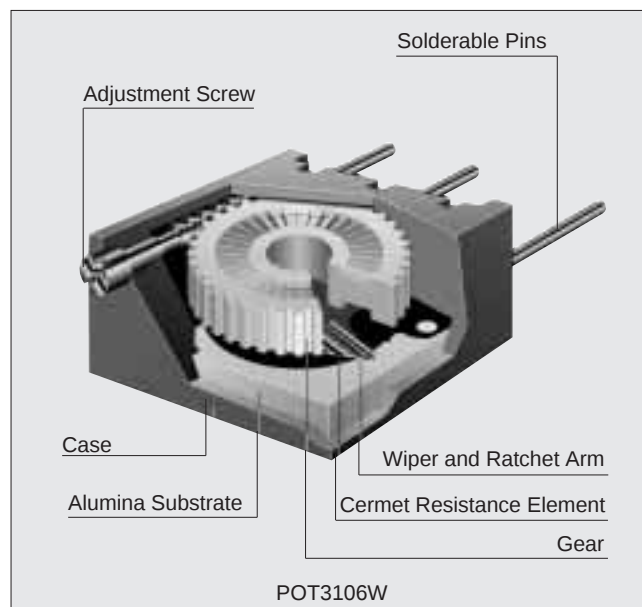
- ① Model
② Model number
③ Terminal style
④ Options 1 : Standard
 31 : Radial taping package
⑤ Resistance code
⑥ Packaging code
 T1 : Radial taping ··1,000pcs./pack
 No codes : Bulk ············ 50pcs./bag

■RATINGS

Standard Total Resistance Range	10Ω to 2MΩ
Total Resistance Tolerance	±10% of standard total resistance value
Power Rating	70°C — 0.5W 125°C — 0W
Max. Working Voltage	300Vdc
Max. Wiper Current	100mA max.
Operating Temperature Range	—55°C to +125°C
Effective Number of Turns	25±5 turns.
Residual Resistance	2Ω max.
Contact Resistance Variation	3% or 3Ω max. Whichever is greater
Dielectric Strength	1000Vac
Insulation Resistance	1000MΩ min. (500Vdc)
Torque	14.7mNm (150gf·cm) max.

■OTHERS

- See pages 43 to 44 for Notice
- See pages 46 to 47 for test methods
- See page 40 for outline dimensions of radial taping type (POT3107W and X)



■ENVIRONMENTAL CHARACTERISTICS

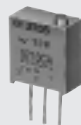
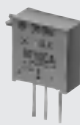
Temperature Coefficient of Resistance	±100ppm/°C
Temperature Cycle	ΔTR ±2% ΔV.S. S. ±1%
Humidity Exposure	ΔTR ±2% IR 100MΩ min.
Vibration (20G)	ΔTR ±1% ΔV.S. S. ±1%
Shock (100G)	ΔTR ±1% ΔV.S. S. ±1%
Load Life	ΔTR ±3% ΔV.S. S. ±1%
Low Temperature Exposure	ΔTR ±2% ΔV.S. S. ±1%
High Temperature Exposure	ΔTR ±3% ΔV.S. S. ±1%
Rotational Life (200 cycles)	No intermittence on resistance change

ΔTR : Total Resistance Change
ΔV.S.S.: Voltage Setting Stability
IR : Insulation Resistance

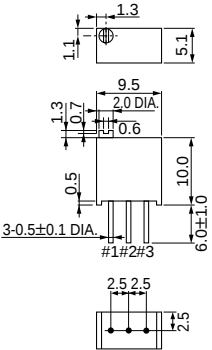
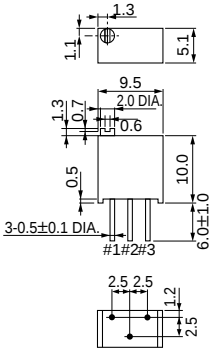
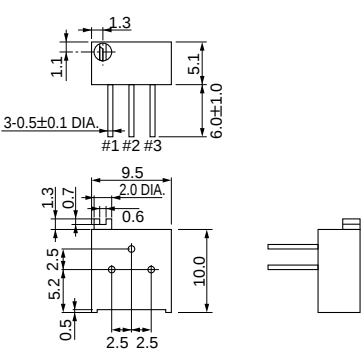
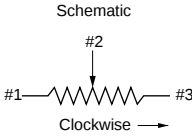
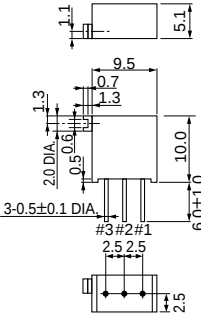
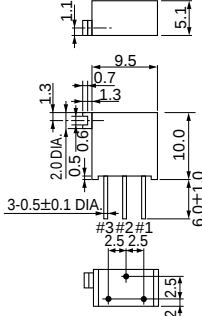
■MINIMUM QUANTITY (order in sets only)

50 pcs./bag···Bulk package
1,000 pcs./pack···Radial taping package

PART NUMBER TABLE

Standard Total Resistance Values	Model Number				
	Top Adjustment (W)	Top Adjustment (Y)	Side Adjustment (P)	Side Adjustment (X)	Side Adjustment (Z)
					
10Ω	POT3106W-1-100	POT3106Y-1-100	POT3106P-1-100	POT3106X-1-100	POT3106Z-1-100
20Ω	POT3106W-1-200	POT3106Y-1-200	POT3106P-1-200	POT3106X-1-200	POT3106Z-1-200
50Ω	POT3106W-1-500	POT3106Y-1-500	POT3106P-1-500	POT3106X-1-500	POT3106Z-1-500
100Ω	POT3106W-1-101	POT3106Y-1-101	POT3106P-1-101	POT3106X-1-101	POT3106Z-1-101
200Ω	POT3106W-1-201	POT3106Y-1-201	POT3106P-1-201	POT3106X-1-201	POT3106Z-1-201
500Ω	POT3106W-1-501	POT3106Y-1-501	POT3106P-1-501	POT3106X-1-501	POT3106Z-1-501
1KΩ	POT3106W-1-102	POT3106Y-1-102	POT3106P-1-102	POT3106X-1-102	POT3106Z-1-102
2KΩ	POT3106W-1-202	POT3106Y-1-202	POT3106P-1-202	POT3106X-1-202	POT3106Z-1-202
5KΩ	POT3106W-1-502	POT3106Y-1-502	POT3106P-1-502	POT3106X-1-502	POT3106Z-1-502
10KΩ	POT3106W-1-103	POT3106Y-1-103	POT3106P-1-103	POT3106X-1-103	POT3106Z-1-103
20KΩ	POT3106W-1-203	POT3106Y-1-203	POT3106P-1-203	POT3106X-1-203	POT3106Z-1-203
25KΩ	POT3106W-1-253	POT3106Y-1-253	POT3106P-1-253	POT3106X-1-253	POT3106Z-1-253
50KΩ	POT3106W-1-503	POT3106Y-1-503	POT3106P-1-503	POT3106X-1-503	POT3106Z-1-503
100KΩ	POT3106W-1-104	POT3106Y-1-104	POT3106P-1-104	POT3106X-1-104	POT3106Z-1-104
200KΩ	POT3106W-1-204	POT3106Y-1-204	POT3106P-1-204	POT3106X-1-204	POT3106Z-1-204
250KΩ	POT3106W-1-254	POT3106Y-1-254	POT3106P-1-254	POT3106X-1-254	POT3106Z-1-254
500KΩ	POT3106W-1-504	POT3106Y-1-504	POT3106P-1-504	POT3106X-1-504	POT3106Z-1-504
1MΩ	POT3106W-1-105	POT3106Y-1-105	POT3106P-1-105	POT3106X-1-105	POT3106Z-1-105
2MΩ	POT3106W-1-205	POT3106Y-1-205	POT3106P-1-205	POT3106X-1-205	POT3106Z-1-205

OUTLINE DIMENSIONS

 POT3106W	 POT3106Y	 POT3106P
Schematic  POT3106X	 POT3106Z	

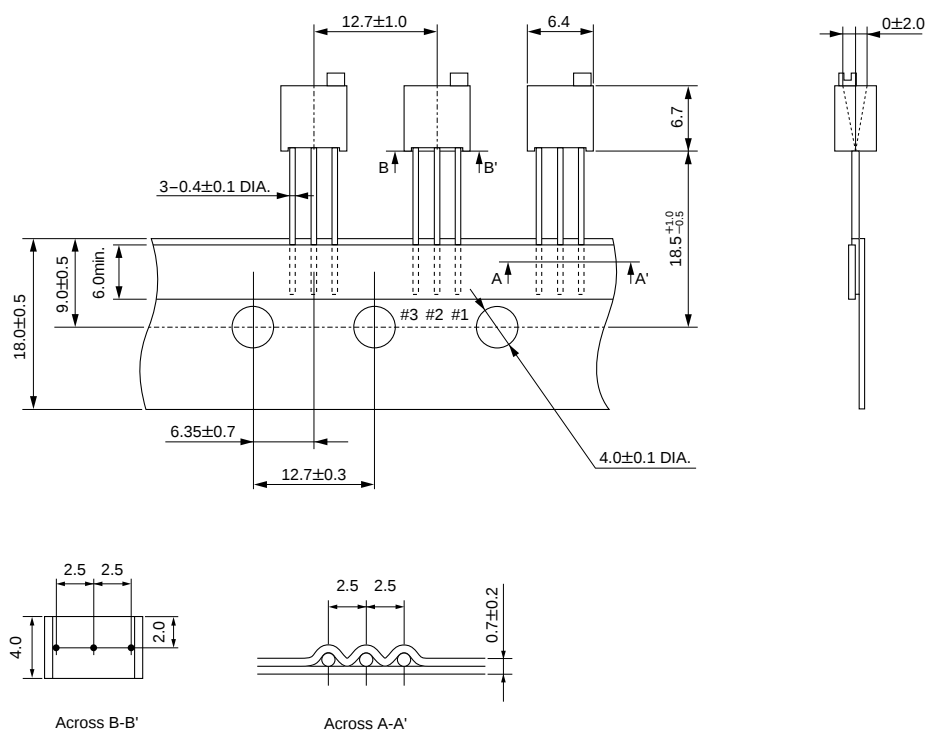
[in mm
Standard tolerance : ±0.3]

DIMENSIONS OF PACKAGING

■ DIMENSIONS OF RADIAL TAPING

● POT3107Y Series

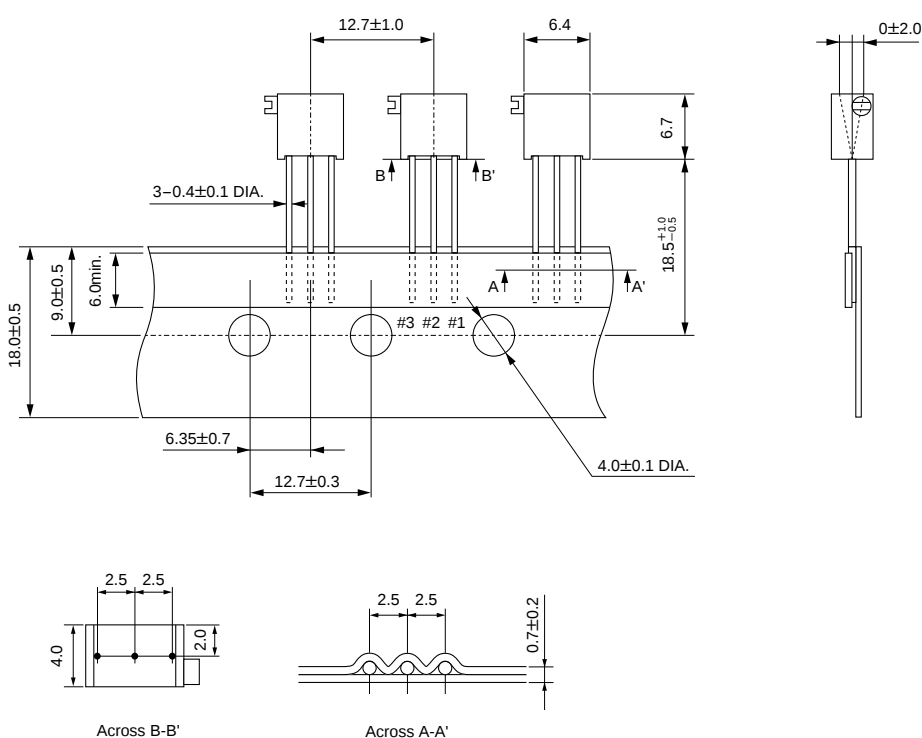
PART NUMBER : POT3107Y-31-□□□-T1 (□□□ : Resistance code)



[in mm
Standard tolerance : ± 0.3]

● POT3107Z Series

PART NUMBER : POT3107Z-31-□□□-T1 (□□□ : Resistance code)



[in mm
Standard tolerance : ± 0.3]

● POT3106W Series

Technical drawing of a mechanical part, showing a side view and two cross-sections (A-A' and B-B').

Side View Dimensions:

- Overall length: 18.0 ± 0.5
- Distance from left end to first hole center: 9.0 ± 0.5
- Minimum distance between holes: 6.0 min.
- Distance between hole centers: 6.35 ± 0.7
- Distance from last hole center to right end: 12.7 ± 0.3
- Overall width: $18.5^{+1.0}_{-0.5}$
- Distance between mounting flange centers: 12.7 ± 1.0
- Flange width: 9.6
- Flange height: 10.0
- Thread specification: $3-0.5 \pm 0.1 \text{ DIA.}$
- Section line A-A' and B-B' are indicated.

Cross-Section A-A' (Right):

- Overall width: $4.0 \pm 0.1 \text{ DIA.}$
- Distance between mounting flange centers: 2.5
- Flange height: 0.7 ± 0.2

Cross-Section B-B' (Left):

- Overall width: 2.5
- Distance between mounting flange centers: 2.5
- Flange height: 2.5

[in mm
Standard tolerance : ± 0.3]

● POT3106X Series

Technical drawing of a mechanical part, showing a side view and two cross-sections (A-A' and B-B').

Side View Dimensions:

- Overall length: 18.0 ± 0.5
- Distance from left end to first hole center: 9.0 ± 0.5
- Minimum distance between holes: 6.0 min.
- Distance from first hole center to second hole center: 12.7 ± 0.3
- Distance from second hole center to third hole center: 12.7 ± 1.0
- Distance from third hole center to right end: 9.6
- Overall height: $18.5^{+1.0}_{-0.0}$
- Distance from top surface to hole center: 6.35 ± 0.7
- Distance from top surface to hole center (alternative): $3-0.5 \pm 0.1 \text{ DIA.}$
- Distance from top surface to hole center (alternative): $4.0 \pm 0.1 \text{ DIA.}$

Cross-Section A-A' Dimensions:

- Distance between hole centers: 2.5
- Distance between hole centers: 2.5
- Distance from centerline to outer edge: 0.7 ± 0.2

Cross-Section B-B' Dimensions:

- Distance between hole centers: 2.5
- Distance between hole centers: 2.5
- Distance from centerline to outer edge: 2.5

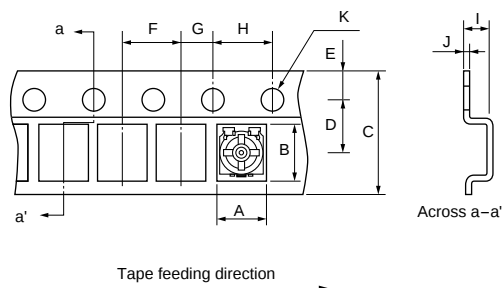
[in mm
Standard tolerance : ± 0.3]

Packaging Specifications

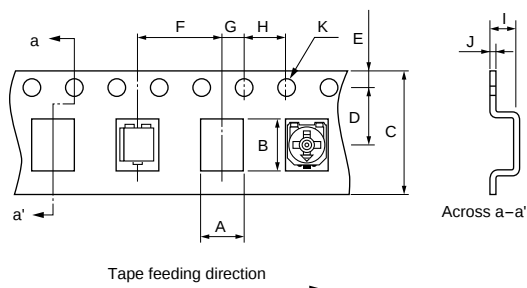
■Tape & Reel Packaging Specifications (Available for POZ, RVG3A, RVG4, POF2 and POG5 series)

(1) Plastic tape

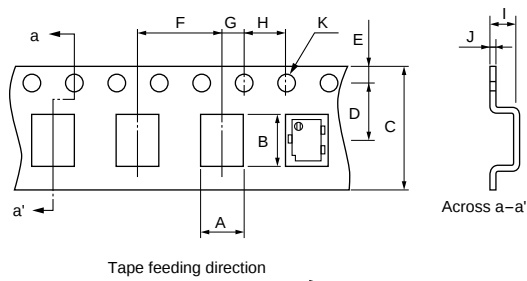
< POZ/RVG3/POF2 >



< RVG4/POG5HN >



< POG5AN >



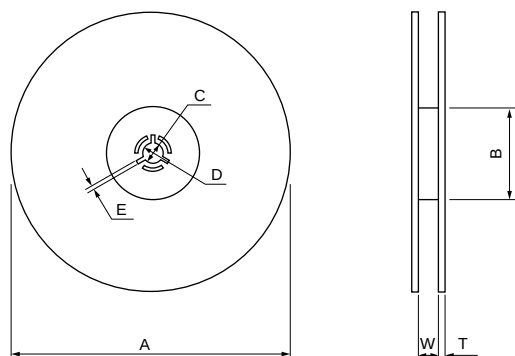
	POZ2AN	POZ3AN	POZ3KN	RVG3A08	RVG3S08	RVG4M	RVG4H	POF2AN	POG5AN	POG5HN
A	2.4±0.1	3.3±0.2	3.3±0.2	3.3±0.2	3.3±0.2	4.5±0.2	4.2±0.2	2.3±0.2	4.3±0.2	5.4±0.2
B	3.1±0.1	3.8±0.2	5.8±0.2	3.8±0.2	4.1±0.2	5.5±0.2	4.9±0.2	2.3±0.2	5.4±0.2	5.8±0.2
C	8.0±0.2	8.0±0.2	12.0±0.2	8.0±0.2	8.0±0.2	12.0±0.2	12.0±0.2	8.0±0.2	16.0±0.3	12.0±0.2
D	3.5±0.1	3.5±0.1	5.5±0.1	3.5±0.1	3.5±0.1	5.5±0.1	5.5±0.1	3.5±0.1	7.5±0.1	5.5±0.1
E	1.75±0.1	1.75±0.1	1.75±0.1	1.75±0.1	1.75±0.1	1.75±0.1	1.75±0.1	1.75±0.1	1.75±0.1	1.75±0.1
F	4.0±0.1	4.0±0.1	4.0±0.1	4.0±0.1	4.0±0.1	8.0±0.1	8.0±0.1	4.0±0.1	12.0±0.2	8.0±0.2
G	2.0±0.1	2.0±0.1	2.0±0.1	2.0±0.1	2.0±0.1	2.0±0.1	2.0±0.1	2.0±0.1	2.0±0.1	2.0±0.1
H	4.0±0.1	4.0±0.1	4.0±0.1	4.0±0.1	4.0±0.1	4.0±0.1	4.0±0.1	4.0±0.1	4.0±0.1	4.0±0.1
I	1.1±0.1	1.95±0.1	2.3±0.1	1.95±0.1	1.6±0.1	2.15±0.1	1.6±0.1	2.3±0.1	5.4±0.1	4.0±0.1
J	0.2±0.1	0.2±0.1	0.3±0.1	0.2±0.1	0.2±0.1	0.3±0.1	0.3±0.1	0.3±0.1	0.4±0.1	0.4±0.1
K	1.5± ^{0.1} ₀ dia	1.5± ^{0.1} ₀ dia	1.5± ^{0.1} ₀ dia	1.5± ^{0.1} ₀ dia	1.5± ^{0.1} ₀ dia	1.5± ^{0.1} ₀ dia	1.5± ^{0.1} ₀ dia	1.5± ^{0.1} ₀ dia	1.5± ^{0.1} ₀ dia	1.5± ^{0.1} ₀ dia

(in mm)

* The side containing terminals #1 and #3 faces the plastic tape pilot holes. (except POG5AN)

Packaging Specifications

(2) Reel



	POZ2AN	POZ3AN	POZ3KN	RVG3A08	RVG3S08	RVG4	POF2AN	POG5AN	POG5HN
A	178±2dia.	178±2dia.	178±2dia.	178±2dia.	178±2dia.	178±2dia.	178±2dia.	178±2dia.	178±2dia.
B	50min. dia.	50min. dia.	50min. dia.	50min. dia.	50min. dia.	50min. dia.	50min. dia.	50min. dia.	50min. dia.
C	13±0.5dia.	13±0.5dia.	13±0.5dia.	13±0.5dia.	13±0.5dia.	13±0.5dia.	13±0.5dia.	13±0.5dia.	13±0.5dia.
D	21±0.8dia.	21±0.8dia.	21±0.8dia.	21±0.8dia.	21±0.8dia.	21±0.8dia.	21±0.8dia.	21±0.8dia.	21±0.8dia.
E	2±0.5	2±0.5	2±0.5	2±0.5	2±0.5	2±0.5	2±0.5	2±0.5	2±0.5
T	2±0.5	2±0.5	2±0.5	2±0.5	2±0.5	2±0.5	2±0.5	2±0.5	2±0.5
W	10±1.5	10±1.5	14±1.5	10±1.5	10±0.5	14±1.5	10±1.5	18±1.5	14±1.5

(in mm)

Recommendable Adjustment Tools

■FOR MANUAL ADJUSTMENT

Model	Manufactures	Model Number	MURATA Model Number	Blade
POZ2	MURATA MFG.	KMPOT05	KMPOT05	⊖ minus
POZ3 POC6 POM6	VESSEL MFG.	NO. 9000+1.7X30	KMPOT12V	⊕ cross
	TORAY INDUSTRIES, INC.	SA-2225	KMPOT13T	⊖ minus
RVG3A08	VESSEL MFG.	NO. 9000+1.7X30	KMPOT12V	⊕ cross
	TORAY INDUSTRIES, INC.	SA-2225	KMPOT13T	⊖ minus
RVG3S08	TORAY INDUSTRIES, INC.	SA-2225	KMPOT13T	⊖ minus
RVG4M	VESSEL MFG.	NO. 9000-2.6X30	KMPOT15V	⊖ minus
RVG4H	MURATA MFG.	PPTZ-0022	PPTZ-0022	⊖ minus
POF2	MURATA MFG.	KMPOT06	KMPOT06	⊖ minus
3321 POT□□□□	VESSEL MFG.	NO. 9000-1.8X30	KMPOT14V	⊖ minus
	FUTABA TOOL MFG.	DA55		⊖ minus
	MURATA MFG.	PPTZ-0022	PPTZ-0022	⊖ minus
POG5	VESSEL MFG.	NO. 9000-1.3X30	KMPOT16V	⊖ minus
	FUTABA TOOL MFG.	DA54		⊖ minus

■FOR AUTOMATIC ADJUSTMENT

Model	Manufactures	Model Number	MURATA Model Number	Blade
POZ3 RVG3A08 RVG3S08 POC6 POM6	TORAY INDUSTRIES, INC.	JB-2225	KMPOT31T	⊖ minus

Notice

INTRODUCTION:

Trimmer potentiometers manufactured by MURATA MFG. CO., LTD. are designed to achieve high reliability and cost efficiency. We offer the following usage guidelines to ensure our trimmer potentiometers perform effectively and meet your requirements.

Rapid innovations will certainly create new applications for our trimmer potentiometers. We welcome you to contact us concerning application questions.

1. Mounting trimmer potentiometers on PCBs

- (1) Ensure that PCB hole spacing complies with the terminal spacing requirement of the intended trimmer potentiometer model. Incorrect hole spacing may lower trimmer potentiometer performance due to excessive stress applied to the terminal.
- (2) Mount trimmer potentiometer in contact with the PCB.
- (3) Do not apply bending or twisting stress after the trimmer potentiometer has been mounted to the PCB.

Model	Allowable stress
POC6/POM6/3321/POT	9.8N (1kgf)

2. Soldering

Standard soldering conditions are specified below. Before using soldering conditions other than those specified below, please contact our sales representatives or engineers prior to using. If the soldering conditions are not suitable for the product, the trimmer potentiometer may deviate from the specified performance characteristics.

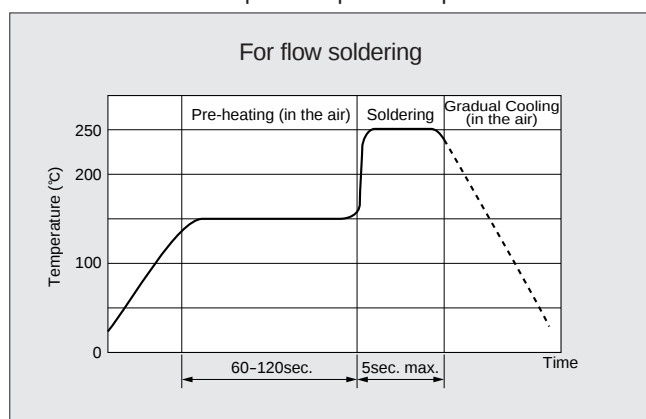
(1) Soldering iron

- ① POC6, POM6, 3321 and POT series (except POT0102)
 - Tip temperature . . . 300°C max.
 - Soldering time 3 sec. max.
- ② POZ, RVG3, RVG4, POF2, POG5 and POT0102 series
 - Tip temperature . . . 260°C max.
 - Soldering time 3 sec. max.
 - Tip diameter 2mm max.
 - Iron wattage 30W max.

(2) Flow soldering

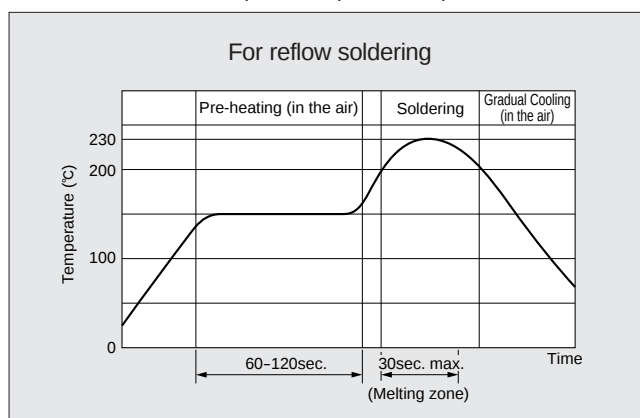
- ① POC6, POM6, 3321 and POT series (except POT0102)
 - Pre-heating 100°C, 60 sec. max.
 - Soldering 260°C max.
 - Dipping time 3 sec. max.
- ② RVG3A08 and RVG4M series

The standard temperature profile is specified below.



(3) Reflow soldering

- ① POZ, RVG3, RVG4, POF2, POG5 and POT0102 series
The standard temperature profile is specified below.



(4) Note in soldering

- The POZ, RVG3S08, RVG4H, POF2, POG5 and POT0102 series cannot be flow soldered.
- The solder iron should not contact the resin substrate of the trimmer potentiometer. If such contact does occur, the trimmer potentiometer may be damaged.
- The POZ, POF2, POG5 and POT0102 series have a resin substrate and a resin case. If an excessively high temperature (greater than 260°C) is applied, the trimmer potentiometer may deviate from specified performance characteristics.
- The amount of solder is critical. An insufficient amount of solder may result in inadequate soldering strength on the PCB. An excessive amount of solder may cause bridging between terminals, resulting in terminal shorts.

3. Cleaning

(1) Cleaning solvents

Isopropyl alcohol and Ethyl alcohol are satisfactory cleaning agents. Water-based agents like Pinealpha and Cleanthru cannot be used. Before using other agents, please contact our sales representative or engineers prior to using.

(2) Cleaning precautions

① RVG4M series

Standard cleaning conditions are specified below. If the product is cleaned under different conditions, it may not perform in accordance with specified performance characteristics.

Condition	Cold dipping	Hot dipping	Ultrasonic cleaning (20W/litre or below)	Vapor
Type 1	Max. 5min.	—	—	—
Type 2	—	Max. 2min.	—	—
Type 3	—	—	Max. 1min.	—
Type 4	—	Max. 1min.	Max. 1min. (Preferably Max. 30sec.)	—
Type 5	—	Max. 1min.	Max. 30sec.	Max. 30sec.

② POZ series

Please contact us if the solvents except Isopropyl alcohol and Ethyl alcohol are used.

Notice

③ RVG3, RVG4H series

If there is flux on the resistive element, clean sufficiently with cleaning solvents and completely remove all residual flux.

④ POC6, POM6, 3321, POT and POG5 series

The total cleaning time for the dipping, vapor or ultrasonic method shall be less than 3 minutes. For ultrasonic cleaning, the specifications are as follows.

1) Power : 600W (67 liter) max.

2) Frequency : 28kHz

3) Temperature : Ambient temperature

Many variables are associated with using ultrasonic cleaning equipment such as the equipments self-resonance point, it is jig construction, and cleaning conditions such as the depth of immersion. Therefore, please test cleaning equipment to determine suitable conditions.

4. Adjusting

- (1) Use suitable screwdrivers that fit comfortably in driver slots. Our recommendable screwdrivers are shown page 40.
- (2) To maintain specified performance characteristics, do not apply force more than 4.9N (500gf) to Driver plate, Rotor, Shaft and Adjustment screwdriver slot.
- (3) For the RVG3S, POF2, POC6, POM6, 3321 and POT3104 series, the rotational torque at the end position of the adjustment range should not exceed the stop strength. If excessive force is applied, trimmer potentiometers may deviate from specified performance characteristics.
- (4) To prevent deterioration of performance characteristics, use POZ, RVG3A08 and RVG4 series within their respective effective rotational angles. As they do not have stoppers, it is possible for wipers to turn over. If this occurs, trimmer potentiometers may deviate from specified performance characteristics.

5. Lock paint

If you intend to use lock paints, please contact our sales representatives or engineers before.

6. Storage conditions

- (1) To ensure the solderability of the terminal, store that the temperature is -10°C to $+40^{\circ}\text{C}$ and the relative humidity is 30 to 85%RH, and use within six months after delivery. If you are going to use a product which has been stored for more than six months, check its solderability beforehand
- (2) Do not store in or near corrosive gasses.
- (3) Do not store under direct sunlight.

7. Circuit design guide

- (1) Confirm specifications of required trimmer potentiometers (power rating, maximum operating voltage, operating temperature, etc.).
- (2) When using potentiometers as rheostats, the power rating should be proportional to the ratio of required resistance to total resistance.
- (3) Use trimmer potentiometer within 90% of the effective-electrical rotational angle and the effective-electrical number of turns to prevent a sudden change of resistance when excessive current is applied.

- (4) The maximum input voltage to a trimmer potentiometer should not exceed $\sqrt{P \cdot R}$ or the maximum operating voltage, whichever is smaller.

P : Power rating (W)

R : Standard total resistance value (Ω)

- (5) The maximum input current to a trimmer potentiometer should not exceed $\sqrt{P/R}$ or the allowable wiper current, whichever is smaller.

P : Power rating (W)

R : Standard total resistance value (Ω)

8. Note

Please make sure that your product has been evaluated and confirmed against your specifications when our product is mounted to your product.

Test Methods for POZ and RVG Series

The tests and measurements shall be conducted under the condition of 15 to 35°C of temperature, 25 to 75% of relative humidity and 86 to 106 kpa of atmospheric pressure unless otherwise specified. In case when entertained a doubt in judgment obtained from results measured in accordance with the above mentioned conditions, the tests and measurements shall be conducted under the condition of 25±2°C of temperature and, 50±2% of relative humidity and 86 to 106 kpa of atmospheric pressure.

■TOTAL RESISTANCE

Measure total resistance between the resistance element and terminals (terminals #1 and #3) with the contact arm positioned against a stop. The positioning of the contact arm and terminal shall be the same for subsequent total resistance measurements on the same device.

Use the test voltage specified in Table-1 for total resistance measurements. This voltage shall be used whenever a subsequent total resistance measurement is made.

Table-1 Total resistance test voltage

Total Resistance, Nominal (Ω)	Maximum Test Voltage (V)
10≤R≤100	1.0
100<R≤1k	3.0
1k<R≤10k	10.0
10k<R≤100k	30.0
100k<R	100.0

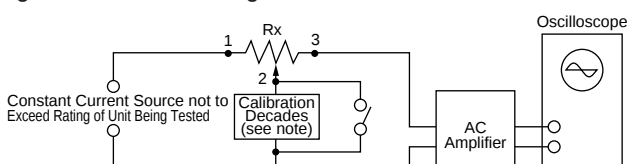
■RESIDUAL RESISTANCE

Position the contact arm at the extreme counterclockwise limit of mechanical travel and measure the resistance between the contact arm and the corresponding end terminal. Then, position the contact arm at the extreme clockwise limit of mechanical travel and measure the resistance between the contact arm and the corresponding end terminal. During this test, take suitable precautions to ensure that the rated current of the resistance element is not exceeded.

■CONTACT RESISTANCE VARIATION

Measure contact resistance variation using the measuring circuit shown in Figure-1 or its equivalent. Rotate the operating knob in both directions through 90° of the actual effective rotational angle 6 times. Use only the last 3 rotation cycles in determining whether a contact resistance variation is observed at least twice in the same location. Ignore values measured at roll-on or roll-off points where, the contact arm moves from the termination and it moves from the resistive element to the termination. Rotate the operating shaft so the wiper completes 1 cycle in a minimum of 5 seconds and a maximum of 2 minutes. The test current shall follow the value given in Table-2 unless otherwise limited by the power rating.

Figure-1 CRV measuring circuit



Rx: Test device

Oscilloscope bandwidth : 100Hz to 50kHz

Minimum input impedance : At least 10 times the nominal resistance being tested.

*Note : For decade calibration, terminals 1 and 2 must be coincident. Calibrate the decade level to the contact resistance variation (CRV) level of the specified nominal resistance being tested.

Table-2 Test current for CRV

Total Resistance, Nominal (Ω)	Test Current
100≤R<500	10mA Max.
500≤R<100k	1mA Max.
100k≤R≤2M	100μA Max.

■HUMIDITY EXPOSURE

Put potentiometers in chamber at 40±2°C and 90-95% RH without loading for 500±12 hours. Measure the resistance value after drying ambient conditions for 5±1/6 hours.

■HIGH TEMPERATURE EXPOSURE

Put potentiometers in a chamber at 70±3°C without loading for 500±12 hours. Measure the resistance value after drying in ambient conditions for 1.5±1/6 hours.

■HUMIDITY LOAD LIFE

Put potentiometers in a chamber at 40±2°C and 90-95% RH. Apply voltage loading intermittently for 1.5 hours on and 0.5 hours off for 1000±12 hours. Measure the resistance value after drying in ambient conditions for 5±1/6 hours.

■LOAD LIFE

Put potentiometers in a chamber at 70±3°C (50±2°C for POZ) loading the voltage intermittently for 1.5 hours on and 0.5 hours off for 1000±12 hours. Measure the resistance value after drying in ambient conditions for 5±1/6 hours.

■TEMPERATURE CYCLE

Subject potentiometers to the temperature shown below for a total of 5 cycles. Measure the resistance value after drying at room temperature for 30 minutes.

Table-3 POZ

Sequence	1	2	3	4
Temp.(°C)	-25°C	Room	+85°C	Room
Time (Min.)	30	10	30	10

Table-4 RVG

Sequence	1	2	3	4
Temp.(°C)	-55°C	Room	+125°C	Room
Time (Min.)	30	10	30	10

■TEMPERATURE COEFFICIENT OF RESISTANCE

Subject potentiometers to the temperatures shown below for 30 to 45 minutes at each temperature. Measure resistance value in the chamber.

$$TC = \frac{R_2 - R_1}{R_1 (t_2 - t_1)} \times 10^6 \text{ [ppm/°C]}$$

Where :

t_1 : Reference temperature in Celsius

t_2 : Test temperature in Celsius

R_1 : Resistance at reference temperature in Ω

R_2 : Resistance at test temperature in Ω

Table-5 POZ

Sequence	1	2	3	4
Temp.(°C)	+25°C	-25°C	+25°C	+85°C

Table-6 RVG

Sequence	1	2	3	4
Temp.(°C)	+25°C	-55°C	+25°C	+125°C

Test Methods for POC6, POM6, 3321, POT, POF2 and POG5 Series

The following describes trimmer potentiometer testing conducted by Murata Manufacturing Co., Ltd. in accordance with MIL-R-22097 (Military specification for variable resistors, non-wirewound) and MIL-STD-202 (Test methods for electronic and electrical component parts).

■TOTAL RESISTANCE

Measure total resistance between the resistance element and terminals (#1 and #3) with the contact arm positioned against a stop. The positioning of the contact arm and terminal shall be the same for subsequent total resistance measurements on the same device. Use the test voltage specified in Table-1 for total resistance measurements. This voltage shall be used for all subsequent total resistance measurements.

Table-1 Total resistance test voltage

Total Resistance, Nominal (Ω)	Maximum Test Voltage (V)
10≤R≤100	1.0
100<R≤1k	3.0
1k<R≤10k	10.0
10k<R≤100k	30.0
100k<R	100.0

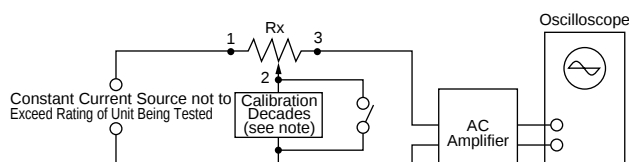
■RESIDUAL RESISTANCE

Position the contact arm at the extreme counterclockwise limit of mechanical travel and measure the resistance between the contact arm and the corresponding end terminal. Then, position the contact arm at the extreme clockwise limit of mechanical travel and measure the resistance between the contact arm and the corresponding end terminal. During this test, take suitable precautions to ensure that the rated current of the resistance element is not exceeded.

■CONTACT RESISTANCE VARIATION

Measure contact resistance variation using the measuring circuit shown in Figure-1 or its equivalent. Rotate the operating knob in both directions through 90% of the actual effective rotational angle (effective number of turns) 6 times. Use only the last 3 rotational cycles in determining whether a contact resistance variation is observed at least twice in the same location. Ignore values measured at roll-on or roll-off points where, the contact arm moves from the termination and it moves from the resistance element to the termination. Rotate the operating shaft so the wiper completes 1 cycle in a minimum of 5 seconds and a maximum of 2 minutes. The test current shall follow the value given in Table-2 unless otherwise limited by the power rating.

Figure-1 CRV measuring circuit



Rx: Test device

Oscilloscope bandwidth : 100Hz to 50kHz

Minimum input impedance : At least 10 times the nominal resistance being tested.

*Note : For decade calibration, terminals 1 and 2 must be coincident. Calibrate the decade level to the contact resistance variation (CRV) level of the specified nominal resistance being tested.

Table-2 Test current for CRV

Standard Total Resistance (Ω)	Test Current
R≤100	20mA
100<R<500	10mA
500≤R<1k	4mA
1k≤R<2k	2mA
2k≤R<50k	1mA
50k≤R<200k	200μA
200k≤R<1M	100μA
1M≤R<2M	50μA
2M≤R	30μA

■TEMPERATURE COEFFICIENT OF RESISTANCE

Position the potentiometers contact arm in the same way as it is positioned for the total resistance measurement. Take resistance measurements at each temperature listed in Table-3 after resistors have been allowed to stabilize at each temperature for 30 to 45 minutes. Temperature adjustment shall be accurate to within 1°C. Compute the temperature coefficient of resistance, referred to a reference of 25°C, using the following formula.

$$TC = \frac{R_2 - R_1}{R_1 (t_2 - t_1)} \times 10^6 \text{ [ppm/°C]}$$

Where :

t_1 : Reference temperature in degrees Celsius

t_2 : Test temperature in degrees Celsius

R_1 : Resistance at reference temperature in Ω

R_2 : Resistance at test temperature in Ω

The temperature coefficient of resistance of the resistor is the maximum calculated value.

Table-3 Test Temperatures

Sequence	Temperature (°C)
1	*+25
2	-15
3	Min. operating temperature
4	*+25
5	+65
6	Max. operating temperature

*Reference temperature

■VOLTAGE SETTING STABILITY

Set the contact arm at approximately 40% of the actual effective rotational angle (effective number of turns) and apply DC test voltage between the end terminals. Measure the voltage between the end terminals (E_2) and the voltage between one end terminal and the contact arm (E_1) and use them in the following formula to calculate setting in percent :

$$\text{Voltage Setting Stability} = \frac{E_1}{E_2} \times 100 (\%)$$

Test Methods for POC6, POM6, 3321, POT, POF2 and POG5 Series

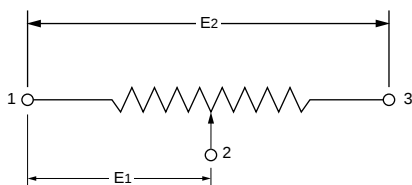
Where:

E_1 : Voltage between one end terminal and the contact arm terminal.

E_2 : Voltage between end terminals.

The difference of the initial setting (calculated from the measurement taken before the environmental test) and the final setting (calculated from the measurement taken after the test) yields the setting stability in percent.

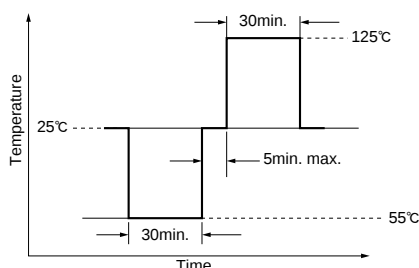
Figure-2



■TEMPERATURE CYCLE

Subject potentiometers to five complete temperature cycles, run continuously. One cycle comprises the steps shown in Figure-3.

Figure-3 One temperature cycle



■HUMIDITY

Subject potentiometers to a relative humidity of 90-95% at a temperature of $40 \pm 2^\circ\text{C}$ for 250 hours.

■VIBRATION

① POC6, POM6, 3321, POT and POG5

Vibrate potentiometers throughout the frequency range at the specified G level. Perform one sweep, defined as a traversal of the complete frequency range (10Hz to 2,000Hz and back), within approximately 15 minutes. Make a total of 12 sweeps, 4 in each of the three axis.

② POF2

The wiper contact point shall be pre-setted at about 50% position of effective rotational angle. After that, the potentiometer shall be subjected to vibration at 0.3 inch amplitude. The frequency shall be varied uniformly between the approximate limits of 10Hz and 55Hz. This motion shall be applied for period of 2 hours in each of 3 mutually perpendicular direction (total of 6 hours).

■SHOCK (applied pulses of specified type)

Subject potentiometers to a total of 12 shocks: 4 shocks per axis, 3 per axis direction.

■LOAD LIFE

Apply the rated DC or AC continuous working voltage at the commercial line frequency and waveform intermittently at a temperature of $70 \pm 2^\circ\text{C}$ ($50 \pm 2^\circ\text{C}$ for POF2) to the end terminals of the potentiometers, 1.5 hours on and 0.5 hours off, for a total of 1000 ± 12 hours. Each potentiometer shall dissipate the rated wattage, but the rated voltage shall not exceed maximum working voltage. Take adequate precautions to maintain constant voltage on the potentiometers.

■HIGH TEMPERATURE EXPOSURE (Except for POF2)

Expose potentiometers to an ambient temperature equal to the specified maximum operating temperature for a period of 250 ± 8 hours.

■LOW TEMPERATURE OPERATION (Except for POF2)

Measure total resistance. Put potentiometers in a chamber at room temperature. Gradually decrease the temperature (take no less than 1.5 hours) to the specified minimum operating temperature. Wait 1 hour for temperature stabilization then measure setting stability. Apply the rated voltage not exceeding the maximum working voltage continuous working voltage not exceeding the maximum rated voltage for 45 minutes. Measure setting stability 15 ± 5 minutes after removing voltage. Gradually increase the chamber temperature to room temperature in 8 hours or less. Remove potentiometers from the chamber and maintain at a temperature of $25 \pm 5^\circ\text{C}$ for approximately 24 hours. Measure total resistance.

■LOW TEMPERATURE EXPOSURE (Only POF2)

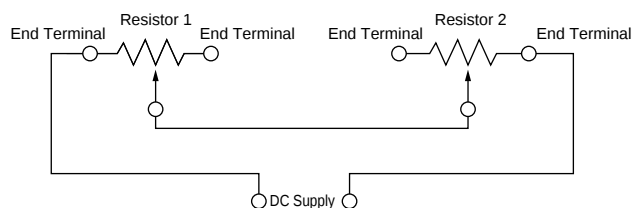
The trimmer potentiometer shall be placed in a chamber at a temperature of $-25 \pm 3^\circ\text{C}$ for 48 ± 4 hours without loading. The resistance value shall be measured after keeping the potentiometer in a room for $1.5 \pm 1/6$ hours.

■ROTATIONAL LIFE

① POC6, POM6, 3321 and POT

Apply a DC voltage as shown in Figure-4. The voltage shall be equivalent to that required to dissipate the rated wattage across the entire resistive element of potentiometers having the same nominal total resistance as those under test. Ensure that the applied DC voltage does not exceed the maximum rated voltage. Rotate the operating shaft continuously through not less than 90% of the actual effective rotational angle (effective number of turns) and return to the starting point at the rate of 1 cycle per 2 ± 0.5 minutes, for a total of 200 cycles. A cycle comprises rotating the operating shaft through 90% of its actual effective rotational angle travel and subsequently returning the shaft to its starting point.

Figure-4 Rotational life test circuit



② POG5

Rotate the operating shaft continuously through not less than 90% of the actual effective number of turns and return to the starting point at the rate of 1 cycle per 2 ± 0.5 minutes, for a total of 200 cycles. A cycle comprises rotating the operating shaft through 90% of its actual effective number of turns and subsequently returning the shaft to its starting point.

③ POF2

The wiper shall be rotated over 90% of the effective rotational angle without loading at a speed of 10 cycles per minute, for 100 cycles continuously. The resistance value shall be measured after keeping the potentiometer in a room for 10 ± 5 minutes.

⚠ Note:**1. Export Control**

〈For customers outside Japan〉

Murata products should not be used or sold for use in the development, production, stockpiling or utilization of any conventional weapons or mass-destructive weapons (nuclear weapons, chemical or biological weapons, or missiles), or any other weapons.

〈For customers in Japan〉

For products which are controlled items subject to the "Foreign Exchange and Foreign Trade Law" of Japan, the export license specified by the law is required for export.

2. Please contact our sales representatives or product engineers before using our products listed in this catalog for the applications listed below which require especially high reliability for the prevention of defects which might directly cause damage to the third party's life, body or property, or when intending to use one of our products for other applications than specified in this catalog.

- ① Aircraft equipment
- ② Aerospace equipment
- ③ Undersea equipment
- ④ Medical equipment
- ⑤ Transportation equipment (vehicles, trains, ships, etc.)
- ⑥ Traffic signal equipment
- ⑦ Disaster prevention / crime prevention equipment
- ⑧ Data-processing equipment
- ⑨ Application of similar complexity and/or reliability requirements to the applications listed in the above

3. Product specifications in this catalog are as of July 1999. They are subject to change or our products in it may be discontinued without advance notice. Please check with our sales representatives or product engineers before your ordering. If there are any questions, please contact our sales representatives or product engineers.**4. The parts numbers and specifications listed in this catalog are for information only. You are requested to approve our product specification or to transact the approval sheet for product specification, before your ordering.****5. Please note that unless otherwise specified, we shall assume no responsibility whatsoever for any conflict or dispute that may occur in connection with the effect of our and/or third party's intellectual property rights and other related rights in consideration of your using our products and/or information described or contained in our catalogs. In this connection, no representation shall be made to the effect that any third parties are authorized to use the rights mentioned above under licenses without our consent.****6. None of ozone depleting substances (ODS) under the Montreal Protocol is used in manufacturing process of us.**

<http://www.murata.co.jp/products/>

Head Office

2-26-10, Tenjin Nagaokakyo-shi, Kyoto 617-8555, Japan Phone:81-75-955-6502

International Division

3-29-12, Shibuya, Shibuya-ku, Tokyo 150-0002, Japan
Phone:81-3-5469-6123 Fax:81-3-5469-6155 E-mail:intl@murata.co.jp