

● Part Numbering

Trimmer Potentiometers

(Part Number)

| | | | | | |
|-----------|-----------|----------|------------|------------|------------|
| PV | Z3 | A | 103 | C01 | R00 |
| ① | ② | ③ | ④ | ⑤ | ⑥ |

① Product ID

| Product ID | |
|------------|------------------------|
| PV | Trimmer Potentiometers |

② Series

③ Adjustment Direction /Lead Type

| Code | Series | Code | Adjustment Direction/ Lead Type |
|-----------|---|----------|------------------------------------|
| Z2 | SMD Open 2mm Size Carbon Resistive Element | A | Top |
| | | R | Rear |
| A2 | SMD Open 2mm Size | A | Top |
| Z3 | SMD Open 3mm Size Carbon Resistive Element | A | Top |
| | | G | Top |
| | | K | Rear |
| F2 | SMD Sealed 2mm Size | A | Top |
| G3 | SMD Sealed 3mm Size | A | Top, J-hook |
| | | G | Top, Gull-wing |
| | | K | Rear |
| M4 | SMD Sealed 4mm Size | A | Top |
| G5 | SMD Sealed 5mm Square 11-turns | A | Top |
| | | H | Side |
| 32 | Lead Sealed 6mm Round Single-turn | H | Top, Triangle |
| | | P | Top, Triangle |
| | | R | Top, Inline |
| | | N | Side, Triangle |
| | | T | Side, Triangle |
| | | S | Side, Triangle |
| 12 | Lead Sealed 7mm Round 4-turns | H | Top, Triangle |
| | | P | Top, Triangle |
| | | T | Side, Triangle |
| | | S | Side, Triangle |
| 36 | Lead Sealed 10mm Square 25-turns | W | Top, Inline |
| | | Y | Top, Triangle |
| | | P | Side, Triangle |
| | | X | Side, Inline |
| 37 | Lead Sealed 6mm Square 12-turns | Z | Side, Triangle |
| | | W | Top, Triangle |
| | | Y | Top, Inline |
| | | P | Side, Triangle |
| | | X | Side, Triangle |
| | | Z | Side, Inline |

④ Total Resistance

Expressed by three figures. The unit is ohm. The first and second figures are significant digits, and the third figure expresses the number of zeros which follow the two figures.

| Ex.) | Code | Total Resistance |
|------|------------|------------------|
| | 100 | 10Ω |
| | 102 | 1000Ω |
| | 104 | 100000Ω (=100kΩ) |

⑤ Individual Specification

| Series | Code | Individual Specification Code |
|----------------------------|------------|---|
| PVA2 | A01 | Standard Type |
| PVZ2 | C04 | Standard Type (High-heat Resistance Type/Ultra-thin Type) |
| | C01 | Standard Type (High-heat Resistance Type/Top Adjustment) |
| PVZ3 | F01 | High Characteristic Carbon Type (only PVZ3G) |
| | E01 | High-heat Resistance Type (for Rear Adjustment) |
| | C01 | Standard Type |
| PVM4 | D01 | High-liability Type |
| | A11 | Standard Type (Resistance Change Characteristics: Linear) |
| PVF2 | A11 | Standard Type (Resistance Change Characteristics: Linear) |
| PV32/PV12 | A01 | Standard Type |
| PVG3/ PV36/PV37 | C01 | Standard Type |
| PV36/PV37 | C01 | Standard Type |
| | C31 | Radial Taping |
| PVG5 | C03 | Standard Type |

⑥ Packaging

| Code | Packaging |
|-------------|-----------|
| A00 | Ammo Pack |
| B00 | Bulk |
| M00* | Magazine |
| R00 | Reel |

* M12 for PV36P Type and M15 for PV36W/Y/X/Z Type.

Trimmer Potentiometers



SMD Sealed Type 3mm Size PVG3 Series

■ Features

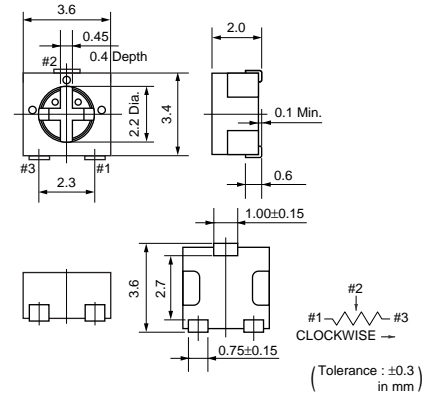
1. Sealed construction protects the interior from dust and liquid, which achieves stable performance.
2. Driver plate with cross-slot is suitable for automatic adjustment.
3. Rotor with large diameter and deep groove improves driver insertion.
4. J-hook, Gull wing terminal shape, rear and through hole terminal shape.
5. 3mm and 4mm land pattern can be used without change. (Gull wing is suitable for 4mm size land pattern.)
6. Heat resistance performance enables high temperature peak re-flow soldering.

■ Applications

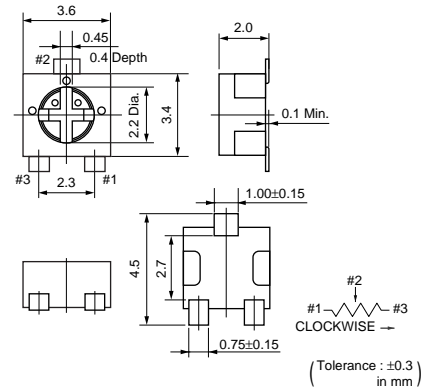
- | | |
|-------------------------|-------------------------------|
| 1. Small sensors | 2. Optical Transceiver Module |
| 3. Copier | 4. Printer |
| 5. Compact Power Supply | 6. Wireless Radio module |



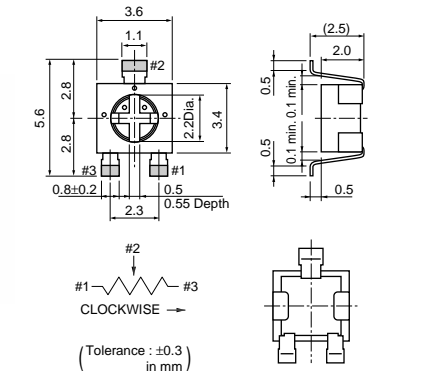
PVG3A



PVG3G



PVG3K



| Part Number | Power Rating (W) | Soldering Method | Number of Turns (Effective Rotation Angle) | Total Resistance Value | TCR (ppm/°C) |
|-------------|------------------|-----------------------|--|------------------------|--------------|
| PVG3□100C01 | 0.25(70°C) | Reflow/Soldering Iron | 1(210°±10°) | 10ohm ±20% | ±150 |
| PVG3□200C01 | 0.25(70°C) | Reflow/Soldering Iron | 1(210°±10) | 20ohm ±20% | ±150 |
| PVG3□500C01 | 0.25(70°C) | Reflow/Soldering Iron | 1(210°±10°) | 50ohm ±20% | ±150 |
| PVG3□101C01 | 0.25(70°C) | Reflow/Soldering Iron | 1(210°±10°) | 100ohm ±20% | ±150 |
| PVG3□201C01 | 0.25(70°C) | Reflow/Soldering Iron | 1(210°±10°) | 200ohm ±20% | ±150 |
| PVG3□501C01 | 0.25(70°C) | Reflow/Soldering Iron | 1(210°±10°) | 500ohm ±20% | ±150 |
| PVG3□102C01 | 0.25(70°C) | Reflow/Soldering Iron | 1(210°±10°) | 1k ohm ±20% | ±150 |
| PVG3□202C01 | 0.25(70°C) | Reflow/Soldering Iron | 1(210°±10°) | 2k ohm ±20% | ±150 |
| PVG3□502C01 | 0.25(70°C) | Reflow/Soldering Iron | 1(210°±10°) | 5k ohm ±20% | ±150 |
| PVG3□103C01 | 0.25(70°C) | Reflow/Soldering Iron | 1(210°±10°) | 10k ohm ±20% | ±150 |
| PVG3□203C01 | 0.25(70°C) | Reflow/Soldering Iron | 1(210°±10°) | 20k ohm ±20% | ±150 |
| PVG3□503C01 | 0.25(70°C) | Reflow/Soldering Iron | 1(210°±10°) | 50k ohm ±20% | ±150 |

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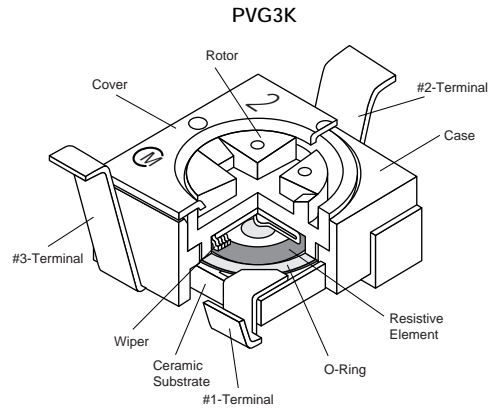
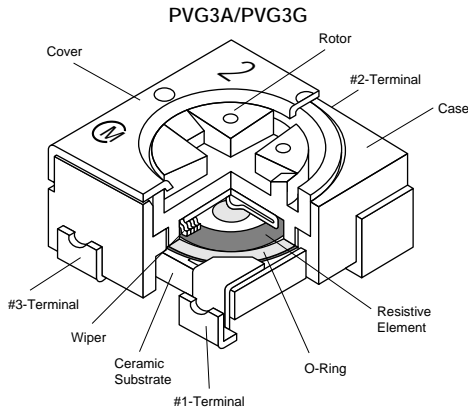
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| Part Number | Power Rating (W) | Soldering Method | Number of Turns (Effective Rotation Angle) | Total Resistance Value | TCR (ppm/°C) |
|-------------|------------------|-----------------------|--|------------------------|--------------|
| PVG3□104C01 | 0.25(70°C) | Reflow/Soldering Iron | 1(210°±10°) | 100k ohm ±20% | ±150 |
| PVG3□204C01 | 0.25(70°C) | Reflow/Soldering Iron | 1(210°±10°) | 200k ohm ±20% | ±150 |
| PVG3□504C01 | 0.25(70°C) | Reflow/Soldering Iron | 1(210°±10°) | 500k ohm ±20% | ±150 |
| PVG3□105C01 | 0.25(70°C) | Reflow/Soldering Iron | 1(210°±10°) | 1M ohm ±20% | ±150 |
| PVG3□205C01 | 0.25(70°C) | Reflow/Soldering Iron | 1(210°±10°) | 2M ohm ±20% | ±150 |

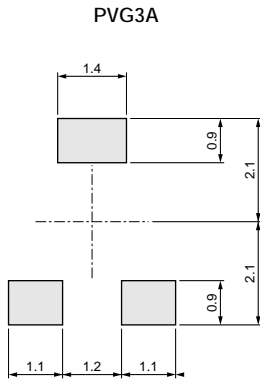
Operating Temperature Range: -55 to 125 °C

The blank column is filled with the code of adjustment direction and lead type A (top, J-hook), G (top, gull-wing), or K (rear).

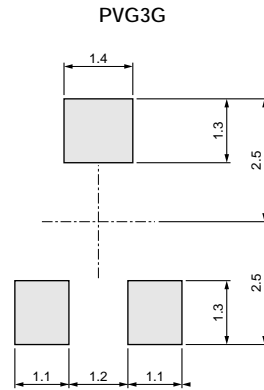
Construction



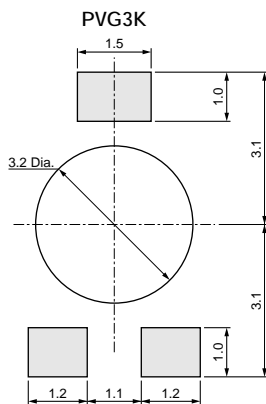
Standard Land Pattern



(Tolerance : ±0.1 in mm)




(Tolerance : ±0.1 in mm)



(Tolerance : ±0.1 in mm)

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■ Characteristics

| | |
|---------------------------|--|
| Temperature Cycle | ΔTR : $\pm 2\%$ $\Delta V.S.S.$: $\pm 1\%$ |
| Humidity | ΔTR : $\pm 2\%$ $\Delta V.S.S.$: $\pm 1\%$ IR : 10M ohm min. |
| Vibration (20G) | ΔTR : $\pm 1\%$ $\Delta V.S.S.$: $\pm 1\%$ |
| Shock (100G) | ΔTR : $\pm 1\%$ $\Delta V.S.S.$: $\pm 1\%$ |
| Temperature Load Life | ΔTR : $\pm 3\%$ or 3 ohm max., whichever is greater $\Delta V.S.S.$: $\pm 1\%$ |
| Low Temperature Exposure | ΔTR : $\pm 2\%$ $\Delta V.S.S.$: $\pm 2\%$ |
| High Temperature Exposure | ΔTR : $\pm 3\%$ $\Delta V.S.S.$: $\pm 2\%$ |
| Rotational Life | ΔTR : $R \leq 100 \text{ kohm} \dots \pm 3\%$ or 2 ohm max., whichever is greater $R > 100 \text{ kohm} \dots +0/-10\%$ (50 cycles) |

ΔTR : Total Resistance Change
 $\Delta V.S.S.$: Voltage Setting Stability
 IR : Insulation Resistance
 R : Standard Total Resistance

PVG3 Series Notice

■ Notice (Operating and Storage Conditions)

1. Store in temperatures of -10 to +40 deg. C and relative humidity of 30-85%.
2. Do not store in or near corrosive gases.
3. Use within six months after delivery.
4. Open the package just before using.
5. Do not store under direct sunlight.
6. If you use the trimmer potentiometer in an environment other than listed below, please consult with a Murata factory representative prior to using.
The trimmer potentiometer should not be used under the following environmental conditions:

- (1) Corrosive gaseous atmosphere
(Ex. Chlorine gas, Hydrogen sulfide gas, Ammonia gas, Sulfuric acid gas, Nitric oxide gas, etc.)
- (2) In liquid
(Ex. Oil, Medical liquid, Organic solvent, etc.)
- (3) Dusty/dirty atmosphere
- (4) Direct sunlight
- (5) Static voltage nor electric/magnetic fields
- (6) Direct sea breeze
- (7) Other variations of the above

■ Notice (Rating)

1. When using with partial load (rheostat), minimize the power depending on the resistance value.
2. The maximum input voltage to a trimmer potentiometer should not exceed $(P \cdot R)^{1/2}$ or the maximum operating voltage, whichever is smaller.

■ Notice (Soldering and Mounting)

1. Soldering
 - (1) Soldering conditions
Refer to the temperature profile.
If the soldering conditions are not suitable, e.g., excessive time and/or excessive temperature, the trimmer potentiometer may deviate from the specified characteristics.
 - (2) Cannot be soldered using the flow soldering method. If you use the flow soldering method, the trimmer potentiometer may not function.
 - (3) The soldering iron should not come in contact with the case of the trimmer potentiometer. If such contact does occur, the trimmer potentiometer may be damaged.
 - (4) Apply the appropriate amount of solder paste.
If the amount of solder paste applied to the land is insufficient, the required adhesive strength cannot be obtained. If an excessive amount of solder paste is applied, solder bridging or flux overflow to the resistive element surface can occur.

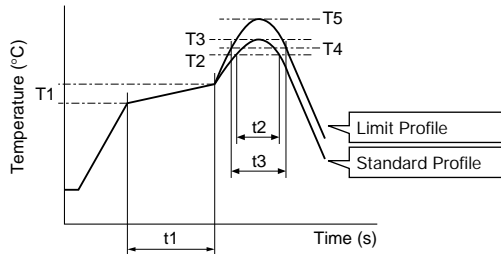
2. Mounting
 - (1) Use our standard land dimension. Excessive land area causes displacement due to the effect of the surface tension of the solder. Insufficient land area leads to insufficient soldering strength of the chip.
 - (2) Do not apply excessive force, preferably 4.9N max. (Ref. 500gf) when the trimmer potentiometer is mounted to the PCB.
 - (3) Do not warp and/or bend PC board to prevent trimmer potentiometer from breakage.
 - (4) In chip placers, the size of the cylindrical pick-up nozzle should be outer dimension 2.5-3.0mm dia. and inner dimension 2.0-2.5mm dia.
3. Cleaning
Isopropyl-alcohol and Ethyl-alcohol are applicable solvents for cleaning. If you use any other types of solvents, please consult with a Murata factory representative prior to using.

PVG3 Series Notice

■ Soldering Profile

● Reflow Soldering Profile

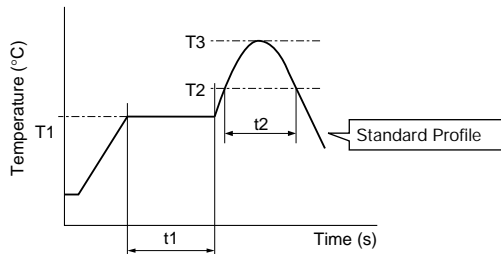
1. Soldering profile for Lead-free solder (96.5Sn/3.0Ag/0.5Cu)



| Series | Standard Profile | | | | | | Limit Profile | | | | | |
|-------------|------------------|-----------|------------|-----------|-----------------------|-----------------|---------------|-----------|------------|-----------|-----------------------|-----------------|
| | Pre-heating | | Heating | | Peak Temperature (T3) | Cycle of Reflow | Pre-heating | | Heating | | Peak Temperature (T5) | Cycle of Reflow |
| | Temp. (T1) | Time (t1) | Temp. (T2) | Time (t2) | | | Temp. (T1) | Time (t1) | Temp. (T4) | Time (t3) | | |
| °C | sec. | °C | sec. | °C | Time | °C | sec. | °C | sec. | °C | Time | |
| PVG3 | 150 to 180 | 60 to 120 | 220 | 30 to 60 | 245±3 | 1 | 150 to 180 | 60 to 120 | 230 | 30 to 50 | 260 +5/-0 | 2 |

2. Soldering profile for Eutectic solder (63Sn/37Pb)

(Limit profile: refer to 1)



| Series | Standard Profile | | | | | |
|-------------|------------------|-----------|------------|-----------|-----------------------|-----------------|
| | Pre-heating | | Heating | | Peak Temperature (T3) | Cycle of Reflow |
| | Temp. (T1) | Time (t1) | Temp. (T2) | Time (t2) | | |
| °C | sec. | °C | sec. | °C | Time | |
| PVG3 | 150 | 60 to 120 | 183 | 30 | 230 | 1 |

● Soldering Iron

| Series | Standard Condition | | | |
|-------------|-----------------------------------|----------------|-----------------------------|-------------------------|
| | Temperature of Soldering Iron Tip | Soldering Time | Soldering Iron Power Output | Cycle of Soldering Iron |
| | °C | sec. | W | Time |
| PVG3 | 350±10 | 3 max. | 30 max. | 1 |

■ Notice (Handling)

1. Use suitable screwdrivers that fit comfortably in driver slot.

* Recommended screwdriver for manual adjustment
 TORAY INDUSTRIES, INC.: SA-2225
 (Murata P/N: KMDR070)

* Recommended screwdriver bit for automatic adjustment
 TORAY INDUSTRIES, INC.: JB-2225
 (Murata P/N: KMBT070)

We can supply the screwdrivers above.

If you place order, please specify the Murata P/N.

2. Do not apply more than 9.8N (Ref. 1kgf) of twist and stress after mounting onto PCB to prevent contact intermittence.

3. When adjusting with an adjustment tool, the applied force to the adjustment screw should not exceed 4.9N (Ref. 500gf). If excessive force is applied, the trimmer potentiometer may not function due to damage.

4. The rotational torque at the position of the adjustment range should not exceed the stop strength.

5. When using a lock paint to fix slot position, please use adhesive resin without chlorine or sulfur (Three-bond "1401 series") and evaluate performance with your product. Lock paint may cause corrosion or electrical contact problems.

■ Notice (Other)

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

2. Murata cannot guarantee trimmer potentiometer integrity when used under conditions other than those specified in this document.