

# Trimmer Potentiometers



## SMD Sealed Type Multi-turn PVG5 Series

### ■ Features

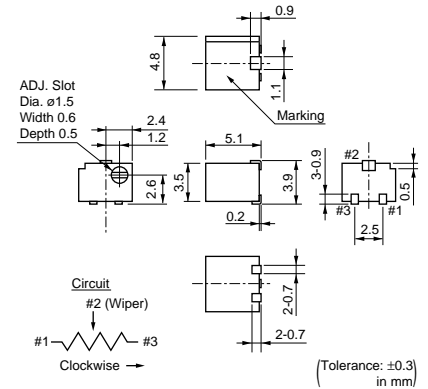
1. Sealed construction protects the interior from dust and liquid, which achieves stable performance.
2. Available with reflow soldering method
3. Available for ultrasonic cleaning after soldering
4. Clutch mechanism prevents excessive wiper rotation.
5. Both Top and side adjustment directions
6. Ultra smaller volume (1/5-1/2) than leaded multi-turn potentiometer.

### ■ Applications

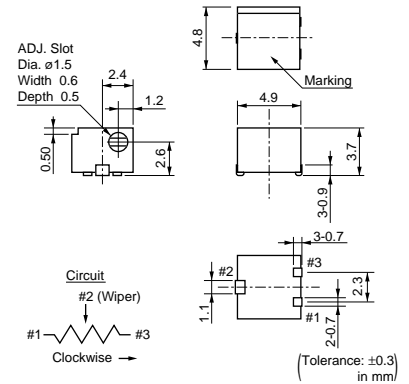
1. Measuring instruments
2. OA equipment
3. Medical equipment
4. Power supply
5. Sensors
6. Base station for cellular phone



PVG5A



PVG5H



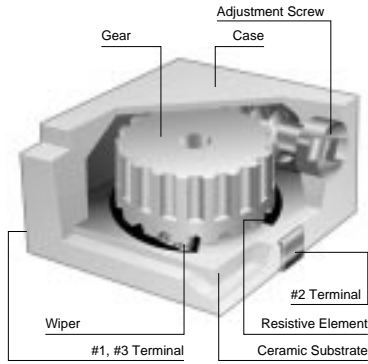
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Part Number	Power Rating (W)	Soldering Method	Number of Turns (Effective Rotation Angle)	Total Resistance Value	TCR (ppm/°C)
PVG5□100C03	0.25(70°C)	Reflow/Soldering Iron	11	10ohm ±10%	±150
PVG5□200C03	0.25(70°C)	Reflow/Soldering Iron	11	20ohm ±10%	±150
PVG5□500C03	0.25(70°C)	Reflow/Soldering Iron	11	50ohm ±10%	±150
PVG5□101C03	0.25(70°C)	Reflow/Soldering Iron	11	100ohm ±10%	±150
PVG5□201C03	0.25(70°C)	Reflow/Soldering Iron	11	200ohm ±10%	±150
PVG5□501C03	0.25(70°C)	Reflow/Soldering Iron	11	500ohm ±10%	±150
PVG5□102C03	0.25(70°C)	Reflow/Soldering Iron	11	1k ohm ±10%	±150
PVG5□202C03	0.25(70°C)	Reflow/Soldering Iron	11	2k ohm ±10%	±150
PVG5□502C03	0.25(70°C)	Reflow/Soldering Iron	11	5k ohm ±10%	±150
PVG5□103C03	0.25(70°C)	Reflow/Soldering Iron	11	10k ohm ±10%	±150
PVG5□203C03	0.25(70°C)	Reflow/Soldering Iron	11	20k ohm ±10%	±150
PVG5□503C03	0.25(70°C)	Reflow/Soldering Iron	11	50k ohm ±10%	±150
PVG5□104C03	0.25(70°C)	Reflow/Soldering Iron	11	100k ohm ±10%	±150
PVG5□204C03	0.25(70°C)	Reflow/Soldering Iron	11	200k ohm ±10%	±150
PVG5□504C03	0.25(70°C)	Reflow/Soldering Iron	11	500k ohm ±10%	±150
PVG5□105C03	0.25(70°C)	Reflow/Soldering Iron	11	1M ohm ±10%	±150
PVG5□205C03	0.25(70°C)	Reflow/Soldering Iron	11	2M ohm ±10%	±150

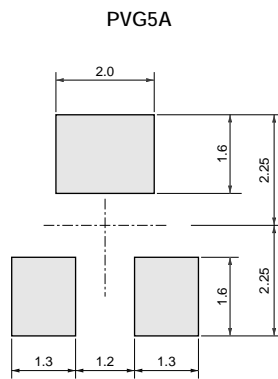
Operating Temperature Range: -55 to 125 °C

The blank column is filled with the code of adjustment direction A (top) or H (side).

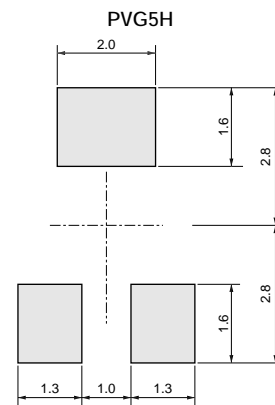
## Construction



## Standard Land Pattern



(Tolerance: ±0.1 in mm)



(Tolerance: ±0.1 in mm)

## Characteristics

Temperature Cycle	$\Delta TR$ : ±2% $\Delta V.S.S.$ : ±1%
Humidity	$\Delta TR$ : ±2% IR : 10M ohm min.
Vibration (20G)	$\Delta TR$ : ±1% $\Delta V.S.S.$ : ±1%
Shock (100G)	$\Delta TR$ : ±1% $\Delta V.S.S.$ : ±1%
Temperature Load Life	$\Delta TR$ : ±3% or 3 ohm max., whichever is greater $\Delta V.S.S.$ : ±1%
Low Temperature Exposure	$\Delta TR$ : ±1% $\Delta V.S.S.$ : ±1%
High Temperature Exposure	$\Delta TR$ : ±2% $\Delta V.S.S.$ : ±1%
Rotational Life	$\Delta TR$ : ±3% or 3 ohm max., whichever is greater (100 cycles)

$\Delta TR$  : Total Resistance Change

$\Delta V.S.S.$ : Voltage Setting Stability

IR : Insulation Resistance

## PVG5 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 condition  
Refer to the temperature profile.  
If the soldering conditions are not suitable, e.g., excessive time and/or excessive temperature, the trimmer capacitor 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) Insufficient amounts of solder can lead to insufficient soldering strength on PCB.  
Excessive amounts of solder may cause bridging between the terminals.

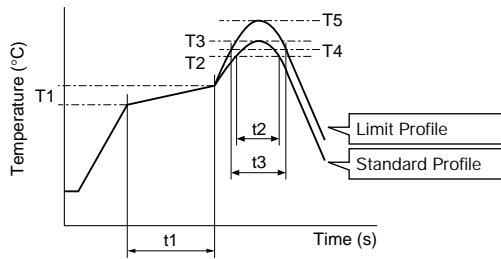
2. Mounting
  - (1) Use our standard land dimension. Excessive land area causes displacement due to the effect of the surface tension of the solder. Insufficient land area leads to insufficient soldering strength of the chip.
  - (2) Do not apply excessive force, preferably 9.8N max. (Ref. 1kgf) when 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 recommended size of the cylindrical pick-up nozzle should be outer dimension 4.0mm dia. and inner dimension 2.0mm 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.

## PVG5 Series Notice

### ■ Soldering Profile

#### ● Reflow Soldering Profile

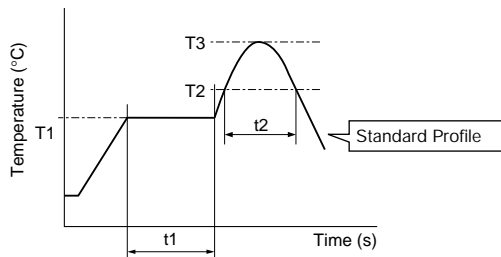
##### 1. Soldering profile for Lead-free solder (96.5Sn/3.0Ag/0.5Cu)



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	
<b>PVG5</b>	150 to 180	60 to 120	220	30 to 60	245±3	2	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	
<b>PVG5</b>	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
<b>PVG5</b>	350±10	3 max.	30 max.	1

### ■ Notice (Handling)

- Use suitable screwdrivers that fit comfortably in driver slot. We recommend the screwdrivers below.  
 \* Recommended screwdrivers for manual adjustment <PVG5 series>  
 VESSEL MFG.: NO.9000-1.3x30  
 (Murata P/N: KMDR130)  
 We can supply the screwdrivers above.  
 If you place order, please specify Murata P/N.
- Do not apply more than 9.8N (Ref. 1kgf) of twist and stress after mounting onto PCB to prevent contact intermittence. If excessive force is applied, the trimmer potentiometer may not function.

- When adjusting with a screwdriver, do not apply excessive force, preferable 4.9N max. (Ref 500gf).
- 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 problems.

### ■ Notice (Other)

- Please make sure that your product has been evaluated and confirmed against your specifications when our product is mounted to your product.
- Murata cannot guarantee trimmer potentiometer integrity when used under conditions other than those specified in this document.