

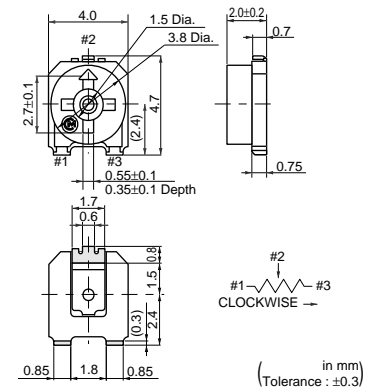
# Trimmer Potentiometers



## SMD Sealed Type 4mm Size PVM4 Series

### ■ Features

1. Sealed construction protects the interior from dust and liquid, which achieves stable performance.
2. Available for flow and reflow soldering method while maintaining unique sealed construction.
3. Simple construction by 3-piece parts achieves high reliability.
4. Large diameter slot of rotor improves driver insertion.
5. Available for cleaning after soldering
6. High grade version is available (PVM4AxxxD01).
7. To be complied with RoHS directive by new Cd free cermet resistive material. Pb free terminals with Sn plating.



### ■ Applications

1. Security
2. OA, FA equipments
3. Measuring equipments
4. Professional cameras
5. Encoders
6. Sensors

5

Part Number	Power Rating	Soldering Method	Number of Turns (Effective Rotation Angle)	Total Resistance Value	TCR
PVM4A101C01	0.1W(70°C)	Flow/Reflow/Soldering Iron	1(240°±10°)	100ohm ±25%	±250ppm/°C
PVM4A201C01	0.1W(70°C)	Flow/Reflow/Soldering Iron	1(240°±10°)	200ohm ±25%	±250ppm/°C
PVM4A301C01	0.1W(70°C)	Flow/Reflow/Soldering Iron	1(240°±10°)	300ohm ±25%	±250ppm/°C
PVM4A501C01	0.1W(70°C)	Flow/Reflow/Soldering Iron	1(240°±10°)	500ohm ±25%	±250ppm/°C
PVM4A102C01	0.1W(70°C)	Flow/Reflow/Soldering Iron	1(240°±10°)	1k ohm ±25%	±250ppm/°C
PVM4A202C01	0.1W(70°C)	Flow/Reflow/Soldering Iron	1(240°±10°)	2k ohm ±25%	±250ppm/°C
PVM4A302C01	0.1W(70°C)	Flow/Reflow/Soldering Iron	1(240°±10°)	3k ohm ±25%	±250ppm/°C
PVM4A502C01	0.1W(70°C)	Flow/Reflow/Soldering Iron	1(240°±10°)	5k ohm ±25%	±250ppm/°C
PVM4A103C01	0.1W(70°C)	Flow/Reflow/Soldering Iron	1(240°±10°)	10k ohm ±25%	±250ppm/°C
PVM4A203C01	0.1W(70°C)	Flow/Reflow/Soldering Iron	1(240°±10°)	20k ohm ±25%	±250ppm/°C
PVM4A303C01	0.1W(70°C)	Flow/Reflow/Soldering Iron	1(240°±10°)	30k ohm ±25%	±250ppm/°C
PVM4A503C01	0.1W(70°C)	Flow/Reflow/Soldering Iron	1(240°±10°)	50k ohm ±25%	±250ppm/°C
PVM4A104C01	0.1W(70°C)	Flow/Reflow/Soldering Iron	1(240°±10°)	100k ohm ±25%	±250ppm/°C
PVM4A204C01	0.1W(70°C)	Flow/Reflow/Soldering Iron	1(240°±10°)	200k ohm ±25%	±250ppm/°C
PVM4A304C01	0.1W(70°C)	Flow/Reflow/Soldering Iron	1(240°±10°)	300k ohm ±25%	±250ppm/°C
PVM4A504C01	0.1W(70°C)	Flow/Reflow/Soldering Iron	1(240°±10°)	500k ohm ±25%	±250ppm/°C
PVM4A105C01	0.1W(70°C)	Flow/Reflow/Soldering Iron	1(240°±10°)	1M ohm ±25%	±250ppm/°C
PVM4A205C01	0.1W(70°C)	Flow/Reflow/Soldering Iron	1(240°±10°)	2M ohm ±25%	±250ppm/°C
PVM4A101D01	0.25W(70°C)	Flow/Reflow/Soldering Iron	1(240°±10°)	100ohm ±20%	±100ppm/°C
PVM4A201D01	0.25W(70°C)	Flow/Reflow/Soldering Iron	1(240°±10°)	200ohm ±20%	±100ppm/°C
PVM4A301D01	0.25W(70°C)	Flow/Reflow/Soldering Iron	1(240°±10°)	300ohm ±20%	±100ppm/°C
PVM4A501D01	0.25W(70°C)	Flow/Reflow/Soldering Iron	1(240°±10°)	500ohm ±20%	±100ppm/°C
PVM4A102D01	0.25W(70°C)	Flow/Reflow/Soldering Iron	1(240°±10°)	1k ohm ±20%	±200ppm/°C
PVM4A202D01	0.25W(70°C)	Flow/Reflow/Soldering Iron	1(240°±10°)	2k ohm ±20%	±200ppm/°C
PVM4A302D01	0.25W(70°C)	Flow/Reflow/Soldering Iron	1(240°±10°)	3k ohm ±20%	±200ppm/°C
PVM4A502D01	0.25W(70°C)	Flow/Reflow/Soldering Iron	1(240°±10°)	5k ohm ±20%	±200ppm/°C
PVM4A103D01	0.25W(70°C)	Flow/Reflow/Soldering Iron	1(240°±10°)	10k ohm ±20%	±150ppm/°C
PVM4A203D01	0.25W(70°C)	Flow/Reflow/Soldering Iron	1(240°±10°)	20k ohm ±20%	±150ppm/°C
PVM4A303D01	0.25W(70°C)	Flow/Reflow/Soldering Iron	1(240°±10°)	30k ohm ±20%	±150ppm/°C
PVM4A503D01	0.25W(70°C)	Flow/Reflow/Soldering Iron	1(240°±10°)	50k ohm ±20%	±150ppm/°C

Continued on the following page.

Continued from the preceding page.

Part Number	Power Rating	Soldering Method	Number of Turns (Effective Rotation Angle)	Total Resistance Value	TCR
PVM4A104D01	0.25W(70°C)	Flow/Reflow/Soldering Iron	1(240°±10°)	100k ohm ±20%	±150ppm/°C
PVM4A204D01	0.25W(70°C)	Flow/Reflow/Soldering Iron	1(240°±10°)	200k ohm ±20%	±150ppm/°C
PVM4A304D01	0.25W(70°C)	Flow/Reflow/Soldering Iron	1(240°±10°)	300k ohm ±20%	±150ppm/°C
PVM4A504D01	0.25W(70°C)	Flow/Reflow/Soldering Iron	1(240°±10°)	500k ohm ±20%	±150ppm/°C
PVM4A105D01	0.25W(70°C)	Flow/Reflow/Soldering Iron	1(240°±10°)	1M ohm ±20%	±150ppm/°C
PVM4A205D01	0.25W(70°C)	Flow/Reflow/Soldering Iron	1(240°±10°)	2M ohm ±20%	±150ppm/°C

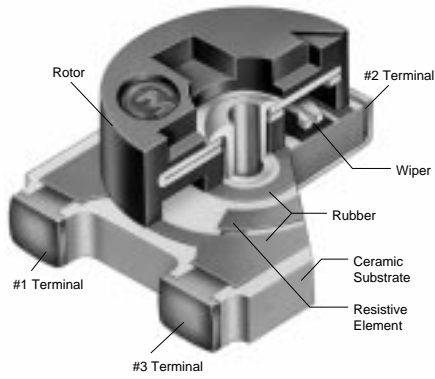
The last three digits express the individual specification codes. C01 for standard type and D01 for high-liability type.

Part Number	Power Rating (W)	Soldering Method	Number of Turns (Effective Rotation Angle)	Total Resistance Value	TCR (ppm/°C)	Remarks	
PVM4A101A01	0.1(70°C)	Flow/Reflow/Soldering Iron	1(240°±10°)	100 ohm±25%	±250	Non Standard Product (Cd Free)	
PVM4A201A01	0.1(70°C)	Flow/Reflow/Soldering Iron	1(240°±10°)	200 ohm±25%	±250		
PVM4A301A01	0.1(70°C)	Flow/Reflow/Soldering Iron	1(240°±10°)	300 ohm±25%	±250		
PVM4A501A01	0.1(70°C)	Flow/Reflow/Soldering Iron	1(240°±10°)	500 ohm±25%	±250		
PVM4A102A01	0.1(70°C)	Flow/Reflow/Soldering Iron	1(240°±10°)	1k ohm±25%	±250		
PVM4A202A01	0.1(70°C)	Flow/Reflow/Soldering Iron	1(240°±10°)	2k ohm±25%	±250		
PVM4A302A01	0.1(70°C)	Flow/Reflow/Soldering Iron	1(240°±10°)	3k ohm±25%	±250		
PVM4A502A01	0.1(70°C)	Flow/Reflow/Soldering Iron	1(240°±10°)	5k ohm±25%	±250		
PVM4A103A01	0.1(70°C)	Flow/Reflow/Soldering Iron	1(240°±10°)	10k ohm±25%	±250		
PVM4A203A01	0.1(70°C)	Flow/Reflow/Soldering Iron	1(240°±10°)	20k ohm±25%	±250		
PVM4A303A01	0.1(70°C)	Flow/Reflow/Soldering Iron	1(240°±10°)	30k ohm±25%	±250	Non Standard Product (Cd included)	
PVM4A503A01	0.1(70°C)	Flow/Reflow/Soldering Iron	1(240°±10°)	50k ohm±25%	±250		
PVM4A104A01	0.1(70°C)	Flow/Reflow/Soldering Iron	1(240°±10°)	100k ohm±25%	±250		
PVM4A204A01	0.1(70°C)	Flow/Reflow/Soldering Iron	1(240°±10°)	200k ohm±25%	±250		
PVM4A304A01	0.1(70°C)	Flow/Reflow/Soldering Iron	1(240°±10°)	300k ohm±25%	±250		
PVM4A504A01	0.1(70°C)	Flow/Reflow/Soldering Iron	1(240°±10°)	500k ohm±25%	±250		
PVM4A105A01	0.1(70°C)	Flow/Reflow/Soldering Iron	1(240°±10°)	1M ohm±25%	±250		
PVM4A205A01	0.1(70°C)	Flow/Reflow/Soldering Iron	1(240°±10°)	2M ohm±25%	±250		
PVM4A101B01	0.25(70°C)	Flow/Reflow/Soldering Iron	1(240°±10°)	100 ohm±20%	±150		Non Standard Product (Cd Free)
PVM4A201B01	0.25(70°C)	Flow/Reflow/Soldering Iron	1(240°±10°)	200 ohm±20%	±100		
PVM4A301B01	0.25(70°C)	Flow/Reflow/Soldering Iron	1(240°±10°)	300 ohm±20%	±100		
PVM4A501B01	0.25(70°C)	Flow/Reflow/Soldering Iron	1(240°±10°)	500 ohm±20%	±100		
PVM4A102B01	0.25(70°C)	Flow/Reflow/Soldering Iron	1(240°±10°)	1k ohm±20%	±100		
PVM4A202B01	0.25(70°C)	Flow/Reflow/Soldering Iron	1(240°±10°)	2k ohm±20%	±100		
PVM4A302B01	0.25(70°C)	Flow/Reflow/Soldering Iron	1(240°±10°)	3k ohm±20%	±100		
PVM4A502B01	0.25(70°C)	Flow/Reflow/Soldering Iron	1(240°±10°)	5k ohm±20%	±100		
PVM4A103B01	0.25(70°C)	Flow/Reflow/Soldering Iron	1(240°±10°)	10k ohm±20%	±100		
PVM4A203B01	0.25(70°C)	Flow/Reflow/Soldering Iron	1(240°±10°)	20k ohm±20%	±100		
PVM4A303B01	0.25(70°C)	Flow/Reflow/Soldering Iron	1(240°±10°)	30k ohm±20%	±100	Non Standard Product (Cd included)	
PVM4A503B01	0.25(70°C)	Flow/Reflow/Soldering Iron	1(240°±10°)	50k ohm±20%	±100		
PVM4A104B01	0.25(70°C)	Flow/Reflow/Soldering Iron	1(240°±10°)	100k ohm±20%	±150		
PVM4A204B01	0.25(70°C)	Flow/Reflow/Soldering Iron	1(240°±10°)	200k ohm±20%	±150		
PVM4A304B01	0.25(70°C)	Flow/Reflow/Soldering Iron	1(240°±10°)	300k ohm±20%	±150		
PVM4A504B01	0.25(70°C)	Flow/Reflow/Soldering Iron	1(240°±10°)	500k ohm±20%	±150		
PVM4A105B01	0.25(70°C)	Flow/Reflow/Soldering Iron	1(240°±10°)	1M ohm±20%	±150		
PVM4A205B01	0.25(70°C)	Flow/Reflow/Soldering Iron	1(240°±10°)	2M ohm±20%	±150		

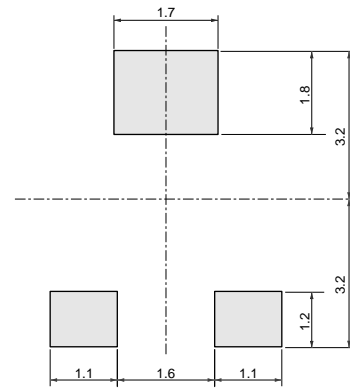
Continued on the following page. ↗

Continued from the preceding page.

■ Construction



■ Standard Land Pattern



(Tolerance : ±0.1) in mm

■ Characteristics

Item	PVM4A□□□C01	PVM4A□□□D01
Humidity Exposure	Res. Change : ±3%	Res. Change : ±2%
High Temperature Exposure	Res. Change : ±3%	Res. Change : ±2%
Humidity Load Life	Res. Change : ±3%	Res. Change : ±3%
Temperature Load Life	Res. Change : ±3%	Res. Change : ±3%
Temperature Cycle	Res. Change : ±3%	Res. Change : ±2%
Rotational Life	Res. Change : ±10% (20 cycles)	Res. Change : ±5% (100 cycles)

## PVM4 Series Notice

### ■ Notice (Operating and Storage Conditions)

1. Store in temperatures of -10 to +40 deg. C and relative humidity of 30-85%RH.
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  $(P.R)^{1/2}$  or the maximum operating voltage, whichever is smaller.
3. The maximum input current to a trimmer potentiometer should not exceed  $(P/R)^{1/2}$  or the allowable wiper current, whichever is smaller.

### ■ Notice (Soldering and Mounting)

1. Soldering
  - (1) Can be soldered by reflow soldering method, flow soldering method, and soldering iron. (In case of flow soldering, it is necessary to clean after soldering.)
  - (2) 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.
  - (3) Standard soldering condition
    - (a) Reflow and flow soldering :  
Refer to the standard temperature profile.
    - (b) Soldering iron:
      - >Temperature of tip 400 deg.C max.
      - >Soldering time 5 sec. max.
      - >Diameter 2mm dia. max.
      - >Wattage of iron 40W max.
- Before using other soldering conditions than those listed above, please consult with a Murata factory representative prior to using. If the soldering conditions are not suitable, e.g., excessive time and/or excessive temperature, the trimmer potentiometer may deviate from the specified characteristics.
- (4) Apply the appropriate amount of solder paste.  
The thickness of solder paste should be printed from 100 micro m to 150 micro m and the dimension of land pattern used should be Murata's standard land pattern at reflow soldering.

Insufficient amounts of solder can lead to insufficient soldering strength on PCB.  
Excessive amounts of solder may cause bridging between the terminals.

- (5) 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.
2. Mounting
  - (1) Do not apply excessive force (preferably 9.8N (Ref.; 1kgf) max.), when the trimmer potentiometer is mounted to the PCB.
  - (2) Do not warp and/or bend PC board to prevent trimmer potentiometer from breakage.
  - (3) 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
  - (1) Isopropyl alcohol and Ethyl alcohol are available materials for cleaning.  
For other materials, please consult with a Murata factory representative prior to using.
  - (2) The following are the recommended cleaning conditions for the potentiometer. If this part is cleaned under any other conditions than these listed below, the sealing construction may be damaged.  
(Condition)  
Type1: Cold dipping/Max. 5 min.

Continued on the following page. 

## PVM4 Series Notice

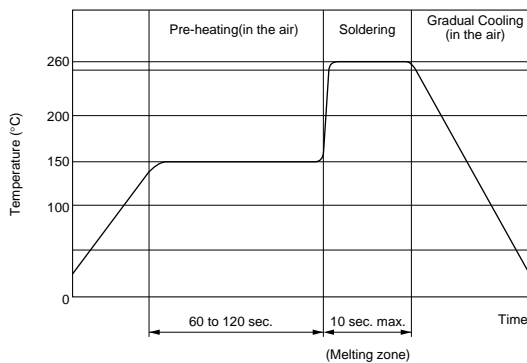
Continued from the preceding page.

- Type2: Hot dipping/Max. 2 min.
- Type3: Ultra-sonic washing/Max. 1 min.  
(20W/litre or below)
- Type4: Hot dipping/Max. 1 min.+  
Ultra-sonic washing/Max.1 min.  
(20W/litre or below)
- Type5: Hot dipping/Max. 1 min.+  
Ultra-sonic washing/Max. 30 sec.+  
(20W/litre or below)/(Preferably max. 30 sec.)  
Vapor/Max.30 sec.

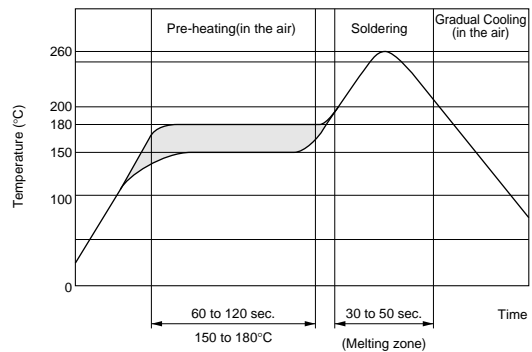
Due to ultra-sonic cleaning equipment's peculiar self-resonance point and that cleaning compatibility usually depends on the jig construction and/or the cleaning condition such as the depth of immersion, please check the cleaning equipment to determine the suitable conditions.

If the condition is not suitable, the trimmer potentiometer may deviate from specified characteristics.

### Flow Soldering Standard Profile



### Reflow Soldering Standard Profile



### Notice (Handling)

1. Use suitable screwdrivers that fit comfortably in driver slot. We recommend the screwdriver below.  
\* Recommended screwdriver for manual adjustment  
VESSEL MFG.: NO. 9000-2.6x30  
(Murata P/N : KMDR120)  
We can supply the screwdrivers above.  
If you place order, please specify the Murata P/N.
2. Don't apply more than 4.9N (Ref.; 500gf) of twist and stress after mounting onto PCB to prevent contact intermittence. If excessive force is

- applied, the trimmer potentiometer may not function.
3. Please use within the effective rotational angle.  
The potentiometer does not have a mechanical stop for over rotation. In cases out of effective rotational angle, the trimmer potentiometer may not function.
4. When using a lock paint to fix slot position, please use adhesive resin without chlorine or sulfur (Three-bond "1401 series").

### 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.

## SMD Open Type and SMD Sealed Type PVM4A\_C01 Series Specifications and Test Methods

The tests and measurements should 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. If questionable results occur that have been measured in accordance with the above mentioned conditions, the tests and measurements should be conducted under the condition of 25±2°C of temperature and, 45 to 55% of relative humidity and 86 to 106 kpa of atmospheric pressure.

No.	Item	Test Methods																														
1	Total Resistance	<p>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 should be the same for subsequent total resistance measurements on the same device.</p> <p>Use the test voltage specified in Table-1 for total resistance measurements. This voltage should be used whenever a subsequent total resistance measurement is made.</p> <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th>Total Resistance, Nominal (ohm)</th> <th>Maximum Test Voltage (V)</th> </tr> </thead> <tbody> <tr> <td>10≤R≤100</td> <td>1.0</td> </tr> <tr> <td>100&lt;R≤1k</td> <td>3.0</td> </tr> <tr> <td>1k&lt;R≤10k</td> <td>10.0</td> </tr> <tr> <td>10k&lt;R≤100k</td> <td>30.0</td> </tr> <tr> <td>100k&lt;R</td> <td>100.0</td> </tr> </tbody> </table> <p style="text-align: center;">Table 1: Total resistance test voltage</p>	Total Resistance, Nominal (ohm)	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																		
Total Resistance, Nominal (ohm)	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																															
2	Residual Resistance	<p>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.</p>																														
3	Contact Resistance	<p>Contact resistance variation should be measured with the measuring circuit shown below, or its equivalent. The operating wiper should be rotated in both directions through 90% of the actual effective-electrical travel for a total of 6 cycles.</p> <p>The rate of rotation of the operating wiper should be such that the wiper completes 1 count in determining whether or not a contact resistance variation is observed at least twice in the same location. The test current should follow the value given in Table-2 unless otherwise limited by the power rating.</p> <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th>Standard Total Resistance R (ohm)</th> <th>Test Current</th> </tr> </thead> <tbody> <tr> <td>100≤R&lt;10k</td> <td>10mA max.</td> </tr> <tr> <td>10k≤R&lt;100k</td> <td>1mA max.</td> </tr> <tr> <td>100k≤R</td> <td>100μA max.</td> </tr> </tbody> </table> <p style="text-align: center;">Table 2: Test current for CRV</p> <div style="text-align: right;"> <p style="text-align: center;">Figure 1: CRV measuring circuit</p> </div>	Standard Total Resistance R (ohm)	Test Current	100≤R<10k	10mA max.	10k≤R<100k	1mA max.	100k≤R	100μA max.																						
Standard Total Resistance R (ohm)	Test Current																															
100≤R<10k	10mA max.																															
10k≤R<100k	1mA max.																															
100k≤R	100μA max.																															
4	Humidity Exposure	<p>The wiper contact point should be preset at about 50% position of effective rotational angle. After that, the potentiometer should be placed in a chamber at 40±2°C and 90 - 95% without loading for 500±12 hours.</p> <p>The resistance value should be measured after keeping the potentiometer in a room for 5±1/6 hours.</p>																														
5	High Temperature Exposure	<p>The wiper contact point should be preset at about 50% position of effective rotational angle. After that, the potentiometer should be placed in a chamber at 70±2°C without loading for 500±12 hours. The resistance value should be measured after keeping the potentiometer in a room for 1.5±1/6 hours.</p>																														
6	Humidity Load Life	<p>The wiper contact point should be preset at about 50% position of effective rotational angle. After that, the potentiometer should be placed in a chamber at 40±2°C and 90 - 95% with loading the 1/2 rated voltage between #1 and #2 terminals, intermittently 1.5 hours ON and 0.5 hours OFF for 1000±12 hours.</p> <p>The resistance value should be measured after keeping the potentiometer in a room for 5±1/6 hours.</p>																														
7	Load Life	<p>The wiper contact point should be preset at about 50% position of effective rotational angle. After that, the potentiometer should be placed in a chamber at 70±2°C (50±2°C for PVZ) with loading the 1/2 rated voltage between #1 and #2 terminals, intermittently 1.5 hours ON and 0.5 hours OFF for 1000±12 hours. The resistance value should be measured after keeping the potentiometer in a room for 1.5±1/6 hours.</p>																														
8	Temperature Cycle	<p>The wiper contact point should be preset at about 50% position of effective rotational angle. After that, the potentiometer should be subjected to Table 3, Table 4 temperature for 5 cycles. The resistance value should be measured after keeping the potentiometer in a room for 1.5±10 minutes.</p> <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th>Sequence</th> <th>1</th> <th>2</th> <th>3</th> <th>4</th> </tr> </thead> <tbody> <tr> <td>Temp. (°C)</td> <td>-25±3</td> <td>+25±2</td> <td>+85±3</td> <td>+25±2</td> </tr> <tr> <td>Time (min.)</td> <td>30±3</td> <td>10max.</td> <td>30±3</td> <td>10max.</td> </tr> </tbody> </table> <p style="text-align: center;">Table 3: PVZ</p> <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th>Sequence</th> <th>1</th> <th>2</th> <th>3</th> <th>4</th> </tr> </thead> <tbody> <tr> <td>Temp. (°C)</td> <td>-55±3</td> <td>+25±2</td> <td>+125±3</td> <td>+25±2</td> </tr> <tr> <td>Time (min.)</td> <td>30±3</td> <td>10max.</td> <td>30±3</td> <td>10max.</td> </tr> </tbody> </table> <p style="text-align: center;">Table 4: PVA3/PVS3/PVM4A□□□C01</p>	Sequence	1	2	3	4	Temp. (°C)	-25±3	+25±2	+85±3	+25±2	Time (min.)	30±3	10max.	30±3	10max.	Sequence	1	2	3	4	Temp. (°C)	-55±3	+25±2	+125±3	+25±2	Time (min.)	30±3	10max.	30±3	10max.
Sequence	1	2	3	4																												
Temp. (°C)	-25±3	+25±2	+85±3	+25±2																												
Time (min.)	30±3	10max.	30±3	10max.																												
Sequence	1	2	3	4																												
Temp. (°C)	-55±3	+25±2	+125±3	+25±2																												
Time (min.)	30±3	10max.	30±3	10max.																												

Continued on the following page.

## SMD Open Type and SMD Sealed Type PVM4A\_C01 Series Specifications and Test Methods

☐ Continued from the preceding page.

No.	Item	Test Methods																				
9	Temperature Coefficient of Resistance	<p>The trimmer potentiometer should be subjected to each of the following temperatures (see Table 5, Table 6) for 30 to 45 minutes. The resistance value should be measured in the chamber.</p> $TCR = \frac{R_2 - R_1}{R_1 (T_2 - T_1)} \times 10^6 \text{ (ppm/}^\circ\text{C)}$ <p>                     T<sub>1</sub> : Reference temperature in degrees celsius                      T<sub>2</sub> : Test temperature in degrees celsius                      R<sub>1</sub> : Resistance at reference temperature in ohm                      R<sub>2</sub> : Resistance at test temperature in ohm                 </p> <table border="1" style="display: inline-table; margin-right: 20px;"> <thead> <tr> <th>Sequence</th> <th>1*</th> <th>2</th> <th>3*</th> <th>4</th> </tr> </thead> <tbody> <tr> <td>Temp. (°C)</td> <td>+25±2</td> <td>-25±3</td> <td>+25±2</td> <td>+85±3</td> </tr> </tbody> </table> <p>Note*: Norm temp.</p> <p style="text-align: center;">Table 5: PVZ</p> <table border="1" style="display: inline-table;"> <thead> <tr> <th>Sequence</th> <th>1</th> <th>2</th> <th>3*</th> <th>4</th> </tr> </thead> <tbody> <tr> <td>Temp. (°C)</td> <td>+25±2</td> <td>-55±3</td> <td>+25±2</td> <td>+125±3</td> </tr> </tbody> </table> <p style="text-align: center;">Table 6: PVA3/PVS3/PVM4A□□□C01</p>	Sequence	1*	2	3*	4	Temp. (°C)	+25±2	-25±3	+25±2	+85±3	Sequence	1	2	3*	4	Temp. (°C)	+25±2	-55±3	+25±2	+125±3
Sequence	1*	2	3*	4																		
Temp. (°C)	+25±2	-25±3	+25±2	+85±3																		
Sequence	1	2	3*	4																		
Temp. (°C)	+25±2	-55±3	+25±2	+125±3																		
10	Rotational Life	<p>The wiper should be rotated over 90% of the effective rotational angle without loading at a speed of 10 cycles per minute, for 10 cycles continuously. The resistance value should be measured after keeping the potentiometer in a room for 10±5 minutes.</p>																				