

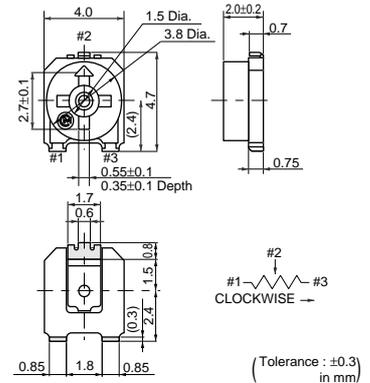
Trimmer Potentiometers



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. Complies with RoHS directive by new Cd free cermet resistive material. Pb free terminals with Sn plating.



■ Applications

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

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

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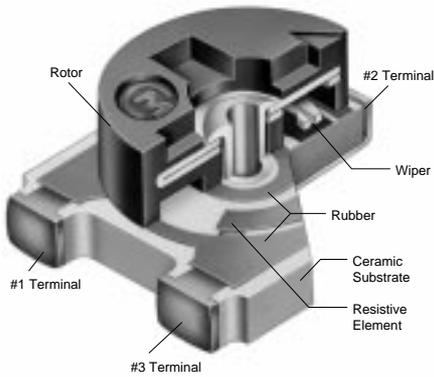
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Part Number	Power Rating (W)	Soldering Method	Number of Turns (Effective Rotation Angle)	Total Resistance Value	TCR (ppm/°C)
PVM4A104D01	0.25(70°C)	Flow/Reflow/Soldering Iron	1(240°±10°)	100k ohm ±20%	±150
PVM4A204D01	0.25(70°C)	Flow/Reflow/Soldering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

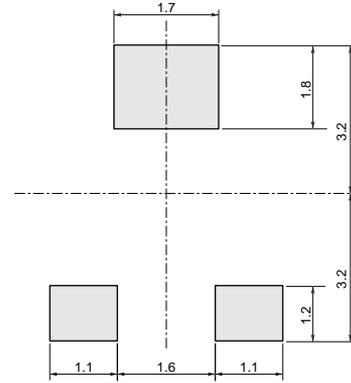
Operating Temperature Range: -55 to 125 °C

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

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%.
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.

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■ Notice (Soldering and Mounting)

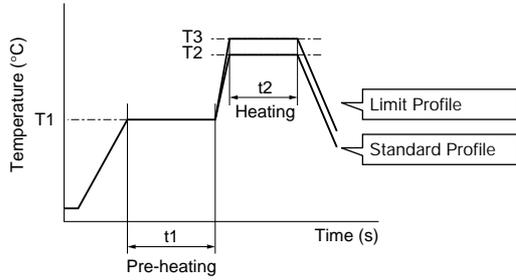
1. Soldering
 - (1) Can be soldered by reflow soldering method, flow soldering method, and soldering iron.
 - (2) Use our standard land dimension. Excessive land area causes displacement due to the effect of the surface tension of the solder. Insufficient land area leads to insufficient soldering strength of the chip.
 - (3) Soldering condition
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.
 - (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 max. (Ref. 1kgf) 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
Isopropyl alcohol and Ethyl alcohol are available materials for cleaning.
For other materials, please consult with a Murata factory representative prior to using.

PVM4 Series Notice

■ Soldering Profile ● Flow Soldering Profile

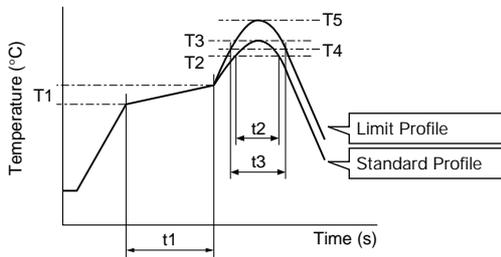
Soldering profile for Lead-free solder (96.5Sn/3.0Ag/0.5Cu), Eutectic solder (63Sn/37Pb)



Series	Standard Profile					Limit Profile				
	Pre-heating		Heating		Cycle of Flow	Pre-heating		Heating		Cycle of Flow
	Temp. (T1)	Time (t1)	Temp. (T2)	Time (t2)		Temp. (T1)	Time (t1)	Temp. (T3)	Time (t2)	
	°C	sec.	°C	sec.	Time	°C	sec.	°C	sec.	Time
PVM4	150	60 to 120	250	5 max.	1	150	60 to 120	265±3	5 max.	2

● Reflow Soldering Profile

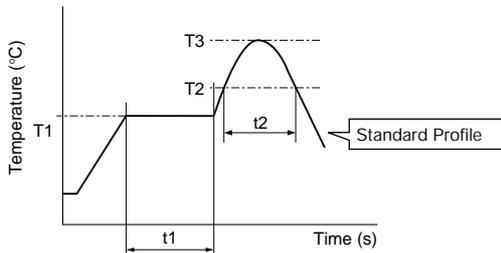
1. Soldering profile for Lead-free solder (96.5Sn/3.0Ag/0.5Cu)



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
PVM4	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
PVM4	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
PVM4	350±10	3 max.	30 max.	1

PVM4 Series Notice

■ 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. Do not 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") 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.