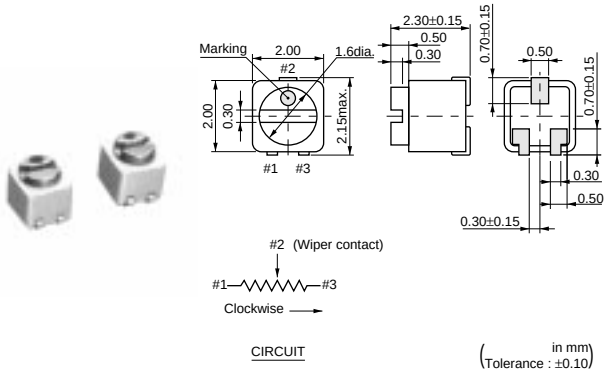
Trimmer Potentiometers

SMD Sealed Type 2mm Size PVF2 Series

■ Features

1. Ultra-compact size of "2x2x2.3mm"
2. A sealed structure prevents liquids (water, cleaning liquid, sweat, etc.) from entering.
3. As for the resistance change characteristics, both a log curve type and linear type are available.
4. A rotation service life of 100 cycles is guaranteed.
5. Can be automatically mounted using a chip placer, as well as mounted using reflow soldering.



■ Applications

1. Hearing aids
2. Ultra-compact sensors or the like
3. Applications requiring ultra-compactness, and a sealed structure

Part Number	Power Rating	Soldering Method	Number of Turns (Effective Rotation Angle)	Total Resistance Value	TCR
PVF2A501A11	0.001W(50°C)	Reflow/Soldering Iron	1(210°±10°)	500ohm ±30%	±500ppm/°C
PVF2A102A11	0.001W(50°C)	Reflow/Soldering Iron	1(210°±10°)	1k ohm ±30%	±500ppm/°C
PVF2A202A11	0.001W(50°C)	Reflow/Soldering Iron	1(210°±10°)	2k ohm ±30%	±500ppm/°C
PVF2A502A11	0.001W(50°C)	Reflow/Soldering Iron	1(210°±10°)	5k ohm ±30%	±500ppm/°C
PVF2A103A11	0.001W(50°C)	Reflow/Soldering Iron	1(210°±10°)	10k ohm ±30%	±500ppm/°C
PVF2A203A11	0.001W(50°C)	Reflow/Soldering Iron	1(210°±10°)	20k ohm ±30%	±500ppm/°C
PVF2A503A11	0.001W(50°C)	Reflow/Soldering Iron	1(210°±10°)	50k ohm ±30%	±500ppm/°C
PVF2A104A11	0.001W(50°C)	Reflow/Soldering Iron	1(210°±10°)	100k ohm ±30%	±500ppm/°C
PVF2A204A11	0.001W(50°C)	Reflow/Soldering Iron	1(210°±10°)	200k ohm ±30%	±500ppm/°C
PVF2A504A11	0.001W(50°C)	Reflow/Soldering Iron	1(210°±10°)	500k ohm ±30%	±500ppm/°C
PVF2A105A11	0.001W(50°C)	Reflow/Soldering Iron	1(210°±10°)	1M ohm ±30%	±500ppm/°C
PVF2A102A41	0.001W(50°C)	Reflow/Soldering Iron	1(210°±10°)	1k ohm ±30%	±500ppm/°C
PVF2A202A41	0.001W(50°C)	Reflow/Soldering Iron	1(210°±10°)	2k ohm ±30%	±500ppm/°C
PVF2A502A41	0.001W(50°C)	Reflow/Soldering Iron	1(210°±10°)	5k ohm ±30%	±500ppm/°C
PVF2A103A41	0.001W(50°C)	Reflow/Soldering Iron	1(210°±10°)	10k ohm ±30%	±500ppm/°C
PVF2A203A41	0.001W(50°C)	Reflow/Soldering Iron	1(210°±10°)	20k ohm ±30%	±500ppm/°C
PVF2A503A41	0.001W(50°C)	Reflow/Soldering Iron	1(210°±10°)	50k ohm ±30%	±500ppm/°C
PVF2A104A41	0.001W(50°C)	Reflow/Soldering Iron	1(210°±10°)	100k ohm ±30%	±500ppm/°C
PVF2A204A41	0.001W(50°C)	Reflow/Soldering Iron	1(210°±10°)	200k ohm ±30%	±500ppm/°C
PVF2A504A41	0.001W(50°C)	Reflow/Soldering Iron	1(210°±10°)	500k ohm ±30%	±500ppm/°C
PVF2A102A51	0.001W(50°C)	Reflow/Soldering Iron	1(210°±10°)	1k ohm ±30%	±500ppm/°C
PVF2A202A51	0.001W(50°C)	Reflow/Soldering Iron	1(210°±10°)	2k ohm ±30%	±500ppm/°C
PVF2A502A51	0.001W(50°C)	Reflow/Soldering Iron	1(210°±10°)	5k ohm ±30%	±500ppm/°C
PVF2A103A51	0.001W(50°C)	Reflow/Soldering Iron	1(210°±10°)	10k ohm ±30%	±500ppm/°C
PVF2A203A51	0.001W(50°C)	Reflow/Soldering Iron	1(210°±10°)	20k ohm ±30%	±500ppm/°C
PVF2A503A51	0.001W(50°C)	Reflow/Soldering Iron	1(210°±10°)	50k ohm ±30%	±500ppm/°C
PVF2A104A51	0.001W(50°C)	Reflow/Soldering Iron	1(210°±10°)	100k ohm ±30%	±500ppm/°C
PVF2A204A51	0.001W(50°C)	Reflow/Soldering Iron	1(210°±10°)	200k ohm ±30%	±500ppm/°C
PVF2A504A51	0.001W(50°C)	Reflow/Soldering Iron	1(210°±10°)	500k ohm ±30%	±500ppm/°C
PVF2A102A81	0.001W(50°C)	Reflow/Soldering Iron	1(210°±10°)	1k ohm ±30%	±500ppm/°C
PVF2A202A81	0.001W(50°C)	Reflow/Soldering Iron	1(210°±10°)	2k ohm ±30%	±500ppm/°C
PVF2A502A81	0.001W(50°C)	Reflow/Soldering Iron	1(210°±10°)	5k ohm ±30%	±500ppm/°C
PVF2A103A81	0.001W(50°C)	Reflow/Soldering Iron	1(210°±10°)	10k ohm ±30%	±500ppm/°C
PVF2A203A81	0.001W(50°C)	Reflow/Soldering Iron	1(210°±10°)	20k ohm ±30%	±500ppm/°C

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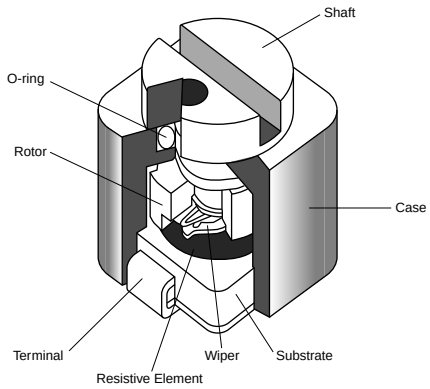
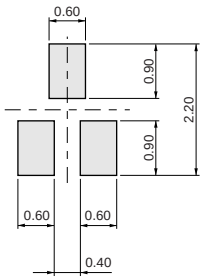
Part Number	Power Rating	Soldering Method	Number of Turns (Effective Rotation Angle)	Total Resistance Value	TCR
PVF2A503A81	0.001W(50°C)	Reflow/Soldering Iron	1(210°±10°)	50k ohm ±30%	±500ppm/°C
PVF2A104A81	0.001W(50°C)	Reflow/Soldering Iron	1(210°±10°)	100k ohm ±30%	±500ppm/°C
PVF2A204A81	0.001W(50°C)	Reflow/Soldering Iron	1(210°±10°)	200k ohm ±30%	±500ppm/°C
PVF2A504A81	0.001W(50°C)	Reflow/Soldering Iron	1(210°±10°)	500k ohm ±30%	±500ppm/°C
PVF2A102A91	0.001W(50°C)	Reflow/Soldering Iron	1(210°±10°)	1k ohm ±30%	±500ppm/°C
PVF2A202A91	0.001W(50°C)	Reflow/Soldering Iron	1(210°±10°)	2k ohm ±30%	±500ppm/°C
PVF2A502A91	0.001W(50°C)	Reflow/Soldering Iron	1(210°±10°)	5k ohm ±30%	±500ppm/°C
PVF2A103A91	0.001W(50°C)	Reflow/Soldering Iron	1(210°±10°)	10k ohm ±30%	±500ppm/°C
PVF2A203A91	0.001W(50°C)	Reflow/Soldering Iron	1(210°±10°)	20k ohm ±30%	±500ppm/°C
PVF2A503A91	0.001W(50°C)	Reflow/Soldering Iron	1(210°±10°)	50k ohm ±30%	±500ppm/°C
PVF2A104A91	0.001W(50°C)	Reflow/Soldering Iron	1(210°±10°)	100k ohm ±30%	±500ppm/°C
PVF2A204A91	0.001W(50°C)	Reflow/Soldering Iron	1(210°±10°)	200k ohm ±30%	±500ppm/°C
PVF2A504A91	0.001W(50°C)	Reflow/Soldering Iron	1(210°±10°)	500k ohm ±30%	±500ppm/°C

The last three digits express the individual specification codes for Resistant Curve. Please refer to Resistance Curve on the following page for characteristics.

■ Construction



■ Standard Land Pattern



(in mm
Tolerance : ±0.10)

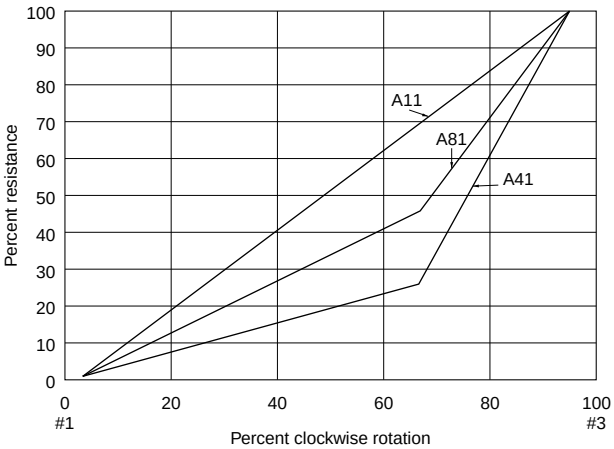
■ Characteristics

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

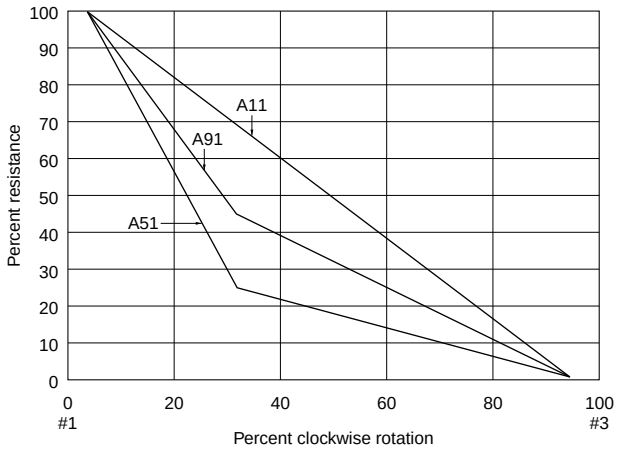
ΔTR: Total Resistance Change
ΔV.S.S. : Voltage Setting Stability

■ Resistance Curve

Linear-log. curve (Measured from terminal 1 to 2)



Linear-log. log. curve (Measured from terminal 2 to 3)



PVF2 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.
4. If the trimmer potentiometer is used in DC and high humidity conditions, please connect wiper (#2) for plus and resistive element (#1 or #3) for minus.

■ Notice (Soldering and Mounting)

1. Soldering
   (1) Standard solder iron condition
   (a) Reflow soldering:
   Refer to the standard temperature profile.
   (b) Sodering iron:
   >Temperature of tip 260 deg. C max.
   >Soldering time 3 sec. max.
   >Diameter 1mm dia. max.
   >Wattage of iron 30W 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.
   (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) 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) Cannot be soldered using the flow soldering method. If you use the flow soldering method, the trimmer potentiometer may not function.
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 (Ref.; 500gf) max.), when the trimmer potentiometer is mounted to the PCB.
   (3) Do not warp and/or bend PC board to prevent trimmer potentiometer from breakage.
3. Cleaning
   (1) 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.
   (2) The total cleaning time by cold dipping, vapor and ultrasonic washing (conditions as below) method should be less than 3 minutes.
   (3) For ultra-sonic cleaning, the available condition is as follows.
   >Power: 600W (67 liter) max.
   >Frequency: 28kHz
   >Temperature: Ambient temperature
   Due to the ultra-sonic cleaning equipment's peculiar self-resonance point and that the

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PVF2 Series Notice

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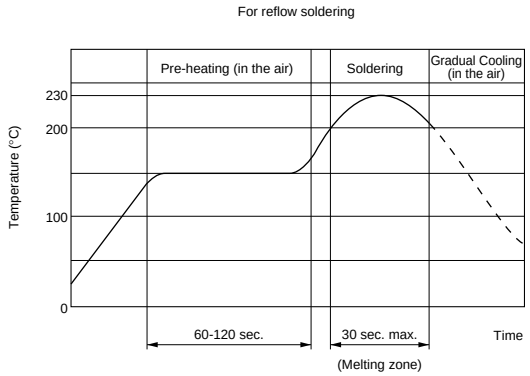
cleaning compatibility usually depends on the jig construction and/or the cleaning condition such as the depth of immersion, please check the cleaning equipment to determine the suitable conditions.
If the trimmer potentiometer is cleaned by other conditions, the trimmer potentiometer may be damaged.

■ Reflow Soldering Standard Profile



■ Notice (Handling)

1. Use suitable screwdrivers that fit comfortably in driver slot.
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. The rotational torque at the position of the adjustment range should not exceed the stop strength.
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.