Trimmer Potentiometers



SMD Open Type 3mm Size PVZ3 Series

PVZ3 Series

■ Features

- 1. Excellent solderability characteristics are achieved via special plating techniques on each termination.
- 2. Specially designed substrate prevents wicking of flux onto the top of the part body.
- 3. Funnel shaped adjustment slot allows for in-process automatic adjustment. (PVZ3A/PVZ3H/PVZ3K Series)
- 4. High-heat resistance type is available (PVZ3A C01/PVZ3K E01).
- 5. Enlarged bottom termination enhances soldering strength while reducing the necessary land area required promoting high-density PCB mounting (PVZ3A/PVZ3H/PVZ3G Series).
- 6. The standard position of driver plate is adjusted at the center normally, but another position is also available.
- 7. This product meets PB-free standards.
- 8. Complies with RoHS directive.

■ Applications

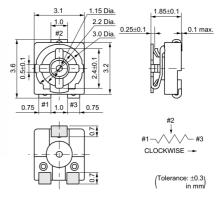
- 1. Optical pick up
- 2. Cordless telephones
- 3. CD players

5. Motor

- 4. E-BOOK 6. CD-ROMs
- 7. Car stereos
- 8. TFT-LCD TV sets
- 9. Headphone stereos

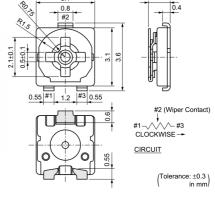


PVZ3A



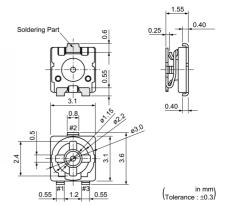


PVZ3G



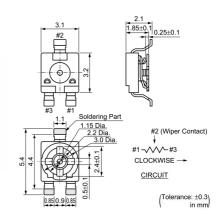


PVZ3H





PVZ3K





⚠Note

↑ This PDF catalog is downloaded from the website of Murata Manufacturing co., ltd. Therefore, it's specifications are subject to change or our products in it may be discontinued without advance notice. Please check with our sales representatives or product engineers before ordering.

• This PDF catalog has only typical specifications because there is no space for detailed specifications. Therefore, please approve our product specifications or transact the approval sheet for product specifications before ordering.

Top Adjustment (H 1.85)

Part Number	Power Rating (W)	Number of Turns (Effective Rotation Angle)	Mechanical Angle	Total Resistance Value	TCR (ppm/°C)
PVZ3A221C01	0.1(50°C)	1(230±10°)	Continuous	220ohm ±30%	±500
PVZ3A471C01	0.1(50°C)	1(230±10°)	Continuous	470ohm ±30%	±500
PVZ3A102C01	0.1(50°C)	1(230±10°)	Continuous	1k ohm ±30%	±500
PVZ3A222C01	0.1(50°C)	1(230±10°)	Continuous	2.2k ohm ±30%	±500
PVZ3A472C01	0.1(50°C)	1(230±10°)	Continuous	4.7k ohm ±30%	±500
PVZ3A103C01	0.1(50°C)	1(230±10°)	Continuous	10k ohm ±30%	±500
PVZ3A223C01	0.1(50°C)	1(230±10°)	Continuous	22k ohm ±30%	±500
PVZ3A473C01	0.1(50°C)	1(230±10°)	Continuous	47k ohm ±30%	±500
PVZ3A104C01	0.1(50°C)	1(230±10°)	Continuous	100k ohm ±30%	±500
PVZ3A224C01	0.1(50°C)	1(230±10°)	Continuous	220k ohm ±30%	±500
PVZ3A474C01	0.1(50°C)	1(230±10°)	Continuous	470k ohm ±30%	±500
PVZ3A105C01	0.1(50°C)	1(230±10°)	Continuous	1M ohm ±30%	±500
PVZ3A225C01	0.1(50°C)	1(230±10°)	Continuous	2.2M ohm ±30%	±500

^{*}Available for other resistance value.

Operating Temperature Range: -25 to 85 $^{\circ}\text{C}$ Soldering Method: Reflow/Soldering Iron

Top Adjustment (H 1.55)

Part Number Power Rating (W)		Number of Turns (Effective Rotation Angle)	Mechanical Angle	Total Resistance Value	TCR (ppm/°C)	
PVZ3H221C01	0.1(50°C)	1(230±10°)	Continuous	220ohm ±30%	±500	
PVZ3H471C01	0.1(50°C)	1(230±10°)	Continuous	470ohm ±30%	±500	
PVZ3H102C01	0.1(50°C)	1(230±10°)	Continuous	1k ohm ±30%	±500	
PVZ3H222C01	0.1(50°C)	1(230±10°)	Continuous	2.2k ohm ±30%	±500	
PVZ3H472C01	0.1(50°C)	1(230±10°)	Continuous	4.7k ohm ±30%	±500	
PVZ3H103C01	0.1(50°C)	1(230±10°)	Continuous	10k ohm ±30%	±500	
PVZ3H223C01	0.1(50°C)	1(230±10°)	Continuous	22k ohm ±30%	±500	
PVZ3H473C01	0.1(50°C)	1(230±10°)	Continuous	47k ohm ±30%	±500	
PVZ3H104C01	0.1(50°C)	1(230±10°)	Continuous	100k ohm ±30%	±500	
PVZ3H224C01	0.1(50°C)	1(230±10°)	Continuous	220k ohm ±30%	±500	
PVZ3H474C01	0.1(50°C)	1(230±10°)	Continuous	470k ohm ±30%	±500	
PVZ3H105C01	0.1(50°C)	1(230±10°)	Continuous	1M ohm ±30%	±500	
PVZ3H225C01	0.1(50°C)	1(230±10°)	Continuous	2.2M ohm ±30%	±500	

^{*}Available for other resistance value.

Operating Temperature Range: -25 to 85 °C Soldering Method: Reflow/Soldering Iron

Top Adjustment and Thin Type (H 1.15)

Part Number	Power Rating (W)	Number of Turns (Effective Rotation Angle)	Mechanical Angle	Total Resistance Value	TCR (ppm/°C)
PVZ3G221C01	0.1(50°C)	1(230±10°)	Continuous	220ohm ±30%	±500
PVZ3G471C01	0.1(50°C)	1(230±10°)	Continuous	470ohm ±30%	±500
PVZ3G102C01	0.1(50°C)	1(230±10°)	Continuous	1k ohm ±30%	±500
PVZ3G222C01	0.1(50°C)	1(230±10°)	Continuous	2.2k ohm ±30%	±500
PVZ3G472C01	0.1(50°C)	1(230±10°)	Continuous	4.7k ohm ±30%	±500
PVZ3G103C01	0.1(50°C)	1(230±10°)	Continuous	10k ohm ±30%	±500
PVZ3G223C01	0.1(50°C)	1(230±10°)	Continuous	22k ohm ±30%	±500
PVZ3G473C01	0.1(50°C)	1(230±10°)	Continuous	47k ohm ±30%	±500
PVZ3G104C01	0.1(50°C)	1(230±10°)	Continuous	100k ohm ±30%	±500
PVZ3G224C01	0.1(50°C)	1(230±10°)	Continuous	220k ohm ±30%	±500
PVZ3G474C01	0.1(50°C)	1(230±10°)	Continuous	470k ohm ±30%	±500
PVZ3G105C01	0.1(50°C)	1(230±10°)	Continuous	1M ohm ±30%	±500
PVZ3G225C01	0.1(50°C)	1(230±10°)	Continuous	2.2M ohm ±30%	±500

^{*}Available for other resistance value.

Operating Temperature Range: -25 to 85 °C Soldering Method: Reflow/Soldering Iron

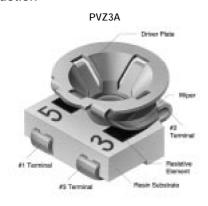


Rear Adjustment

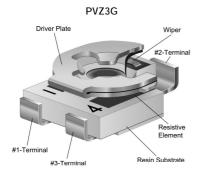
Part Number	Power Rating (W)	Number of Turns (Effective Rotation Angle)	Mechanical Angle Total Resistance Value		Mechanical Angle Total Resistance Value		TCR (ppm/°C)	
PVZ3K221E01	0.1(50°C)	1(230±10°)	Continuous	us 220ohm ±30%				
PVZ3K471E01	0.1(50°C)	1(230±10°)	Continuous	470ohm ±30%	±500			
PVZ3K102E01	0.1(50°C)	1(230±10°)	Continuous	1k ohm ±30%	±500			
PVZ3K222E01	0.1(50°C)	1(230±10°)	Continuous	2.2k ohm ±30%	±500			
PVZ3K472E01	0.1(50°C)	1(230±10°)	Continuous	4.7k ohm ±30%	±500			
PVZ3K103E01	0.1(50°C)	1(230±10°)	Continuous	10k ohm ±30%	±500			
PVZ3K223E01	0.1(50°C)	1(230±10°)	Continuous	22k ohm ±30%	±500			
PVZ3K473E01	0.1(50°C)	1(230±10°)	Continuous	47k ohm ±30%	±500			
PVZ3K104E01	0.1(50°C)	1(230±10°)	Continuous	100k ohm ±30%	±500			
PVZ3K224E01	0.1(50°C)	1(230±10°)	Continuous	220k ohm ±30%	±500			
PVZ3K474E01	0.1(50°C)	1(230±10°)	Continuous	470k ohm ±30%	±500			
PVZ3K105E01	0.1(50°C)	1(230±10°)	Continuous	1M ohm ±30%	±500			
PVZ3K225E01	0.1(50°C)	1(230±10°)	Continuous	2.2M ohm ±30%	±500			

^{*}Available for other resistance value.

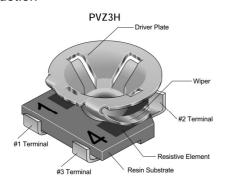
■ Construction



■ Construction

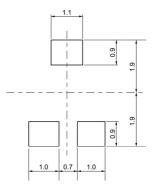


■ Construction



■ Standard Land Pattern

PVZ3A/PVZ3G/PVZ3H



(Tolerance : ±0.1) in mm)

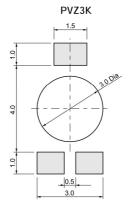
■ Construction

PVZ3K Driver Plate #1-Terminal #2-Terminal Wiper Resistive Element (Carbon) #3-Terminal Resin Substrate

■ Characteristics

Humidity Exposure	Res. Change: +10, -2%
High Temperature Exposure	Res. Change: R≦100kohm···+2, -10% 100kohm <r···+2, -15%<="" td=""></r···+2,>
Humidity Load Life	Res. Change: ±10%
Load Life	Res. Change: R≦100kohm···+2, -10% 100kohm <r···+2, -15%<="" td=""></r···+2,>
Temperature Cycle	Res. Change: ±5%
Rotational Life	Res. Change: ±10% (10 cycles)

■ Standard Land Pattern



(Tolerance : ±0.1) in mm)

sales representatives or product engineers before ordering. • This PDF catalog has only typical specifications because there is no space for detailed specifications. Therefore, please approve our product specifications or transact the approval sheet for product specifications before ordering.

PVZ3 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

The trimmer potentiometer should not be used under the following environmental conditions:

- 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. 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.

- (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 (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. Do not use flow soldering method (dipping). If you use the flow soldering method, the trimmer potentiometer may not function.
- (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) 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.

- (4) 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. (PVZ Series only)
- (1) Do not apply excessive force, preferably 4.9N max. (Ref. 500gf) 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 2.5-2.8mm dia. and inner dimension 2mm dia.
- 3. Cleaning
- (1) In case there is flux on the resistive element, clean sufficiently with cleaning solvents and completely remove all residual flux.
- (2) Isopropyl-alcohol and Ethyl-alcohol are applicable solvents for cleaning. If you use any other types of solvents, please evaluate performance with your product.

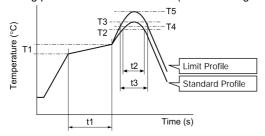


PVZ3 Series Notice

■ Soldering Profile

Reflow Soldering Profile

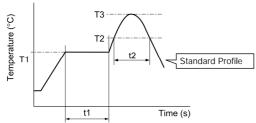
1. Soldering profile for Lead-free solder (96.5Sn/3.0Ag/0.5Cu)



Series		Standard Profile					Limit Profile					
	Pre-heating		Heating		Peak Temperature Cycle of		Pre-heating		Heating		Peak Temperature	Cycle of
	Temp. (T1)	Time (t1)	Temp. (T2)	Time (t2)	(T3)	Reflow	Temp. (T1)	Time (t1)	Temp. (T4)	Time (t3)	(T5)	Reflow
	°C	sec.	°C	sec.	°C	Time	°C	sec.	°C	sec.	°C	Time
PVZ3	150 to 180	60 to 120	220	30 to 60	245±3	2	150 to 180	60 to 120	220	30 to 60	260	2

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

(Limit profile: refer to 1)



	Standard Profile								
Series	Pre-h	eating	Hea	ting	Peak Temperature	Cycle of			
	Temp. (T1)	Time (t1)	Temp. (T2)	Time (t2)	(T3)	Reflow			
	°C	sec.	°C	sec.	°C	Time			
PVZ3	150	60 to 120	183	30	230 max.	1			

Soldering Iron

<u> </u>								
	Standard Condition							
Series	Temperature of Soldering Iron Tip	Soldering Time	Soldering Iron Power Output	Cycle of Solder Iron				
	°C	sec.	W	Time				
PVZ3	350±10	3 max.	30 max.	1				

■ Notice (Handling)

- 1. Use suitable screwdrivers that fit comfortably in driver slot. We recommend the screwdrivers below.
 - * Recommended screwdriver for manual adjustment >VESSEL MFG.: NO.9000+1.7x30 (Murata P/N: KMDR080)
 - * Recommended screwdriver for automatic adjustment >TORAY MFG.: JB-2225 (Murata P/N: KMBT070)
- 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.
- 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.

- 3. Please use within the effective rotational angle. Do 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 or cover the rotor, please evaluate performance by your product. Lock paint may cause corrosion or electrical contact problems.