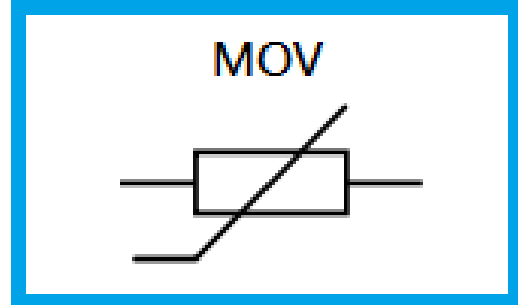


## PMV1812 Series MOV Devices

### Features

- Wide operating voltages ranging from 6 Vrms to 300 Vrms (9 Vdc to 385 Vdc).
- Fast response, instantly clamping the transient over voltage.
- High surge current handling capability.
- High energy absorption capability.
- Low clamping voltages, providing better surge protection.
- Low capacitance values, providing digital switching circuitry protection.
- High insulation resistance, preventing electric arcing to the adjacent devices or circuits.



### Applications

- Universal Serial Bus (USB).
- Mobile communication.
- Computer/DSP product.
- Video and audio ports.
- Portable/Hand-Held Products.
- Data, Diagnostic I/O ports.

### General Characteristics Definition

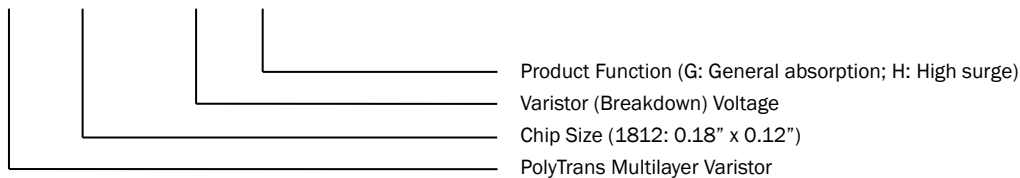
- Operating temperature: -40 ~ 125°C
- Storage temperature: -40 ~ 125°C

### Material

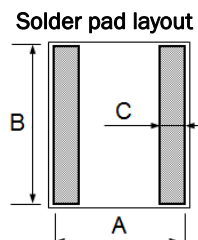
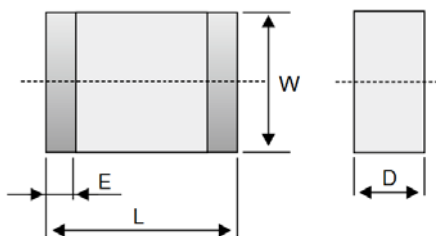
- Electrode: Ag/Ni/Sn
- Chip body: Zinc oxide

### Part Number Code

PMV 1812 - □□□ □



### Physical Dimensions



Symbol	Dimension (mm)
L	4.5±0.4
W	3.2±0.3
D	3.2 max.
E	0.75±0.25
A	5.0 typ.
B	3.4 typ.
C	1.2 typ.

**Note:**

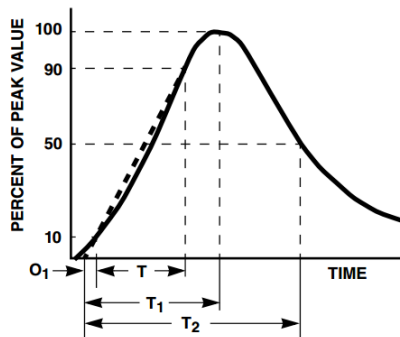
1. All dimensions are in millimeters.
2. No marking on the device.

## PMV1812 Series MOV Devices

### Electrical Characteristics

Part Number	Max Allowable Voltage		Varistor Voltage $V_b @ 1 \text{ mA}$	Energy 10/1000 $\mu\text{s}$	Withstand Surge Current $I_{PP}$ 8/20 $\mu\text{s}$	Max Clamping Voltage $V_c$		Typical Capacitance (pF)	Safety Certification UL/CSA
	$V_{RMS}$	$V_{DC}$				V	I		
	(V)	(V)	(V)	(J)	(A)	(V)	(A)	(pF)	UL/CSA
PMV1812-120G	6	9	12	0.9	500	20	10	9150	-
PMV1812-180G	11	14	18	1.4	500	30	10	6400	-
PMV1812-240G	14	18	24	2.3	500	38	10	4650	-
PMV1812-270G	17	22	27	2.0	500	44	10	4000	-
PMV1812-330G	20	26	33	2.5	500	54	10	2900	-
PMV1812-390G	25	30	39	2.9	500	65	10	2500	-
PMV1812-470G	30	38	47	3.5	500	77	10	2200	-
PMV1812-560G	35	45	56	4.2	500	90	10	1950	-
PMV1812-680G	40	56	68	4.8	500	110	10	1650	-
PMV1812-820G	50	65	82	4.5	500	135	10	1000	-
PMV1812-101G	60	85	100	5.0	500	165	10	450	-
PMV1812-271H	175	225	270	8.0	500	450	10	86	-
PMV1812-391H	250	330	390	10.0	500	647	10	42	-
PMV1812-431H	275	350	430	8.2	500	710	10	310	-
PMV1812-471H	300	385	470	8.2	500	775	10	210	-

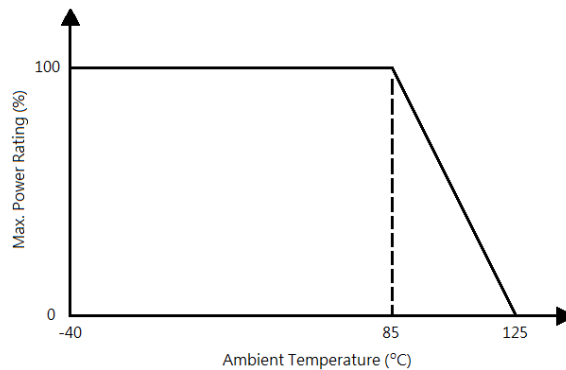
### Peak Pulse Current Test Waveform



$O_1$  = Virtual Origin of Wave  
 $T$  = Time from 10% to 90% of Peak  
 $T_1$  = Rise Time =  $1.25 \times T$   
 $T_2$  = Decay Time

**Example** - For an 8/20 ms current waveform  
 $8 \mu\text{s} = T_1 = \text{Rise Time}$   
 $20 \mu\text{s} = T_2 = \text{Decay Time}$

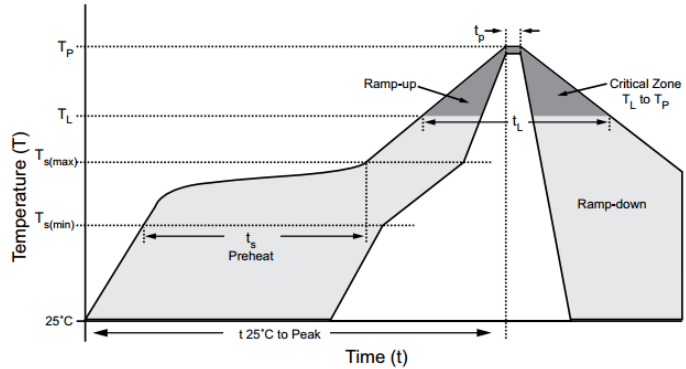
### Power Derating Curve



## PMV1812 Series MOV Devices

### Lead Free Reflow Soldering Recommendations

<b>Preheat</b>	
- Temperature Min ( $T_{s\_min}$ )	150°C
- Temperature Max ( $T_{s\_max}$ )	200°C
- Time ( $T_{s\_min}$ to $T_{s\_max}$ )	60-180 seconds
- Average Ramp-Up Rate	1~3°C/second
<b>Peak Temperature</b>	260°C max.
<b>Time within 5°C of actual Peak Temperature (<math>t_p</math>)</b>	40 seconds max.
<b>Ramp-Down Rate</b>	6 °C /second max.



**Note:** If the wave soldering temperatures exceed the recommended profile, devices may not meet the performance requirements.

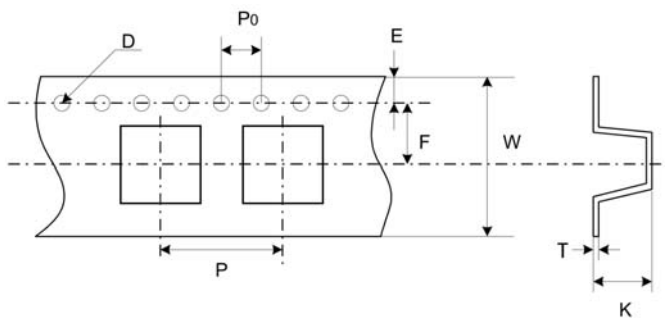
### Reliability Test

Environmental Ratings										
Test Parameter	Test Condition / Description	Performance Requirements								
Dry Heat Loading	The specimen shall be applied continuously the maximum allowable voltage at the specified conditions for specified period and then stored at room temperature and normal humidity over 2 hours. Thereafter, the change of $V_b$ and mechanical damage shall be examined. Ambient temp: 85±2°C / Period: 1000±24hours	$\Delta V_b/V_b \leq 10\%$								
High Temp Storage	In a dry oven without load. Ambient temp: 125±2°C / Period: 1000±24hours	$\Delta V_b/V_b \leq 10\%$								
Damp Heat/ Humidity Loading	The specimen shall be applied continuously the maximum allowable voltage at the specified conditions for specified period and then stored at room temperature and normal humidity over 2 hours. Thereafter, the change of $V_b$ and mechanical damage shall be examined. Ambient temp: 40±2°C, 90~95%RH / Period: 1000±24hours	$\Delta V_b/V_b \leq 10\%$								
Temperature Cycle	Condition the specimen to each temperature from step 1 to step 4 in this order for the period shown in the table of specifications. The change of $V_b$ and mechanical damage shall be examined after 2 hours. <table border="1" style="margin-left: 20px;"> <tr> <td>Step 1</td> <td>-40±3°C / 30min.</td> </tr> <tr> <td>Step 2</td> <td>Room temp / 15min.</td> </tr> <tr> <td>Step 3</td> <td>85±2°C / 30min.</td> </tr> <tr> <td>Step 4</td> <td>Room temp / 15min.</td> </tr> </table>	Step 1	-40±3°C / 30min.	Step 2	Room temp / 15min.	Step 3	85±2°C / 30min.	Step 4	Room temp / 15min.	No Visible damage $\Delta V_b/V_b \leq 10\%$
Step 1	-40±3°C / 30min.									
Step 2	Room temp / 15min.									
Step 3	85±2°C / 30min.									
Step 4	Room temp / 15min.									
Low Temp Storage	In a cooling chamber without load. Ambient temp: -40±2°C / Period: 1000±24hours	$\Delta V_b/V_b \leq 10\%$								

## PMV1812 Series MOV Devices

### Packaging Information

Part Number	Carrier Material	Quantity (EA/Roll)	Reel Dimension (mm)	
			Diameter	Thickness
PMV1812 Series	Plastic	1000	178.0±1.0 (7" Plastic Reel)	13.6±0.2



Symbol	Dimension (mm)
P	8.0±0.1
P0	4.0±0.1
D	1.55±0.05
E	1.75±0.1
F	5.5±0.1
W	12.0±0.2
T	0.25±0.05
K	2.0±0.1