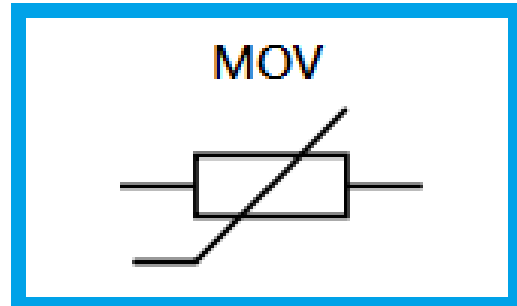


## PMV2220 Series MOV Devices

### Features

- Wide operating voltages ranging from 14 Vrms to 300 Vrms (18 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

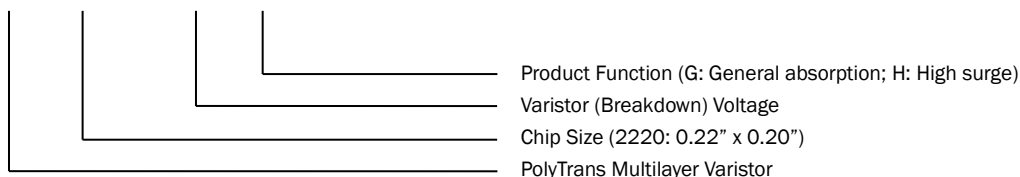
- Operating temperature: -40 ~ 125°C
- Storage temperature: -40 ~ 125°C

### Material

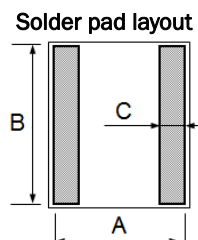
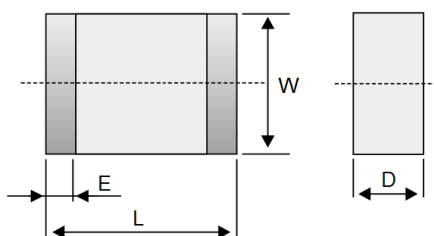
- Electrode: Ag/Ni/Sn
- Chip body: Zinc oxide

### Part Number Code

PMV 2220 - □□□ □



### Physical Dimensions



Symbol	Dimension (mm)
L	5.7±0.4
W	5.0±0.3
D	4.5 max.
E	1.0±0.3
A	6.7 typ.
B	5.0 typ.
C	1.5 typ.

**Note:**

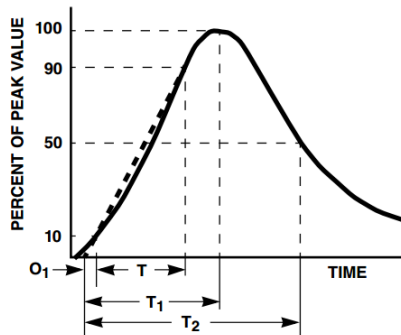
1. All dimensions are in millimeters.
2. No marking on the device.

## PMV2220 Series MOV Devices

### Electrical Characteristics

Part Number	Max Allowable Voltage		Varistor Voltage V <sub>b</sub> @ 1 mA	Energy 10/1000 μs	Withstand Surge Current I <sub>PP</sub> 8/20 μs	Max Clamping Voltage V <sub>c</sub>		Typical Capacitance (pF)	Safety Certification UL/CSA
	V <sub>RMS</sub>	V <sub>DC</sub>				V	I		
	(V)	(V)	(V)	(J)	(A)	(V)	(A)	(pF)	UL/CSA
PMV2220-240G	14	18	24	3.1	1000	38	10	11800	-
PMV2220-330G	20	26	33	4.3	1000	54	10	8900	-
PMV2220-390G	25	30	39	5.5	1000	65	10	7500	-
PMV2220-470G	30	38	47	6.3	1000	77	10	4600	-
PMV2220-560G	35	45	56	7.7	1000	90	10	4000	-
PMV2220-680G	40	56	68	8.8	1000	110	10	3500	-
PMV2220-820G	50	65	82	5.6	800	135	10	2850	-
PMV2220-271G	175	225	270	16.0	500	450	10	390	-
PMV2220-271H	175	225	270	22.0	800	450	10	560	-
PMV2220-391G	250	330	390	20.0	500	647	10	238	-
PMV2220-391H	250	330	390	20.0	1000	647	10	330	-
PMV2220-431G	275	350	430	18.0	500	705	10	215	-
PMV2220-431H	275	350	430	18.0	800	710	10	310	-
PMV2220-471G	300	385	470	18.0	500	775	10	195	-
PMV2220-471H	300	385	470	25.0	800	775	10	295	-

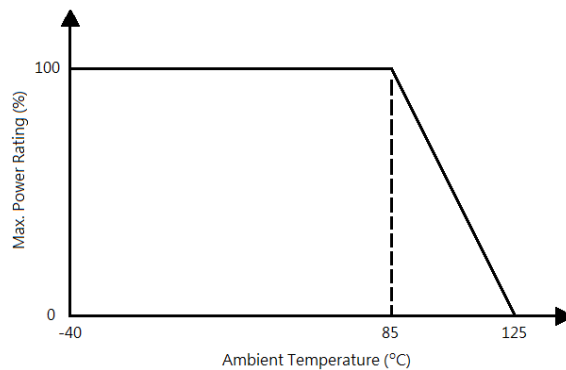
### Peak Pulse Current Test Waveform



O<sub>1</sub> = Virtual Origin of Wave  
 T = Time from 10% to 90% of Peak  
 T<sub>1</sub> = Rise Time = 1.25 x T  
 T<sub>2</sub> = Decay Time

**Example** - For an 8/20 ms current waveform  
 8 μs = T<sub>1</sub> = Rise Time  
 20 μs = T<sub>2</sub> = Decay Time

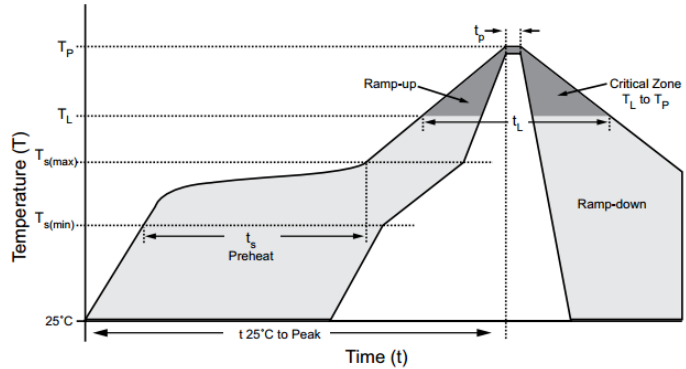
### Power Derating Curve



## PMV2220 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.

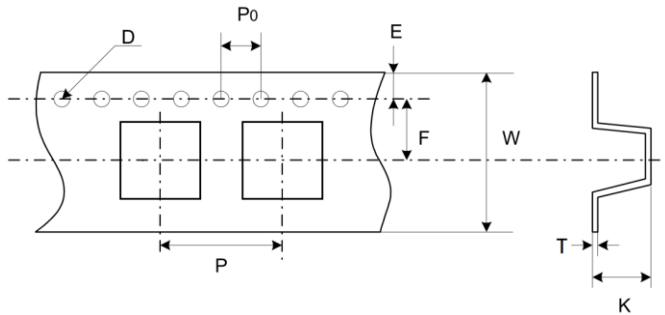
### Reliability Test

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	$\Delta V_b/V_b \leq 10\%$								

## PMV2220 Series MOV Devices

### Packaging Information

Part Number	Carrier Material	Quantity (EA/Roll)	Reel Dimension (mm)	
			Diameter	Thickness
PMV2220 (240G~820G)	Plastic	1000	178.0±1.0 (7" Plastic Reel)	13.6±0.2
PMV2220 (271G~471H)	Plastic	500	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	3.1±0.1