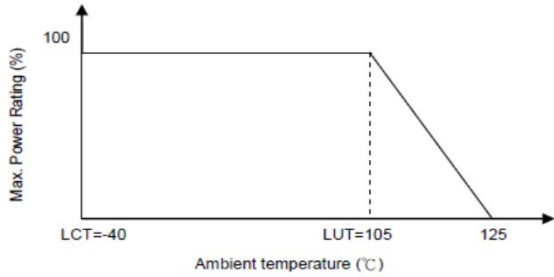


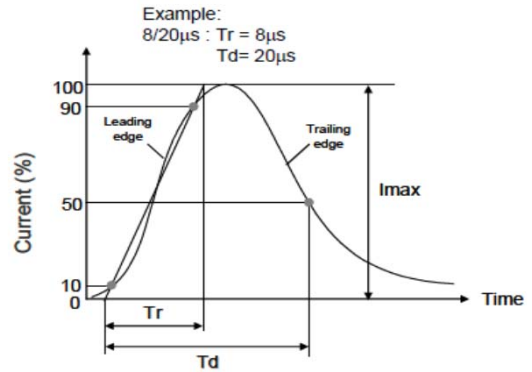
**JNC****Metal Oxide Varistor : JNR Series****■ Reliability**

Item	Standard	Test conditions	Specification															
Tensile Strength of Terminations	IEC 60068-2-21	Gradually apply the specified force and keep the unit fixed for 10±1 sec.  <table border="1"> <tr> <td>Terminal diameter (mm)</td> <td>Force (kg)</td> </tr> <tr> <td>0.5&lt;d≤0.8</td> <td>1</td> </tr> <tr> <td>0.8&lt;d≤1.25</td> <td>2</td> </tr> </table>	Terminal diameter (mm)	Force (kg)	0.5<d≤0.8	1	0.8<d≤1.25	2	Δ V1mA/V1mA   ≤5% No visible damage									
Terminal diameter (mm)	Force (kg)																	
0.5<d≤0.8	1																	
0.8<d≤1.25	2																	
Bending Strength of Terminals	IEC 60068-2-21	Hold specimen and apply the force specified below to each lead. Bend the specimen to 90°, then return to the original position. Repeat the procedure in the opposite direction.  <table border="1"> <tr> <td>Terminal diameter (mm)</td> <td>Force (kg)</td> </tr> <tr> <td>0.5&lt;d≤0.8</td> <td>0.5</td> </tr> <tr> <td>0.8&lt;d≤1.25</td> <td>1</td> </tr> </table>	Terminal diameter (mm)	Force (kg)	0.5<d≤0.8	0.5	0.8<d≤1.25	1	Δ V1mA/V1mA   ≤5% No visible damage									
Terminal diameter (mm)	Force (kg)																	
0.5<d≤0.8	0.5																	
0.8<d≤1.25	1																	
Vibration	IEC 60068-2-6	Frequency range: 10~55Hz Amplitude: 0.75mm or 98m/s <sup>2</sup> Direction: 3 mutually perpendicular directions, 2 hrs each.	Δ V1mA/V1mA   ≤5% No visible damage															
Solderability	IEC 60068-2-20	245±5°C , 3±0.3 sec	At least 95% of terminal electrode is covered by new solder															
Resistance to Soldering Heat	IEC 60068-2-20	260±3°C , 10±1 sec	Δ V1mA/V1mA   ≤5% No visible damage															
High Temperature Storage	IEC 60068-2-2	125±5°C x 1000 hrs ± 24hrs	Δ V1mA/V1mA   ≤5% No visible damage															
Damp Heat, Steady State	IEC 60068-2-78	a. 40±2°C, 90 ~ 95 % RH, 1344 hrs b. 40±2°C, 90~ 95 % RH , at 10% Vdc, 1344 hrs	Δ V1mA/V1mA   ≤5% No visible damage Insulation Resistance ≥ 100MO															
Rapid Change of Temperature	IEC 60068-2-14	The conditions shown below shall be repeated 5 cycles <table border="1"> <thead> <tr> <th>Step</th> <th>Temperature (°C)</th> <th>Period (minutes)</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>-40±3</td> <td>30±3</td> </tr> <tr> <td>2</td> <td>Room temperature</td> <td>5±3</td> </tr> <tr> <td>3</td> <td>-125±3</td> <td>30±3</td> </tr> <tr> <td>4</td> <td>Room temperature</td> <td>5±3</td> </tr> </tbody> </table>	Step	Temperature (°C)	Period (minutes)	1	-40±3	30±3	2	Room temperature	5±3	3	-125±3	30±3	4	Room temperature	5±3	Δ V1mA/V1mA   ≤5% No visible damage
Step	Temperature (°C)	Period (minutes)																
1	-40±3	30±3																
2	Room temperature	5±3																
3	-125±3	30±3																
4	Room temperature	5±3																
High Temp. Load	MIL-STD-202 Method 108	125±2°C , 1000±24 hrs at VDC or Vrms (Max. Continuous Voltage)	Δ V1mA/V1mA   ≤10% No visible damage															
8/20μs Surge Life	IEC 61051-1	8/20μs waveform, 10 surge currents, unipolar, interval 30 sec, amplitude corresponding to max. surge current derating curves for 20μs.	Δ V1mA/V1mA   ≤10% No visible damage															
10/1000μs Surge Life	IEC 61051-1	10/1000μs waveform, 10 surge currents, unipolar, interval 2 mins, amplitude corresponding to max. surge current derating curves for 1000μs.	Δ V1mA/V1mA   ≤10% No visible damage															
Voltage Proof	IEC 61051-1	Metal balls method, 2500 Vac 1 min	No visible damage															
Varistor Voltage Temp. Coefficient	Specification Standard	$\frac{V_{1ma} \text{ at } 125^{\circ}\text{C} - V_{1ma} \text{ at } 25^{\circ}\text{C}}{V_{1ma} \text{ at } 25^{\circ}\text{C}} \times \frac{1}{100} \times 100 (\%/^{\circ}\text{C})$ $\frac{V_{1ma} \text{ at } -40^{\circ}\text{C} - V_{1ma} \text{ at } 25^{\circ}\text{C}}{V_{1ma} \text{ at } 25^{\circ}\text{C}} \times \frac{1}{65} \times 100 (\%/^{\circ}\text{C})$	-0.05 ≤ TC ≤ 0.05 (%/°C)															

■ **Power Derating Curve**

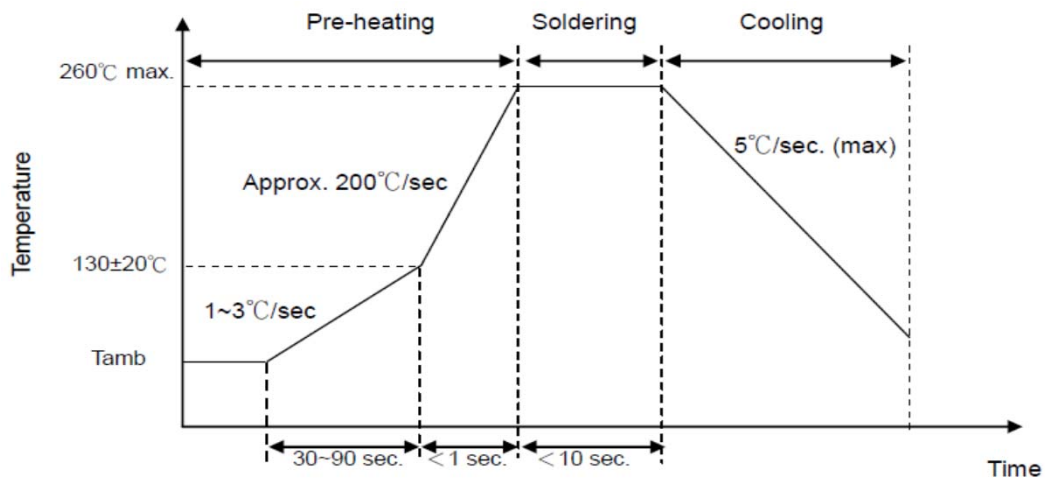


■ **Surge Current Standard Waveform**



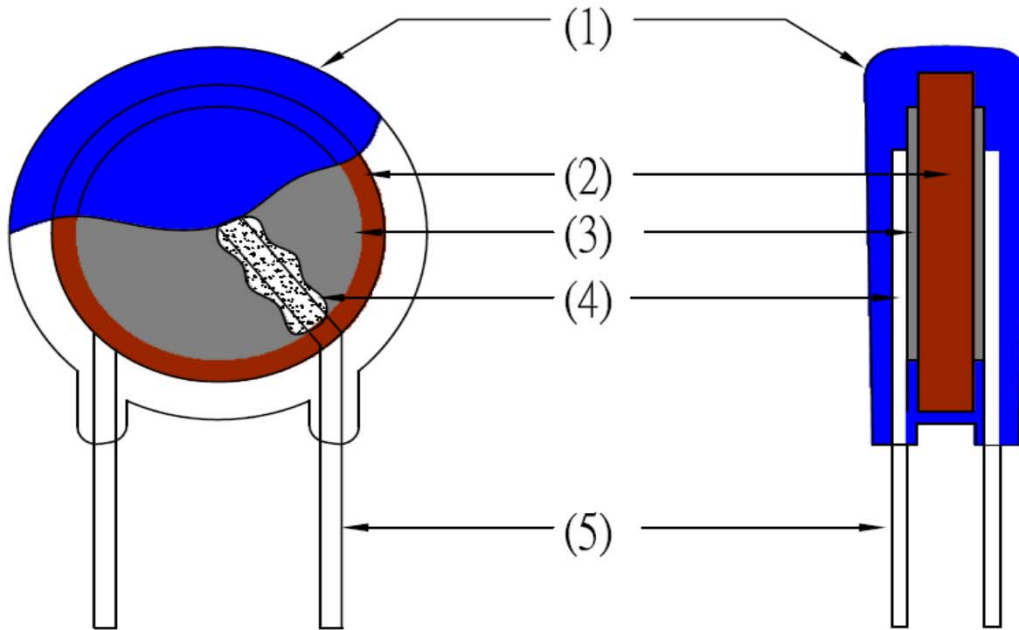
■ **Soldering Recommendation**

◆ **Wave Soldering Profile**



◆ **Reworking Conditions with Soldering Iron**

Item	Condition
Temperature of Soldering Iron	360°C (max.)
Soldering Time	3 sec (max.)
Distance from Varistor Coating	2 mm (min.)

**JNC****Metal Oxide Varistor : JNR Series****■ Drawing of internal structure and material list:****◆ Remarks:**

No.	Part name	Material	Model type	Component
1	Insulation Coating	Epoxy	XCP-231	Epoxy resin (Blue / UL 94 V-0 )
2	Element	Zinc oxide	$\phi 7, \phi 10, \phi 14\text{mm}$	ZnO
3	Electrodes	Silver	Ag	Ag
4	Solder	Tin-Silver Tin-Copper	Sn98-Ag2 Sn99.3-Cu0.7	Sn98-Ag2 Sn99.3-Cu0.7
5	Lead wire	Tinned copper clad steel wire	$\phi 0.6, 0.8, 1.0\text{mm}$	Substrate metal: Fe & Cu Surface plating: Sn 100%