"ZNR®" Transient/Surge Absorbers

Matsushita ZNRs are zinc-oxide nonlinear resistors whose resistance changes as a function of the applied voltage. These basic characteristics of ZNR express by varistor voltage and clamping voltage (or voltage ratio).
The ZNR utilizes a ceramic element composed of zinc oxide and several kinds of metal oxide additives that have been sintered at relatively high temperature.

The ZNR has a bilateral and symmetrical V-I characteristics similar to back-to-back zener diode and unparalleled large peak current capability so that be used for absorption of transient voltage, suppression of pulse noise and as an arrester element and circuit voltage stabilization.

■ Explanation of technical terms

1. Voltage-Current Characteristics

Figure 1 shows voltage-current characteristics of ZNR. The axis of abscissas is logarithm of current and the axis of ordinates is logarithm of voltage.
For the purpose of expression of the characteristics, in principle, voltage value at 1 mA and slope of V-I curve are used, calling varistor voltage and voltage ratio respectively.
In case of surge absorber which utilizes at large current region because of inferior linearity of the slope, voltage at specified current is used, calling clamping voltage in place of voltage ratio.

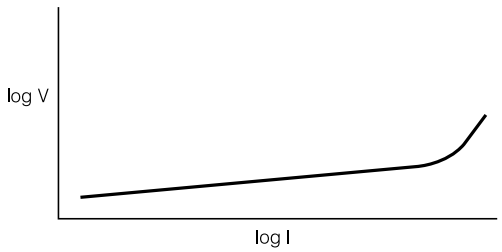

Fig. 1 Example of V-I Characteristic of ZNR

2. Maximum Peak Current

Specification which specified how much surge current surge absorber can endure is maximum peak current. This characteristics express a current value having standard wave form showed at figure 2.
In case of different waveform from standard one, the specification shall determine refering to impulse life ratings.

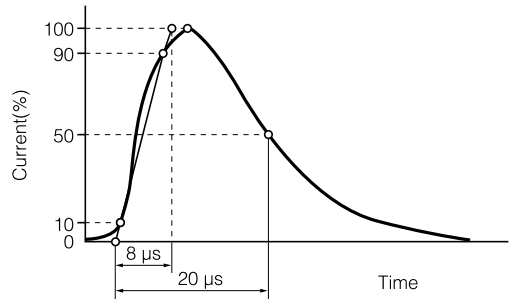

Fig. 2 Standard Impulse Current Waveform (8/20 µs)

Note
* ZNR "Zinc Oxide Nonlinear Resistor" is a trade mark of voltage dependent resistor elements by Panasonic.
ZNR is in some cases named Metal Oxide Varistor "MOV"

3. Clamping Voltage

Varistor have an abitity to limit a high voltage surge like lightning.
We call this limited voltage as "Clamping Voltage".
"Clamping Voltage" is measured by voltage between both therminals using standard impulse current wave form (8/20µs) shown in fig.2.
To avoid an exothermic influence.

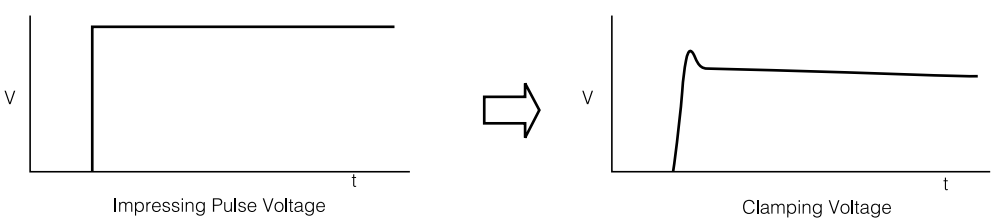

Fig. 3 Example of impressing pulse and clamping Voltage