HOW DO METAL OXIDE VARISTORS WORK?

Metal Oxide Varistor (MOV) technology is the most prevalent technology utilized in electrical transient protection products today. Many industry manufacturers, including Current Technology, integrate various sizes of radial or strap-type MOVs into their products: 20mm, 32mm and 40mm diameter MOVs are most commonly used. Does MOV size make a difference, and if so, what size delivers the best performance?

What is an MOV?

MOVs are non-linear bi-polar resistors which have a very high resistance (can be modeled as an open circuit) to the normal 60Hz sine wave (see Fig. 1A). Conduction begins when the voltage across an MOV reaches maximum continuous operating voltage (MCOV) - also known as "threshold voltage:" As the voltage increases, the MOV's resistance drops dramatically, eventually approaching zero (see Fig. 1B). Because of the low impedance at this higher voltage level, a properly designed transient suppression device will divert transient current through itself and away from sensitive loads. Since MOV-based devices are connected in parallel to the loads, the clamp voltage across the MOVs plus the voltage developed across the wiring and disconnect provided for the device is the maximum voltage that will appear across the load terminals. After the transient occurs, the MOV returns to normal stat, ready for the next transient (see Fig.1C).

FIG 1A:

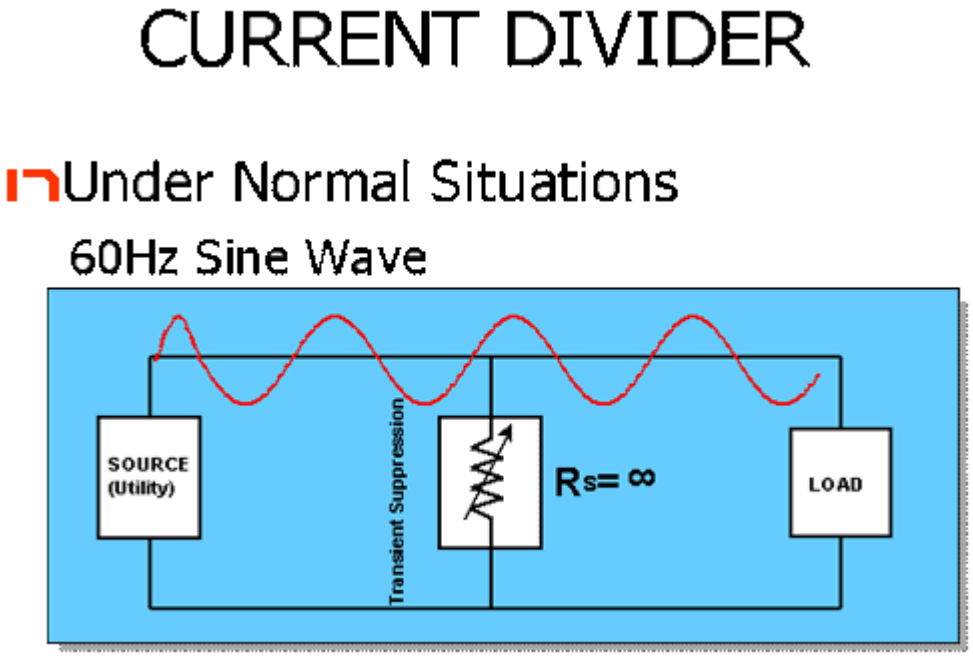

FIG 1B:

CURRENT DIVIDER

- Under Transient Conditions

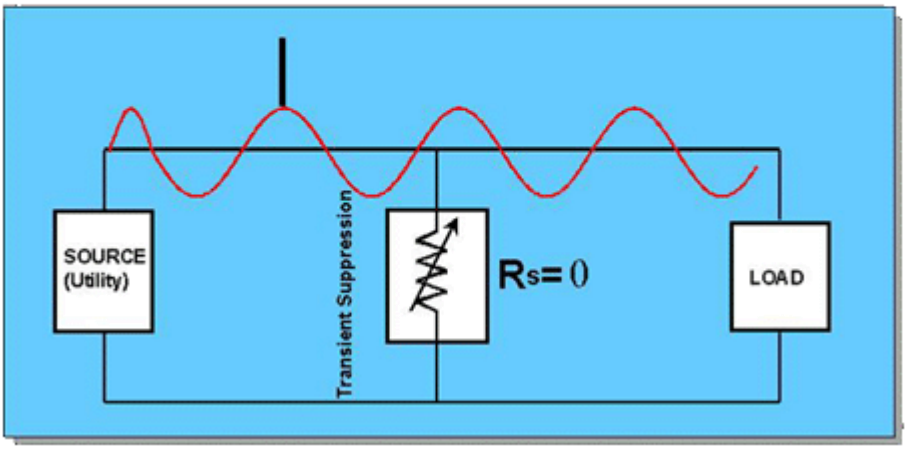

FIG 1C:

CURRENT DIVIDER

- After Transient Is Gone