Metal Oxide Varistors: World Market Outlook: 2008-2013

Covering Zinc Oxide Varistors in Disc Configuration (MOV Disc) and Multilayered Chip Varistors (MLV)

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About Paumanok:

Paumanok is a focused market research company that addresses the global markets for capacitors, resistors, inductors and circuit protection devices only. This includes raw material usage and supply, manufacturing, distribution and consumption. We do business in a variety of countries for 20 years. This study is a focused report from our database on passive components.

Circuit Protection Components include both overvoltage and overcurrent protection devices that are sold in a variety of configurations. This study focuses on one type of these components: the metal oxide varistor, frequently referred to as an MOV.

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1.0 Technology Overview:

**Metal Oxide Varistor Technology, Types and Configurations:**

**Description of Varistors:**
A varistor is an electronic component with a significant non-ohmic current-voltage characteristic. A varistor is also known as Voltage Dependent Resistor or VDR and therefore varistors are considered a sub-set of the variable resistor component segment, and are also likewise considered to be part of the overvoltage protection component market segment as well.

**Application of Varistors:**
Varistors are often used to protect circuits against excessive transient voltages by incorporating them into the circuit in such a way that, when triggered, they will shunt the current created by the excessive voltage away from the sensitive components. Multilayered chip type varistors are physically small, and mirror the EIA (US) and EIAJ (Japan) accepted ultra-small case sizes consumed in digital electronic circuits for ESD (Electrostatic Discharge) protection. Larger configuration disc type varistors (pressed pill technology) are older, legacy type components that are used to protect sensitive line voltage equipment connected to AC power lines.

**Construction of Varistors:**
Varistors are ceramic in nature, and are created from ceramic slurry composed of zinc oxide and specific additives (such as Bismuth). Multilayered chip varistors are produced in the same manner as multilayered ceramic chip capacitors, whereby ceramic slurry is screened through a Doctor Blade, and then electrode materials composed of precious metals (palladium + silver or in some instances- platinum) are applied to each consecutive layer of ceramic “green tape.” The finished, stacked construction is then fired in either a batch or tunnel kiln, dried and then separated into the desired case size. The finished chips are then “terminated” with siver paste materials. Disc varistors are typically radial leaded in nature, whereby the ceramic powder mixture is compressed into a pill or “disc shape, sprayed with silver conductive materials, and then encapsulated in polymer materials.
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