

Chapter 1 : Transient-voltage-suppression diode - Wikipedia

Unprotected transients. An event initiator occurs as in the case for protected transients, but the reactor PPS fails to function. An event initiator occurs as in the case for protected transients, but the reactor PPS fails to function.

Description[edit] The device operates by shunting excess current when the induced voltage exceeds the avalanche breakdown potential. It is a clamping device, suppressing all overvoltages above its breakdown voltage. It automatically resets when the overvoltage goes away, but absorbs much more of the transient energy internally than a similarly rated crowbar device. A transient-voltage-suppression diode may be either unidirectional or bidirectional. A unidirectional device operates as a rectifier in the forward direction like any other avalanche diode , but is made and tested to handle very large peak currents. A bidirectional transient-voltage-suppression diode can be represented by two mutually opposing avalanche diodes in series with one another and connected in parallel with the circuit to be protected. While this representation is schematically accurate, physically the devices are now manufactured as a single component. A transient-voltage-suppression diode can respond to over-voltages faster than other common over-voltage protection components such as varistors or gas discharge tubes GDT. The actual clamping occurs in roughly one picosecond , but in a practical circuit the inductance of the wires leading to the device imposes a higher limit. This makes transient-voltage-suppression diodes useful for protection against very fast and often damaging voltage transients. These fast over-voltage transients are present on all distribution networks and can be caused by either internal or external events, such as lightning or motor arcing. TVS diode as array Transient voltage suppressors will fail if they are subjected to voltages or conditions beyond those that the particular product was designed to accommodate. There are three key modes in which the TVS will fail: Maximum reverse standoff voltage: The nonconducting diode behaves like a capacitor , which can distort and corrupt high-speed signals. Lower capacitance is generally preferred. Because the actual over voltage switching is so fast, the package inductance is the limiting factor for response speed. Amount of energy it can absorb: Because the transients are so brief, all of the energy is initially stored internally as heat; a heat sink only affects the time to cool down afterwards. Thus, a high-energy TVS must be physically large. If this capacity is too small, the over voltage will possibly destroy the device and leave the circuit unprotected.

Chapter 2 : CiteSeerX " Unprotected Transients in a Small Scale Accelerator Driven System

Possibilities of enhancing core safety under unprotected loss of flow (ULOF) and unprotected transient over power (UTOP) accidents with control and safety rod drive mechanism (CSRDM) expansion feedbacks are explored in a medium sized oxide fuelled fast breeder reactor.

Chapter 3 : Erdman, C. A. [WorldCat Identities]

The transients simulated were unprotected loss of heat sink (ULOHS), unprotected beam overpower (UBOP) and unprotected transient overpower (UTOP) respectively. The analyses results of ULOHS.

Chapter 4 : Surge Protection Devices - APC USA

While previously the neutronics behavior during unprotected transients was typically approximated by point kinetics models, there is now a growing demand to test the validity of these models using best estimate tools (Gauthé and Sciora,).

Chapter 5 : ProtectNet - APC USA

The Unprotected Loss-of-Flow (ULOF) transient and the Unprotected Transient-Over-Power (UTOP) have been

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evaluated for the European Lead-cooled SYstem (ELSY) for Analyses of Beam Trip, Beam Over Current and Unprotected Transient Over Power Transients in a Small Scale Accelerator Driven System (ADS).