

MOV Failure Mode Identification

Researchers at the University of South Florida have developed a surge protector that avoids false indication of full protection when an internal failure has occurred.

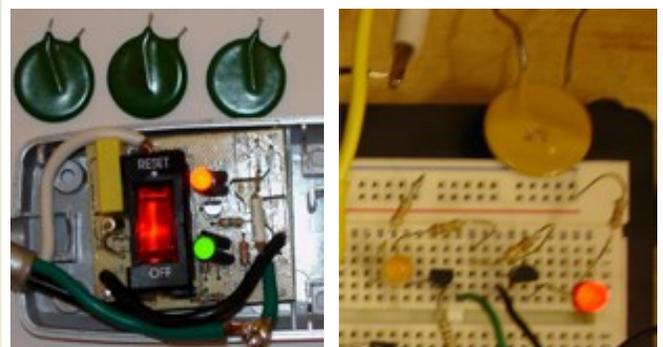
Surge protectors are common appliances designed to protect electrical devices from voltage spikes by diverting excess electricity into the outlet's grounding wire. One key component of a surge protector is a Metal Oxide Varistor (MOV) which is responsible for diverting the electricity. A design issue with currently available surge protectors is that failure of the MOV, which may occur after repeated surge suppression, does not affect the normal operation of the surge protector itself. Thus, a user of a surge protector with a faulty MOV is unaware that the device's protection capabilities are compromised because the surge protector still supplies power to the user's electrical devices. This is a critical issue that subverts the intent of using a surge protector, and it may lead to destruction of electrical devices. Furthermore the issue poses a threat as a fire hazard. What is needed is a safer surge protector design that indicates to the user whether or not the MOV is working properly.

USF inventors have designed a surge protector that provides indication of the working order of the surge protector's MOV. The novel surge protector device consistently monitors the MOV and notifies the user as to whether or not the MOV is still operating via red and green LEDs, with red indicating MOV failure. This provides the user with the necessary information to decide to stop using a faulty surge protector, thereby promoting safety and protection of appliances. The invention represents a substantial improvement to current surge protection technology.

ADVANTAGES:

- Safer surge protection
- Continuous monitoring of surge protection status
- Enhanced protection of electrical appliances

Foolproof Surge Protector Indicates if Protection Capability is Compromised



Left: MOVs Removed, Surge Protector Still Indicates Protection. Right: New Design with Red LED Indicating MOV Removal.