

An application note for possible failure modes in press pack devices

Introduction

This application note provides a description of the possible failure mode in a press pack devices compared to a soldered module or stud device.

Short circuit failure modes in press pack devices

The normal failure mode for a ceramic press pack thyristor, diode or GTO (or a press pack thyristor/diode module) is to a short circuit. It is extremely unlikely that these device types will fail open circuit. Whilst it is impossible to guarantee these statements in the experience of IXYS UK Westcode press pack devices will fail to a stable short circuit condition with a resistance comparable to that of a normal device in forward conduction.

Soldered modules or stud base products can fail open circuit. In the case of a module there may be a wire bond or in the case of the stud device a flexible lead in the main current path. If the wire bonds or the flexible leads are ruptured or broken then an open circuit condition will normally occur. In products that contain electrolytic gels this is often followed by ionic breakdown and a temporary short circuit. This is followed by package rupture and a subsequent open circuit condition.

The press pack device is in direct contact with the cooler or heatsink, there are no bonded wires or flexible leads that can be ruptured or break as in the case of the soldered modules and stud devices.

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