

An application note for the use of a multimeter to test a diode, thyristor, GTO or PPIGBT

All IXYS UK Westcode devices are tested using equipment specifically designed to accurately perform the tests required for the various parameters detailed in the IXYS selector guide and in the IXYS UK Westcode datasheets.

In many situations the only test equipment available to an end user of a thyristor, diode, GTO or PPIGBT is limited to a battery operated DVM or multimeter. The interpretation of this type of measurement can be misleading under certain conditions. In extreme cases the use of this type of equipment can result in damaged or destroyed devices.

The voltage of the multimeter will typically be less than 10V. Thyristor, diode GTO and PPIGBT voltage and leakage characteristics are considered to be non-linear. Therefore the leakage current measured at this voltage will in most cases not reflect the leakage current at the rated maximum voltage of the device. At low voltage the leakage of the device may be higher than the leakage at high voltage under normal circuit conditions.

In certain situations it may be appropriate to use a multimeter, for instance if it is suspected that within a circuit there are potentially short circuit devices. If a multimeter is used under these circumstances ensure that the resistance is only measured across the device and does not include components in parallel with it. In addition ensure that the device is uniformly clamped across the whole electrode surface and the clamp force must be within the datasheet limits to ensure that the internal components within the device are in contact. The second point is important since an "open circuit" measurement may result if there is not sufficient clamping force on the device. Under these conditions the only valid result is 0Ω indicating a potentially short circuit device.

High voltage insulation/continuity testers should not be used as damage to the semiconductor device could occur.

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