

Many users of thyristors and diodes lack the proper equipment to make measurements of semiconductor parameters. The readily available battery operated multimeter is often used to try to determine the difference between acceptable and non-acceptable devices using a resistance reading. A reading of this type can lead to incorrect conclusions.

MULTIMETER MEASUREMENTS

The multimeter is generally used to measure the DC resistance between anode and cathode of thyristors and diodes and also the gate to cathode on thyristors. These measurements are of the "off state" or blocking voltage of the device.

The only valid readings are "open circuit" and "short circuit". The anode to cathode or gate to cathode measurement must register a short circuit in both directions (forward and reverse polarity) for the device to be declared short and infinite resistance for an open circuit.

The measurement of resistance with a multimeter is an inappropriate measurement technique for separating good devices from bad. When a resistance measurement is taken with an multimeter, the internal battery voltage is typically in the range 1.5V to 15V and the leakage current of the device at this voltage will determine the measured resistance. A semiconductor has a non-linear blocking voltage/leakage current characteristic and hence a non-linear resistance

curve. The blocking voltage of a thyristor is defined as the voltage at which it reaches a specified leakage current at the defined temperature. Therefore devices can have a variety of leakage current characteristics and still be within specification.

PRECAUTIONS

1. Ensure that the resistance reading is only being taken across the device and not across something in parallel with it.
2. If a disc type device is being measured, make sure that it is under sufficient load to ensure that the internal components are pressed together and high resistance readings are avoided.

SUMMARY

A multimeter resistance measurement is not recommended for determining acceptable semiconductor devices. As a quick check for devices in a circuit, a multimeter will allow you to determine if a device has failed catastrophically. The device with the lowest leakage current at 3V is not necessarily the one with the lowest leakage current a high voltage.

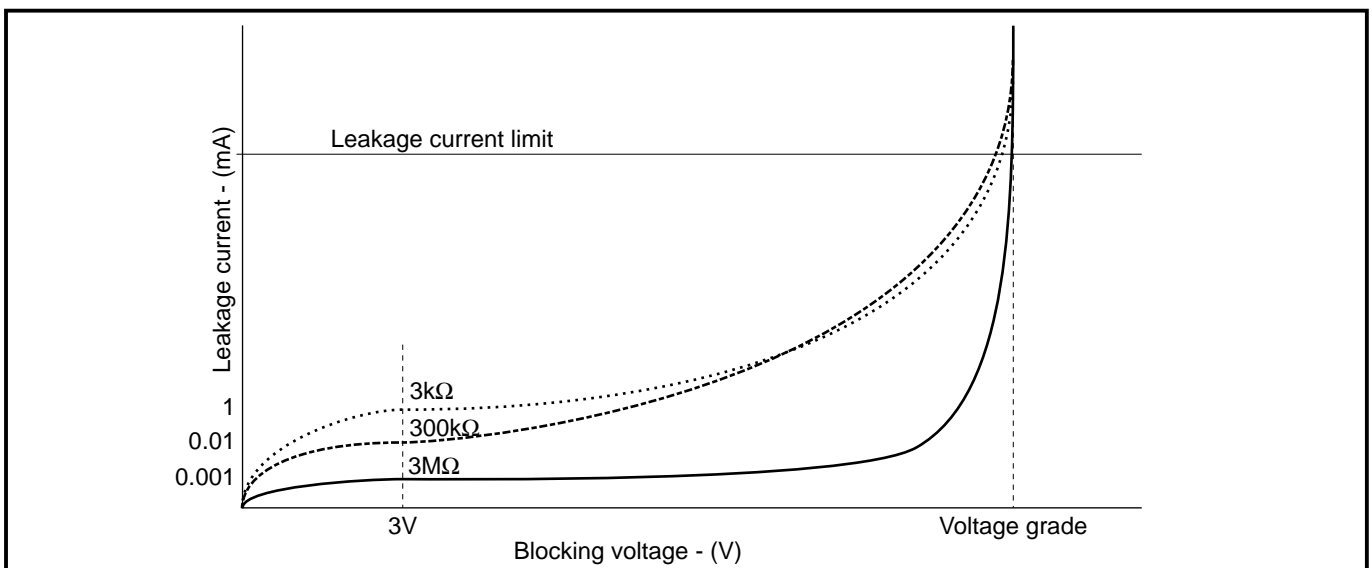


Fig.1

POWER ASSEMBLY CAPABILITY

The Power Assembly group was set up to provide a support service for those customers requiring more than the basic semiconductor, and has developed a flexible range of heatsink and clamping systems in line with advances in device voltages and current capability of our semiconductors.

We offer an extensive range of air and liquid cooled assemblies covering the full range of circuit designs in general use today. The Assembly group offers high quality engineering support dedicated to designing new units to satisfy the growing needs of our customers.

Using the latest CAD methods our team of design and applications engineers aim to provide the Power Assembly Complete Solution (PACs).

HEATSINKS

The Power Assembly group has its own proprietary range of extruded aluminium heatsinks which have been designed to optimise the performance of Dynex semiconductors. Data with respect to air natural, forced air and liquid cooling (with flow rates) is available on request.

For further information on device clamps, heatsinks and assemblies, please contact your nearest sales representative or Customer Services.



<http://www.dynexsemi.com>

e-mail: power_solutions@dynexsemi.com

HEADQUARTERS OPERATIONS
DYNEX SEMICONDUCTOR LTD
Doddington Road, Lincoln.
Lincolnshire. LN6 3LF. United Kingdom.
Tel: +44-(0)1522-500500
Fax: +44-(0)1522-500550

CUSTOMER SERVICE
Tel: +44 (0)1522 502753 / 502901. Fax: +44 (0)1522 500020

SALES OFFICES
Benelux, Italy & Switzerland: Tel: +33 (0)1 64 66 42 17. Fax: +33 (0)1 64 66 42 19.
France: Tel: +33 (0)2 47 55 75 52. Fax: +33 (0)2 47 55 75 59.
Germany, Northern Europe, Spain & Rest Of World: Tel: +44 (0)1522 502753 / 502901.
Fax: +44 (0)1522 500020
North America: Tel: (613) 723-7035. Fax: (613) 723-1518. Toll Free: 1.888.33.DYNEX (39639) /
Tel: (949) 733-3005. Fax: (949) 733-2986.

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