



R&D Electronics Newsletter (2014 Issue 7)

Welcome to our 7th issue of newsletter!

In this issue we will explain you the **performance features** of our supplier partner **TECHSEM** and the resulting **customer benefits** from the same. In addition, we will discuss in more detail on the **five common causes** of power semiconductors problems in the practice.

Cost Savings:

With our price groups in our webshop we want to offer you at least 10% price advantage to other similar products. Should you find more favorable price than those in our shop, please contact us.

In addition, as a welcome gift 10% discount on your first order, regardless of order quantity will be applied once and automatically in your shopping cart. For more information please visit our webshop: www.rd-ebusiness.com

Yours faithfully
R&D Electronics Team

TECHSEM performance features and the customer benefits:

As a power semiconductor company with half a century of history, TECHSEM makes itself off with the following features from the competition:

- 48 years experience in development and production of power semiconductors;
- Broad product portfolio from chip to power stack;
- Certified according to ISO9001: 2008; ISO14001: 2004, OHSAS18001:2007;
- Market leader and the only public listed power electronics company in China;
- Power modules with pressure contact technology for high reliability and lifetime;

These performance features offer the following customer benefits:

- High-quality products based on the proven development, manufacturing and test processes;
- Comprehensive product portfolio for all applications in the field of power electronics;
- Proven high product quality and reliability;
- Excellent cost efficiency through high value-added chain;
- Continuity and stability of the company- and product strategy;

The customer benefits and competitiveness will be maximized by using of TECHSEM products with excellent cost-benefit ratio and in compliance with the international quality standards.

Get to know TECHSEM products better now! R&D Electronics provides now for certain types of products with limited quantities as **free samples** at your disposal. Test our products and benefit from them!

Five common causes of failure in the practice:

1. Auxiliary Cathode and Gate Leads not Twisted
If the auxiliary cathode (small red) and gate (white) are not twisted together properly it can cause false triggering or the device turning on when it should be off. The proper twist for these is one twist per inch. This eliminates EMC problem (e.g. noise).
2. Loose gate connection at power semiconductors or terminal board
This is typically caused by improper or non-soldered gate connection to the device and/or firing board. It could also be the result of improper matching of connectors. That is, metal or plastic undersized male connector fitting into female connector. There were incidences when they used 3/16" male with 1/4" female. This will create heat (40 volt potential), which in turn melts solder to the terminal board and breaks the connection.
3. Bad snubber (R&C) network across SCR
Snubbers are resistor capacitor networks (circuits) which limit rapid rises in voltage or current in short time periods. If the snubber network is malfunctioning or not designed to handle the load, spikes can be passed on to the power semiconductors causing failure.
4. Improper torque or pressure
When conducting current the silicon chip, or junction, within the SCR package generates a great deal of heat. In order to get the heat away from the junction, it is imperative to torque the power modules onto the heat sinks to their specifications listed in our catalog.
5. Insufficient gate drive to the power semiconductors
Power semiconductors need a hard drive to get the total junction on and ready to accept the system current. A hard drive is typically an initial gating pulse of 25 volts at 1 amp for 1 microsecond then rapidly decaying to 3 volts and 500 milliamps. If the gate drive is insufficient to get the total junction on thin when the system current pulse occurs it will hit the portion of the junction that is on. This can cause a current burn through destroying the junction thus causing a device failure.

In summary, power semiconductors will not fail by themselves. Something external causes them to fail. Before you pullout the failed power components and install new ones make sure you locate the cause of the failure.

For the failure analysis of TECHSEM products we are happy to help. Contact us if you need our support.

Visit us at our booth during the PCIM in Nuremberg

- When: from 20th - 22nd May 2014
- Where: at booth 9-548 in hall 9

We are looking forward to meeting you. For meeting arrangement please contact us via info@rd-ebusiness.com or by phone +852-3421-2216.