

TIM allows higher power density for same ageing resistance

New type of paste with enhanced thermal conductivity for modules

Power electronics are experiencing a continuous rise in their power densities. As a consequence, thermal management for today's power semiconductors must be integrated as early as their design phase. Only then can reliable cooling be safeguarded over the long term. A particularly important role is assigned to thermal conduction at the link between the component and the heat sink. In these cases, materials are often used that cannot meet the growing requirements. In its search for a remedy, Infineon Technologies AG has incorporated a TIM material solution from Henkel Electronic Materials to now make available a heat conducting compound optimized specifically for the architecture of power semiconductors in modules.

This so called thermal interface material (TIM) greatly reduces the contact resistance between the metal areas on the power semiconductor and the heat sink. On the EconoPACK™+ of the new D Series, the contact resistance between the module and heat sink drops by 20 percent. With a high filler content, the material reliably applies its improved properties of thermal contact resistance from the first moment the module is switched on. There is no need for a separate burn in cycle usual on many comparable materials with phase change properties.

The development of the new heat conducting material focused on ease of processing in the form of honeycombs stencil-printed on modules. This prevents air from becoming trapped in the link to the heat sink. Also, the heat conducting material does not contain any substances harmful to health, meeting the requirements under the

Directive 2002/95/EC (RoHS). In addition, the TIM is free of silicone and does not conduct electricity.

“With this Henkel TIM, we have the best silicone-free solution for the growing requirements in the thermal management of power semiconductors at our disposal,” claims Dr Martin Schulz, responsible Manager for the qualification at the Application Engineering Division of Infineon Technologies AG. “The paste simplifies the link between the module and the heat sink, optimizes heat transfer, and so extends both the service life and the reliability of the modules.” The TIM was developed for use on Infineon modules and is now available for the IGBT EconoPACK™+ module series. More details on this heat conducting paste and the module types featuring this can be viewed here: www.infineon.com/TIM.

Many years of cooperation between Henkel and Infineon

The new thermal material was developed by Henkel Electronic Materials of the USA, a subsidiary of Henkel, to meet the stringent requirements of Infineon Technologies AG. Both companies have enjoyed many years of good cooperation.

“The development of LOCTITE TCP 7000 is a major step forward for high power, high temperature thermal management,” explains Henkel’s Jason Brandi, Market Development Manager. “A printable, phase change TIM with such robust thermal cycling performance is indeed a breakthrough, overcoming the limitations of alternative materials and pioneering a brand new solution for power module thermal management.”

Both companies are now planning to deepen their cooperation in the development of new materials and to extend this to new projects.

About Henkel

Henkel operates worldwide with leading brands and technologies in three business areas: Laundry & Home Care, Beauty Care and Adhesive Technologies. Founded in 1876, Henkel holds globally leading market positions both in the consumer and industrial businesses with well-known brands such as Persil, Schwarzkopf and Loctite. Henkel employs about 47,000 people and reported sales of 15,605 million euros and adjusted operating profit of 2,029 million euros in fiscal 2011. Henkel's preferred shares are listed in the German stock index DAX.

About Infineon

Infineon Technologies AG, Neubiberg, Germany, offers semiconductor and system solutions addressing three central challenges to modern society: energy efficiency, mobility, and security. In the 2012 fiscal year (ending September 30), the company reported sales of Euro 3.9 billion with close to 26,700 employees worldwide. Infineon is listed on the Frankfurt Stock Exchange (ticker symbol: IFX) and in the USA on the over-the-counter market OTCQX International Premier (ticker symbol: IFNNY).

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The following material is available:



On Infineon's IGBT module EconoPACKTM+ of the new D Series, the contact resistance between the module and heat sink drops by 20 percent with TIM.



The optimized heat transfer extends both the service life and the reliability of the modules.