

Global Seminar

Power Semiconductor Devices - Future Development and Key Market Segments -

DATE: March 31, 2008, 13:00-14:30
ROOM: E6-111

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Abstract For the major power semiconductor device families the 3D Si-utilization is the key successful factor for improvement in terms of forward loss reduction, ruggedness, overload capability and switching frequency. However we have to understand that along with the chip size reduction the requirement for chip contacting and interfacing technologies as well as thermal management and controlling the switching speed is increasing tremendously.

Most of the power electronic systems however are driving actuators and consequently consisting of a mix of different technologies, e.g. power devices, signal processing IC's and Micro-electronics.

All these new device concepts such as Trench FS-IGBT, super Junction and SiC devices are still having huge further development potential. However one common direction is : low losses along with high switching frequencies to achieve the goal of high efficiency and miniaturized systems at low cost. The real challenge in the future power electronics converters will be to gain a deep going understanding of parasitics, chip interfacing technologies and thermal management. A multi-disciplinary cooperation of experts from chip industry, packaging development and electrical system engineering will become more important.

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