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Superjunction MOSFET Offers 900-V Breakdown Voltage And Low Total Gate Charge

MagnaChip Semiconductor's 90R1K4P superjunction MOSFET features a maximum peak voltage of 950 V and a breakdown voltage as high as 900 V, which enables enhanced system stability and reliability. It is well-suited for high-voltage applications such as auxiliary power supplies for industrial smart metering, which uses a three-phase input power to ac electric power generation, transmission, and distribution. The MOSFET is also suited for power supplies for lighting equipment due to its high stability, which helps prevent an unstable system condition that could lead to outages.

The 90R1K4P offers increased switching speed due to its low total gate charge (Q_g), which reduces heat generation in the system, keeps power loss down and improves energy efficiency. It also enables smaller form factors than a high-voltage planar MOSFET, since the die size of 90R1K4P is more than 50% smaller versus planar devices with similar conduction loss.

To enable the use of the 90R1K4P in small form factors, MagnaChip houses the device in an I-PAK package (model number MMIS90R1K4P). As a result of the die size reduction and choice of packaging, this new MOSFET has the potential to be adopted in a wide range of applications. Moreover, to ensure the 90R1K4P can be adopted for applications where space is at a premium, the company also can mount the SJ MOSFET in the slim D-PAK (model number MMD90R1K4P).

The device will sample to customers in November 2018 and will be manufactured in high volume in the first quarter of next year.