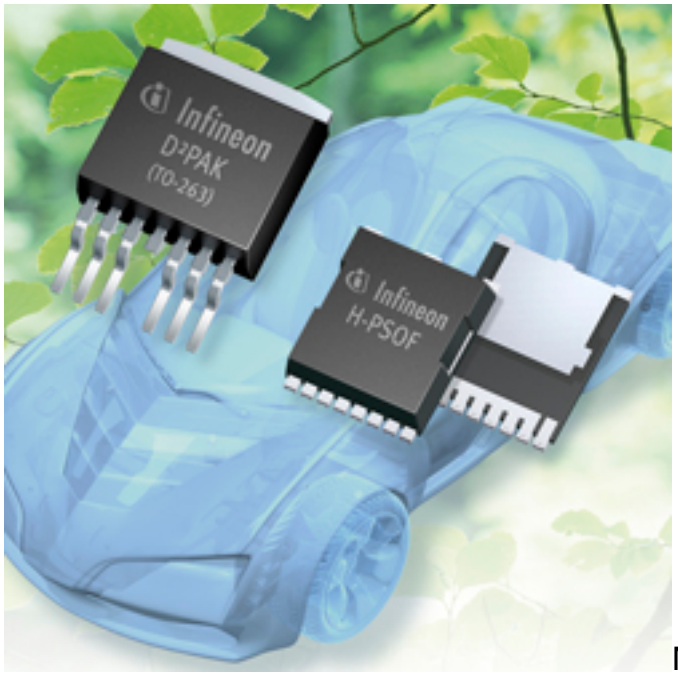
Packaging Enhances Automotive MOSFETs



Neubiberg, Germany – January 26, 2012 – Infineon Technologies introduced an innovative package technology providing high-current capability and high efficiency for demanding automotive electronics applications, including electric and hybrid vehicles. The new TO package is compliant with JEDEC standard H-PSOF (Heatsink Plastic Small Outline Flat lead). The first available products using the H-PSOF package technology are 40V OptiMOS™ T2 power transistors offering up to 300A current capability in addition to ultra low R DS(on) values of only 0.76m?.

Higher performance power electronics components help automotive system designers comply with government regulations mandating higher standards for automotive fuel efficiency while also demanding lower overall emissions. To meet these standards, power MOSFETs with current capability above 200A and R DS(on) below 1m? are needed to reduce conduction losses and improve overall efficiency. Until now, MOSFETs to fulfill these needs have not been available in the automotive market.

With introduction of the H-PSOF package, Infineon defines a new milestone providing 40V power MOSFETs with up to 300A current capability and R DS(on) of only 0.76m?. In addition, the overall dimensions and the height of the H-PSOF package were reduced compared to a standard D 2PAK package (TO-263) which is typically used in these types of applications. The footprint of the H-PSOF package is about 20 percent smaller and its height is almost half that of the current D 2PAK package.

“With the development of the innovative H-PSOF package Infineon underlines its technology leadership both in automotive and power electronics, combined with a deep automotive system expertise,“ said Jochen Hanebeck, President of the

Automotive Division at Infineon Technologies AG. ”This package innovation for high-current MOSFETs will enable our customers, the automotive system suppliers, to design energy efficient and reliable automotive applications to fulfill the needs for reduced fuel consumption and emissions.”

The H-PSOF package will enable automotive electronics manufacturers to better serve the market for high-current applications. These include applications such as battery management for hybrid vehicles as well as Electric Power Steering (EPS), active alternators and other heavy load applications enabling higher efficiency and lower emissions. An example of a growing application area, cited the US market research firm Strategy Analytics in a recent report, are automotive EPS and start stop systems. These will grow from about 47 million units in the year 2011 to about 110 million units in the year 2016, accounting to a compound average annual growth rate of about 19 percent.

The main goal for the development of the H-PSOF package was to decrease the package resistance and increase the current capability of the package compared to the D 2PAK offering high-current capabilities.

The H-PSOF package also offers assembly and manufacturing advantages. Its special design ensures a good wetting for reliable soldering and it is possible to control the soldered leads by using Automatic Optical Inspection (AOI) which is usually part of a Surface Mount Technology (SMT) production line.

Availability

The first available product using the H-PSOF package is the IPLU300N04S4-R7, a member of the 40V OptiMOS T2 automotive power transistor family from Infineon, which is the benchmark for applications in energy efficiency, CO2 reduction, and electric drives. The IPLU300N04S4-R7 offers a continuous drain current (I D) of 300A with R DS(on) of 0.76m?. The power devices in the H-PSOF package are qualified according to AEC-Q101 standards. Infineon plans to introduce further 40V and 30V automotive MOSFETs using the H-PSOF package technology.

Further information

Further information on Infineon’s automotive MOSFETs and automotive semiconductor portfolio are available at www.infineon.com/automotivemosfet [1] and at www.infineon.com/automotive [2]

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