

Main considerations for inverter design with SiC MOSFET

SPEAKER

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About The Speakers:

Simon Kim:

At Infineon Technology Korea, he is a Principal Engineer in the System Application Engineering team with 20 years of experience in power electronics and six years in robotics and automation. His expertise includes inverter design using SiC MOSFETs and gate drivers, focusing on UAM, HVAC, rail applications, MV drives, ESS, and electric ships.

ABSTRACT

The proposed session will be composed of three topics as the following.

As a start, there is the introduction for both SiC MOSFET and gate driver. SiC MOSFET's characteristics and trends are reviewed. Application review with SiC MOSFET. Selection of discrete or module (two more SiC MOSFET switch is inside) with power dimensioning. Gate driver type and selection guide.

As a main topic, there is the design guide between SiC MOSFET and gate driver IC. Key design consideration with gate driver IC as the followed topics: Low loss, gate clamping, Better EMI with slew rate gate driver IC, current protection by over current protection with shunt, DESAT protection and 2 level DESAT Protection. Used application is reviewed. Signal pattern consideration with related with gate-ringing. Power pattern consideration with stray inductance. Tuning by Gate resistor and snubber. As a last topic, there is a short introduction of micro controller Selection of Micro controller for inverter. Without program coding. motor driving. Industrial and automotive micro controller. Simple introduction. And then, there is "Q&A session" and listen & discussion of voices from industrial and academic field.

