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Speech subject：Discussion of Substrate-Embedded SiC Power Module Packaging Technology

Speech leader: Fengze Hou, Institute of Microelectronics of the Chinese Academy of Sciences

Speech Description/Objective:
Silicon Carbide (SiC) power devices are gradually maturing, but the mainstream interconnection technology still relies on aluminum wire bonding, which has become a bottleneck restricting the performance of SiC power devices. To maximize the advantages of SiC power devices, it is crucial to study advanced power packaging technologies that offer low inductance and low thermal resistance. In recent years, with the in-depth research by academia and the promotion by industry, substrate-embedded SiC power chip packaging has become a research hotspot. In this keynote, I will analyze the main issues of conventional wire bonding packaging, introduce state-of-the-art advanced SiC power module packaging technologies, and focus on discussing substrate-embedded SiC power module packaging technology.

Speech Outline:

Who Should Attend:

Introduction of Speaker:

Fengze Hou is an IEEE Senior Member. He graduated from the Department of Microelectronics at Delft University of Technology in the Netherlands, currently an Associate Professor at the System Integration and Packaging Center of the Institute of Microelectronics of the Chinese Academy of Sciences (IMECAS), a master's supervisor, and a faculty member at the School of Integrated Circuits, University of Chinese Academy of Sciences. He joined the IMECAS in 2012, and from June 2013 to June 2021, he held a dual appointment at the national center for advanced packaging (NCAP), where he served as an Engineer and Senior Engineer. He mainly works on SiC power module packaging, AI chip 3D integration, vertical power delivery, thermal management, and reliability technologies. He was the first to propose and develop the substrate-embedded SiC power module packaging technology internationally, achieving significant advancements in key metrics such as switching loss and thermal resistance compared to international products. He studied material characterization, structural design and optimization, thermal management, multi-objective optimization, performance evaluation, and nanoparticle Cu sintering in the substrate-embedded SiC power module packaging. He has published over 60 papers in top journals and conferences such as TPEL, ATE, TED, JESTPE, TCPMT, and ECTC, with over 700 citations. He serves as a reviewer for nearly 10 international academic journals and hold 25 Chinese and US patents. He has received the National Award for Outstanding Self-financed Students Abroad.