

Elektrotechnik-Elektronik-Informationstechnik

EEI KOLLOQUIUM

Investigation of Heterogeneous 3-Dimensional Integration for System on Packaging (SOP) and Thermal Reliability Analysis using Multi-physics Methods.

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Three-dimensional integrated design technology can provide a single standard electronic system with multiple functions and is the most important method to enhance the technical performance of modern ICs and expand their capabilities. 3-D ICs based on system in package will significantly improve the RF performance. Three main areas will be included: 1) Heterogeneous chip integration and physical compatibility, 2) Miniature and high-performance passive components with integration methodology, 3) Thermal management and reliability issues using multi-physics methods. On the other hand, special attention has been focused on intentional electromagnetic interference (IEMI) effects on communication systems, in which high sensitivity RF devices/circuits can be easily interfered and even damaged. In this talk, the electro-thermal-stress (E-T-S) multi-physics method is also used to analyze the interactions of RF devices and high power electromagnetic pulses. Simulation, measurement, and calculations show some correlations.