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Paper ID: 454

Paper Title: Stacked-Plate Heatsink Design for Effective Thermal Management of Power Semiconductor Modules

Abstract: Advances in power semiconductor devices and packaging technologies have increased power density in power conversion systems, making effective thermal management be critical. This study evaluates stacked-plate architecture against conventional pin-fin heatsinks using finite element method (FEM) simulations, in terms of cooling performance and pressure drop. Based on the findings, a novel stacked-plate heatsink structure for power semiconductor module is proposed that achieves higher cooling efficiency with low pressure drop, which addresses the traditional trade-off relationship in heatsink design.