

Numerical Analysis of Copper Heat Sink with Different Micro Pin Fins

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Abstract

INTRODUCTION:

Micro heat sinks can be widely used for cooling in modern microelectronic high heat flux components where the amount of heat generated sometimes exceeds the limit which the system can withstand. Microstructures when introduced into the channels of heat sinks in form of micro fins enhance the heat transfer performance of the heat sinks further.

USE OF COMSOL MULTIPHYSICS

Copper heat sinks with different types of micro fins in the channel are analyzed for their heat transfer performance in this paper using convective heat flux feature of Heat Transfer module of COMSOL Multiphysics software. In this study the heat sinks with square, circular and elliptical fins on the channel base are compared with heat sink without fins for their heat transfer performance and corresponding pressure drops.

RESULTS & CONCLUSION:

It is observed that the sizes and shape of the fins have a considerable effect on the heat transfer performance and pressure drop of a heat sink. Also the heat sinks with micro fins performed better than heat sinks without fins. But the sink without fins has least pressure drop when compared to the heat sinks with fins.

Reference

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