

伝熱材料を評価するための新しい手法

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The New Method for Evaluating Heat Transfer Material

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概要 伝熱材料を評価するための新しい手法を提案する。機械加工で正確に溝を制御したアルミニウム凹凸板を伝熱材料の上に置き、圧力を変化させながら熱の測定を行うことによって、ヒートシンクの表面粗さの影響を再現性良く評価できる。その手法の有効性を確認するために、硬度が異なる2種類の伝熱材料を評価し、アルミニウム凹凸板は溝の形状が異なる4種類を使用した。その結果、凹凸板を使用することによって密着度を再現性良く評価することができた。

Abstract

In this paper, we present a new method for evaluating heat transfer materials. When electronic devices are mounted on a metallic heat sink, a heat-transfer material is required to handle the thermal flow from the devices while maintaining electrical insulation. The concept proposed in this paper is to measure the thermal characteristics of a heat-transfer material placed on an aluminum plate that is machine-milled to form precise grooves, which represent the surface roughness of the heat sink. By varying the shape of the grooves and the amount of applied pressure, the contact conditions can be precisely controlled. In order to verify the effectiveness of the proposed method, an evaluation system was constructed, in which the temperature was controlled using flowing water. Tests were then carried out on two types of heat-transfer materials, one with a hardness of C10 and the other with a hardness of C60, as determined using an Asker C type hardness meter.

Key Words: *Thermal Interface Material, Thermal Resistance, Contact Condition, Repeatability*