Tohoku Univ. Technology

Cooling structure

Cooling device supporting next generation power semiconductor

Since the application has not yet been published, it is possible to disclose the specification and technical details and consider commercialization after the conclusion of a contract including confidentiality clauses (ordinary option contract).
Please feel free to contact us.

Overview

In recent years, the heat generation density has increased due to the miniaturization and high power output of semiconductor devices, and high cooling performance has been required. In the cooling method using the diffusion of vapor such as vapor chamber, the heated liquid (working liquid) becomes vapor near the heating surface, and then the vapor is removed to a place away from the heating surface, flocculates as a liquid, and the liquid is supplied to the heating surface again to continue cooling. However, when the amount of vapor generated increases with the increase of heat generation density, the vapor prevents the supply of the liquid to the heating surface, and the cooling effect disappears.

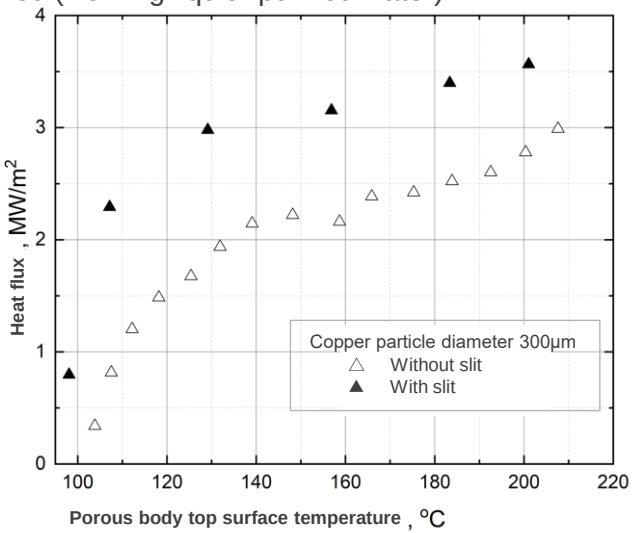
Therefore, the inventors have developed a cooling structure with high cooling performance by devising the flow phenomenon of vapor and liquid to cope with next-generation power semiconductors with high heat generation density.

Product Application

- Vapor chamber

Features・Outstandings

Temperature and heat flux of heating part of cooling structure measured (working liquid: purified water)



For boiling on a plane heated surface in water at atmospheric pressure, the critical heat flux is 1 MW／㎡

➡ **The cooling limit of the present invention is greatly improved!**

IP Data

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