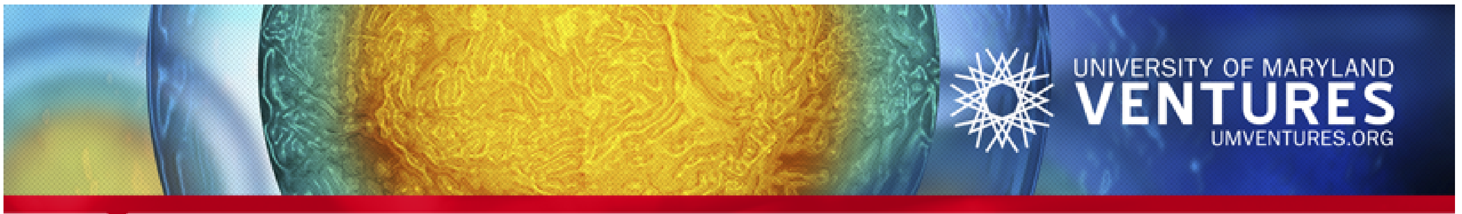

TECHNOLOGY

New Embodiments for Packages with Mini-Contact TE Coolers

OVERVIEW

Present trends towards greater miniaturization of integrated circuits (IC) have provided motivation for innovative on-chip thermal management systems.

The inefficiencies of conventional thermal management systems requires design of more aggressive thermal solutions for managing systems that include localized regions of elevated flux called hotspots. The current application of thermoelectric/thermionic coolers to hotspot removal is not able to cool down those hotspots of very high heat flux due to the low cooling power density of thermoelectric/thermionic coolers.

Researchers at the University of Maryland have come up with an invention which is directed to providing thermal management for systems that have localized regions of elevated heat flux adjacent to regions of lesser heat flux by modifying and incorporating new embodiments in the conventional thermal management system primarily in the thermoelectric cooler region. Results have shown that the peak temperature at the hotspot is reduced from 146.5ºC to 112.8ºC, 19ºC lower than the hotspot temperature in the conventional chip package. The new invention can still further be subjected to variations, modifications and alternatives.

For additional information, please contact the Office of Technology Commercialization, (301) 405-3947, E-mail: otc@umd.edu.

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PATENT STATUS

Issued

LICENSE STATUS

Contact OTC for licensing information

CATEGORIES

- Industrial Processing

EXTERNAL RESOURCES

- US Patent 7,654,311

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