TECHNOLOGY

Low-Resistance Seamless Wedge Thermal Connectors

OVERVIEW

Low-Resistance Seamless Wedge Thermal Connectors

Background

Electronic equipment used in severe in environments such as military and aircraft applications cannot be adequately cooled down by the use of typical convection methods found inside most personal computers. Instead the equipment must rely on conduction cooling methods via the use of liquid or air cooled heat exchanger enclosures. These heat exchanger enclosures are dependent on the thermal conductivity of the materials as well as the thermal resistance at the interfaces of different materials. The current solutions to address the issue of thermal conductivity and thermal resistance between the electronic modules and the heat exchanger enclosure involve the use of various wedge locks. Though this solution tends to excel in clamping force of the modules, due to the small amount of contact area provided for heat transfer, it lacks in overall heat dissipation.

Innovation

Researchers at the University of Maryland have designed a new Low-Resistance Seamless Wedge Thermal Connector. This innovative design provides a secure grip on the electronic modules keeping them in place and providing high resistance to shock as well as vibration. This design also produces maximum thermal heat transfer as a result of a combination of materials used to yield an approximate 0.05 C/W in thermal resistivity, an improvement of 75% over previous solutions. This innovation will increase the life of the electronic modules as they continue to demand additional cooling as they become increasingly more complex in power density.

Applications

- Heat Exchanger Enclosures
- Sheet Metal Enclosures'

Advantages

- Low Thermal Resistivity
- Full PCB Contact
- High Resistance to Shock

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Additional Information

INSTITUTION

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PATENT STATUS

Pending

LICENSE STATUS

Available for exclusive license

CATEGORIES

- Microelectronics
- Materials

EXTERNAL RESOURCES

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