TECHNOLOGY

Suspended Dye Packaging Technique for Compact 3-D Power Electronics

OVERVIEW

Current developments in technology indicate a strong trend towards replacing mechanical and hydraulic drives with more compact, controllable, and flexible electrical drives and actuators. These new technologies require the development of high power, reliable power conversion and control systems. Traditional electronics packaging technology has difficulty meeting the needs of these new compact and powerful systems. One of the key limitations of this packaging is the dissipation of the heat generated by the current flowing through the electronic components.

Researchers at the University of Maryland have developed an improved high efficiency electronics packaging design that provides a specialized cooling structure leading to maximum cooling and enables 3-D packaging of power electronics components with minimum thermal stress on the semi-conductor die. As a result, heat dissipation factors are significantly higher than any currently available technologies and power density is the highest.

The thermal resistance of the packaging is greatly reduced from existing designs. Due to the reduction of thermal resistance, processed power per die surface area grows tenfold in relation to a die with an integrated heat sink, and grows one hundredfold with respect to a traditional heat sink. The Suspended Die 3-D packaging technology allows a significantly smaller size) of the power package, at least in two orders of magnitude higher power density of the package.

If you would like to review additional information or further discuss the technology with the inventors please contact the Office of Technology Commercialization at 301-405-3947 or otc@umd.edu.

CONTACT INFO

UM Ventures
0134 Lee Building
7809 Regents Drive
College Park, MD 20742
Email: umdtechtransfer@umd.edu
Phone: (301) 405-3947 | Fax: (301) 314-9502

Additional Information

INSTITUTION

University of Maryland, College Park

PATENT STATUS

Patent(s) pending

LICENSE STATUS

Contact OTC for licensing information

CATEGORIES

- Power Electronics

EXTERNAL RESOURCES

PS-2007-054