

Nextreme Embeds Thin-Film Optocooler into Laser Diode Packages - Signals New Generation of Optoelectronics Cooling

Photonics West Conference to feature LED and laser diode cooling demonstration at booth #6328

Durham, N.C. (January 21, 2008) — Nextreme Thermal Solutions™, the leader in microscale thermal and power management products for the electronics industry, today announced new applications for the UPF OptoCooler: the cooling of LEDs and temperature control of laser diodes. When embedded in a laser diode package, the OptoCooler module can pump a heat density up to 78 W/cm² - an industry first - to maintain the diode's optimal operating conditions and performance.

Nextreme will be demonstrating LED cooling and the OptoCooler module at the Photonics West conference, January 22-24, 2008 in booth #6328 at the San Jose Convention Center, South Hall 1.

Laser diodes - devices that illuminate telecom fiber-optic cables - use thermoelectric devices for precision temperature control to improve diode output levels and wavelength integrity. A major trend in photonics, however, has been the move to smaller, more integrated and cheaper packaging in order to enable a lower cost structure and to open the door for higher volume manufacturing. In the course of this transition, conventional TEC solutions have become increasingly difficult to implement as size and power densities have not been addressed with conventional bulk thermoelectric technology.

A low-power laser diode might generate as little as 0.09 W of power; however, the diode itself is only ~300 μm x 200 μm in size. This then equates to a device producing ~150 W/cm². Even if that power is spread by a factor of 30 (to 5 W/cm²) it still falls outside the operating regime of a typical bulk TEC, especially within the constraints of the package size.

Thin-film thermoelectric cooling devices can pump more heat and be made much smaller than conventional thermoelectric devices. The UPF OptoCooler, a new thermoelectric module from Nextreme, removes a maximum of 420 mW of heat at 25°C ambient in an active footprint of only 0.55 mm². As a result, the module can pump a heat density up to 78 W/cm² or cool up to 45°C. At 85°C, these values increase to 610 mW, 112 W/cm² and 60°C, respectively.

OptoCooler modules are available now and can be purchased for \$12 in unit volumes of 1000's. Pricing for smaller or larger volumes are available upon request.

For more information, contact Nextreme at 3908 Patriot Dr., Suite 140, Durham, NC 27703-8031; call (919)-597-7300; e-mail info@nextreme.com; or go to www.nextreme.com.

About Nextreme Thermal Solutions, Inc.

Nextreme designs and manufactures microscale thermal and power management products for the semiconductor, photonics, consumer, automotive and defense/aerospace industries. The company has embedded cooling, temperature control and power generation capabilities into the widely accepted copper pillar bumping process used in high-volume electronic packaging. Nextreme's breakthrough addresses the most challenging thermal and power management constraints in electronics today, and delivers the only fully-scalable technology solution by leveraging the existing, high-volume flip chip manufacturing infrastructure. By minimizing the need for manufacturing changes and focusing on developing a seamless design-in solution, Nextreme will change the future of thermal and power management for the entire electronics industry.

Nextreme is managed by an experienced start-up team and world-renowned experts in electronic packaging, thermal management and pillar bump technology. The company is based in Research Triangle Park, North Carolina.

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