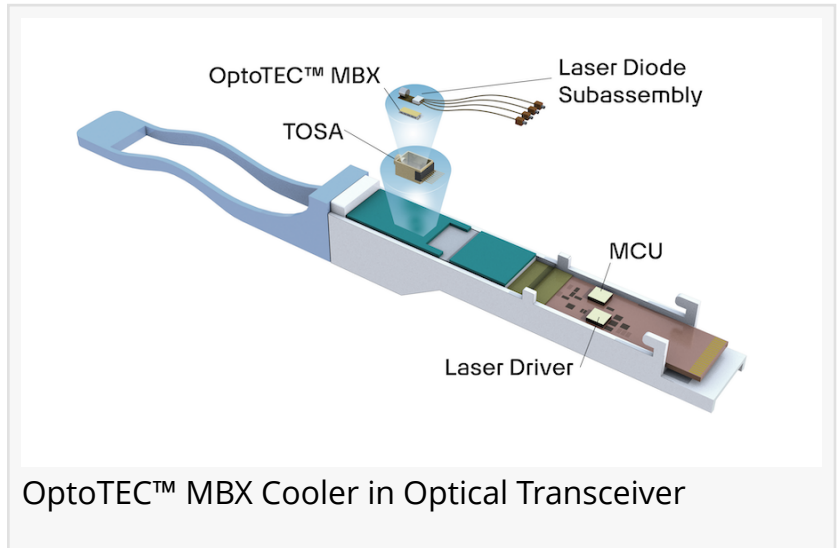


# Tark Thermal Solutions' MBX Series Micro Thermoelectric Coolers Empower Next-Gen Pluggables for AI Data Centers

ROSENHEIM, GERMANY, September 29, 2025 /EINPresswire.com/ -- Tark Thermal Solutions, the leading global manufacturer of thermal management solutions (formerly Laird Thermal Systems), introduces new custom options in the Series of [OptoTEC™ MBX thermoelectric coolers](#) (TECs), engineered to address emerging thermal challenges in ultra-high-speed optical transceivers fueling the next wave of AI-driven data centers.



As hyperscale data centers and AI clusters deploy increasingly larger models and interconnect more servers, the bandwidth required between compute and storage nodes is pushing transmission speeds from 800Gbps, to 1.6Tbps per link. These higher-speed links produce more

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Engineered for thin profiles, high heat packing densities and scalability, MBX coolers position AI data centers and telecom providers to meet tomorrow's bandwidth demands with confidence.”

*Andrew Dereka,  
Thermoelectrics Product  
Director, Tark Thermal  
Solutions*

heat in smaller spaces and are requiring increasingly compact, efficient, and reliable thermal management to stabilize sensitive laser temperatures, mitigate crosstalk, and preserve signal integrity over long-haul and multi-wavelength links. Effective miniaturized thermal management is critical to preventing signal degradation, maintaining laser wavelength stability and ensuring reliability.

Engineered for Speed, Miniaturization and Efficiency  
The OptoTEC MBX Series of micro thermoelectric coolers maintain tight temperature control while fitting within the space constraints of cutting-edge optical pluggables.

- Precision Cooling: new thermoelectric materials and high-precision manufacturing deliver rapid thermal response for ultra-compact optical pluggables, including 800G, 1.6T, and

anticipated 3.2T modules

- **Micro Footprint:** OptoTEC MBX TECs feature footprints as small as 1.5mm x 1.1mm and thicknesses down to 0.65mm, integrating seamlessly into advanced transceiver designs with minimal space and weight penalty
- **Optimized for Performance:** OptoTEC MBX achieves heat pumping densities up to 43 W/cm<sup>2</sup> at a lower operating current than traditional thermoelectric coolers, reducing total power draw for dense data center deployments



"Our MBX Series redefines thermal management for a new era of optical pluggables. Engineered for thin profiles, high heat packing densities and scalability, MBX coolers position AI data centers and telecom providers to meet tomorrow's bandwidth demands with confidence."

– Andrew Dereka, Thermoelectrics Product Director, Tark Thermal Solutions

As hyperscale applications push optical links to new performance heights, the MBX Series ensures that innovation in transceiver speed is matched by innovation in miniaturized, cost-effective, and highly reliable thermal control.

For more information, go to: <https://tark-solutions.com/products/thermoelectric-cooler-modules/micro-MBX-series>

1. What specific role does the OptoTEC™ MBX Series play in optical pluggables design?□

The MBX Series provides active temperature stabilization for laser diodes and other heat-sensitive components within ultra-compact optical pluggables. By tightly controlling the laser junction temperature, MBX TECs help maintain wavelength stability and minimize signal degradation at transmission rates of 800 Gbps, 1.6 Tbps, and in field trials up to 3.2 Tbps.

2. How does the MBX Series achieve high performance in such a small footprint?□

MBX modules utilize advanced thermoelectric materials and high-precision assembly processes that enable heat pumping densities up to 43 W/cm<sup>2</sup>. Footprints start as small as 1.5 mm × 1.1 mm with thicknesses down to 0.65 mm, making integration possible in next-generation OSFP and QSFP transceiver packages without significant space or weight penalties.

3. What advantages do MBX TECs offer compared to conventional thermoelectric coolers?□

In addition to their reduced form factor, MBX TECs are optimized for lower operating current at a given heat load. This lowers overall power consumption in dense data center environments.

Their fast thermal response also allows precise control loops for modulated or rapidly varying heat loads typical of high-speed optics.

4. Which applications or optical pluggables standards are best suited for MBX TECs?

They are designed for pluggable optical transceiver formats such as 800G and 1.6T OSFP/QSFP-DD modules, as well as emerging 3.2T coherent links. Any application with tight thermal requirements, high channel counts, and limited PCB real estate, such as AI cluster interconnects and long-haul DWDM systems can benefit from MBX integration.

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#### About Tark Thermal Solutions

Tark Thermal Solutions designs, develops, and manufactures active thermal management solutions for demanding applications across global medical, industrial, transportation, telecommunications and data center markets. We manufacture one of the most diverse product portfolios in the industry, ranging from thermoelectric coolers and assemblies to temperature controllers, specialty pumps and liquid cooling systems. With unmatched thermal management expertise, our engineers use advanced thermal modeling and management techniques to solve complex heat and temperature control problems. By offering a broad range of design, prototyping and in-house testing capabilities, we partner closely with our customers across the entire product development lifecycle to reduce risk and accelerate time-to-market. Our global design, manufacturing and support resources help customers shorten their product design cycle, maximize productivity, uptime, performance, and product quality. Tark Thermal Solutions is the optimum choice for standard or custom thermal solutions.

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