

Infographic

3 Key Advances in TEC Design



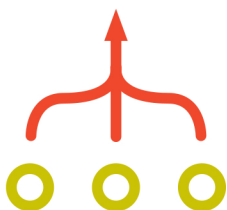
**Phononic's
3 key TEC
advancements:**



BETTER
heat pumping
density



LOWER
power
consumption



NEW
integration
schemes

3 Key Advances in TEC Design

Challenges in the market: Today, content providers in the datacom space are releasing new technology faster than ever, demanding the same pace of development from transceiver and optical components providers. You need to innovate fast, without increasing cost, to keep up with this demand. There's

a global effort to lower power consumption, reducing operating costs. But traditional TECs can be one of the larger power drains in the TOSA. As power consumption budgets tighten, you need to find ways to increase efficiency across every part of your package - and a great place to start is the TEC.

Five major trends influencing laser package designs:



Increasing heat density as form factors shrink



Increasing maximum ambient temperatures, from C-Temp to I-Temp



Increasing power consumption budget stringency, as defined in MSA specifications



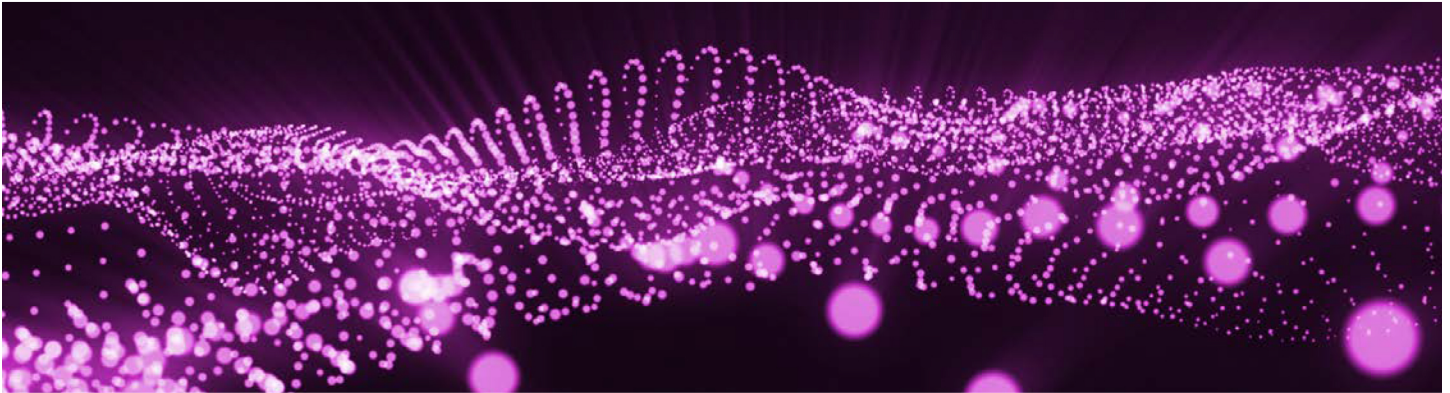
Optics moving closer to CPUs, forcing a switch from electrons to light. Innovation in on-board optics will require new cooling approaches



Environmental challenges introduced by non-hermetic packages that reduce package complexity and cost



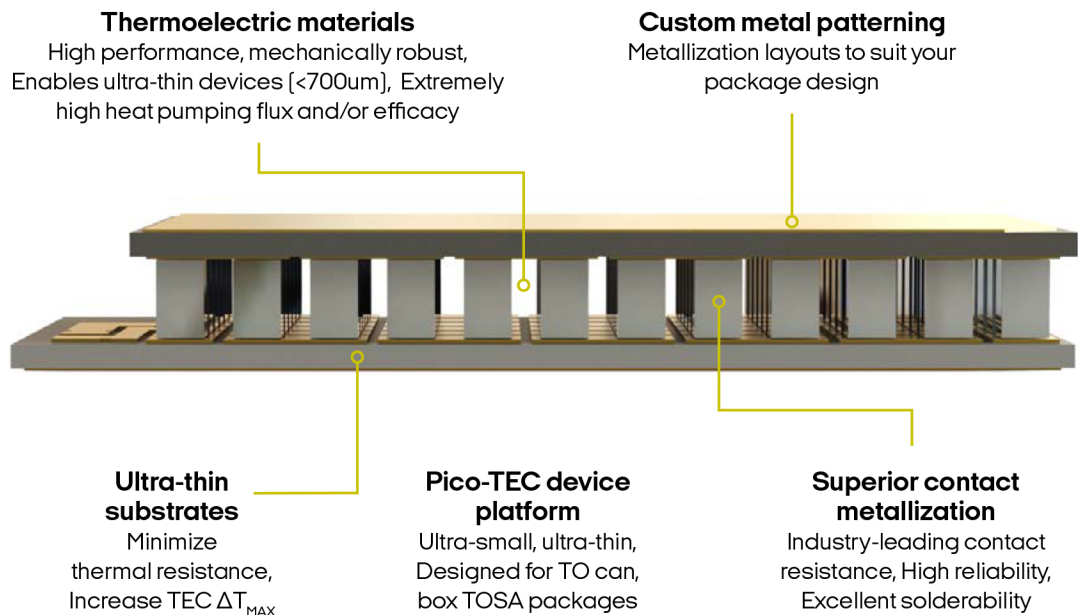
How do we deliver all this?
We're obsessed with performance.



Our process delivers consistent, repeatable results.

With extremely tight process control, we deliver unrivaled quality. Our TECs are assembled in a US-based automated manufacturing facility that scales quickly from design into production, reducing NPI timelines.

Limitless Innovation



We're **constantly** developing new technologies.

Our mission is simple but bold: push the limits of what's possible in active cooling and thermal management with thermoelectrics. A deep understanding of semiconductor processes, product assembly and their inherent challenges such as reliability and integration feed our radically different approach. From performance-enhancing R&D on our materials and processes to hybrid TEC/package designs that integrate tightly with 2.5D or 3D Photonic Integrated Circuits, we develop innovations that shatter old limitations.



A TEC isn't just a TEC. A Phononic TEC is different.
Contact us today at content.phononic.com/OPT/Get-Started. We'll assess your system requirements and partner with you on TEC design and development for your cooled TOSA.

Phononic is reimagining cooling and heating in ways never thought possible. Its breakthrough solid-state technology is transforming industries and creating new markets with innovative solutions that disrupt antiquated business models and incumbent technologies. Phononic is the critical element of innovation needed to radically change what it means to be efficient, effective and sustainable. The company has been named to the 2016, 2017 and 2019 CNBC Disruptor 50 lists, received the US EPA's 2017 Emerging Tech Award, R&D 100 Award and more.