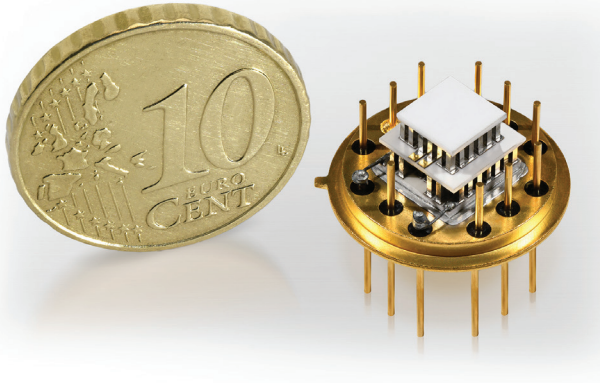


OptoTEC™ MSX Series

The MSX Series utilizes advanced automation and next-generation thermoelectric materials to boost cooling capacity by as much as 10% and assure high process repeatability.



The multistage TECs offer micro footprints on the cold side down to 2.0 x 4.0 mm's with height thicknesses down to 3.3 mm's.

Features include:

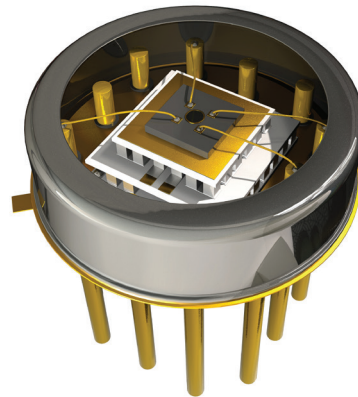
- High performance next generation thermoelectric materials
- Deep cooling well below 0°C with high COP

Designed for:

- Infrared (IR) Detectors
- Charge-Coupled Devices (CCD)
- Complementary Metal Oxide Semiconductors (CMOS)
- X-Ray Detectors

Optical TEAs

MSX multistage micro thermo-electric coolers are available as a standalone or integrated into an optical package called Optical TEAs. Laird Thermal Systems has a proprietary bonding technique to adhere TECs to optical packages with minimal solder voiding.



Laird™

THERMAL SYSTEMS

Active Cooling Solutions for Advanced Optoelectronics



lairdthermal.com



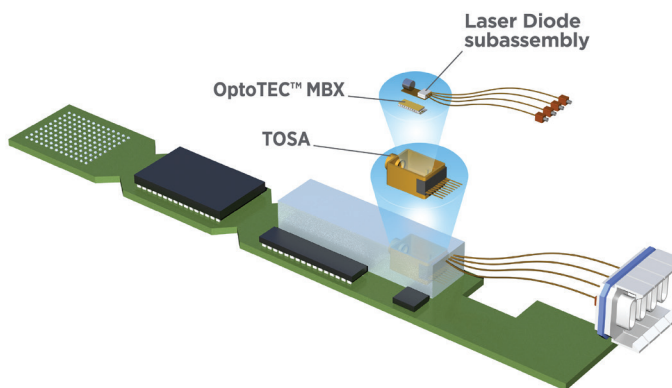
OptoTEC™ MBX Series

NEW high performance thermoelectric cooler to support next generation opto-electronic applications.



Designed to stabilize temperature in high-performance applications

- Next-generation LiDAR systems for autonomous vehicles
- Pluggable optical transceivers for telecom and datacom AI cluster computing
- Indium Phosphide VCSELs

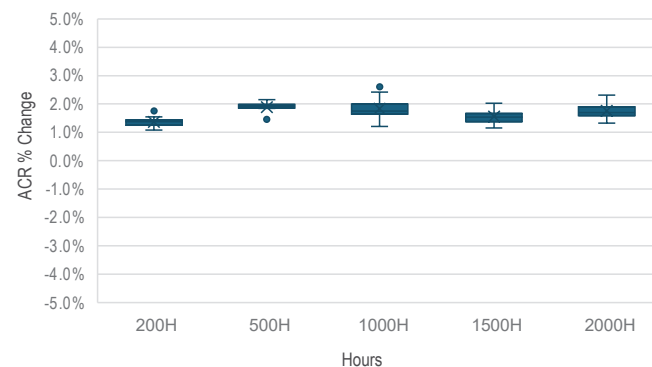


LTS offers hermetic sealing of TEC for non-hermetic packaged optics

- Protects all inner surfaces of the TEC
- Ultra thin coating that does not impact cooling performance
- Withstands solder mounting temperatures of 200°C for short duration

Coated MBX TECs have been tested under 85C/85%RH conditions for 2,000 hours with minimal (spec <5%) degradation

MBX60 2,000 hrs 85C/85%RH



Features include:

- Micro footprints with thin profiles
- High performance next generation thermoelectric materials
- High heat flux densities
- Operation in high-temperature environments
- Telcordia GR-468-Core Iss 2 validation approved

MBX Series TECs will be required for Coherent 1.6TB optical transceivers and beyond

	DESCRIPTION	TH (C)	QMAX ⁽¹⁾ (WATTS)	IMAX (AMPS)	VMAX (VOLTS)	ΔTMAX (°C)	ACR (W)	L (MM)	W (MM)	H (MM)
TO Can	MBX16-06-F2N-0101-GG-W0	27	0.69	1.61	0.72	71.4	0.41	1.48	1.12	0.78
	MBX14-09-F1N-0102-GG-W0	27	0.89	1.39	1.08	71.7	0.72	1.82	1.46	0.68
	MBX11-18-F2N-0202-GG-W0	27	1.39	1.08	2.15	72.5	1.84	2.02	2.02	0.93
TOSA	MBX18-20-F2N-0303-GG-W0	27	2.58	1.82	2.39	71.4	1.21	2.99	2.58	0.90
	MBX12-038-F2N-0305-GG-W0	27	3.01	1.32	4.57	72.3	3.63	4.36	2.80	1.03
	MBX19-28-F2N,0304,GG,W0	27	2.05	1.86	3.35	71.8	1.66	3.56	3.13	0.93
Butterfly	MBX21-45-F2N-0505-GG-W0	27	6.62	2.07	5.38	72.5	2.41	5.02	4.53	1.01
	MBX20-042-F2A-1206-GG,W0	27	5.90	2.05	4.90	73.4	2.21	10.15	6.00	2.07
	MBX18-66-F2A-0408-GG-W0	27	7.82	1.81	7.61	69.0	3.68	8.45	4.04	1.33
	MBX25-59-F2A-0506-GG-W0	27	9.48	2.53	6.71	66.2	2.27	6.24	5.22	1.23
	MBX28-71-F1A-0606-GG-W0	27	12.46	2.76	8.06	65.9	2.49	6.48	6.48	1.23