

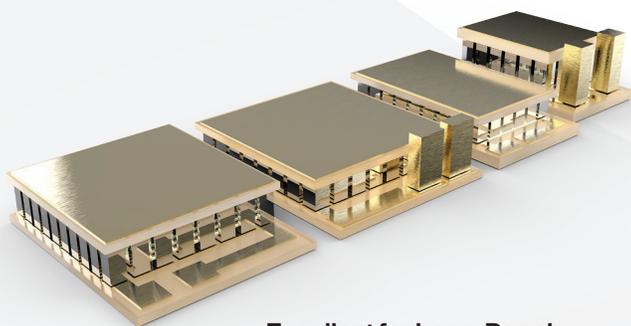
## Technical Data Sheet

# TECs for Box TOSAs

Phononic's high-performance TEC solutions for box TOSA [transmit optical subassembly] laser packages deliver industry-leading cooling for applications of 100G, 400G, 800G and even 1.6T and beyond. These TECs are perfectly suited for reach requirements of co-located and regional data centers and hyperscalers, and are well suited for QSFP transceiver packages as well. Phononic's TEC series is expertly designed to meet the needs of your box TOSA laser package, optimizing design to meet or exceed critical speed, distance and form factor/space requirements.

### Capitalize on Phononic's Design Expertise

Collaborate with our team of experienced Application Engineers and Thermal Management Experts to design cooling solutions optimized for the nuances of your specific end-application, with quick NPI timelines to accommodate tight product launch schedules, at scale.



**Excellent for Long-Reach and High-Speed Applications**

## Benefits

- **Industry-leading Design and Application Support:** Capitalize on our expertise. The Phononic team will consult and proactively engage with your team throughout the design process, enabling faster time to market with designs done right the first time.
- **Extremely Low Power Consumption:** Achieve up to 30% lower power consumption as compared with industry standard performance.
- **High Heat Pumping Density:** Customization for high heat loads of 200G/400G EMLs in existing form factors

## Features

- Lower power consumption
- Higher heat pumping density
- Supports 100G-3.2T applications
- Suited for long reaches
- Compatible with I-temp or C-temp ranges
- Application-specific designs available

## End-Customer Applications

- CFPx MSA transceivers
- OSFP, QSFP28 and QSFP-DD [Quad Small Form Factor Pluggable] transceivers
- 400G DR4/FR4/LR4 and 800G DR4/DR8/FR8 TOSAs
- 100G/400G/800G/1.6T Coherent
- 1.6T/3.2T DR8/FR8
- High data rate LAN-WDM and DWDM [dense wavelength division multiplexing]
- I-Temp QSFP28 TOSAs for wireless front haul applications

## Integration Options

- Bare wire bond pads
- Wire bonding posts
- Cold side electrical connections
- High-temperature solder
- Solder pre-tinning
- Patterned cold-side metalization
- Pre-attached cold-side thermistor
- Automation-ready packaging

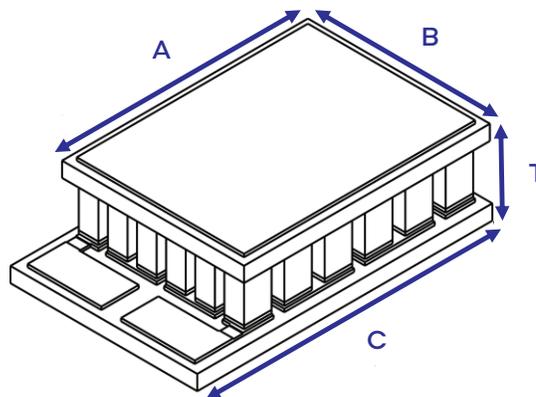
## Product Portfolio

Part Number	TEC Dimensions				TEC Performance (Thot = 75°C)					AC Resistance @ 25°C (Ω)
	A [mm]	B [mm]	C [mm]	T [mm]	Optimal Heat Load [milliwatts]	Qc Max [Watts]	DT Max [°C]	V Max [Volts]	I Max [Amps]	
FBM-017990	8.50	2.70	9.30	0.93	590 - 1950	5.9	88	5.28	1.99	1.72
FBP-018318	3.90	4.20	4.90	0.67	580 - 1900	5.8	86	10.84	0.97	7.71
FBM-016859	4.10	4.10	4.90	1.00	500 - 1650	5.0	89	5.28	1.69	2.03
FBM-016140	4.20	2.90	4.90	1.00	420 - 1400	4.2	89	4.46	1.68	1.73
FBM-016936	4.20	4.50	5.00	0.85	290 - 960	2.9	89	3.97	1.31	2.01
FBM-016916	2.80	2.70	3.50	1.30	240 - 800	2.4	89	3.46	1.23	1.83
FBM-017066	4.10	2.20	4.85	0.93	180 - 600	1.8	89	3.64	0.90	2.63
FBB-017256	3.00	4.20	3.80	1.60	130 - 430	1.3	93	2.66	0.85	2.18
FBM-017996	6.45	2.70	7.10	0.93	600 - 2000	6.1	88	3.95	2.74	0.93

\*Optimal heat load is the cold side heat load range under which the TEC operates at or near highest efficiency conditions. Hot side temperature is 75°C, cold side temperature is 45°C to 55°C.

## Considerations to Maximize Performance

To maximize performance, longevity and reliability, TEC storage and operation at or below 85°C ambient in a non-condensing environment is recommended. Recommended mounting methods are bonding with thermal epoxy or soldering with metalized ceramics. For additional information or assistance selecting or designing the right TEC optimized for your specific application, please consult with one of our Application Engineers at [phononic.com/contact-us](https://phononic.com/contact-us), or learn more about Phononic’s proprietary approach to TEC design at [phononic.com/tecs-for-fiber-optics](https://phononic.com/tecs-for-fiber-optics).



Learn More:



**Unleash Every Watt. Unlock Every Degree.**

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