

## Application Note

### Chip-on-Carrier (COC) Evaluation Board

The SemiNex Chip-on-Carrier (COC) Evaluation Board is designed to provide customers with a fast, simple, and reliable method to evaluate SemiNex laser chips before integration into their systems. By combining a COC of the customer's choice with a compact printed circuit board (PCB), an integrated thermistor, and a standard connector interface, this board reduces lead time and accelerates testing and prototyping.

This evaluation solution is particularly suited for users who need to:

- Rapidly test laser performance in their application environment.
- Characterize optical and thermal behavior.
- Integrate into existing test setups with minimal hardware development.

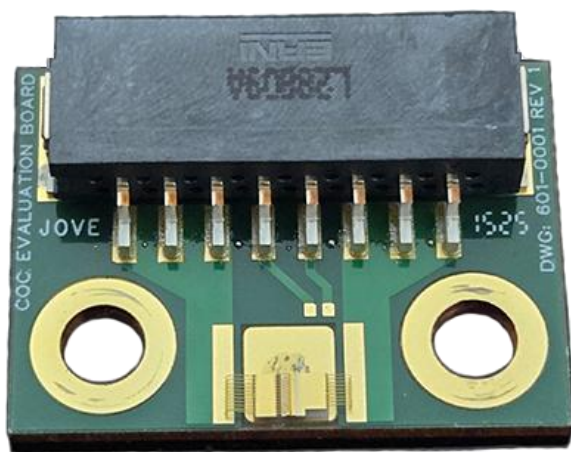


Fig 1. SemiNex Standard Evaluation Board

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Each COC Evaluation Board includes:

ITEM NO.	PART NO.	DESCRIPTION
1	PCB-102	COC Evaluation Board
2	COC-###	Laser Diode Mounted on Ceramic Substrate
3	NTCG103JF103FT1A	TDK Corp – NTC Thermistor, 10k, SMT, 0402
4	284124-E	TE Connectivity – Connector, SMT, Right Angle, 8 POS. 0.1" Pitch

The board is manufactured to precision tolerances with third-angle projection and an overall compact footprint of approximately **30 × 21.9 mm**, with a mounting hole pattern suitable for standard lab setups

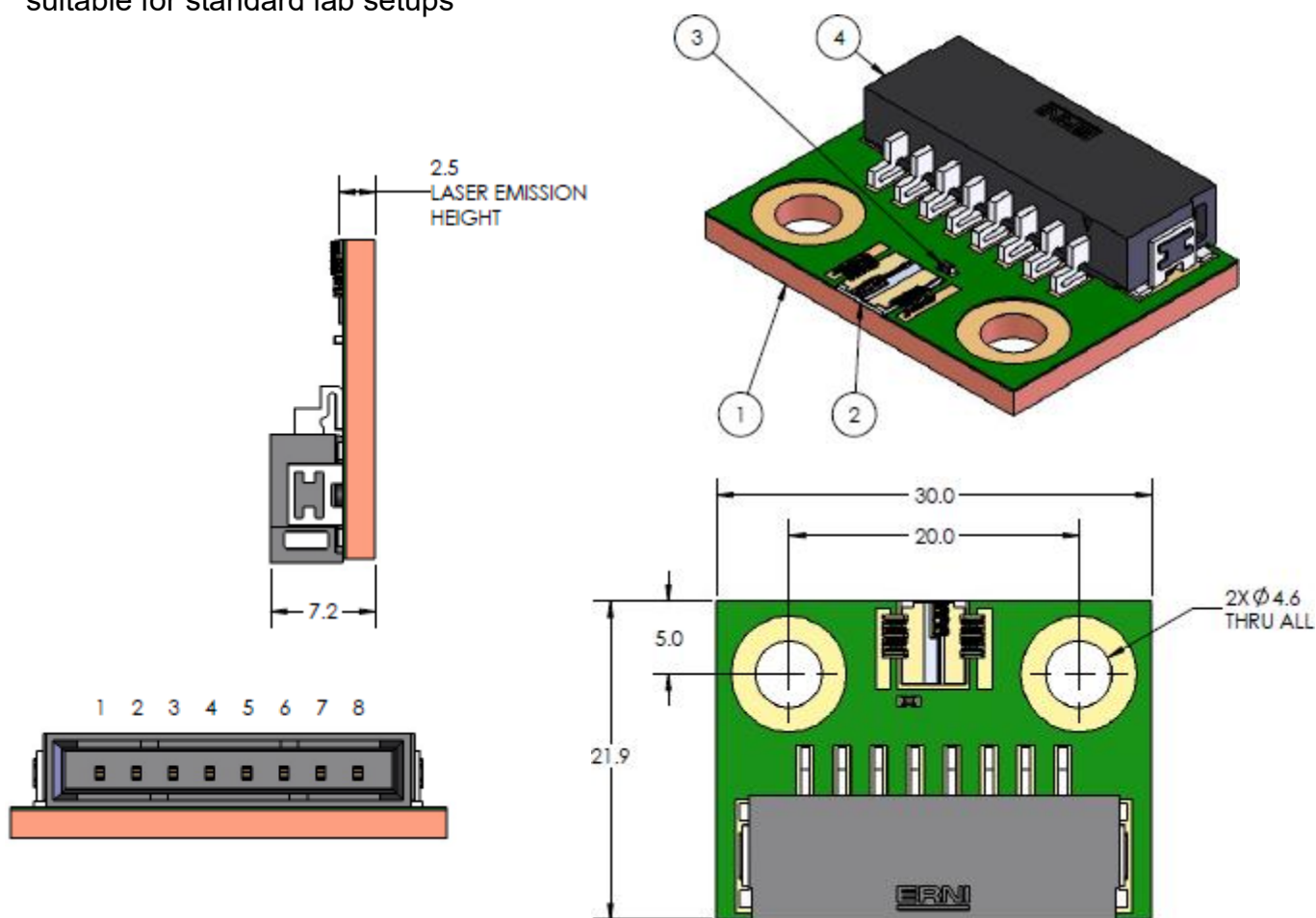


Fig 2. Dimensions of the Eval Board, including CoC and mounting hole placement

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## Pinout Configuration

The TE Connectivity 8-pin connector provides direct electrical access to the COC and the thermistor for monitoring and control.

PIN	SIGNAL	DESCRIPTION
1	Anode	Laser Anode connection
2	Anode	Laser Anode connection
3	VSENSE (+)	Positive voltage sense line
4	Thermistor	Thermistor lead
5	Thermistor	Thermistor lead
6	VSENSE (-)	Negative voltage sense line
7	Cathode	Laser Cathode connection
8	Cathode	Laser Cathode connection

## Mechanical Design

- **Board dimensions:** 30.0 × 21.9 mm
- **Mounting holes:** 2 × Ø 4.6 mm (through) for secure mechanical attachment.
- **Height:** ~2.5 mm (excluding connector height).
- **Laser COC position:** Centered to allow optimal optical coupling.

The PCB is designed to offer both mechanical rigidity and thermal stability during operation. The thermistor is placed close to the COC to provide accurate temperature monitoring.

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## Usage Instructions: Getting Started

1. **Mounting the Board:** Secure the evaluation board on a stable platform or heat sink using the mounting holes provided. Ensure good thermal contact between the carrier and your cooling stage for accurate thermal performance.
2. **Electrical Connection:** Connect the 8-pin cable or socket to your test setup. Verify pin orientation carefully to avoid polarity reversal.
3. **Laser Drive:** Use a precision laser driver with current and temperature control. Connect the anode and cathode to the driver output, and VSENSE lines to your measurement system if needed for four-wire sensing.
4. **Temperature Monitoring:** Interface the thermistor pins to your temperature monitoring circuit or TEC controller for real-time feedback.
5. **Operation:** Power up the system and begin testing at low current levels. Gradually increase drive current while monitoring output power, temperature, and voltage.

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