

TL-2010-C TL-2020-C

Ultra Low Power Dissipation Design

High Optical Power Widely Tunable Laser Module

Features

- 1550 nm CW DFB laser module for DWDM systems
- <3.9W maximum power dissipation at 75C case
- High optical power (up to 20 mW) without an SOA
- Tunable over L-Band: 37 nm tuning range
- Highly reliable DFB performance
- Integrated wavelength locker
- Excellent Relative Intensity Noise (RIN): -140 dB/Hz typical
- Narrow line-width: 3 MHz typical
- High Side Mode Suppression Ratio (SMSR): 50 dB typical
- Built-in Digital Signal Processor (DSP) and control electronics
- Compatible with OIF tunable laser MSA

The TL-2010-C and TL-2020-C are a new generation of compact 10 and 20 mW widely tunable transmission lasers built with Santur's own proprietary packaging technology. This package provides for a highly efficient, small form factor module with the lowest power dissipation in the industry.

*Ideally suited for use in a wide variety of DWDM systems, the Santur **TL-2010/TL-2020-C** provides the best combination of performance features available, offering a unique combination of high optical power, wide tunability, and low power dissipation. The **TL-2010/TL-2020-C** module includes an integrated wavelength locker, industry standard electrical interface, and a uniquely stable and reliable DFB laser design.*

High-powered performance, reliability, ease of manufacture, and economies of scale derived from the exclusive, proven design differentiate this product from others in the industry.



Specifications:

| Symbol | Parameter | Conditions | TL-2010-C | | | TL-2020-C | | | Unit |
|---|---------------------------------------|----------------------------|-----------|------|---------|-----------|------|---------|-------------|
| | | | Min | Typ | Max | Min | Typ | Max | |
| Output Power | | | | | | | | | |
| P_{peak} | Radiant output power from pigtail | - | - | 10 | - | - | 20 | - | mW |
| | Power Variation | Over wavelength | -0.3 | | 0.3 | -0.3 | | 0.3 | dB |
| | | Over temperature | -0.3 | | 0.3 | -0.3 | | 0.3 | dB |
| Optical Characteristics | | | | | | | | | |
| λ_R | Wavelength tuning range | - | 35 | | | 35 | | | nm |
| | Channel spacing | ITU Grid | 25 | 50 | | 25 | 50 | | GHz |
| | Wavelength limits | | 1528.77 | | 1563.86 | 1528.77 | | 1563.86 | nm |
| T_{switch} | Wavelength switching speed | - | - | 2 | 15 | - | 2 | 15 | seconds |
| f_w | Spectral linewidth | FWHM | - | 3 | 10 | - | 3 | 10 | MHz |
| f_d | Frequency inaccuracy over life | Steady-state | -1.5 | | 1.5 | -1.5 | | 1.5 | GHz |
| SMSR | Side mode suppression ratio | - | 40 | 50 | - | 40 | 50 | - | dB |
| ISO | Optical isolation | - | 30 | - | - | 30 | - | - | dB |
| RIN | Relative intensity noise | 20 MHz to 10 GHz | - | -137 | -130 | - | -143 | -135 | dB/Hz |
| PER | Polarization extinction ratio | E-field along slow axis | 20 | - | - | 20 | - | - | dB |
| Electrical Power Supply Specifications | | | | | | | | | |
| V_{cc} | Supply voltage with respect to GND | - | 3.15 | 3.3 | 3.45 | 3.15 | 3.3 | 3.45 | V |
| I_{cc} | Peak supply current while tuning | - | - | - | 3.0 | - | - | 3.0 | A |
| P_d | Total power dissipation, steady-state | $T_{case} = 25^{\circ}C$ | - | 1.0 | 1.5 | - | 1.0 | 1.5 | W |
| | | $T_{case} = 75^{\circ}C$ | - | 1.7 | 3.6 | - | 2.0 | 3.9 | W |
| Fiber Pigtail | | | | | | | | | |
| | Fiber type | Fujikura Panda PM | - | - | - | - | - | - | |
| L | Length of pigtail | - | 1.0 | - | - | 1.0 | - | - | m |
| R | Bending radius | - | 35 | - | - | 35 | - | - | mm |
| F | Tensile strength (fiber to case) | - | - | - | 5 | - | - | 5 | N |
| | Optical connector | FC/UPC R-Type (narrow key) | - | - | - | - | - | - | |
| | Key alignment | Slow axis | - | - | - | - | - | - | |
| Absolute Maximum Ratings | | | | | | | | | |
| T_{op} | Case operating temperature* | - | -5 | - | 75 | -5 | - | 75 | $^{\circ}C$ |
| T_{stg} | Storage temperature range* | - | -40 | - | 85 | -40 | - | 85 | $^{\circ}C$ |
| | Signal pin voltage | | | | 5.5 | | | 5.5 | V |
| | Power pin voltage | | | | 3.6 | | | 3.6 | V |

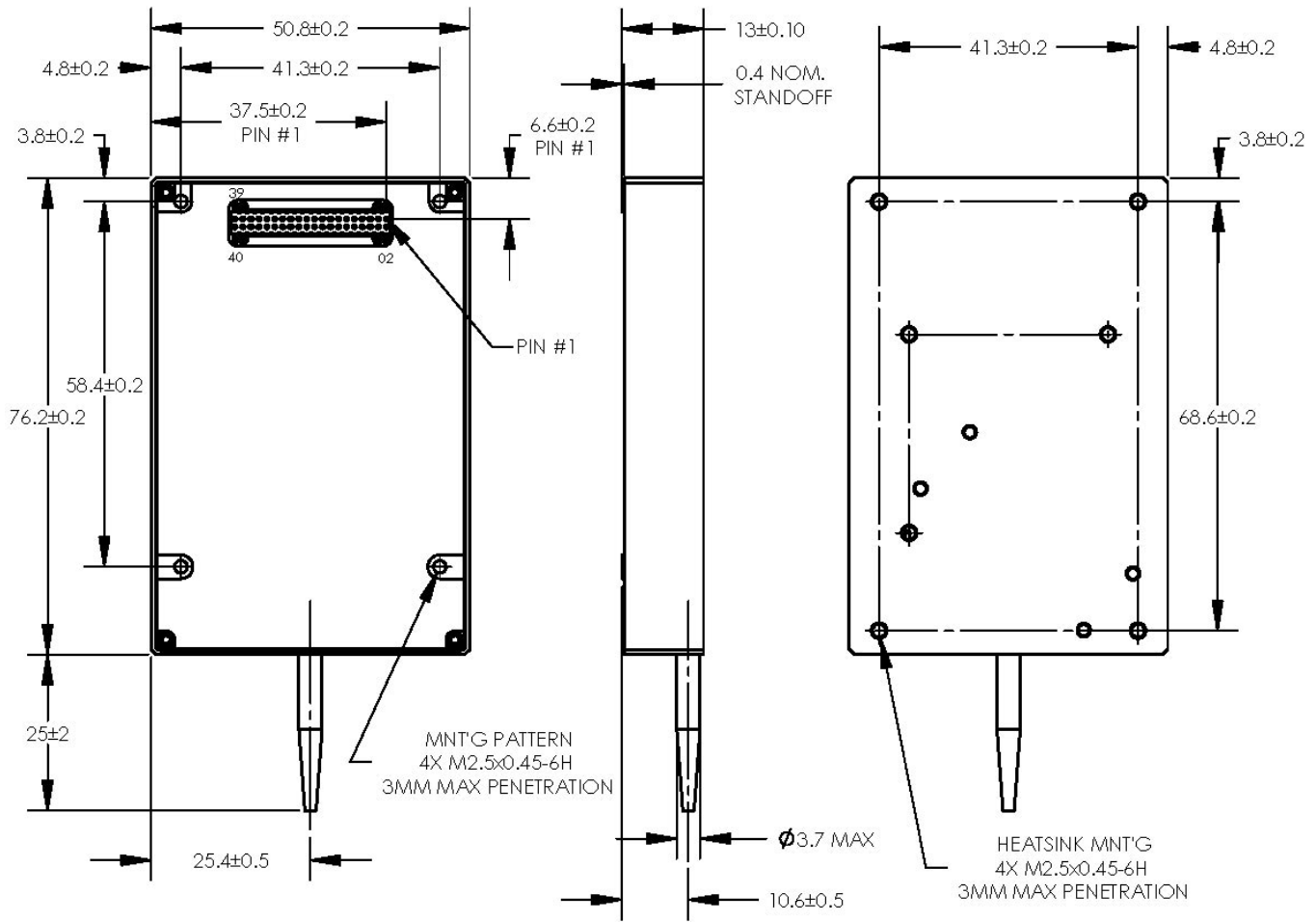
*non-condensing

Custom OEM specifications possible. Contact Santur for your needs.

| Part Number Format | | | | |
|--------------------|---|-------|---|-----------------|
| | x | Power | y | Channel Spacing |
| TL-20x0-C-10y(-A) | 1 | 10 mW | 1 | 50 GHz |
| | 2 | 20 mW | 2 | 25 GHz |

-A ASCII command set instead of OIF MSA binary interface

Mechanical Outline:



Schematic measurements are in millimeters.
 Customer to use 40-pin SAMTEC CLP-120-02-*-D or equivalent soldered flush to board.

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This is an OEM product that does not comply with the requirements of 21 CFR Subchapter 1 as applicable. It is the responsibility of the user to report the end product and to certify that it meets all applicable requirements.



DANGER: Fiber output is >20 mWatt at 1585 nm.
Do not look into fiber end.

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