

PLD-NS

SHORT PULSE LASER DIODE DRIVER



Key Features

- Special Design for 10/14 pin Butterfly Laser Diode
- Output current up to 2000 mA
- Compliance voltage up to 3V
- Adjustable pulse width 1–100 ns
- Repetition rate up to 10 MHz
- External trigger option
- USB, RS-232, CAN, UART interfaces
- LabView and Python libraries
- On-Board TEC Controller
- 5VDC Input Power
- Completed by heatsink
- Compact size 85 × 60 × 21 mm

Description

The PLD-NS is a compact short-pulse seed laser diode driver for powering 10/14-pin butterfly laser diode modules for applications, which require pulse widths from 1 ns to 100 ns. The pulse repetition frequency can be varied from 1 kHz to 10 MHz.

The driver circuitry requires a single 5 VDC power source. All other needed voltages are generated on the board by high-frequency switching power supplies. The driver supplies a bidirectional proportional-integral-derivative (PID) thermoelectric cooler controller (TEC) with current capability of 1.5 A and a voltage capability of 4 V.

The main parameters of PLD-NS (output current, pulse width, repetition frequency, temperature set) are controlled by computer interface.

The current pulse monitor output can be viewed with an oscilloscope by on-board SMA connector allowing the user

a real time view of the current. Voltage amplitude 1 V is equal to 2 A current.

The PLD-NS has an external TTL-compatible input for repetition rate control from single shot up to 10 MHz.

The PLD-NS has an external output for synchronization with each current pulse.

Driver has landing pads for soldering a butterfly laser diode directly into driver board and large heat sink for stable heat dissipation.

Specifications

| Parameter | Min. | Typ. | Max. | Units |
|-------------------------------|--|------|------|-------|
| INPUT | | | | |
| Voltage | 4.8 | 5.0 | 5.2 | VDC |
| Current | - | - | 2 | A |
| External trigger (50 Ω) | 3.3 | - | 5 | VDC |
| OUTPUT | | | | |
| Current | - | - | 2000 | mA |
| Compliance Voltage | 1 | - | 3 | V |
| Pulse width** | 1 | - | 100 | ns |
| Pulse width step | - | 0.2 | - | ns |
| Repetition rate* | 0.001 | - | 10 | MHz |
| Rise time** | 50 | - | 500 | ps |
| Fall time** | 200 | - | 1000 | ps |
| TEC current | -1.5 | - | 1.5 | A |
| TEC Voltage | 1 | - | 4 | V |
| TEC Temperature Set | 15 | 25 | 50 | °C |
| TEMPERATURE | | | | |
| Operating | +10 | - | +50 | °C |
| Storage | -20 | - | +70 | °C |
| Humidity, Non-Condensing | - | - | 95 | % |
| CONNECTIONS | | | | |
| Power and interface connector | Terminal block (1-282834-0 TE connectivity) | | | |
| USB | Mini-USB, Type B (1734035-1 TE connectivity) | | | |
| MECHANICAL | | | | |
| Size | 85 × 60 × 21 mm | | | |
| Weight, not more | 160 g | | | |

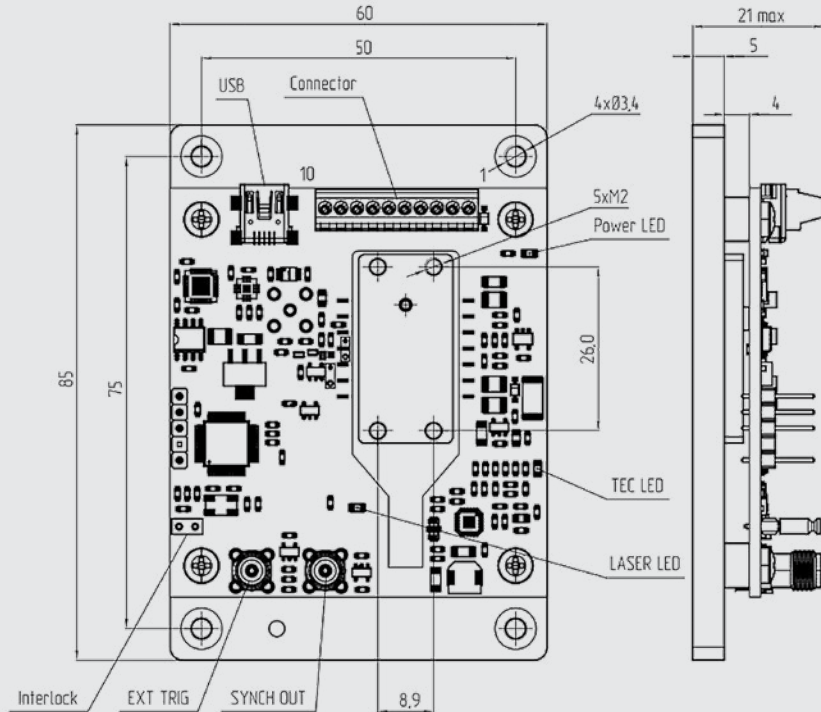
* Maximum duty cycle is limited to 2%

** Output performance depends upon laser diode characteristics. Performance cannot be guaranteed for all laser types. See optical output waveforms

Dimensions and Connections

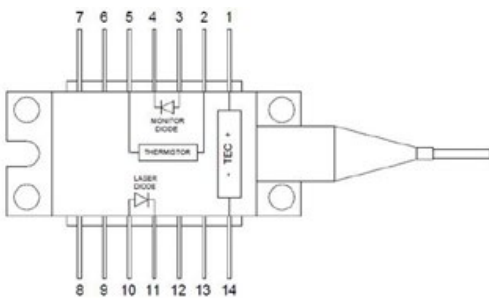
Connector pinout

| PIN | Function | Description |
|-----|----------|----------------------|
| 1 | GND | Device ground |
| 2 | +5VDC | Power input |
| 3 | CANH | CAN bus high |
| 4 | CANL | CAN bus low |
| 5 | RS232 TX | RS232 port transmit |
| 6 | RS232 RX | RS232 port reception |
| 7 | GND | Device ground |
| 8 | UART TX | UART TX |
| 9 | UART RX | UART RX |
| 10 | INT | Interlock |



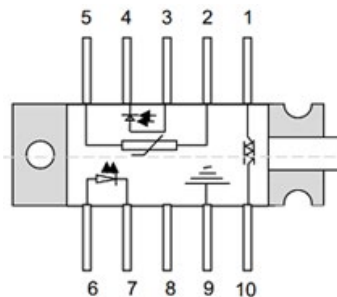
Compatible Laser Pinout

14-pin Butterfly package



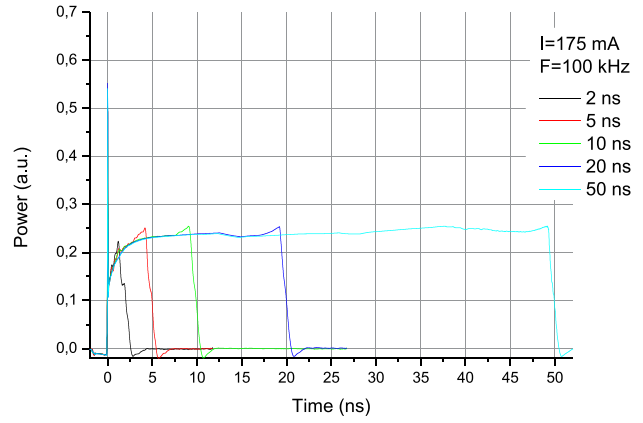
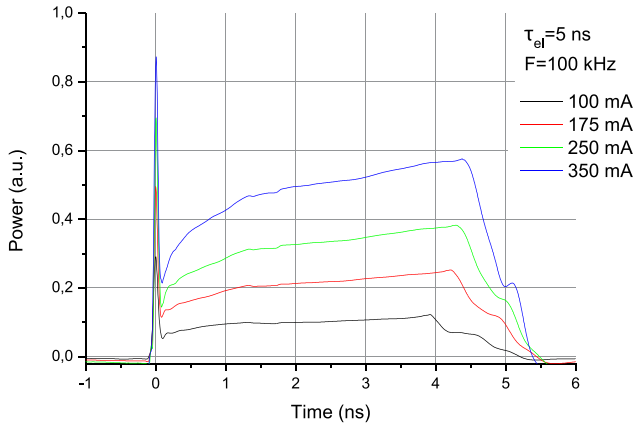
| Nº | Description | Nº | Description |
|----|--------------------|----|-------------|
| 1 | TEC Anode | 8 | n/c |
| 2 | Thermistor | 9 | n/c |
| 3 | Monitor PD Anode | 10 | LD Anode |
| 4 | Monitor PD Cathode | 11 | LD Cathode |
| 5 | Thermistor | 12 | n/c |
| 6 | n/c | 13 | n/c |
| 7 | n/c | 14 | TEC Cathode |

10-pin Butterfly package

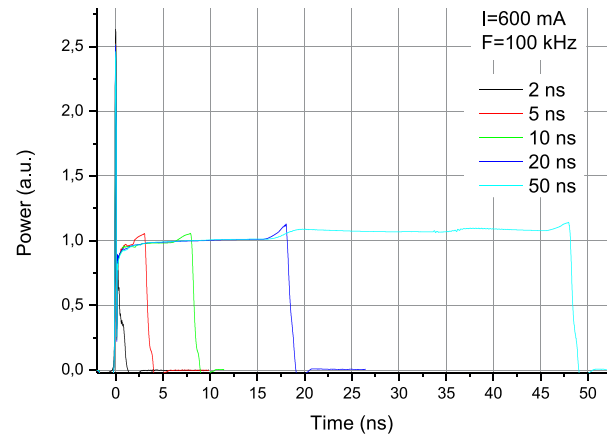
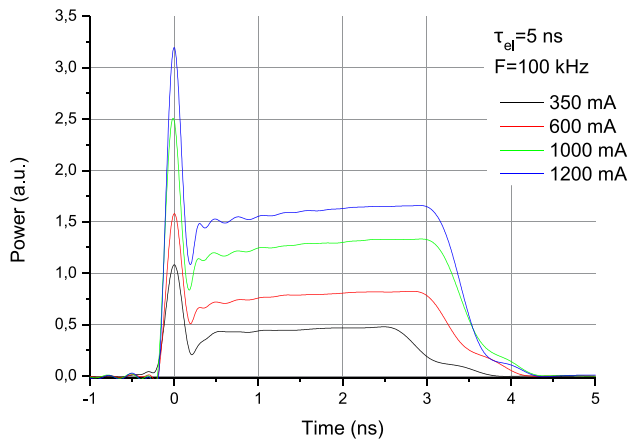


| Nº | Description | Nº | Description |
|----|---------------------|----|-------------------|
| 1 | TEC (+) | 6 | Laser anode (+) |
| 2 | Thermistor | 7 | Laser cathode (-) |
| 3 | Monitor anode (-) | 8 | NC |
| 4 | Monitor cathode (+) | 9 | Package ground |
| 5 | Thermistor | 10 | TEC (-) |

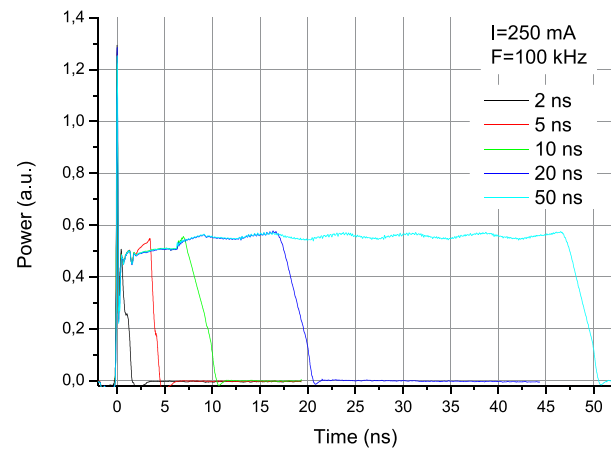
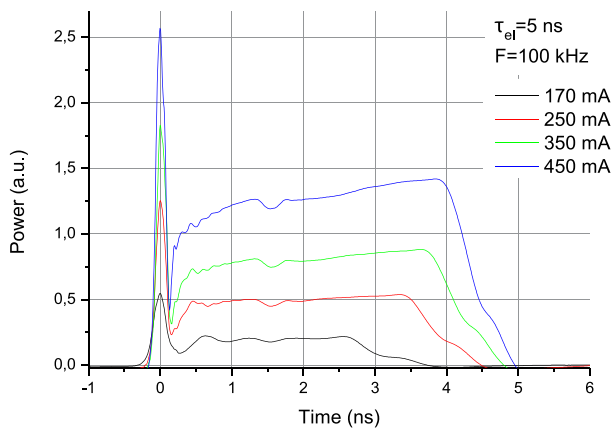
Typical Performance Characteristics



DFB 1064 at current 0.1-0.35 A, 2 ns, 3 ns, 5 ns, 10 ns, 20 ns, 50 ns



FBG 1064 at current 0.35-1.2 A, 2 ns, 5 ns, 10 ns, 20 ns, 50 ns



FP 1030 at current 0.17-0.45 A, 2 ns, 5 ns, 10 ns, 20 ns, 50 ns