

# PLD-PS-SYNC

## 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 3 V
- Extra short 50 ps pulse width
- Repetition rate up to 30 MHz
- External trigger option
- External clock option
- Master/slave operation mode with the repetition rate jitter suppression
- USB, RS-232, CAN, UART interfaces
- On-Board TEC Controller
- 5Vdc Input Power
- Completed by Heatsink
- Compact Size 85 mm × 60 mm × 21 mm

## Description

The PLD-PS-SYNC is a compact short-pulse seed laser diode driver for powering 10/14-pin butterfly laser diode modules for applications, which require pulse widths about 50 ps. The pulse repetition frequency can be varied from 1 kHz to 30 MHz.

The driver is specially designed to minimize jitter between external trigger signal and optical pulse by enabling external clock synchronization. The driver also supports operation in Master/Slave mode and synchronization of optical pulses between two lasers, one operates as Master and another one as Slave, with the optical pulse position jitter below 500 ps and tunable delay between the optical pulses from two lasers.

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-PS-SYNC (power, repetition frequency, temperature set point, pulse delays in sync mode) are controlled by computer interface.

The PLD-PS-SYNC has an external TTL-compatible input for repetition rate control from single shot up to 30 MHz. The driver has an external output for synchronization with each current pulse. The PLD-PS-SYNC has an external input/output of the clock frequency for synchronous operation of two drivers with minimal period jitter between optical pulses.

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

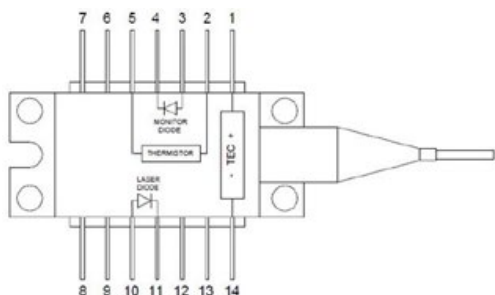
## Specifications

Parameter	Min.	Typ.	Max.	Units
<b>INPUT</b>				
Voltage	4.8	5.0	5.2	VDC
Current	-	-	0.6	A
External trigger (50 Ω)	3.3	-	5	VDC
<b>OUTPUT</b>				
Current	-	-	2000	mA
Compliance Voltage	1	-	3	V
Pulse width *	40	50	150	ps
Repetition rate	0.001	-	30	MHz
Rise time *	40	50	60	ps
Fall time *	40	50	100	ps
TEC current	-1.5	-	1.5	A
TEC Voltage	1	-	4	V
TEC Temperature Set	15	25	50	°C
Repetition rate in sync mode	-	-	1	MHz
Pulse delay in sync mode	-50	-	+50	ns
<b>TEMPERATURE</b>				
Operating	+10	-	+50	°C
Storage	-20	-	+70	°C
Humidity, Non-Condensing	-	-	95	%
<b>CONNECTIONS</b>				
Power and interface connector	Terminal block (1-282834-0 TE connectivity)			
USB	Mini-USB, Type B (1734035-1 TE connectivity)			
External trig in/out	SMA (1-1478979-0 TE connectivity)			
Clock in/out	U.FL (U.FL-R-SMT-1(10) Hirose Electric)			
<b>MECHANICAL</b>				
Size	85 × 60 × 21 mm			
Weight, not more	160 g			

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

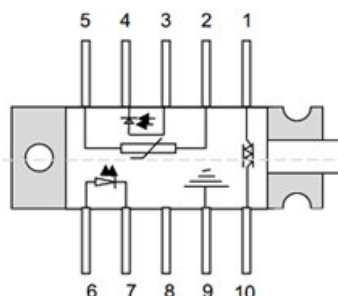
## Compatible Laser Pinout

### 14-pin Butterfly package



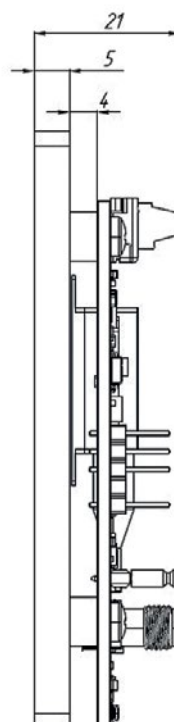
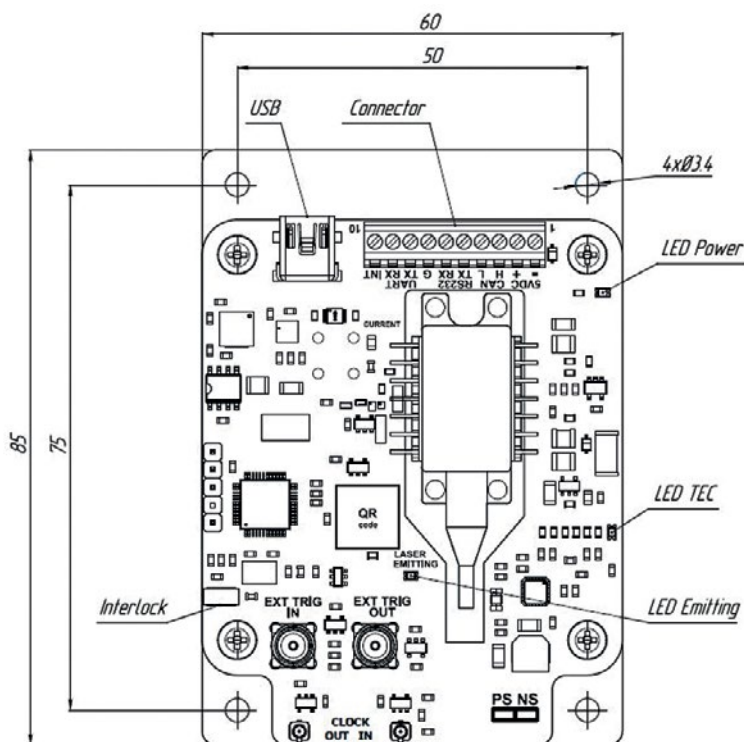
Nº	Description	Nº	Description
1	TEC Anode	8	n/c
2	Thermistor	9	n/c
3	Monitor PD Anode	10	LD Anode
4	Monitor PD Cathode	11	LD Cathode
5	Thermistor	12	n/c
6	n/c	13	n/c
7	n/c	14	TEC Cathode

### 10-pin Butterfly package



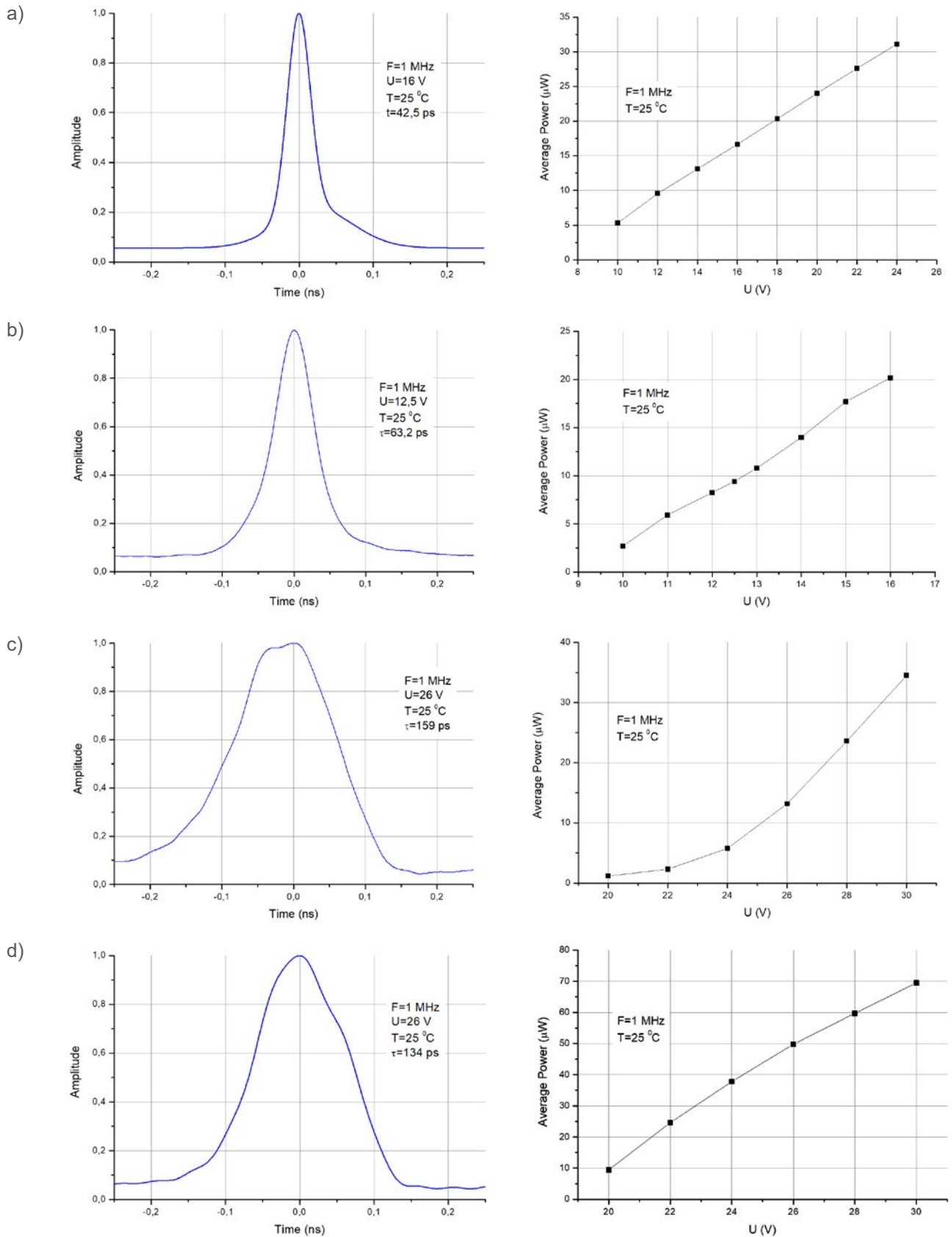
Nº	Description	Nº	Description
1	TEC (+)	6	Laser anode (+)
2	Thermistor	7	Laser cathode (-)
3	Monitor anode (-)	8	NC
4	Monitor cathode (+)	9	Package ground
5	Thermistor	10	TEC (-)

## Dimensions and Connections



1	GND
2	+5VDC
3	CAN H
4	CAN L
5	RS232-TX
6	RS232-RX
7	GND
8	UART-TX
9	UART-RX
10	Interlock

## Typical Performance Characteristics



Typical pulse form and dependence of average power on operation voltage for different types of laser diode.  
 a) DFB 1064 nm, b) FBG 1550 nm, c) FBG 1064 nm, d) FP 1030 nm