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SPECIFICATION

Ultra-Narrow Linewidth Pulse Laser Box

DL-BF10-CLS101B-FP-S1550

A. PRODUCT DESCRIPTION

The DenseLight DL-BF10-CLS101B-FP-S1550 is a single frequency laser designed for applications in fiber-optic communications, Brillouin OTDR, optical metrology & instrumentation requiring narrow spectral linewidth, excellent SMSR, power stability and a very highly wavelength stable laser output. The DL-BF10-CLS101B-FP-S1550 is completed with a DenseLight 14-pin BTF package laser, integrated laser driver & temperature controller. The built-in current driver is capable for CW driving or digital modulation input, which can be customized with various options to meet your specific needs.

For responsive prototyping enquiries please email: sales@denselight.com

B. FEATURES

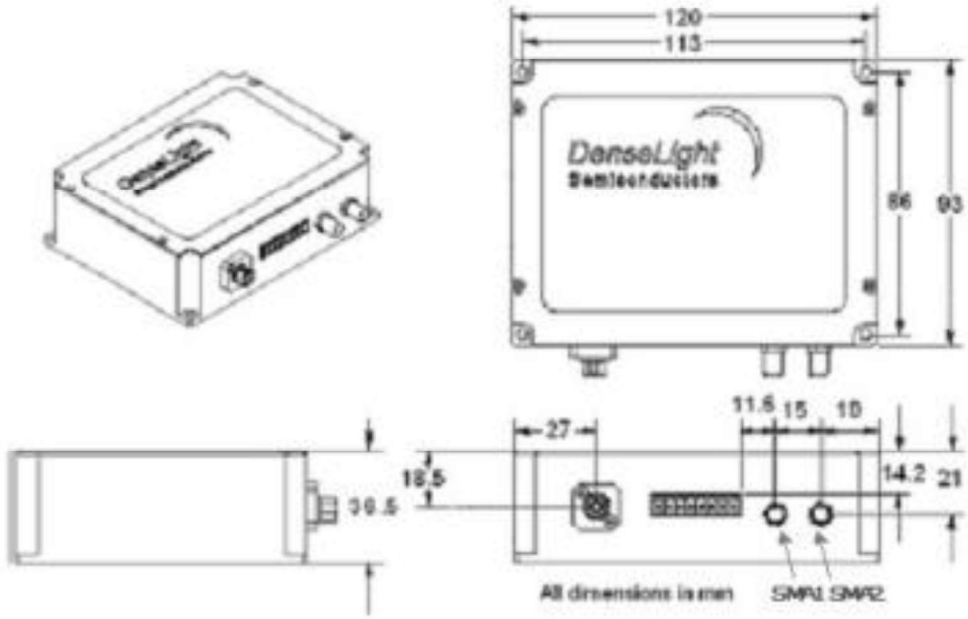
- Continuous Wave Output power > 10mW
- Center Wavelength 1550 nm +/-2 nm
- Wavelength stability better than +/-1pm
- Typical linewidth of <100kHz
- SMSR >35dB
- PER >15dB
- Built-in current driver and temperature controller
- Integrated optical Isolator
- Single +5V power supply with power adapter included
- RoHS compliance, Telcordia GR-468-CORE
- Optical output: FC/APC receptacle
- Dimension: L120 x W93 x H36.5 mm

C. APPLICATIONS

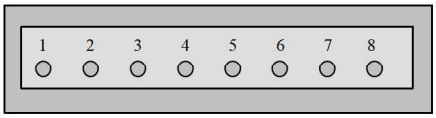
- OTDR (Optical Time Domain Reflectometry)
- B-OTDR (Brillouin Optical Time Domain Reflectometry)
- Optical measuring instrumentation
- Optical gas and chemical sensor
- LIDAR

D. PHYSICAL DIMENSIONS AND MECHANICAL SPECIFICATION

Dimension : L120 x W93 x H36.5 mm
Enclosure: Metal Case
Optical output: FC/APC receptacle
Cooling: Air cooled. Passively cooled with heatsink at the base
Electronic interface: 8-pin terminal block



E. PIN ASSIGMENT AND FUNCTION



8-pin terminal block (Pin 8 near to SMA1)

Pin No.	Symbol	Power/Control /Monitor	Analog /Digital	Input /Output	Description
1	P_{GND}	P	–	–	Power supply ground
2	V_S	P	–	–	+5V D.C.
3	N/C	–	–	–	–
4	N/C	–	–	–	–
5	N/C	–	–	–	–
6	T_{MON}	M	A	O	PCB temperature monitor
7	N/C	–	–	–	–
8	A_{GND}	–	–	–	Signal ground for control and monitor signals

F. OPERATION SETTINGS[1]

Operating mode	Operation Setting	
	SMA1 connector (50Ω)	SMA2 connector (50Ω)
CW	Logic High, $2V \le V_{IH} \le 3V$	DC Voltage (User to set optical peak power through DC voltage to SMA2) $0\ V \le SMA2 \le 2.2\ V$
Digital	External Trigger Input (CMOS/TTL compatible): $0 \le V_{IL} \le 0.8V$ and $2V \le V_{IH} \le 3V$	DC Voltage (User to set optical peak power through DC voltage to SMA2) $0\ V \le SMA2 \le 2.2\ V$
Analog	Logic High $2V \le V_{IH} \le 3V$	Transconductance amplifier operating on positive polarity analog input signal.

[1)] Note: There will be no optical output if SMA1 or SMA2 is left unconnected. Do not apply SMA2 voltage more than 2V, otherwise the device will be damaged.

G. ABSOLUTE MAXIMUM RATINGS

Operation beyond the absolute maximum ratings can cause degradation in device performance, permanent damage to the device, and will annul the device warranty.

Parameter	Symbol	Condition	Min	Max	Unit
Operating temperature (chassis)	T_{case}	CW	0	50	°C
Operating relative humidity	RH	-	–	85	%
Storage temperature	T_{stg}	Unbiased	-40	85	°C
Input power supply current	I_s	CW	–	6	A
Input power supply voltage	V_S	CW	–	6	V
SMA1 input voltage	SMA1	50Ω connector	0	3	V
SMA2 input voltage	SMA2	50Ω connector	0	2	V

H. ELECTRICAL SPECIFICATIONS

Unless otherwise specified, tests are performed at T_{case} = 25°C. The specification is only guaranteed if the conditions stated in table below are fulfilled.

Parameter	Symbol	Condition	Min	Typ	Max	Unit
Input power supply voltage	V_S	Pulse, CW	4.75	5	5.25	V
Input power supply current	I_S	Pulse, CW	–	–	2.5	A
Input power supply voltage ripple and noise	ΔV_S	CW	–	–	50	mV_{p-p}
Total power consumption	P_S	Pulse, CW	–	–	12.5	W
PCB temperature monitor	T_{MON}	Analog voltage : T_{MON} = 395mV + (6.2mV/°C x T), T = PCB temperature in °C				mV
Voltage	V_{OUT}	–	0	–	2.5	V
Output impedance	R_{OUT}	–	–	150	–	Ω
Source current	$\|I_{OUT}\|$	V_{OUT} = 2.5V	–	–	4	mA

I. OPTICAL SPECIFICATIONS

Unless otherwise specified, tests are performed at T_{case} = 25°C. The specification is only guaranteed if the conditions stated in table below are fulfilled.

Parameter	Symbol	Min	Typ	Max	Unit
Power in PMF	P_o	10	–	–	mW
Peak Wavelength	λ	1548	1550	1552	nm
Linewidth	Δλ	–	–	100	KHz
Sidc Modc Supprcssion Ratio	SMSR	30	–	–	dB
Polarization Extinction Ratio	PER	15	–	–	dB
Power stability[2] 1 hour	PStb	-	-	± 0.03	dB
8 hours		-	-	± 0.05	dB
Wavelength stability[2]	λstability	-	-	± 1	nm

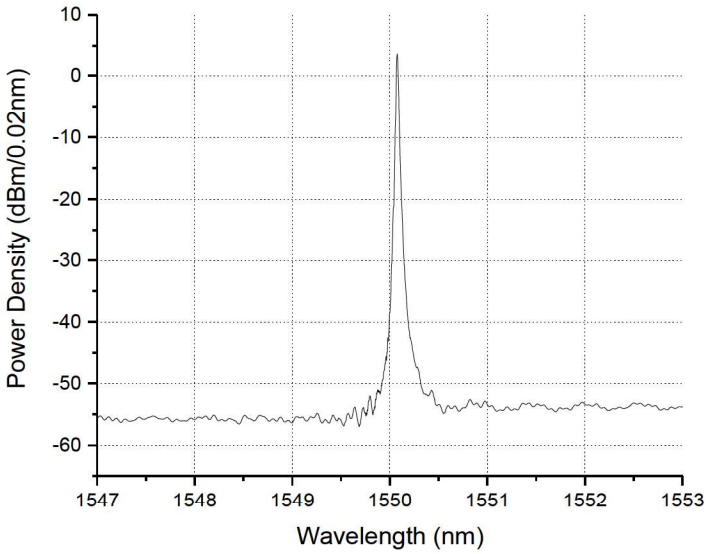
1) Unless otherwise specified. Tests are performed at T_{op} = 25°C

2) After one hour of warm-up

J. TYPICAL PERFORMANCE CHARACTERISTICS

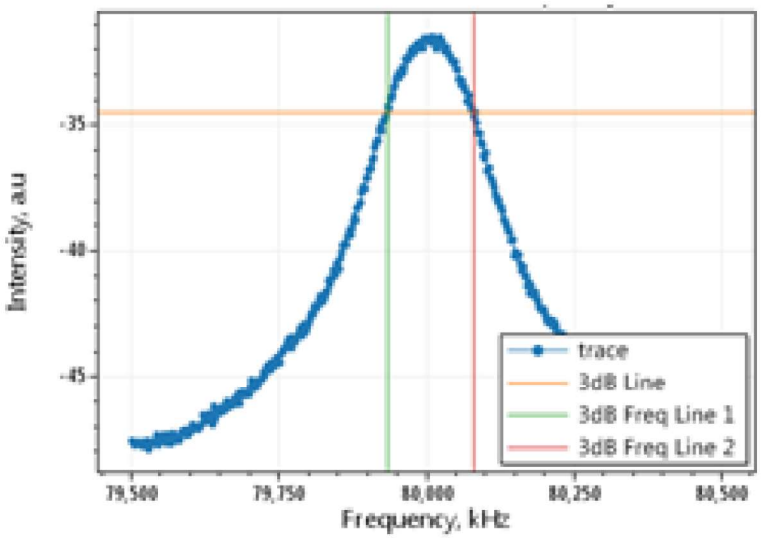
1. Optical Spectrum Plots

Test Condition: CW Setting, OSA Resolution: 0.02nm



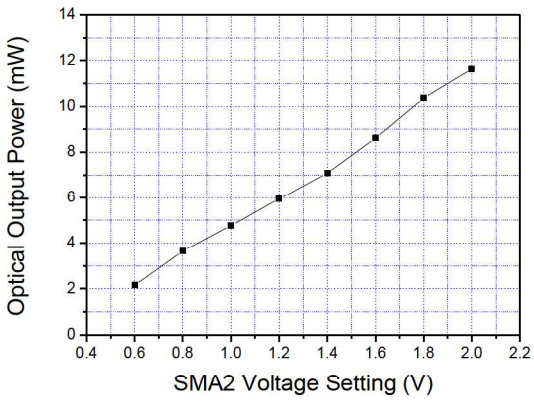
2. Linewidth

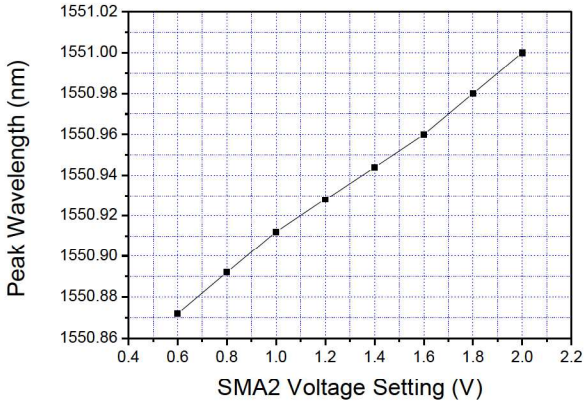
Test Condition: CW Setting



3. Output Power

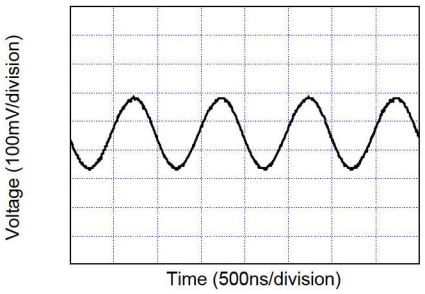
Testing Condition: CW setting



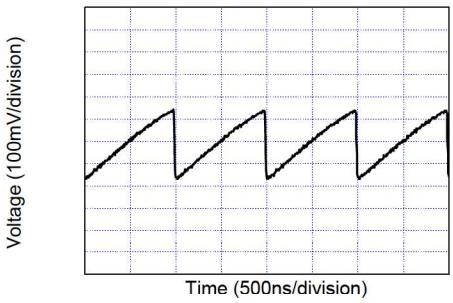


4. Typical Digital Modulation Curve

Testing Condition: TAMBIENT: 25°C



SMA1: Logic high (V_{IH} = 2.5V)
SMA2: Sine wave
Frequency: 1MHz
Amplitude= 0.5 to 2.5V



SMA1: Logic high (V_{IH} = 2.5V)
SMA2: Ramp wave
Frequency: 1MHz
Amplitude= 0.5 to 2.5V

K. DISCLAIMER FOR CUSTOMER SPECIFIC APPLICATIONS

Denselight product is not intended for use other than stated on the application note or as defined in the product specification. The performance of the product should always be tested in the actual application conditions. As our products are used in conditions beyond our control, we cannot assume any liability for damage caused through their use. Users of DenseLight products are solely responsible to thoroughly test and qualify their system and / or application for their intended application and have determined such at their sole discretion. DenseLight cannot assume any liability for the use of our products in conjunctions with other. Customer assumes the sole risk and liability of the product performance other than specified by the product specific data sheet or application notes without DenseLight's specific written consent.

L. SAFETY INFORMATION

The DL-BF10-CLS101B-FP-S1550 is classified as Class 3R products per IEC 60825-1 laser safety requirements.