

## PRODUCT DATASHEET

### 1653nm DFB Laser BTF Module

### DL-DFB65310A

PRELIMINARY DRAFT

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## A. PRODUCT DESCRIPTION

The DL-DFB65310A is a cooled InGaAsP based distributed feedback laser in a 14-Pin BTF package, optimized for methane sensing applications. Denselight's advanced technology enables mode-hop free tunability, high power, excellent SMSR, and high accuracy of the lasing wavelength.

## B. FEATURES

- Optical output power from SM fiber min. 10mW
- Lasing wavelength of 1653nm with accuracy of  $\pm 2\text{nm}$
- Minimum SMSR of 30dB
- 14 pin BTF package with TEC

## C. APPLICATIONS

- Test & Measurement (OTDR)
- Methane Sensing
- Biomedical Sensing
- Telecommunication

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## D. ABSOLUTE MAXIMUM RATINGS

Operation beyond the absolute maximum ratings can cause degradation in device performance leading to permanent damage to the device.

Parameter	Symbol	Conditions	Min	Max	Unit
Reverse voltage	$V_R$	-	-	2	V
Forward current	$I_F$	-	-	140	mA
Forward voltage	$V_F$	$I_{op}$	-	2.5	V
Case temperature	$T_{case}$	$I_{op}$	-30	70	°C
Chip Temperature	$T_{chip}$	$I_{op}$	0	70	°C
Thermoelectric cooler voltage	$V_{TEC}$	-	-	3.0	V
Thermoelectric cooler current	$I_{TEC}$	-	-	1.8	A
Storage temperature	$T_{stg}$	Unbiased	-40	85	°C
Storage humidity	-	-	5	85	%RH
Electro static discharge (ESD)	$V_{ESD}$	Human body model	-	500	V
Lead soldering temperature	$S_{temp}$	-	-	260	°C
Lead soldering time	$S_{time}$	-	-	10	s

## E. ELECTRICAL AND OPTICAL CHARACTERISTICS

The following performance is evaluated at  $T_{chip}$  of 25 °C and CW, unless stated otherwise

Parameter	Symbol	Condition	Min	Typ	Max	Unit
Power in SMF	$P_o$	$I_{op}=130mA$	10	-	-	mW
Threshold current	$I_{th}$	-	-	16	26	mA
Operating current	$I_{op}$	$P_o=10mW$	-	120	130	mA
Forward voltage	$V_F$	$P_o=10mW$	-	1.6	2.0	V
Slope efficiency	$\eta$	$P_o=10mW$	0.09	0.1	-	mW/mA
Peak wavelength	$\lambda_p$	$P_o=10mW$	1651	1653	1655	nm
Side mode suppression ratio	SMSR	$P_o=10mW$	30	40	-	dB
Wavelength temperature tuning coefficient	$\Delta\lambda/\Delta T$	-	-	0.1	-	nm/°C
Monitor current	$I_m$	$P_o=10mW$	0.1	-	1	mA
Thermistor resistance	$R_{th}$	$T_{th} = 25\text{ °C}$	9.5	10	10.5	kΩ
Thermoelectric cooler voltage	$V_{TEC}$	$P_o=10mW$	-	-	2.6	V
Thermoelectric cooler current	$I_{TEC}$	$P_o=10mW$	-	-	1.2	A

**Note:**  $T_{chip}$  is monitored by internal thermistor with external pin out

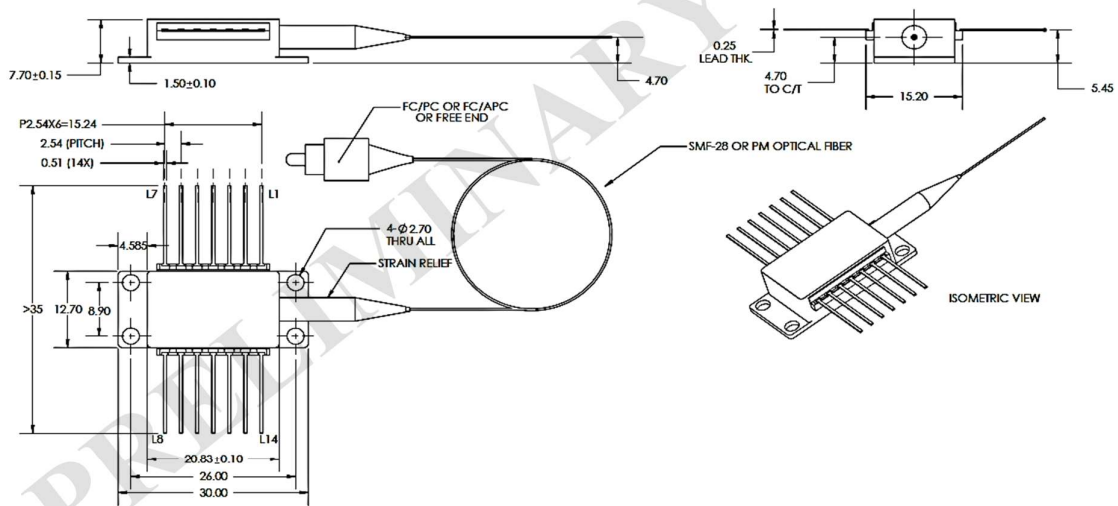
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## F. PACKAGE

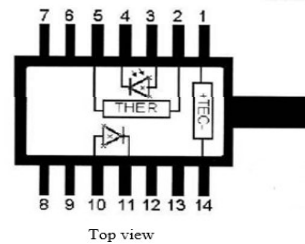
### BTF package

Part	Description
Package type	BTF
Fiber:	SMF-28
MFD	10μm
Cladding diameter	125μm
Coating diameter	245μm
Jacket	900μm loose tube
Fiber pigtail length	1m
Fiber bending radius	>40mm
Connector	FC/APC
Dimensions	See figure



Pin Assignment	
1	TEC +
2	THERMISTOR
3	PD ANODE (-)
4	PD CATHODE (+)
5	THERMISTOR
6	-
7	-
8	-
9	-
10	DFB ANODE +
11	DFB CATHODE -
12	-
13	CASE
14	TEC-

+ & - refer to biasing polarity

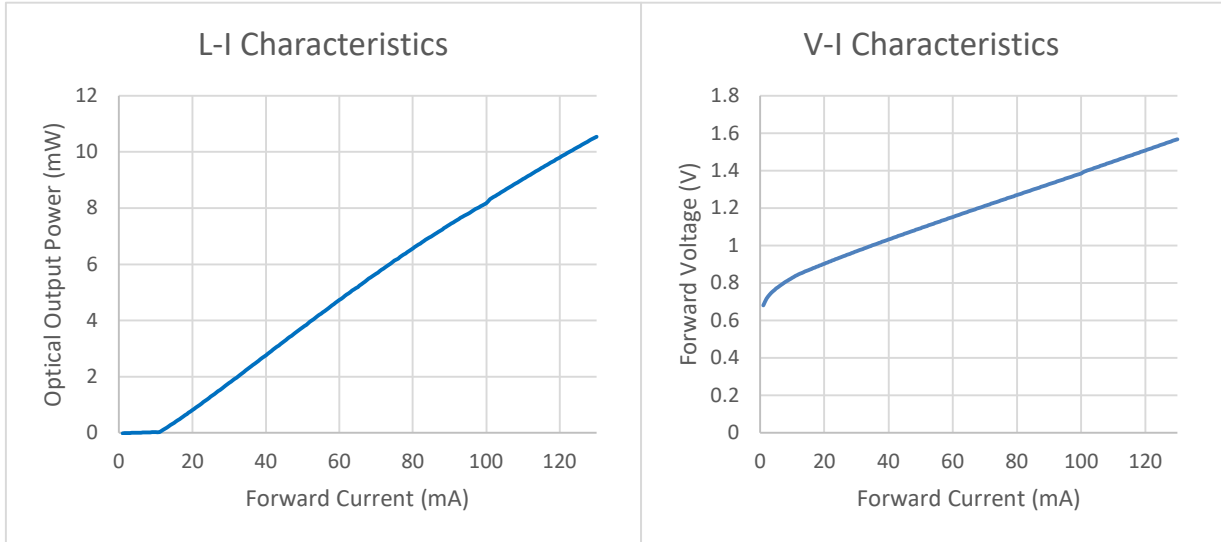


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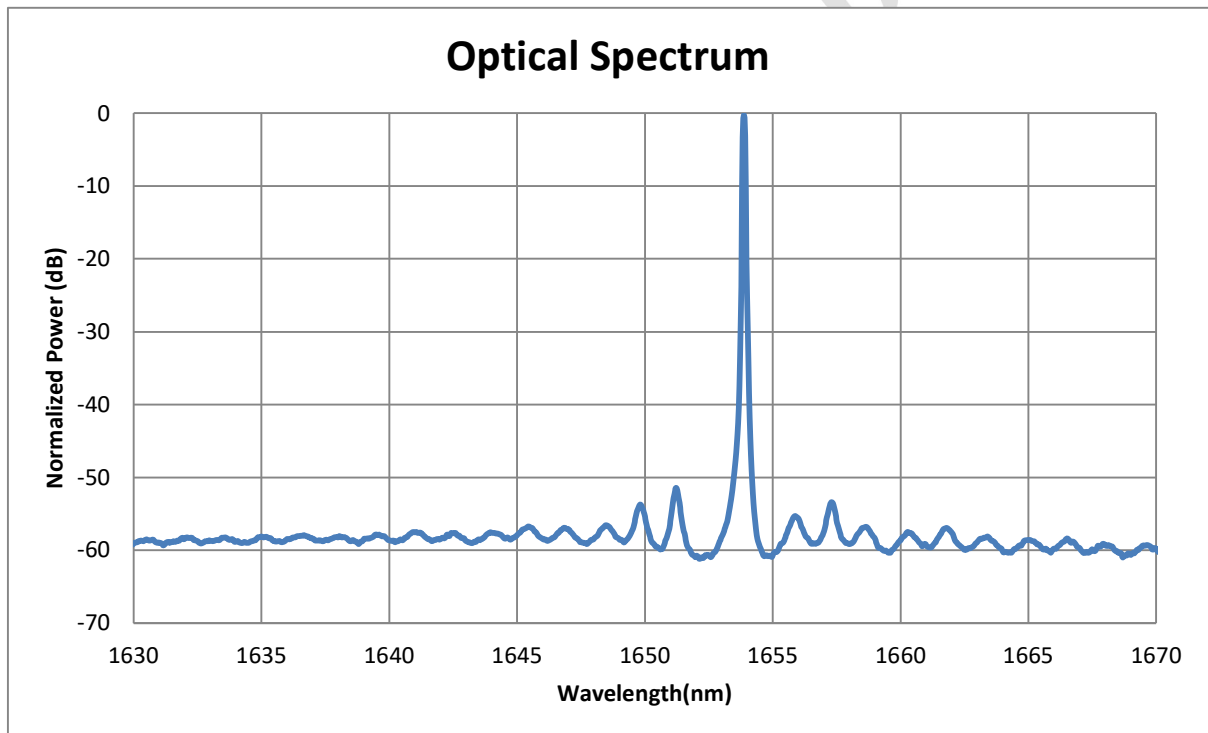
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## G. TYPICAL PERFORMANCE CHARACTERISTICS

The L-I and V-I characteristics are evaluated at  $T_{\text{chip}}=25^{\circ}\text{C}$  and CW



The Optical Spectrum is evaluated at  $T_{\text{chip}}=25^{\circ}\text{C}$ ,  $I_{\text{op}}=120\text{mA}$  and CW



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## H. PRODUCT NAMING

### **DL-DFB65310A**

DL: Denselight

DFB: Distributed Feedback Laser

653: Typical Peak Wavelength 1653nm

10: Minimum Power 10mW

A: BTF 14 pin

## I. 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.

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