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## **SPECIFICATIONS**

### **CWDM DFB Laser Diode Coaxial Pigtail Package**

**DL-UDLC021D-SXXXX-Y**

DenseLight Semiconductors reserves the right to make product design or specifications changes without notice.

## **A. PRODUCT DESCRIPTION**

Denselight DL-UDLC021D-SXXXX-Y is an uncooled DFB laser diode in SM fiber pigtailed package and engineered for CWDM transmissions up to 2.5Gbps.  $\lambda/4$  shifted grating structure is employed to obtain excellent SMSR performance under 2.5Gbps modulation. Furthermore, it can operate over a wide temperature range from 0°C to +70°C without any need for a Peltier cooler and temperature controller.

## **B. FEATURES**

- Peak wavelength range: 1470, 1490, 1510, 1530, 1550, 1570, 1590 and 1610nm
- InGaAsP/InP MQW with  $\lambda/4$  shifted grating structure
- Wide temperature operation range from 0 to +70°C without any active cooling
- High output power to 2mW at 25°C
- High SMSR (typical 45dB)
- Built-in optical isolator
- Built-in InGaAs monitor photodiode
- Fiber pigtailed TOSA package with optional FC connector
- Designed for 2.5Gbps high speed transmission
- RoHS Compliance

## **C. PACKAGING**

- SMF-28 pigtail TOSA package

## **D. APPLICATIONS**

- CWDM applications
- 2.5 Gbps SONET/SDH transmission
- Laser source at specific wavelength

## E. ABSOLUTE MAXIMUM RATINGS

Operating beyond the absolute maximum ratings may cause permanent damages to the device. Exposure to absolute maximum rating condition for extended periods may affect device reliability.

Parameter	Symbol	Condition	Ratings	Unit
Output power	$P_O$	CW	2	V
Laser Forward current	$I_F$		120	mA
Laser Forward voltage	$V_F$		2	V
PD forward current	$I_{fPD}$		2	mA
PD reverse voltage	$V_{rPD}$		10	V
Case temperature	$T_c$		0 ~ +70	°C
Storage temperature	$T_{stg}$		-40 ~ +85	°C

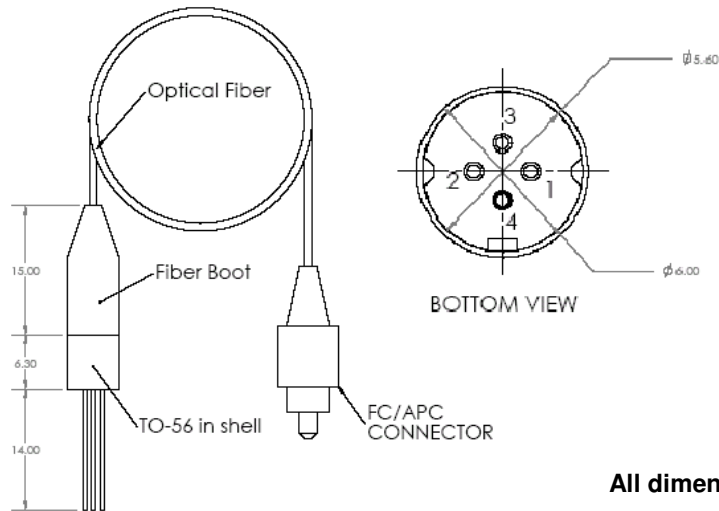
## F. OPTICAL/ELECTRICAL SPECIFICATION

( $T_c = 25\text{ °C}$  unless otherwise noted)

Parameter	Symbol	Condition	Min	Typ	Max	Unit
Threshold current	$I_{th}$	CW	-	12	15	mA
		CW, $T_c=70\text{ °C}$	-	-	50	
Operating current	$I_{op}$	CW	-	35	50	mA
		CW, $P_o=2\text{mW}$ , $T_c=70\text{ °C}$	-	-	70	
Operation voltage	$V_{op}$	CW, $P_o=2\text{mW}$	-	-	1.7	V
Slope efficiency	$\eta$	CW, $P_o=2\text{mW}$	0.05	-	-	mW/mA
Peak wavelength	$\lambda_p$	CW, $P_o=2\text{mW}$ , S1470	1468	1470	1472	nm
		CW, $P_o=2\text{mW}$ , S1490	1488	1490	1492	
		CW, $P_o=2\text{mW}$ , S1510	1508	1510	1512	
		CW, $P_o=2\text{mW}$ , S1530	1528	1530	1532	
		CW, $P_o=2\text{mW}$ , S1550	1548	1550	1552	
		CW, $P_o=2\text{mW}$ , S1570	1568	1570	1572	
		CW, $P_o=2\text{mW}$ , S1590	1588	1590	1592	
CW, $P_o=2\text{mW}$ , S1610	1608	1610	1612			
Side mode suppression ratio	SMSR	CW, $P_o=2\text{mW}$ , $T_c=0$ to $70\text{ °C}$	30	-	-	dB
Rise and fall time (20-80)%	$t_r$ , $t_f$	2.48832Gbps, $I_{bias}=I_{th}$ , $I_{modulation}=40\text{mA}$	-	-	250	psec
Optical isolation	ISO	$T_c = 0$ to $70\text{ °C}$	20	-	-	dB
PD monitor current	$I_m$	CW, $P_o = 2\text{mW}$ , $V_{rPD} = 1\text{V}$	0.1	-	1.5	mA
PD dark current	$I_d$	$V_{rPD} = 5\text{V}$	-	-	0.1	$\mu\text{A}$
PD capacitance	$C_{pd}$	$V_{rPD} = 5\text{V}$	-	10	20	pF

## G. PACKAGE

Part	Description
Package type	TO-56
Fiber:	SMF-28
MFD	9 $\mu$ m
Cladding diameter	125 $\mu$ m
Coating diameter	245 $\mu$ m
Jacket	900 $\mu$ m loose tube
Fiber pigtail length	>0.8m
Fiber bending radius	>40mm
Connector	FC/APC



Pin Assignment 1	Description
1	LD Cathode
2	LD Anode/PD Cathode
3	Case
4	PD Anode

Pin Assignment 2	Description
1	LD Cathode
2	PD Anode
3	LD Anode (Case)
4	PD Cathode

## F. ORDERING INFORMATION

Please use the following part code system to order products.

### DL-UDLC021D-SXXXX-Y

Part code:

- 1) SXXXX denotes peak wavelength, eg S1550 refer to 1550nm
- 2) Y denotes pin type: 1 refer to pin assignment 1 and 2 refer to pin assignment 2