	Technical Specification					
	Product Datasheet					
	Product Code:		DL-DFB65404T-C-S			
	Title:		1653.7nm, Cooled TO CAN, Collimated Output			
	Part #:		DFS0001-00-000	Revision:	A	Total Pages:

REVISION HISTORY			
Rev	Revision Date	Originator	Description of Change
A	22 Aug 2022	Muhammad Zuhdi	Initial Specification Release

	Name	Signature	Date
Originator:	Muhammad Zuhdi		
Checked By:	Hafiziarto		

Approvals	Name	Signature	Date
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PRODUCT DATASHEET

1653.7nm, Cooled TO-Can, Collimated Output

DL-DFB65404T-C-S

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A. PRODUCT DESCRIPTION

The DL-DFB65404T-C-S is an InGaAsP based and cooled distributed feedback laser in a TO-60 package, with a collimated output, 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 min. 3.5mW
- Lasing wavelength of 1653.7nm with accuracy of ± 1 nm
- Typical SMSR of 40dB

C. APPLICATIONS

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

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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	Test Conditions	Min	Max	Unit
Reverse voltage	V_R	-	-	2	V
Forward Current	I_F	-	-	120	mA
Forward Voltage	V_F	-	-	2	V
Chip Temperature	T_{chip}	-	0	70	°C
Storage temperature	T_{stg}	Unbiased	-40	85	°C
Electro static discharge (ESD)	V_{ESD}	Human body model	-	500	V
Lead Soldering Temperature	S_{Temp}	-	-	220	°C
Lead Soldering Time	S_{Time}	-	-	10	s
TEC Current	I_{TEC}	-	-	1.1	A
TEC Voltage	V_{TEC}	-	-	1.25	V

E. ELECTRICAL AND OPTICAL CHARACTERISTICS

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

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Peak wavelength	λ_p	$I_{op} = 45mA$	1652.7	1653.7	1654.7	nm
Optical output power	P_O	$I_{op} = 45mA$	3.5	8	13	mW
Threshold current	I_{th}	-	-	12	-	mA
Operating current	I_{op}	-	-	45	-	mA
Operating Voltage	V_{op}	$I_{op} = 45mA$	-	1.2	1.6	V
Side mode suppression ratio	SMSR	$I_{op} = 45mA$	-	40	-	dB
Wavelength Temperature Tuning Coefficient	$\Delta\lambda/\Delta T$	-	0.07	0.1	0.14	nm/°C
Wavelength Current Tuning Coefficient	$\Delta\lambda/\Delta I$	-	0.008	0.01	0.03	nm/mA
Spot Size	SS	Optical path = 80mm	-	3	5	mm
Optical Linewidth	Δf	$I_{op} = 45mA$	-	-	2	MHz
Thermistor Resistance	R_{th}	25°C	9.5	10	10.5	kΩ
B constant of R_{th}	B	-	-	3930	-	K
Case Temperature	T_{case}	$I_{op} = 45mA$	-30	-	60	°C

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

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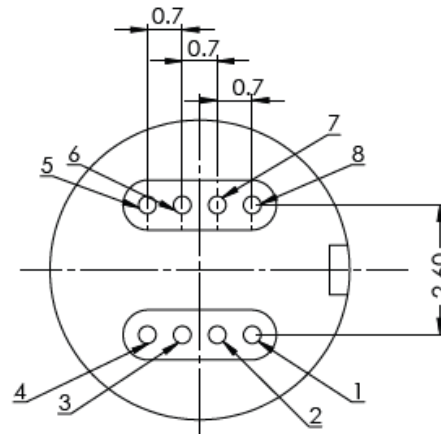
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F. PACKAGE

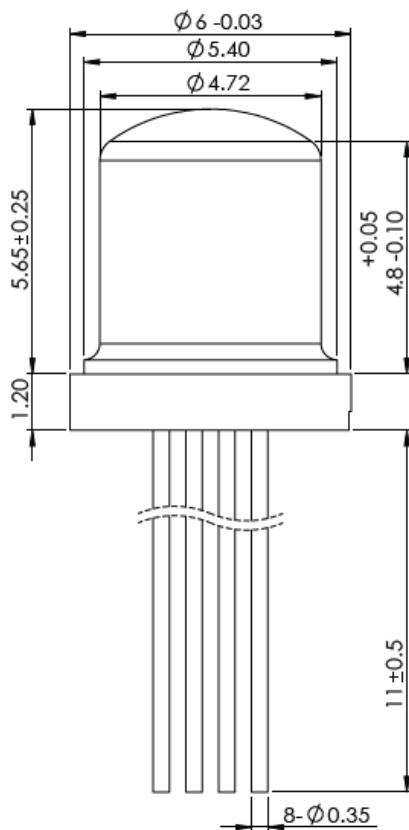
Pin out

Pin Assignment	
1	TEC-
2	Thermistor+
3	LD+
4	NC
5	NC
6	LD-
7	Thermistor-
8	TEC+

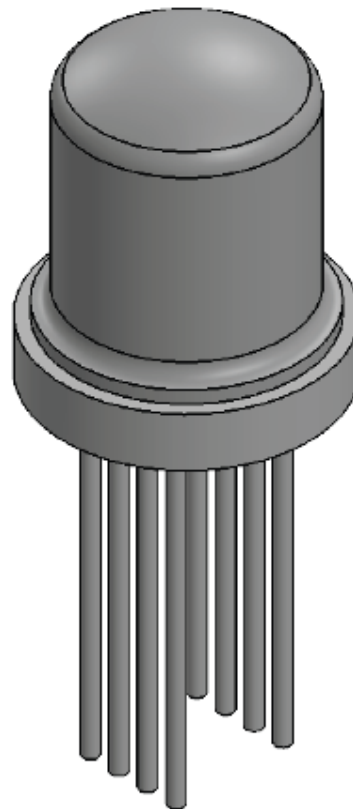
Bottom View



Side View



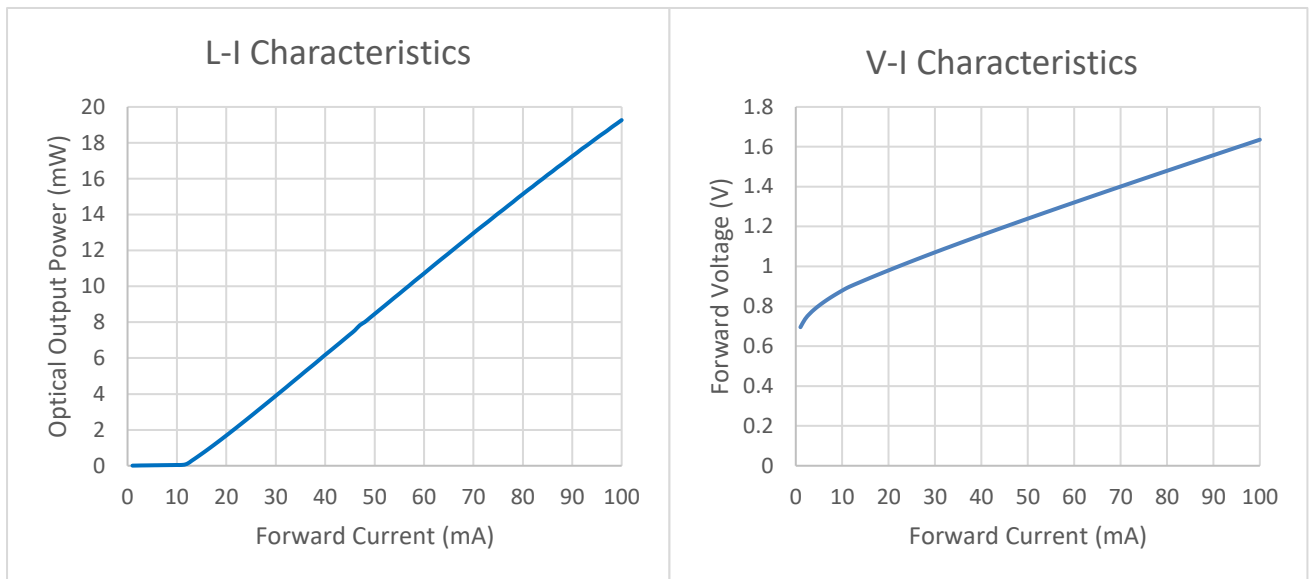
Perspective View



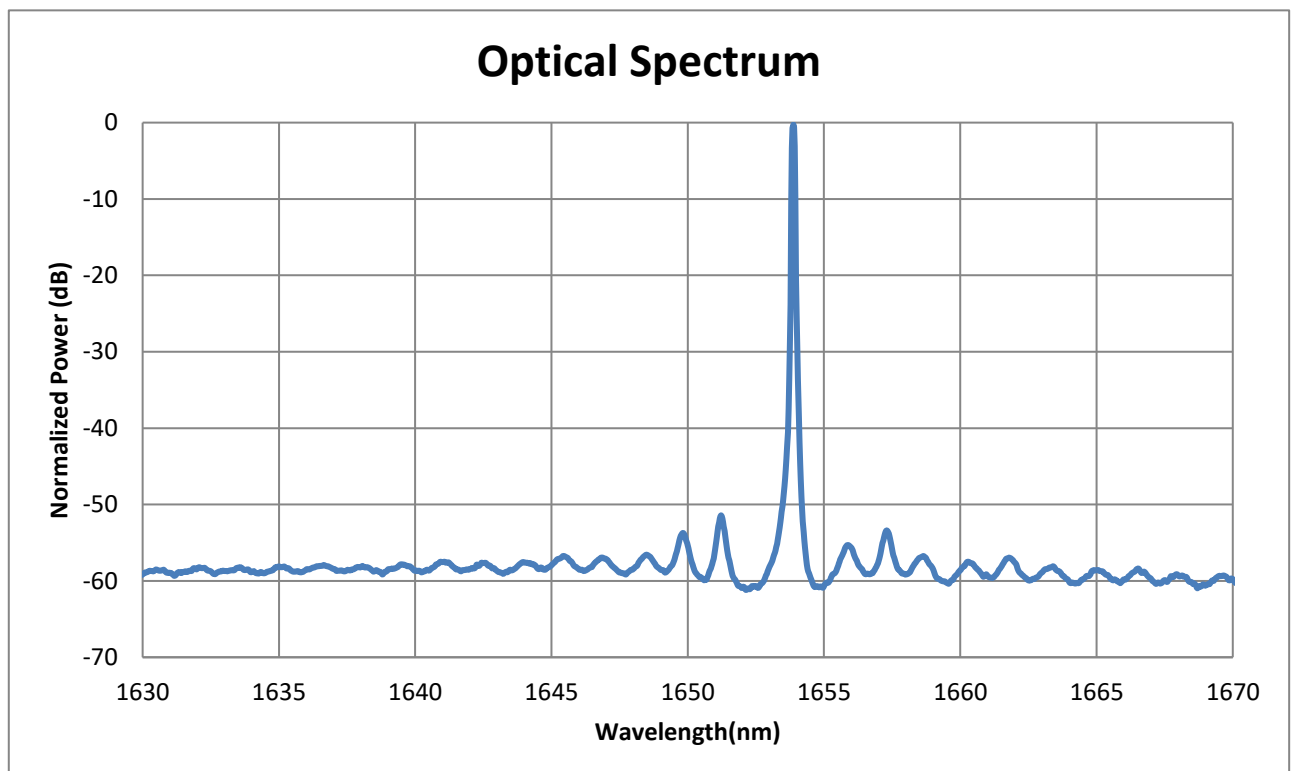
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G. TYPICAL PERFORMANCE CHARACTERISTICS

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



The Optical Spectrum is evaluated at $T_{chip}=25^{\circ}C$, $I_{op}=45mA$ and CW



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H. PRODUCT NAMING

DL-DFB65404T-C-S

DL: Denselight

DFB: Distributed Feedback Laser

654: Typical Peak Wavelength 1653.7nm

04: Minimum Power 3.5mW

T: TO-CAN

C: Collimated

S: Pin Configuration type S

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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