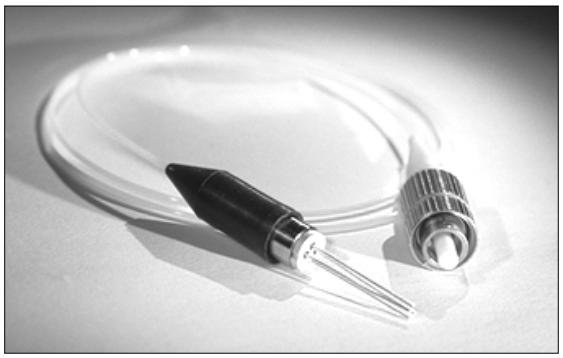
DFB-1310-C5-2-A2-xx-x-x



Description

The DFB-1310-C5-2-A2-xx-x-x series of Multi-Quantum Well (MQW) Distributed Feedback (DFB) lasers have been designed specifically analog applications, especially wireless repeater applications. The devices feature high output power, wide operating temperature range, low distortion characteristics, low RIN noise, and high side mode suppression.
Their uncooled, hermetically sealed, coaxial fiber-pigtailed packages are a cost-effective means of providing a highly linear light source for intermediate-reach and long-reach analog transmission applications.

Features

- Advanced Multiple Quantum Well (MQW) Distributed Feedback (DFB) Laser Design
- Low Distortion
  - IMD2 typ. –52 dBc
  - IMD3 typ. –55 dBc
- RIN < -145 dB/Hz
- Cost-effective Uncooled Laser Technology
- SMSR typ. 40 dB
- 5.6-mm TO-style package

Applications

- Wireless (CDMA, GSM, PCS) fiber-optic repeaters
- Analog transmission

Absolute Maximum Ratings

Exceeding the conditions specified below may result in permanent damage to the laser module. In normal operation, refer to the operating conditions in Table 1, below. Exceeding the conditions in Table 1, but below the absolute maximum ratings may result in unacceptable performance in some applications. Exposure to conditions above the absolute maximum ratings may negatively impact the reliability of the devices.

Parameter	Symbol	Condition	Min	Max	Unit
Operating Case Temperature	Tc	I=Iop	-20	85	°C
Storage Temperature	Tstg	--	-40	100	°C
Laser Forward Current	--	--	--	120	mA
Laser Reverse Bias	Vr	--	--	2	V
Photodiode Reverse Bias	V_{rpd}	--	--	10	V

Electrical/Optical Characteristics

Table 1. Electrical and Optical Characteristics

Parameters are over operating temperature range unless otherwise noted.

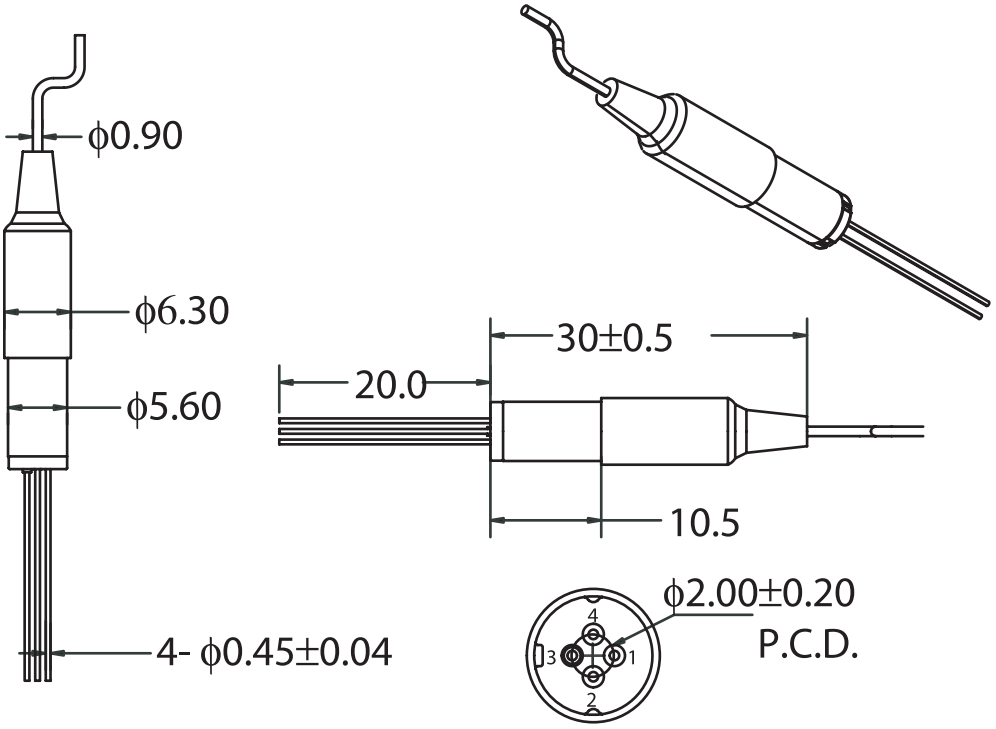
Parameter	Symbol	Min	Typ	Max	Unit	Test Conditions
Operating Temperature	T	-20*	--	85*	°C	
Optical Output Power	P_o	2.0	2.5	--	mW	CW
Threshold Current	I_{th}	-- --	12 35	18 50	mA	T=25 °C T=85 °C
Operating Current	I_{op}	--	60	75	mA	T=85 °C
Forward Voltage	V_F	--	1.1	1.6	V	P_o=2.0 mW
Center Wavelength	λ_c	1280	1310	1335	nm	P_o=2.0 mW, CW
Spectral Width (-20 dB)	$\Delta\lambda$	--	0.1	1.0	nm	P_o=2.0 mW
Wavelength temperature coefficient	$\Delta\lambda/\Delta T$	--	0.09	--	nm/°C	
Side-mode Suppression Ratio	SMSR	30	40	--	dB	P_o=2 mW
Monitor Current	I_{mon}	100	--	1000	µA	V_R=5 V
Monitor Dark Current	I_D	10	--	200	nA	V_R=5 V
Tracking Error	γ	-1	--	1	dB	I_{mon}=const, γ=10 log (P_f/2.0) [dB]

*See Ordering Options for operating temperature ranges available.

Table 2. RF Characteristics

Parameter	Symbol	Min	Typ	Max	Unit	Test Conditions
Relative Intensity Noise	RIN			-145	dB/Hz	CW,P_o=2.0 mW, f=5 MHz to 300 MHz
Relaxation Oscillation Frequency	f_R		4.5		GHz	P_o=2.0 mW
Modulation Bandwidth	BW	1.0			GHz	-3 dB, P_o=2 mW
Second-Order Intermodulation	IMD2		-52	-48	dBc	T=25 °C, P_o=2 mW, OMI=0.2, Two-tone test, 13 MHz and 19 MHz, 7 dB plus connector loss
Third-Order Intermodulation	IMD3		-55	-52	dBc	T=25 °C, P_o=2.0 mW, OMI=0.2, Two-tone test, 13 MHz and 19 MHz, 7 dB plus connector loss, all peaks from 5 MHz to 50 MHz meet this level
Carrier to noise ratio	CNR		50		dB	T=25 °C, P_o=2.0 mW, OMI=0.2, ref. To one-tone:5 MHz to 50 MHz, 7 dB plus connector loss
RF Bandpass Flatness	BF			1.0	dB	Peak to valley, 5 MHz to 200 MHz

DIMENSIONS



Pin Assignment

	Type A	Type C
1	PD Cathode	PD Anode
2	PD Anode	LD Anode,PD Cathode
3	LD Anode, GRD	GRD
4	LD cathode	LD cathode

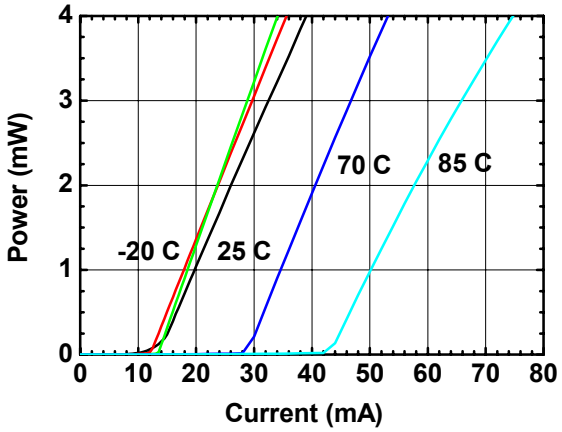
ORDERING OPTIONS:

DFB-1310-C5-2-A2-xx-x-x

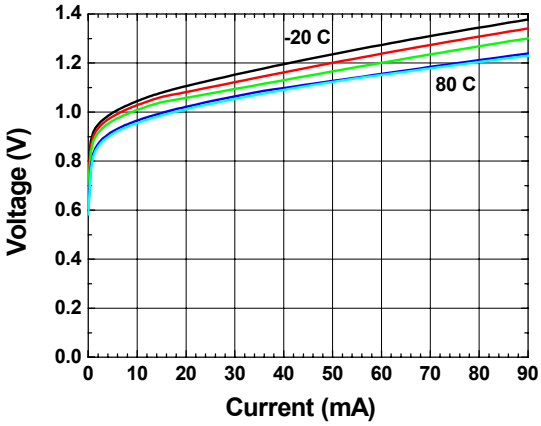
SC=SC/PC FC=FC/PC SA=SC/APC FA=FC/APC NC=No Connector	A=-20°C to 85°C B=-20°C to 75°C C=0°C to 85°C D=0°C to 75°C	A= Pin Type A C= Pin Type C

TYPICAL PERFORMANCE DATA (T=25 °C unless otherwise noted)

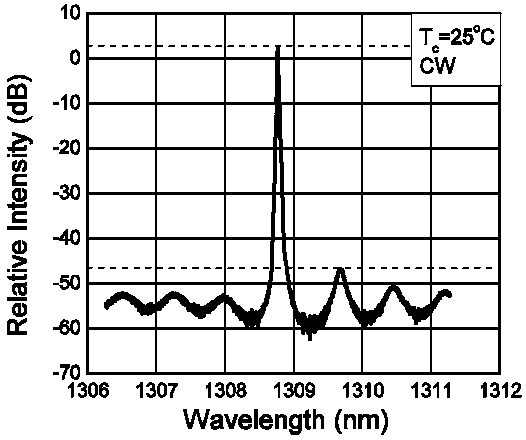
Output Power vs. Current



Forward Voltage vs. Current



Output Spectrum



Safety Information

All version of this laser are Class 3R laser products per IEC* 60825-1:2001. Users should observe safety precautions such as those recommended by ANSI** Z136.1-2000, ANSI Z36.2-1997 and IEC 60825-1:2001.

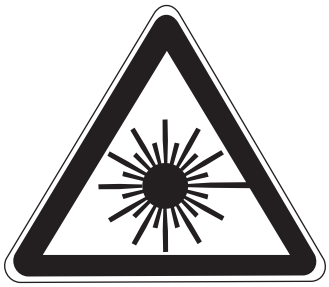
This product does not conform to 21 CFR 1040.10 and 1040.11. Consequently, this laser module is only intended for use as a component by manufacturers of electronic products and equipment.

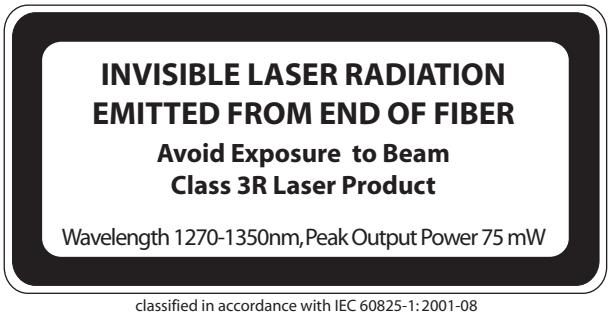
Wavelength =1.3 µm
Maximum Power = 75mW
Single-mode fiber pigtail
Fiber Numerical Aperture = 0.14

Labeling is not affixed to the laser module due to size constraints; rather, labeling is placed on the outside of the shipping box.

This product is not shipped with a power supply.

Caution: use of controls or adjustments or performance of procedures other than those specified herein may result in hazardous radiation exposure.





classified in accordance with IEC 60825-1: 2001-08

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**ANSI is a registered trademark of the American National Standards Institute