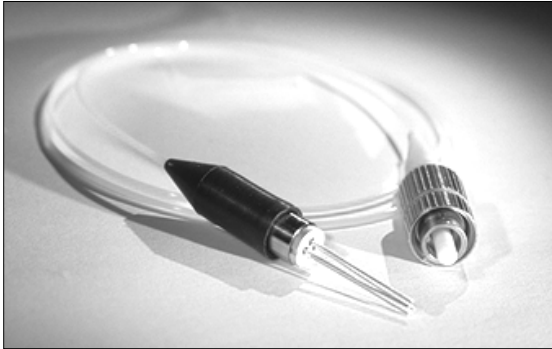


## DFB-1310-C5-2-2.5-xx-x-x

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### Description

The DFB-1310-C5-2-2.5-xx-x-x series of Multi-Quantum Well (MQW) Distributed Feedback (DFB) lasers have been designed specifically to satisfy the requirements of ITU-G.959 S16.1 and L16.1. The devices feature high output power and wide operating temperature range. Their uncooled, hermetically sealed, coaxial fiber-pigtailed packages are a cost-effective means of providing a high-speed light source for intermediate-reach and long-reach applications.

### Features

- ❑ Advanced Multiple Quantum Well (MQW) Distributed Feedback (DFB) Laser Design
- ❑ High-speed up to 2.5 Gbps
- ❑ Engineered Specifically for SONET S16.1 and L16.1
- ❑ Low-Cost Uncooled Laser Technology
- ❑ 1-meter SMF-28 Fiber Pigtail
- ❑ 5.6-mm TO-style package

### Applications

- ❑ SONET S16.1 2.5 Gbps transmitter
- ❑ Sonet L16.1 2.5 Gbps transmitter
- ❑ Intermediate and long-distance fiber transmitter

## DFB-1310-C5-2-2.5-xx-x-x

### 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	T <sub>c</sub>	I=I <sub>op</sub>	-20	85	°C
Storage Temperature	T <sub>stg</sub>	--	-40	100	°C
Laser Forward Current	--	--	--	120	mA
Laser Reverse Bias	V <sub>r</sub>	--	--	2	V
Photodiode Reverse Bias	V <sub>rpd</sub>	--	--	10	V

### Electrical/Optical Characteristics

**Table 1. Electrical and Optical Characteristics**

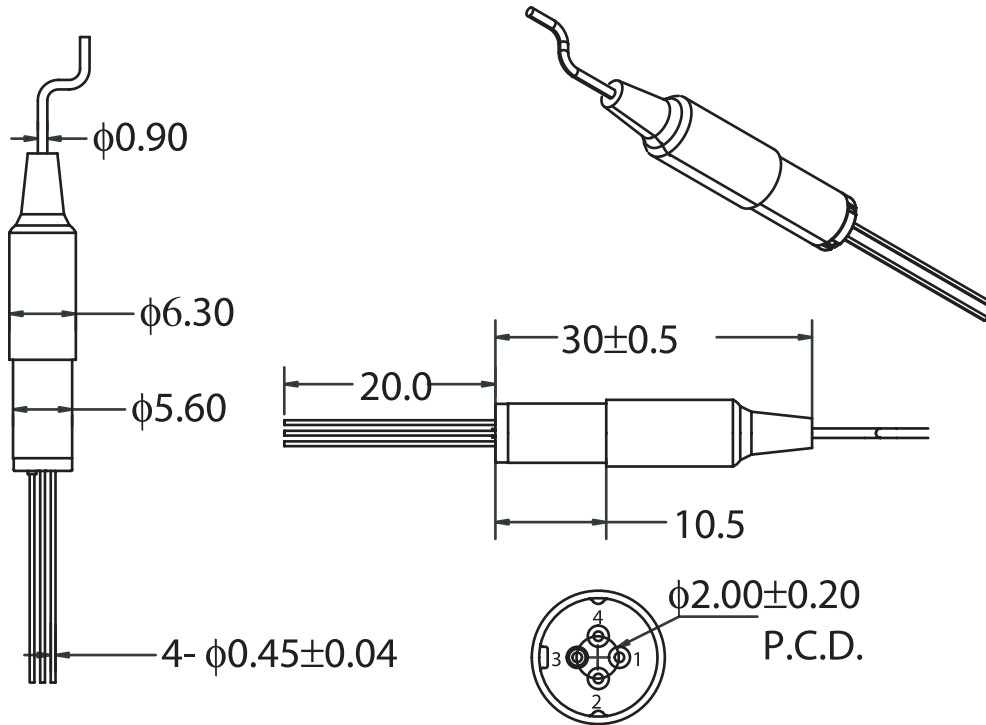
Parameters are over operating temperature range unless otherwise noted.

Parameter	Symbol	Min	Typ	Max	Unit	Test Conditions
Operating Temp.	T	-20*	--	85*	°C	
Optical Output Power	P <sub>o</sub>	2.0	2.2	--	mW	CW
Threshold Current	I <sub>th</sub>	--	12	18	mA	T=25 °C T=85 °C
Forward Voltage	V <sub>F</sub>	--	1.1	1.6	V	P <sub>o</sub> =2.0 mW
Operating Current	I <sub>op</sub>	--	22	35	mA	P <sub>o</sub> =2.0 mW, T=25 °C P <sub>o</sub> =2.0 mW, T=85 C
Center Wavelength	λ <sub>c</sub>	1270	1310	1350	nm	P <sub>o</sub> =2.0 mW, CW
Spectral Width (-20 dB)	Δλ	--	0.1	1.0	nm	P <sub>o</sub> =2.0 mW
Wavelength temperature coefficient	Δλ /ΔT	--	0.09	0.1	nm/°C	
Side-mode Suppression Ratio	SMSR	30	40	--	dB	P <sub>o</sub> =2 mW
Rise/Fall Times	t <sub>r</sub> , t <sub>f</sub>	--	--	0.1	ns	P <sub>peak</sub> =2.0 mW, 20% to 80%
Relaxation Oscillation Frequency	f <sub>R</sub>	--	4.5	--	GHz	P <sub>o</sub> =2.0 mW
Monitor Current	I <sub>mon</sub>	100	--	1000	μA	V <sub>R</sub> =5 V
Monitor Dark Current	I <sub>D</sub>	10	--	200	nA	V <sub>R</sub> =5 V
Relative Intensity Noise	RIN	--	-140	-130	dB/Hz	P <sub>o</sub> =2.0 mW, 30 db external isolation
Tracking Error	γ	-1	--	1	dB	I <sub>mon</sub> =const, γ=10 log (P <sub>f</sub> /2.0) [dB]

\* See Ordering Options for available temperature ranges.

**DFB-1310-C5-2-2.5-xx-x-x**

**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:**

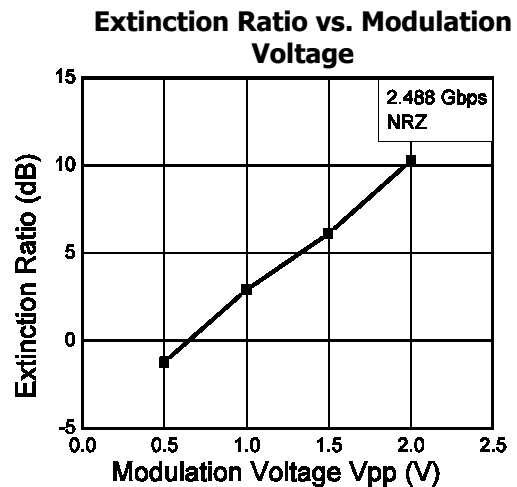
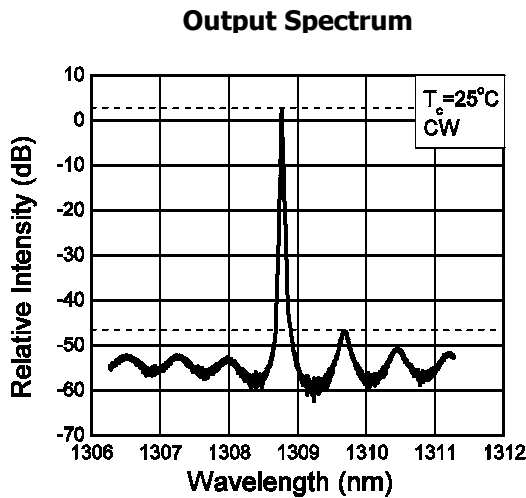
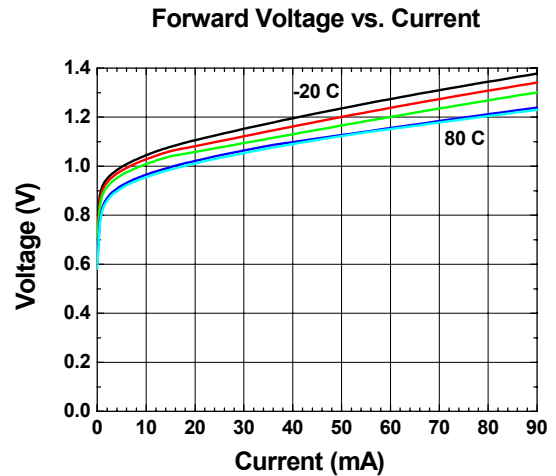
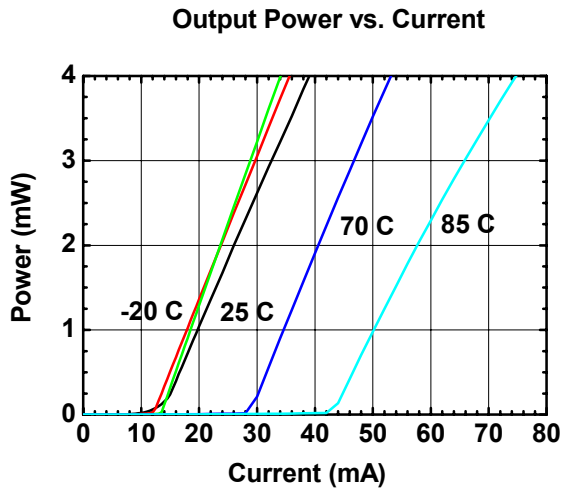
DFB-1310-C5-2-2.5-xx-x-x

SC=SC/PC  
 FC=FC/PC  
 SA=SC/APC  
 FA=FC/APC  
 NC=No Connector

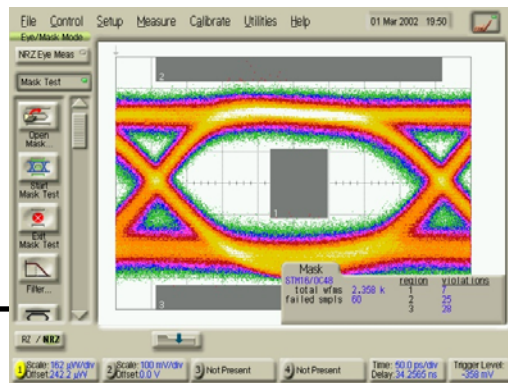
A=-20°C to 85°C  
 B=-20°C to 75°C  
 C=0°C to 85°C  
 D=0°C to 75°C

A= Pin Type A  
 C= Pin Type C

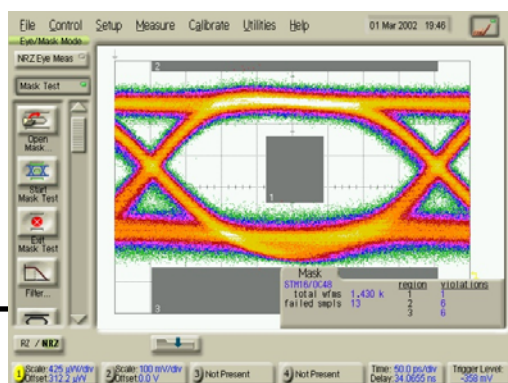
**TYPICAL PERFORMANCE DATA** (T=25 °C unless otherwise noted)



**2.488 Gbps Eye Diagram, after 10 km SMF, 4<sup>th</sup> order Bessel Filter**



**2.488 Gbps Back-to-Back Eye Diagram, after 4<sup>th</sup> order Bessel Filter**



## 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.

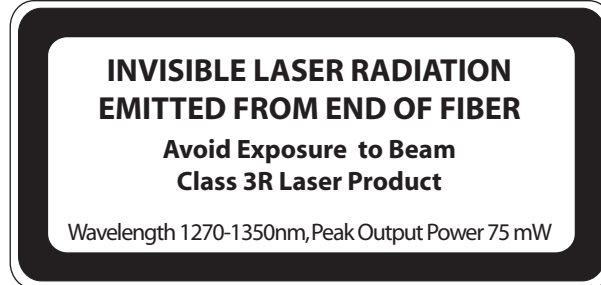
This product does not conform to 21 CFR 1040.10 and 1040.11. Consequently, this laser module is only intended for use as a component by manufacturers of electronic products and equipment.

Wavelength = 1.3  $\mu\text{m}$   
Maximum Power = 75 mW  
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

\*IEC is a registered trademark of the International Electrotechnical Commission

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