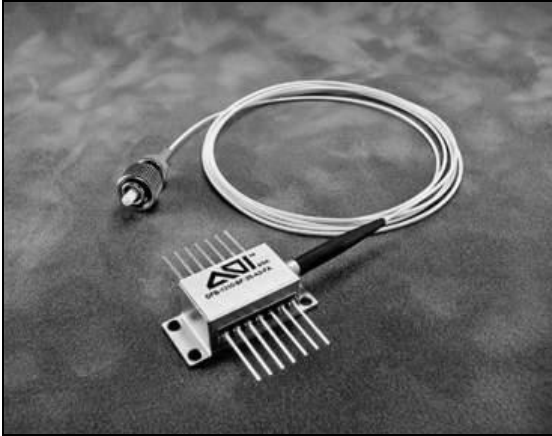


**DFB-1XXX-BF-XX-CW-Fx-Hx-N127****Description**

The DFB-1XXX-BF-XX-CW-Fx-Hx-N127 series of Multi-Quantum Well (MQW) Distributed Feedback (DFB) lasers have been designed specifically to satisfy the requirements of the sensor application.

The devices feature high output power and wide operating temperature range.

Their 14-pin butterfly packages are either pin-compatible with standard SONET OC-48 devices or can be "floating" from the metal house.

**Features**

- ❑ Advanced Multiple Quantum Well (MQW) Distributed Feedback (DFB) Laser Design
- ❑ High-output power
- ❑ Industry-standard 14-pin Butterfly package
- ❑ Option of SMF-28 Fiber Pigtail or PM fiber

**Applications**

- ❑ Sensor development
- ❑ Methane Gas detection
- ❑ External modulation



**DFB-1XXX-BF-XX-CW-Fx-Hx-N127**
**Absolute Maximum Ratings**

Parameter	Symbol	Condition	Min	Max	Unit
Operating Case Temperature	$T_c$	$I=I_{op}$	-10	50	°C
Storage Temperature	$T_{stg}$	--	-40	85	°C
Laser Forward Current	$I_f$	--	--	120	mA
Laser Reverse Bias	$V_f$	--	--	2	V
Photodiode Reverse Bias	$V_{rpd}$	--	--	10	V
TEC Current	$I_{TEC}$	$-10\text{ °C} < T_c < 50\text{ °C}$ , $T_{op}=25\text{ °C}$ , $I_f=100\text{ mA}$	--	1.5	A

**Electrical and Optical Characteristics**

Parameters are tested at 25 °C unless otherwise noted.

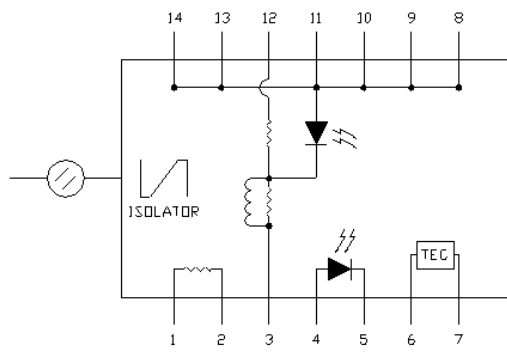
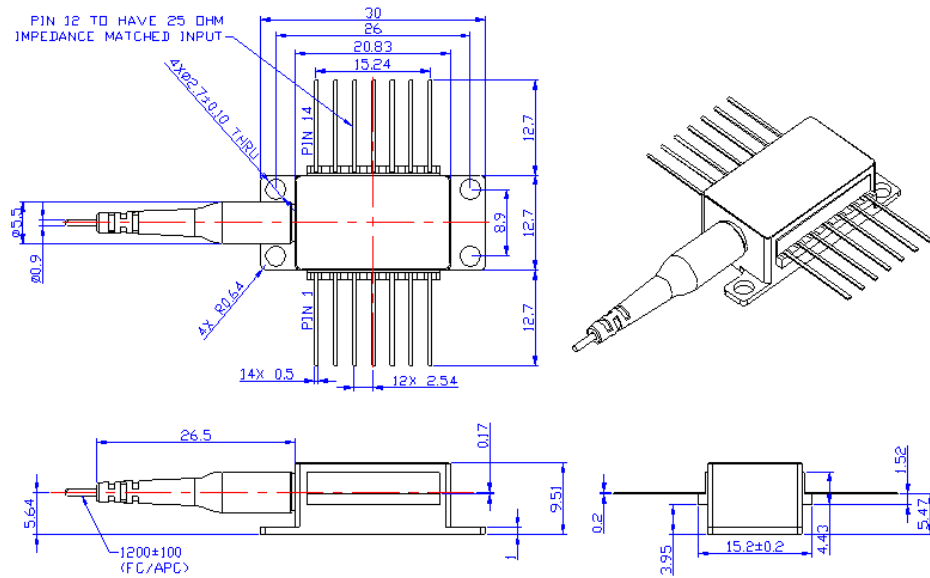
Parameter	Symbol	Min	Typ	Max	Unit	Test Conditions
Operating Case Temperature	$T_c$	-10	--	50	°C	
Laser Set temperature	$T_L$	10	25	40	°C	
Optical Output Power*	$P_o$	6	--	--	mW	CW,
Threshold Current	$I_{th}$	--	--	50	mA	$T_L=25\text{ °C}$
Forward Voltage	$V_F$	--	--	2	V	$P_o=P_L$
Operating Current	$I_{op}$	--	--	120	mA	$P_o=P_L$ , $T_L=25\text{ °C}$
Center Wavelength*	$\lambda_c$	Refer to order option			nm	$P_o=P_L$ , CW, $10\text{ °C} \leq T_L \leq 40\text{ °C}$
Center Wavelength Tolerance	$\Delta\lambda_c$	-0.1	--	0.1	nm	$P_o=P_L$ , CW, $10\text{ °C} \leq T_L \leq 40\text{ °C}$
Spectral Linewidth		--	--	10	MHz	$P_o=P_L$ , $T_L=25\text{ °C}$
Side-mode Suppression Ratio	SMSR	35	--	--	dB	$P_o=P_L$
Monitor Current	$I_{mon}$	10	--	150	$\mu\text{A}/\text{mW}$	$V_{rpd}=5\text{ V}$
Monitor Dark Current	$I_D$	--	--	200	nA	$V_{rpd}=5\text{ V}$
Thermistor Resistance	$R_t$	9.5	--	10.5	$\text{k}\Omega$	$T=25\text{ °C}$
Thermistor B Constant	B	--	3900	--	K	$T=25\text{ °C}$
TEC Current	$I_C$	--	--	1.5	A	$\Delta T=40\text{ °C}$
TEC Voltage	$V_C$	--	--	2.0	V	$\Delta T=40\text{ °C}$

\* See Ordering Options and contact AOI marketing for availability.

**DFB-1XXX-BF-XX-CW-Fx-Hx-N127**

**Outline Diagram**

Dimensions are in millimeters



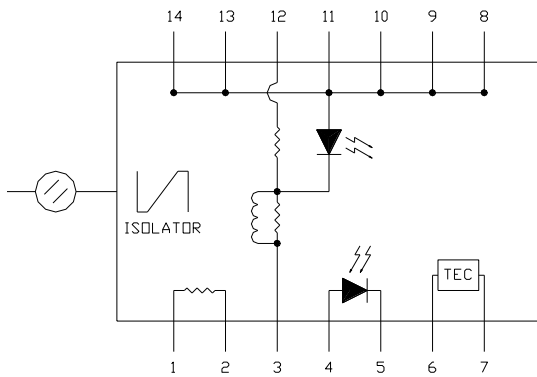
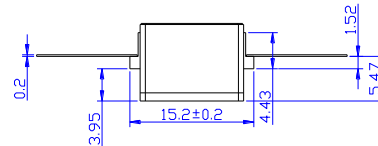
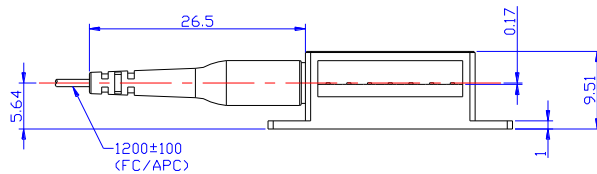
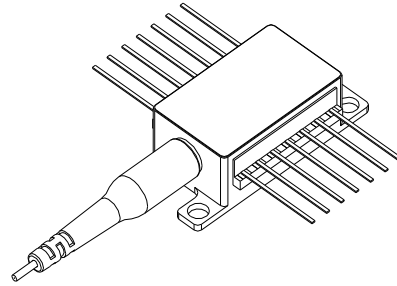
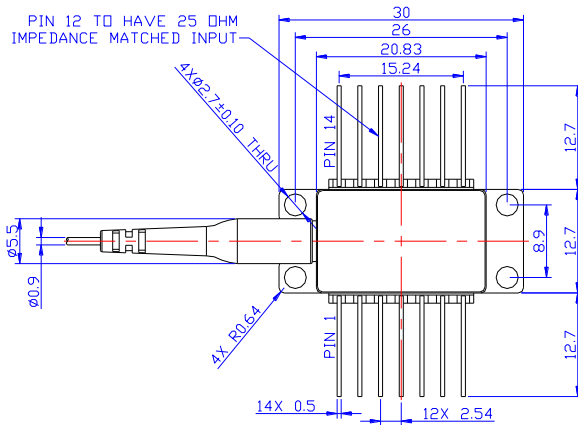
ELECTRICAL SCHEMATICS

**PIN ASSIGNMENT:**

1	Thermistor
2	Thermistor
3	DC Laser Bias (-)
4	PD Anode (-)
5	PD Cathode (+)
6	Thermoelectric Cooler (+)
7	Thermoelectric Cooler (-)
8	Laser Common (+)
9	Laser Common (+)
10	Laser Common (+)
11	Laser Common (+)
12	Laser Modulation (-)
13	Laser Common (+)
14	Laser Common (+)

**For ordering option -H1 (Floating LD design)**

**DFB-1XXX-BF-XX-CW-Fx-Hx-N127**



ELECTRICAL SCHEMATICS

PIN ASSIGNMENT:

1	Thermistor
2	Thermistor
3	DC Laser Bias (-)
4	PD Anode (-)
5	PD Cathode (+)
6	Thermoelectric Cooler (+)
7	Thermoelectric Cooler (-)
8	Case Ground
9	Case Ground
10	Case Ground
11	Laser Common (+), Case Ground
12	Laser Modulation (-)
13	Laser Common (+), Case Ground
14	Case Ground

**For ordering option -H2 (Negative Bias Design, Case GRD connected to LD Anode)**

**DFB-1XXX-BF-XX-CW-Fx-Hx-N127**

**Ordering Options**

**DFB-1XXX-BF-XX-CW-Fx-Hx-N127**

BF House Option :  
 H1 = Floating LD design  
 H2 = Negative Bias Design

Fiber Pigtail Option				
Option	Fiber	Length (mm)	Connector	Notes
F1	PM	1200+100	FC/APC	
F2	SMF	1200+100	FC/APC	

Output Power Option		
Option	Output Power (mW)	Notes
06	6	
08	8	
10	10	
15	15	
20	20	
25	25	

Wavelength Option			
Option	Center Wavelength (nm)	Max Output Power (mW)	Notes
1653	1653.7	12	CH <sub>4</sub>
1651	1651.0	8	CH <sub>4</sub>
1631	1631.46	8	
1630	1630.98	8	
1625	1625.0	10	
1623	1623.5	8	
1578	1578.0	10	CO <sub>2</sub>
1531	1531.7	20	NH <sub>3</sub>
1512	1512.0	20	NH <sub>3</sub>
1392	1392.0	20	H <sub>2</sub> O
1312	1312.0	30	HF
1580	1580.0	10	H <sub>2</sub> S, CO
1590	1590.0	10	H <sub>2</sub> S
1538	1538.19	10	
1570	1570.0	10	

Note 1: Please check with AOI marketing for the availability of the wavelength before order.  
 Note 2: Other wavelength may be possible for a different absorption line, Please check with AOI market department for the availability.

## Safety Information

All versions of this laser are Class 1M laser products per IEC<sup>1</sup>/EN<sup>2</sup> 60825-1:2001-08. Users should observe safety precautions such as those recommended by ANSI<sup>3</sup> Z136.1-2000, ANSI Z36.2-1997 and IEC 60825-1:2001-08.

### Notes about Laser Safety Class:

The Food and Drug Administration's Center for Devices and Radiological Health (FDA/CDRH) in the USA has decided to harmonize their requirements with 21 CFR 1040.10 and 1040.11 with the IEC/EN 60825-1 and IEC/EN 60601-2-22 standards. This process has not yet happened and in the interim, the CDRH agency has released '[Laser Notice No.50](#)' to reduce the regulatory burden. This notice allows IEC/EN classification and labeling of lasers within the USA.

#### IEC<sup>1</sup>/EN<sup>2</sup> 60825-1 Laser Class

**Class 1M:** laser is safe for all conditions of use except when passed through magnifying optics such as microscopes and telescopes. Class 1M lasers produce large-diameter beams, or beams that are divergent. The MPE for a Class 1M laser cannot normally be exceeded unless focusing or imaging optics are used to narrow the beam. If the beam is refocused, the hazard of Class 1M lasers may be increased and the product class may be changed. A laser can be classified as Class 1M if the total output power is below (IEC/EN) class 3B but the power that can pass through the pupil of the eye is within Class 1.

#### FDA Laser Class

**Class IIIB:** moderate power lasers (cw: 5-500 mW, pulsed: 10 J/cm<sup>2</sup> or the diffuse reflection limit, whichever is lower). In general Class IIIB lasers will not be a fire hazard, nor are they generally capable of producing a hazardous diffuse reflection. Specific controls are recommended.

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 = 1270 – 1610 nm  
 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

(1) IEC is a registered trademark of the International Electrotechnical Commission

(2) Within Europe the IEC standard has been adopted as a European Normative standard known as EN 60825, and each European country will have its own version of this standard, for example, the British Standards version known as BS EN 60825. There can be small differences between the different countries versions of EN 60825, and these are in part caused by the process of translating the standard into the native language of that country.

(3) ANSI is a registered trademark of the American National Standards Institute.