

DFB-XXX-BF-10-EC-Fx-Hx-N126 Laser Module



Description

The DFB-XXX-BF-10-EC-Fx-Hx-N126 laser modules are designed for fiber optic sensor applications. The narrow linewidth and the option of using polarization maintaining optical fiber made it specially suitable for high sensitivity optical sensor development. The devices feature standard pin assignments (compatible with OC-48).

Features

- Standard OC-48 pin compatibility
- Narrow spectral linewidth
- Low noise
- Meets GR 468 reliability specifications

Applications

- Fiber optic sensor
- Test and measurement light source
- LIDAR





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Absolute Maximum Ratings

Parameter	Symbol	Condition	Min	Max	Unit
Operating Case Temperature	T _c	I=I _{op}	-20	65	°C
Storage Temperature	T _{stg}	--	-40	85	°C
Laser Forward Current	I _f	--	--	360	mA
Laser Reverse Bias	V _r	--	--	2	V
TEC Current	I _{tec}	-20 °C < T _c < +65 °C, T _{op} =25 °C I _f =100 mA		1.5	A

Electrical and Optical Characteristics

Parameters are over operating temperature range unless otherwise noted.

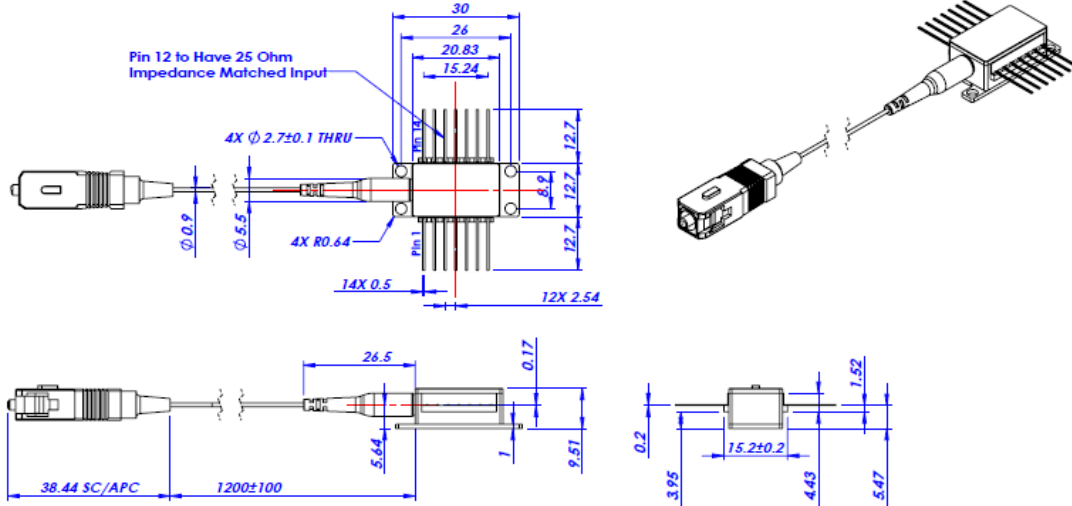
Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Center Wavelength*	λ _c	P _i = P _{or} , CW, T _{set} = 15°C - 35°C Refer to the ordering option	1530	--	1560	nm
Optical Output Power	P _o	CW, T _i = T _{set}	--	10	--	mW
Threshold Current	I _{th}	T _i = 25 °C	--	--	50	mA
Operating Current	I _{op}	P _i = P _{or}	--	--	200	mA
Optical Isolation	I _s	T = 25 °C	30	--	--	dB
Side-mode Suppression Ratio	SMSR	P _i = P _{or}	45	--	--	dB
Spectral Linewidth	Δλ	Measured with self-heterodyne setup	--	--	60	kHz
Polarization Extinction Ratio	PER	With PANDA PM fiber, Slow-axis align with E-field	20	--	--	dB
Relative Intensity Noise	RIN	CW, P _i = P _{or}	--	--	-145	dB/Hz
Forward Voltage	V _F	P _i = P _{or}		1.2	2.0	V
Operating Case Temperature	T		-20	--	65	°C
Thermistor Resistance	R _t	T = 25 °C	9.5	--	10.5	KΩ
Thermistor B Constant	B	T = 25 °C	--	3900	--	K
TEC Current	I _c	ΔT = 40°C	--	--	1.5	A
TEC Voltage	V _c	ΔT = 40°C	--	--	2.0	V
Laser Set Temperature	TL		15		35	°C

*See available wavelengths from Ordering Options. DWDM wavelength set by laser sub-mount temperature.

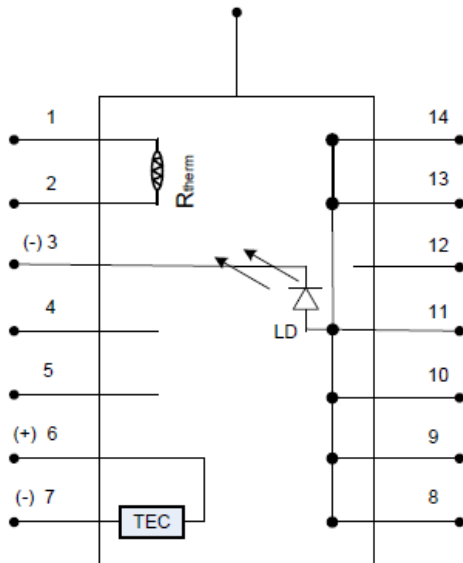
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Outline Diagram

Dimensions are in millimeters



Electric Schematic



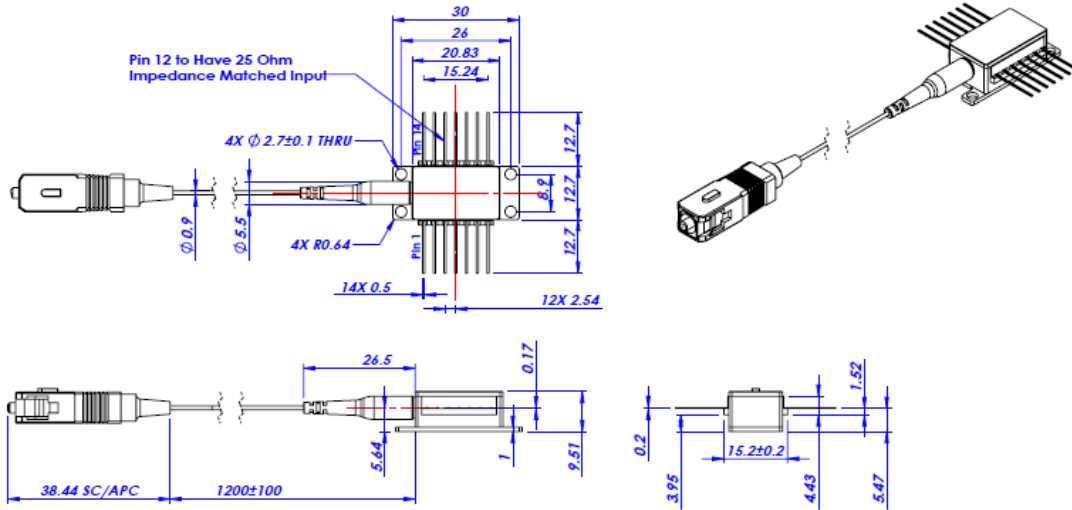
PIN Information

Pin	Description
1	Thermister
2	Thermister
3	Laser Cathode
4	Not Connected
5	Not Connected
6	Thermoelectric Cooler (+)
7	Thermoelectric Cooler (-)
8	Laser Anode
9	Laser Anode
10	Laser Anode
11	Laser Anode
12	Not Connected
13	Laser Anode
14	Laser Anode

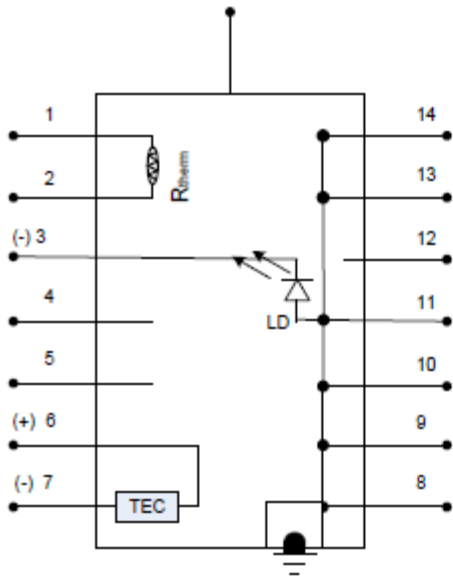
For ordering option –H1 (Floating LD design)



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Electric Schematic



PIN Information

Pin	Description
1	Thermister
2	Thermister
3	Laser Cathode
4	Not Connected
5	Not Connected
6	Thermoelectric Cooler (+)
7	Thermoelectric Cooler (-)
8	Case Ground
9	Case Ground
10	Case Ground
11	Laser Anode, Case Ground
12	Not Connected
13	Laser Anode, Case Ground
14	Case Ground

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



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Ordering Options

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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	

Wavelength Option
 Refer to the Channel list below



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ITU-T DWDM Channel

ITU Channel	Frequency (THz)	Wavelength (nm)	Tolerance (nm)	ITU Channel	Frequency (THz)	Wavelength (nm)	Tolerance (nm)
916	191.6	1564.68	± 0.1	940	194.0	1545.32	± 0.1
917	191.7	1563.86	± 0.1	941	194.1	1544.53	± 0.1
918	191.8	1563.05	± 0.1	942	194.2	1543.73	± 0.1
919	191.9	1562.23	± 0.1	943	194.3	1542.94	± 0.1
920	192.0	1561.42	± 0.1	944	194.4	1542.14	± 0.1
921	192.1	1560.61	± 0.1	945	194.5	1541.35	± 0.1
922	192.2	1559.79	± 0.1	946	194.6	1540.56	± 0.1
923	192.3	1558.98	± 0.1	947	194.7	1539.77	± 0.1
924	192.4	1558.17	± 0.1	948	194.8	1538.98	± 0.1
925	192.5	1557.36	± 0.1	949	194.9	1538.19	± 0.1
926	192.6	1556.55	± 0.1	950	195.0	1537.4	± 0.1
927	192.7	1555.75	± 0.1	951	195.1	1536.61	± 0.1
928	192.8	1554.94	± 0.1	952	195.2	1535.82	± 0.1
929	192.9	1554.13	± 0.1	953	195.3	1535.04	± 0.1
930	193.0	1553.33	± 0.1	954	195.4	1534.25	± 0.1
931	193.1	1552.52	± 0.1	955	195.5	1533.47	± 0.1
932	193.2	1551.72	± 0.1	956	195.6	1532.68	± 0.1
933	193.3	1550.92	± 0.1	957	195.7	1531.9	± 0.1
934	193.4	1550.12	± 0.1	958	195.8	1531.12	± 0.1
935	193.5	1549.32	± 0.1	959	195.9	1530.33	± 0.1
936	193.6	1548.51	± 0.1	960	196.0	1529.55	± 0.1
937	193.7	1547.72	± 0.1	961	196.1	1528.77	± 0.1
938	193.8	1546.92	± 0.1	962	196.2	1527.99	± 0.1
939	193.9	1546.12	± 0.1				

* Please consult factory for wavelength availability before ordering

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Safety Information

All versions of this laser are Class 1M laser products per IEC¹/EN² 60825-1:2001-08. Users should observe safety precautions such as those recommended by ANSI³ 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.

IEC¹/EN² 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/cm² 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