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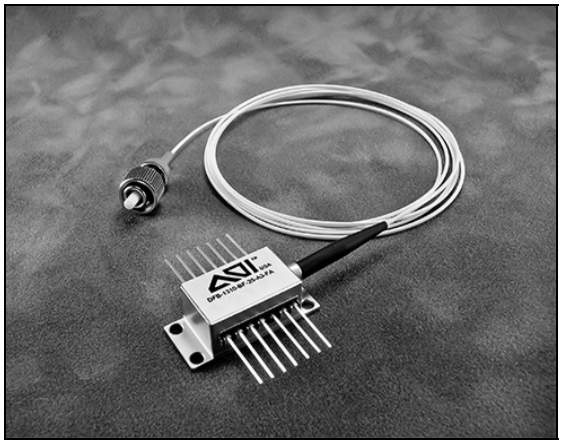
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DFB-1310-BF-xx-Ax-xx Laser Module



Description

The DFB-1310-BF-xx-Ax-xx DFB laser modules are designed for forward-path CATV applications. The modules are designed to incorporate high output power while maintaining high linearity. The devices feature standard pin assignments (compatible with OC-48).

The modules are excellent sources for use in CATV systems incorporating both PAL-D, with 60 channel loading, and NTSC, with up to 77 channels. The combination of high performance and very reasonable price make these modules the most cost-effective CATV transmitter solutions in the industry.

Features

- Standard OC-48 pin compatibility
- Negative bias
- Optimized for PAL-D and NTSC channel counts
- Output power up to 31 mW
- Meets GR 468 reliability specifications

Applications

- CATV forward-path
- 1310-nm broadcast and point-to-point applications

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DFB-1310-BF-xx-Ax-xx Laser Module

Absolute Maximum Ratings

Parameter	Symbol	Condition	Min	Max	Unit
Operating Case Temperature	Tc	I=Iop	-20	65	°C
Storage Temperature	Tstg	--	-40	85	°C
Laser Forward Current	If	--	--	120	mA
Laser Reverse Bias	Vr	--	--	2	V
Photodiode Reverse Bias	Vrpd	--	--	10	V
TEC Current	Itec	-20 °C < Tc <+65 °C, Top=25 °C If=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	CW	1300	1310	1320	nm
Spectral Width (-20 dB)	$\Delta\lambda$	CW	--	0.1	1.0	nm
Optical Output Power*	P_o	CW, T_L=25 °C	6	--	31	mW
Optical Isolation	I_S	T=25 °C	30	--	--	dB
Side-mode Suppression Ratio	SMSR	CW	30	--	--	dB
Threshold Current	I_{th}	T_L=25 °C	--	12	18	mA
Operating Current	I_{op}	CW	--	--	120	mA
Forward Voltage	V_F	CW	--	1.2	1.7	V
Monitor Current	I_{mon}	V_{rpd}=5 V	10	--	150	μA/mW
Monitor Dark Current	I_D	V_{rpd}=5 V	--	--	200	nA
Operating Case Temperature	T		-20	--	65	°C
Tracking Error	γ	I_{mon}=const, γ=10 log (P_o/P_r) [dB]	-0.5	--	0.5	dB
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	--	--	1.0	A
TEC Voltage	V_C	ΔT=40°C	--	--	2.0	V

*See Ordering Options for operating powers available.

RF Characteristics (NTSC 77)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Frequency Range	F	--	45	--	550	MHz
Frequency Response	$\lvert S_{21} \rvert$	I=82 mA f = 45 MHz-860 MHz T=25 °C	--	± 0.5	--	dB
Relative Intensity Noise	RIN	CW,P_o= P_r, f=45 MHz to 860 MHz, Optical reflection=-40 dB	--	-155	-150	dB/Hz

Distortion

Parameter		Symbol	Test Conditions	Min	Typ	Max	Unit
DFB-1310-BF-xx-A3-xx							
	Carrier to Noise Ratio	CNR	Note 1	51	--	--	dB
	Composite Second Order	CSO	Note 1	--	--	-64	dBc
	Composite Triple Beat	CTB	Note 1	--	--	-70	dBc
DFB-1310-BF-xx-A4-xx							
	Carrier to Noise Ratio	CNR	Note 1	51	--	--	dB
	Composite Second Order	CSO	Note 1	--	--	-62	dBc
	Composite Triple Beat	CTB	Note 1	--	--	-67	dBc
DFB-1310-BF-xx-A5-xx							
	Carrier to Noise Ratio	CNR	Note 1	51	--	--	dB
	Composite Second Order	CSO	Note 1	--	--	-60	dBc
	Composite Triple Beat	CTB	Note 1	--	--	-65	dBc
DFB-1310-BF-xx-A6-xx							
	Carrier to Noise Ratio	CNR	Note 1	51	--	--	dB
	Composite Second Order	CSO	Note 1	--	--	-53	dBc
	Composite Triple Beat	CTB	Note 1	--	--	-63	dBc

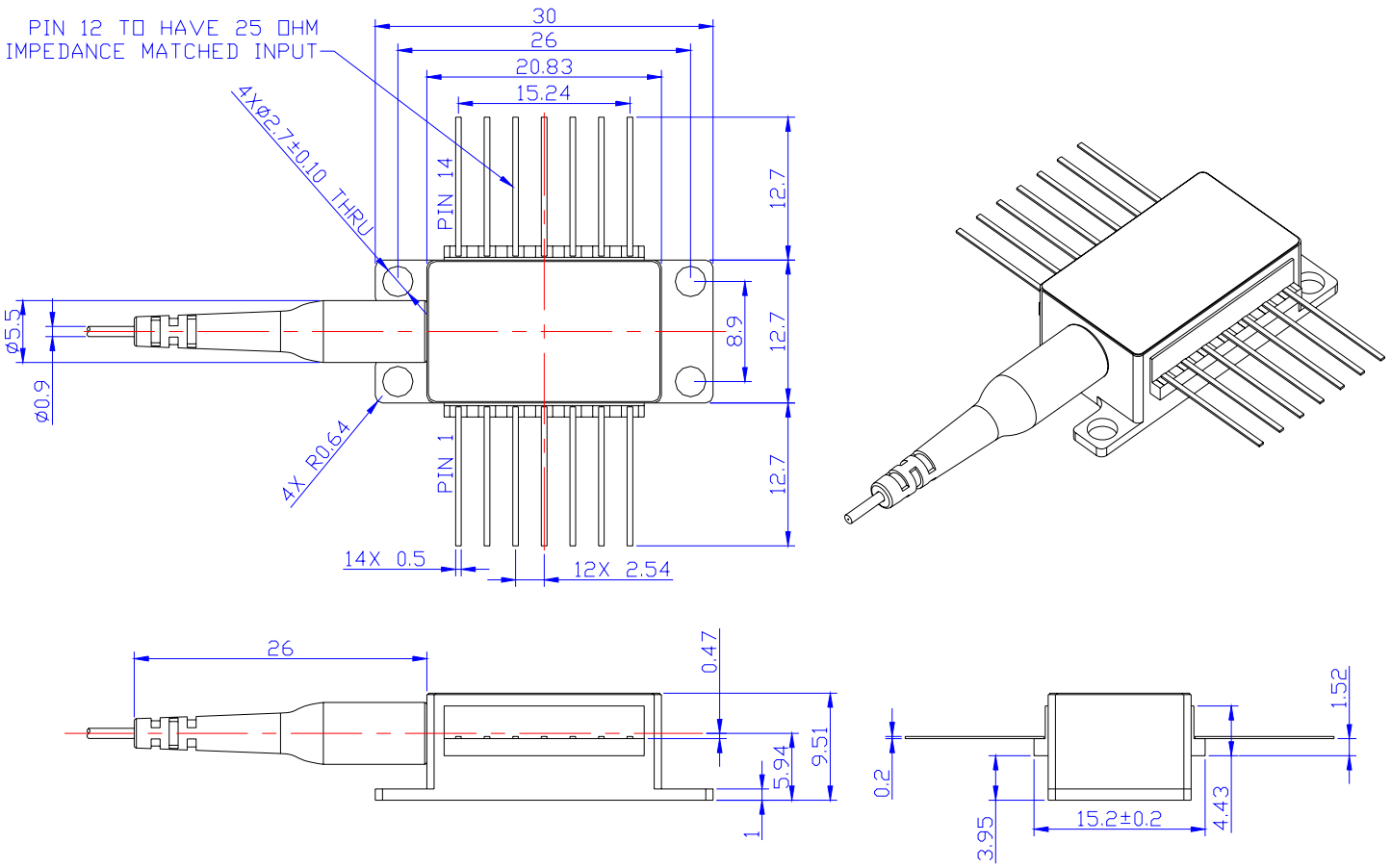
Note 1: Test condition: P_o= P_r, OMI 2.8%, 77 unmodulated carriers (50 to 550 MHz), Received Power=-1 dBm.

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Outline Diagram

Dimensions are in millimeters



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Electrical Schematics

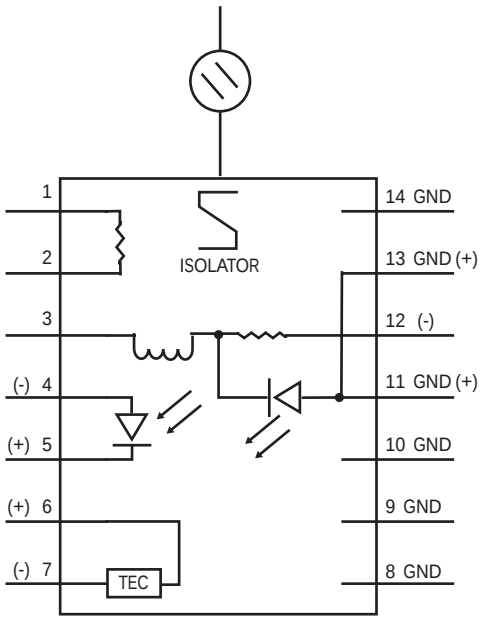


Figure 1. Laser Schematic

Pin Information

Pin No.	Description
1	Thermistor
2	Thermistor
3	Dc Laser Bias (-)
4	MPD Anode (-)
5	MPD 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

Ordering Options

DFB-1310-BF-xx-Ax-xx

P_r		
04= 4 mW	3= Distortion Range 3	SC=SC/PC
06= 6 mW	4= Distortion Range 4	FC=FC/PC
08= 8 mW	5= Distortion Range 5	SA=SC/APC
10= 10 mW	6= Distortion Range 6	FA=FC/APC
13= 13 mW		NC=No Connector
16= 16 mW		
19= 19 mW		
22= 22 mW		
25= 25 mW		
28= 28 mW		
31= 31 mW		

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Safety Information

All versions of this laser are Class 1M 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 = 100 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.



*IEC is a registered trademark of the International Electrotechnical Commission
**ANSI is a registered trademark of the American National Standards Institute

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