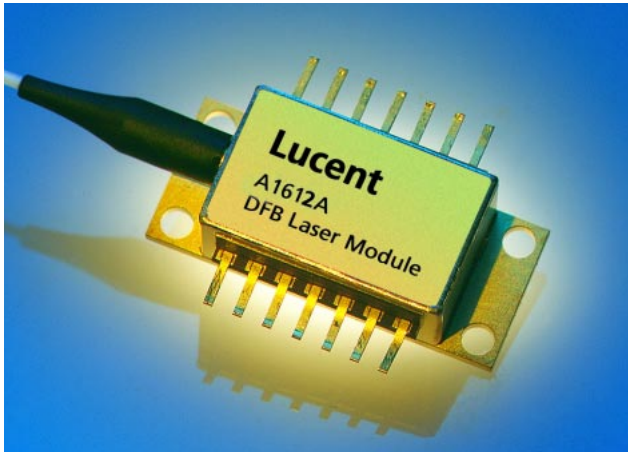




A1612A/B 1310 nm Forward-Path DFB Laser Modules



Description

The A1612A/B 1310 nm forward-path DFB laser modules are designed for both broadcast and narrowcast analog applications. The highly linear, OC-48 pinout-compatible devices feature up to 31 mW output power with superior distortion performance over an enhanced operating temperature range of -40°C to $+85^{\circ}\text{C}$.

With 31 mW of output power, the A1612A/B module enables transmission beyond 40 km, and a greater number of optical splits. In addition, the wide operating temperature range increases the laser's reliability even in the harshest environments.

Features

- OC-48 pinout compatible
- Negative bias
- 112 channel loading
- Meets *Telcordia Technologies** 468 specifications
- High output power, up to 31 mW

Applications

- 1310 nm forward path:
 - Long distances
 - High-count optical splits
- Broadcast and narrowcast networks

* *Telcordia Technologies* is a trademark of Telcordia Technologies, Inc.

Absolute Maximum Ratings

Stresses in excess of the absolute maximum ratings can cause permanent damage to the device. These are absolute stress ratings only. Functional operation of the device is not implied at these or any other conditions in excess of those given in the operational sections of the data sheet. Exposure to absolute maximum ratings for extended periods can adversely affect device reliability.

Parameter	Symbol	Condition	Min	Max	Unit
Operating Case Temperature Range	T _C	I _F = I _{OP}	−40	85	°C
Storage Temperature Range	T _{stg}	—	−40	85	°C
Laser Forward dc Current	—	—	—	150	mA
Reverse dc Voltage (Laser)	V _R	—	—	2	V
Reverse Voltage Photodiode	V _{RPD}	—	—	10	V
TEC Current	I _{TEC}	−40 °C < T _C < 85 °C, T _{OP} = 25 °C, I _F = 100 mA	—	1.9	A

Electrical/Optical Characteristics

Table 1. Electrical and Optical Characteristics

Parameter	Symbol	Condition	Min	Typ	Max	Unit
Wavelength	λ _{OP}	I _F = I _{OP} , T = T _{OP}	—	1310 ± 10	—	nm
Optical Output Power	P _O	I _F = I _{OP}	4	—	31	mW
Optical Isolation	ISO	T _{OP} = 25 °C	30	—	—	dB
Side Mode Suppression Ratio	SMSR	I _F = I _{OP}	30	—	—	dB
Threshold Current	I _{TH}	25 °C, BOL	—	—	30	mA
Operating Current	I _{OP}	BOL	—	—	120	mA
Monitor PD Current	I _{PD}	V _{RM} = 5 V, T _{OP} = 25 °C	10	—	200	μA/mW
Thermistor Resistance	R _{TH}	T _{OP} = 25 °C	—	10 ± 0.5 @ 25 °C	—	kΩ
Thermistor Temperature Coefficient	T _{CTH}	T _{OP} = 25 °C	—	−4.4 @ 25 °C	—	%/°C
TEC Current	I _{TEC}	−40 °C < T _C < 85 °C, T _{OP} = 25 °C, I _F = 100 mA	—	—	1.6	A

Table 2. RF Characteristics

Parameter	Symbol	Condition	Min	Typ	Max	Unit
Frequency Range	F	—	40	—	860	MHz
Frequency Response	S ₂₁	I _F = 60 mA, 40 MHz—860 MHz, T _{OP} = 25 °C	—	±0.5	—	dB
Carrier-to-Noise Ratio*	CNR	—	—	51	—	dB
Composite Second Order: 1612A 1612B	CSO	—	— —	57 60	— —	dB dB
Composite Triple Beat	CTB	—	—	67	—	dB
Relative Intensity Noise	RIN	—	—	< −155	—	dB/Hz

* OMI = 3.2% min, 112 unmodulated NTSC channels.

Electrical Schematics

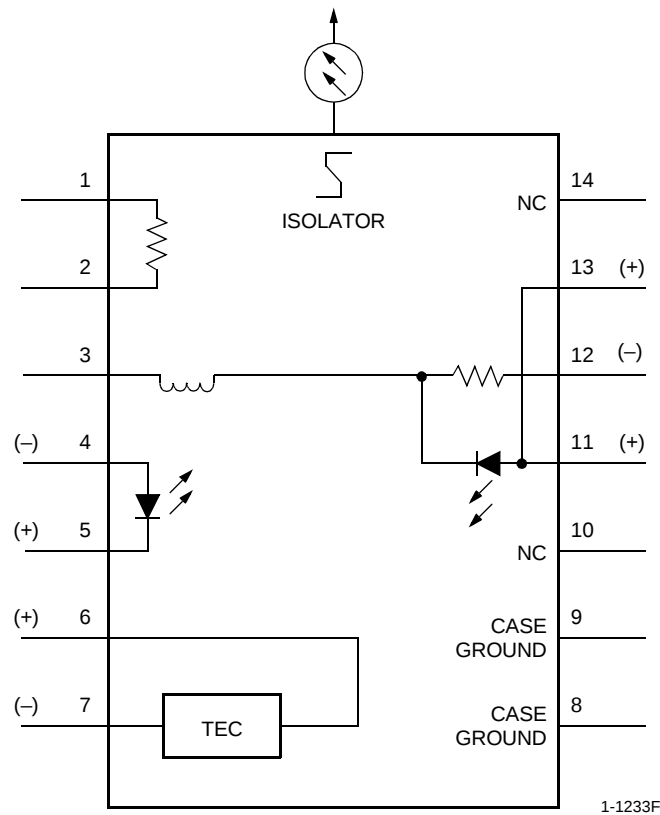


Figure 1. A1612A/B Laser Schematic

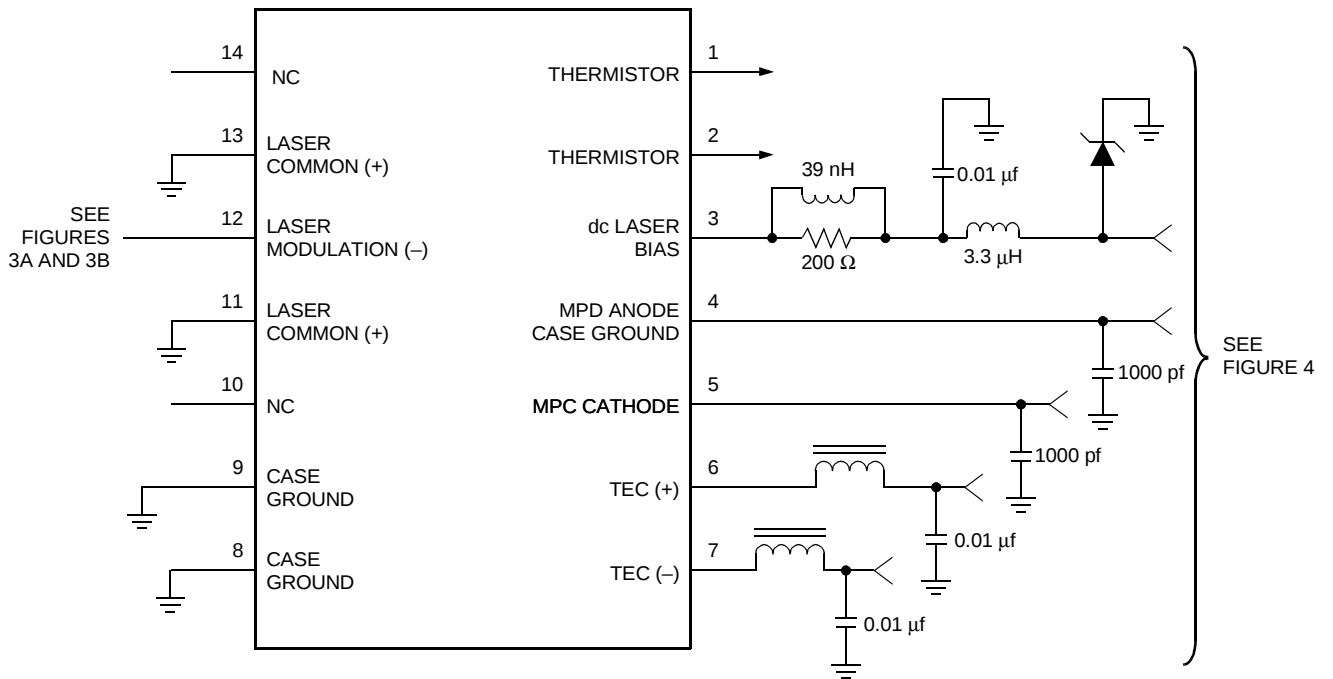


Figure 2. A1611A/B Circuit Schematic

Electrical Schematics (continued)

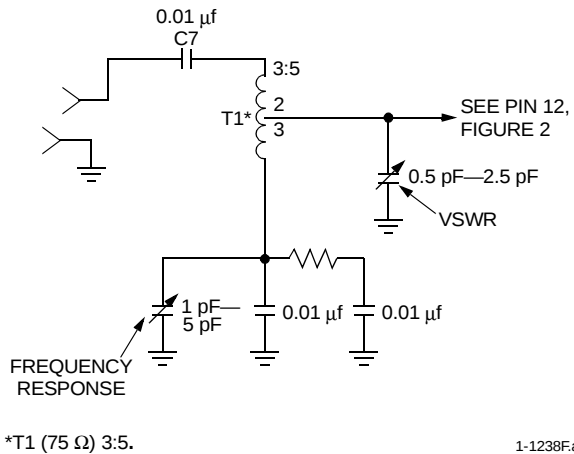


Figure 3a. Impedance-Matched Configuration

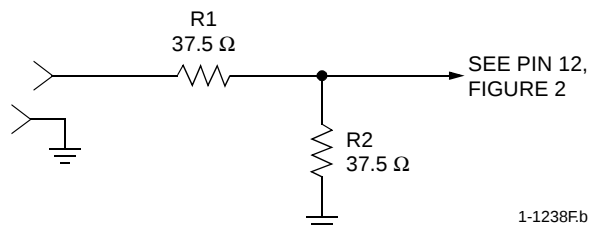
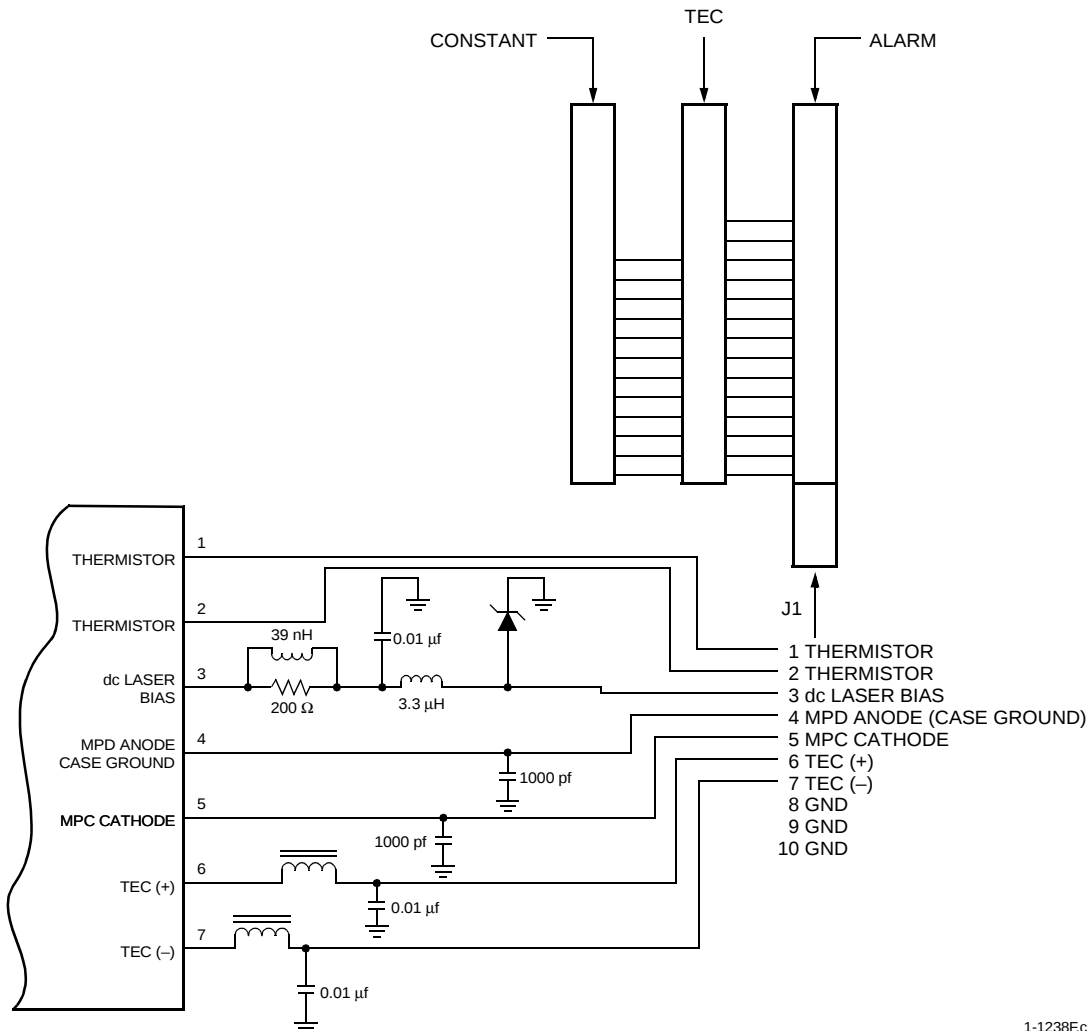


Figure 3b. Resistive-Matched Configuration

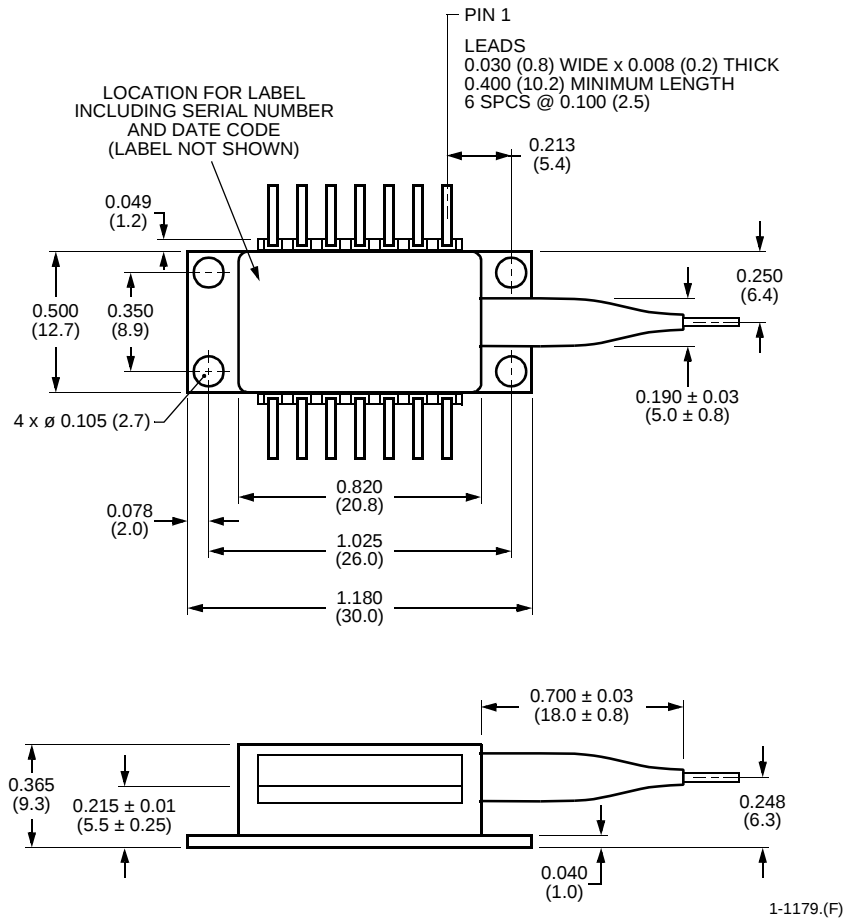


Note: When ordering the dc set, the following boards are included: alarm board, 9108-004; TEC board, 9028-004; constant current, 9383-004.

Figure 4. dc Set (Lucent Supplied)

Outline Diagram

Dimensions are in inches and (millimeters).



Pin Information

Table 3. Pin Descriptions

Pin No.	Description
1	Thermistor
2	Thermistor
3	dc Laser Bias (–)
4	MPD Anode, Case Ground
5	MPD Cathode
6	Thermoelectric Cooler (+)
7	Thermoelectric Cooler (–)
8	Case Ground
9	Case Ground
10	NC
11	Laser Common (+)
12	Laser Modulation (–)
13	Laser Common (+)
14	NC

Laser Safety Information

Class IIIb Laser Product

FDA/CDRH Class IIIb laser product. All versions are Class IIIb laser products per CDRH, 21 CFR 1040 Laser Safety requirements. All versions are Class 3B laser products per *IEC** 60825-1:1993. The device has been classified with the FDA under an accession number to be determined.

This product complies with 21 CFR 1040.10 and 1040.11.

Single-mode fiber pigtail

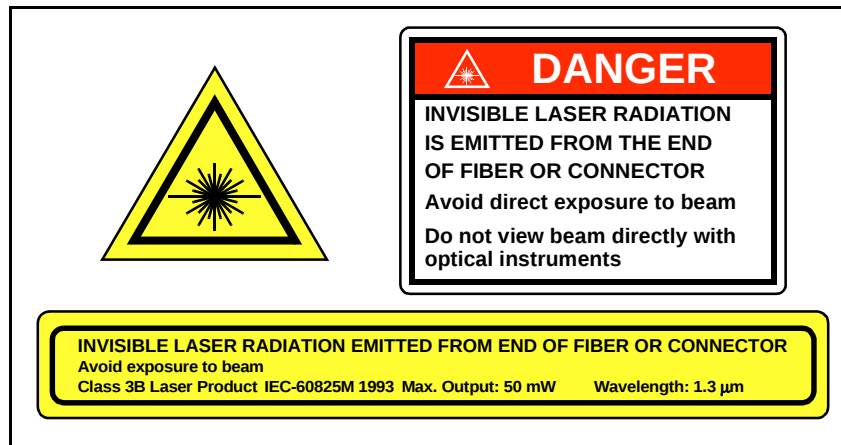
Wavelength = 1.3 μm

Maximum power = 50 mW

Because of size constraints, laser safety labeling (including an FDA Class IIIb label) is not affixed to the module but attached to the outside of the shipping carton.

Product is not shipped with power supply.

Caution: Use of controls, adjustments, and procedures other than those specified herein may result in hazardous laser radiation exposure.



* *IEC* is a registered trademark of The International Electrotechnical Commission.

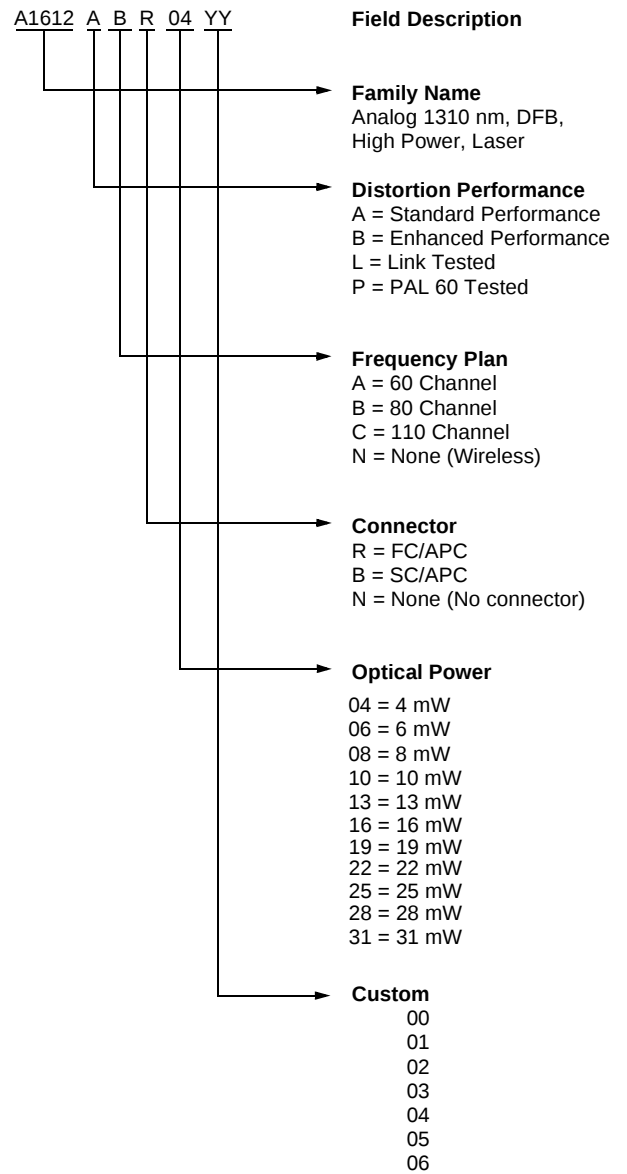
Ordering Information

Table 4. Ordering Information*

Device Code	Comcode
A1612ACB16	108851999
A1612ACB19	108852005
A1612ACB22	108852013
A1612ACB25	108854720
A1612ACB28	108854738
A1612ACB31	108854746
A1612ACB34	108855263
A1612ACR16	108855271
A1612ACR19	108855289
A1612ACR22	108855297
A1612ACR25	108855305
A1612ACR28	108855313
A1612ACR31	108855321
A1612ACR34	108855339

* For additional ordering information, please contact a Lucent account manager at Microelectronics Group, Optoelectronics Division, OPTO West, 1-800-362-3891 (for sales staff, please press option 2).

Order Code Definitions



For additional information, contact your Microelectronics Group Account Manager or the following:

INTERNET: **<http://www.lucent.com/micro>**, or for Optoelectronics information, **<http://www.lucent.com/micro/opto>**

E-MAIL: **docmaster@micro.lucent.com**

N. AMERICA: Microelectronics Group, Lucent Technologies Inc., 555 Union Boulevard, Room 30L-15P-BA, Allentown, PA 18109-3286
1-800-372-2447, FAX 610-712-4106 (In CANADA: **1-800-553-2448**, FAX 610-712-4106)

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Tel. (65) 778 8833, FAX (65) 777 7495

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Tel. (81) 3 5421 1600, FAX (81) 3 5421 1700

EUROPE: Data Requests: MICROELECTRONICS GROUP DATALINE: **Tel. (44) 7000 582 368**, FAX (44) 1189 328 148
Technical Inquiries: OPTOELECTRONICS MARKETING: **(44) 1344 865 900** (Ascot UK)

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