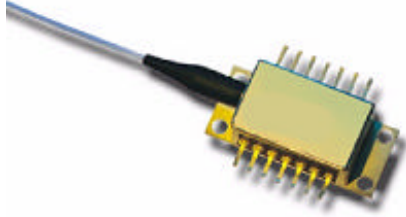


## 1612P 1310 nm DFB Laser Module

The 1612P 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 25 mW of output power.

The 1612P module is optimized for OEM 1310 nm CATV transmitter designs addressing PAL-D transmission with 60 channel loading. The combination of high-performance specifications and available output power ensures the flexibility a CATV designer needs to accurately and cost-effectively address the requirements of forward-/return-path application.



### Applications

- 1310 nm forward path/return path
- Broadcast and narrowcast networks

### Features

- OC-48 pinout compatible
- *Telcordia Technologies*<sup>TM</sup> 468 compliant
- Optimized for PAL-D 60 channel loading

### Performance Highlights

	Min	Typical	Max	Units
Wavelength	1300	-	1320	nm
Optical Output Power (multiple versions)	4-25	-	-	mW
Temperature Range	-40	-	+85	°C
Frequency Range	5	-	860	MHz
Carrier to Noise Ratio	51	-	-	dB
Composite Second Order	60	-	-	dB
Composite Triple Beat	65	-	-	dB

See following pages for complete specification and conditions.

## 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	Units
Operating Case Temperature	$T_C$	continuous	-40	+85	°C
Storage Temperature	$T_{STG}$	-	-40	+85	°C
Laser Forward dc Current	-	-	-	150	mA
Photodiode Reverse Voltage	$V_{RPD}$	-	-	10	V
Laser Reverse Voltage	-	-	-	1	V
ESD	-	HBM: R = 1500 Ohm, C = 100 pF	-500	500	V
TEC Current	$I_{TEC}$	continuous	-1.9	1.9	A

## Electrical/Optical Characteristics

Laser Temperature ( $T_L$ ) = 25°C,  $I_F=I_{OP}$ , Beginning of Life (BOL)

Parameter	Symbol	Condition	Min	Typ	Max	Unit
Wavelength	-		1300	-	1320	nm
Optical Output Power	-	1612-xxxx-04 version See ordering page for all power options, up to: 1612-xxxx-25 version	4 . . 25	-	-	mW  mW
Optical Isolation	ISO	-	30	-	-	dB
Sidemode Suppression Ratio	SMSR	-	35	-	-	dB
Threshold Current	$I_{TH}$	-	-	-	20	mA
Operating Current	$I_{OP}$	depends on power option	-	-	110	mA
Monitor PD Responsivity	$r_{PD}$	$V_{RM}=5V$	10	-	200	$\mu A/mW$
Thermistor Resistance	$R_{TH}$	$T_{OP}=25\text{ }^\circ C$	9.5	10	10.5	KOhm
Thermistor Temp. Coefficient	$TC_{TH}$	$T_{OP}=25\text{ }^\circ C$	-	-4.4	-	%/°C
TEC Current	$I_{TEC}$	$-40 < T_C < +85\text{ }^\circ C$ ; $I_F = 100\text{ mA}$	-1.5	-	1.6	A
Fiber Length	-	May include optical splice	1.0	1.5	-	m
Fiber Buffer	-	-	-	900	-	$\mu m$
Fiber Core / Cladding	-	-	-	9/125	-	$\mu m$

## RF Characteristics

Laser Temperature ( $T_L$ ) = 25°C,  $I_F=I_{OP}$ , Beginning of Life (BOL)

Parameter	Symbol	Condition	Min	Typ	Max	Units
Frequency Range	F	-	5	-	860	MHz
Frequency Response	S21	$I_F=60\text{ mA}$ , 5 MHz-860 MHz	-	$\pm 0.5$	-	dB
Carrier-to-Noise Ratio	CNR	PAL-D 60	51	-	-	dB
Composite Second Order	CSO	PAL-D 60	60	-	-	dB
Composite Triple Beat	CTB	PAL-D 60	65	-	-	dB
Relative Intensity Noise	RIN	-	-	<-155	-	dB/Hz

In order to prevent reflection-induced distortion, the laser must be connected to an optical cable having a return loss of at least 55 dB for discrete reflections and 30 dB for distributed reflections.

Electrical Schematics

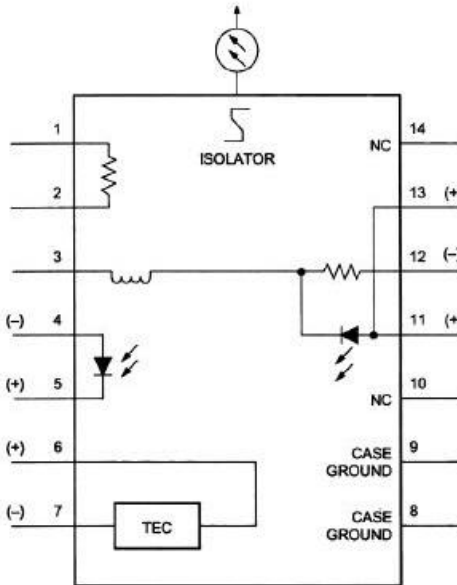


Figure 1. 1612P Laser Schematic

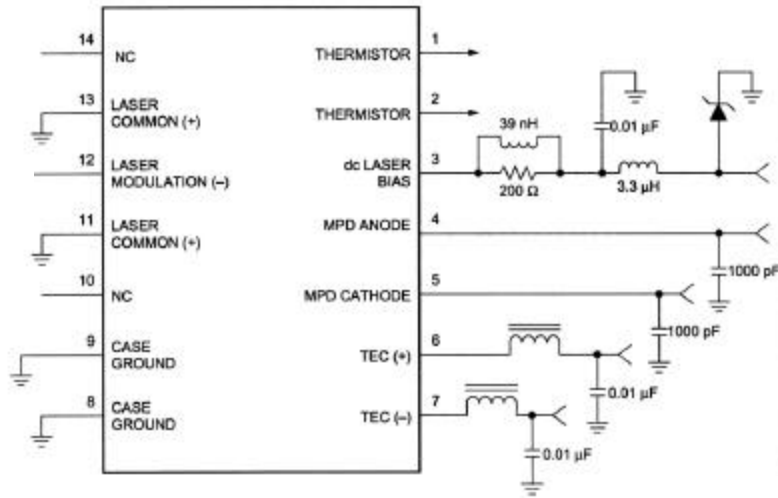
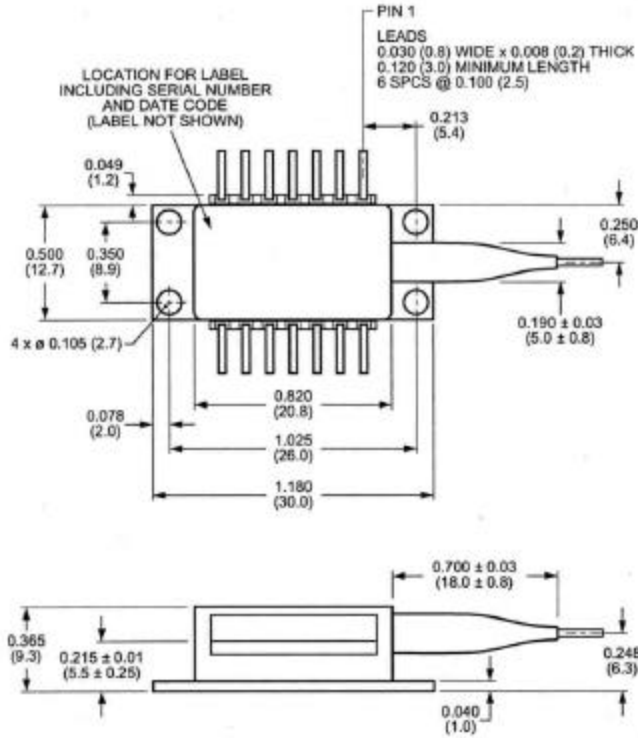


Figure 2. 1612P Circuit Schematic

**Outline Diagram**

Dimensions are in inches and (millimeters)



**Pin Information**

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

## Laser Safety

This product meets the appropriate standard in Title 21 of the Code of Federal Regulations (CFR). FDA/CDRH Class IIIb laser product. This device has been classified with the FDA/CDRH under accession number 0220191.

Single-mode fiber pigtail with SC/APC connectors (standard).

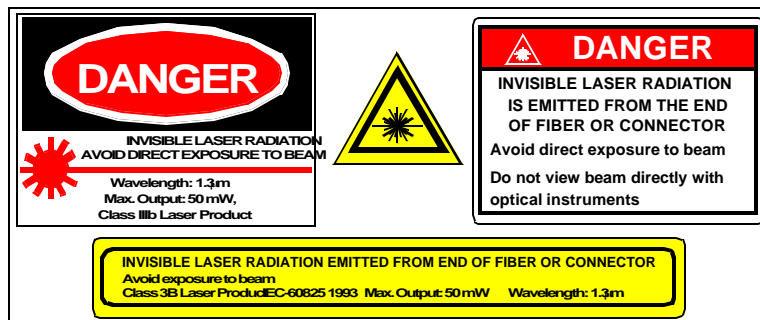
Wavelength = 1.3  $\mu\text{m}$ .

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.

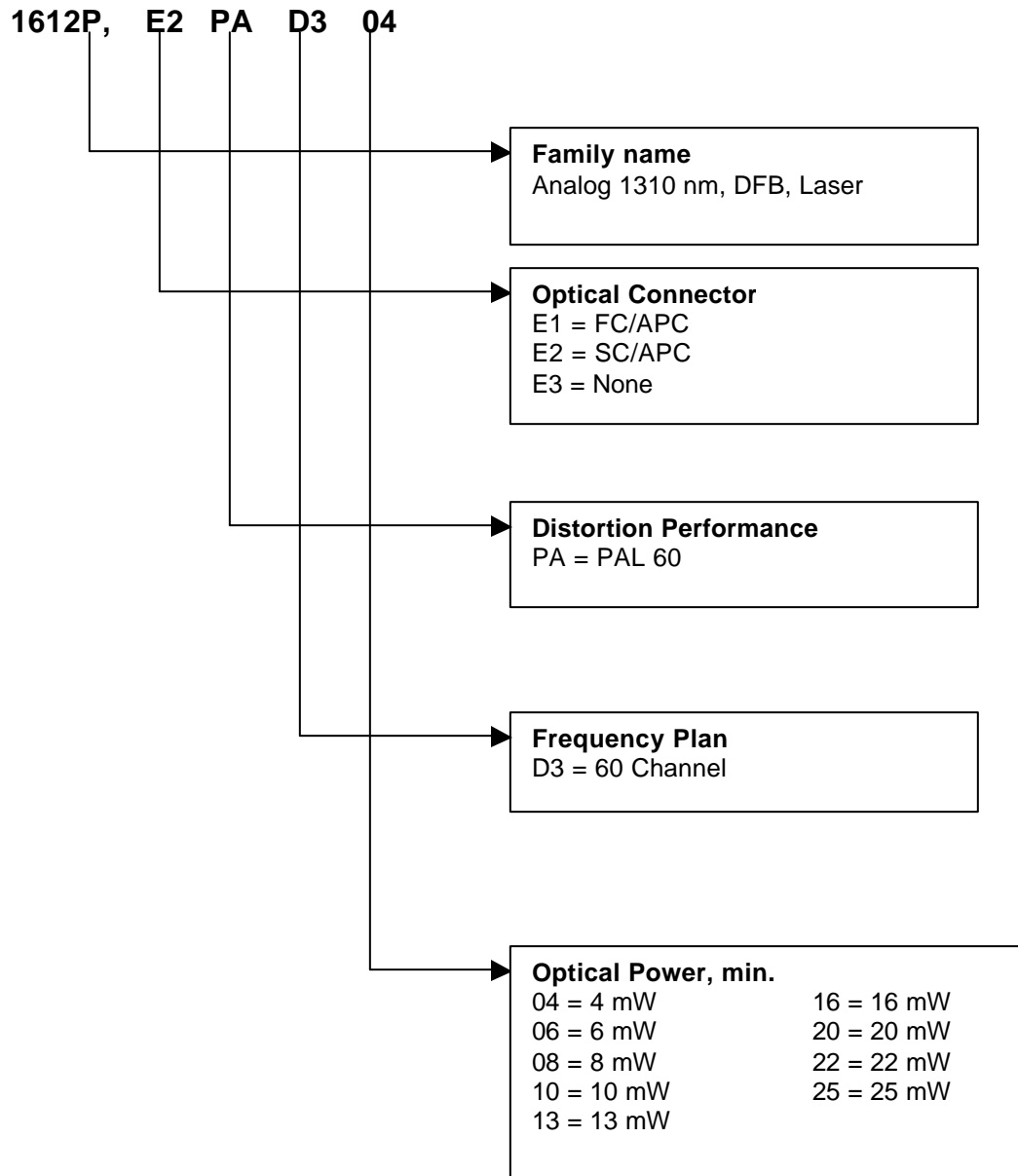
**Caution: Use of controls, adjustments and procedures other than those specified herein may result in hazardous laser radiation exposure.**



**Ordering Information**

Contact Ortel for ordering information at 626-293-3400.

**Ordering Code Definitions**



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