



Erbium-Doped Fiber Amplifier (EDFA) - GM Series

Nanovation's GM series of EDFA products is specifically designed as power booster amplifiers for fiber optic metro and access applications where cost efficiency and product flexibility are paramount. Characterized by outstanding optical performance, Bellcore reliability and ISO 9001 quality certification, these compact modules offer a wide range of user-specified optical output power and a superior low noise figure.

Features

- Wide operating wavelength ranges
- High power gain
- Low noise figure
- Input, output and optional reverse optical power monitoring via incorporated P-I-N photo detectors
- High reliability
- Wide operating temperature and humidity ranges
- Compact packaging
- Bellcore GR-1312-CORE qualified and ISO 9001 certified

Applications

- Metro and access fiber optic transmission systems
- Power booster amplifier configuration



Product Description

General

The GM series of EDFAs has been specially designed to provide flexibility by working with a customer's own drive and control circuitry to provide a specific product for use in metro transmission systems as a booster amplifier.

Optical

This module is based on an erbium-doped fiber amplifier (EDFA), which is pumped with 980 nm diode lasers. Input and output ports are optically isolated to maintain stable operation of the amplifier. An optical splitter on the output port taps a small amount of light onto photo-diodes to enable optical power monitoring.

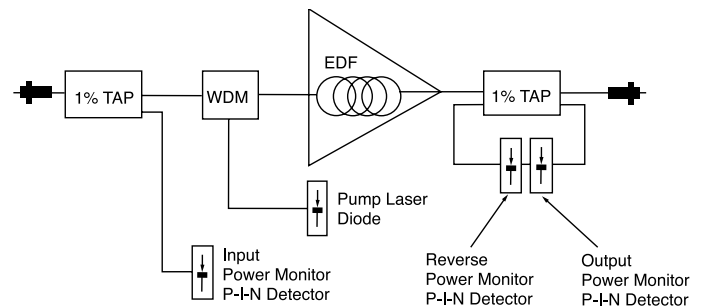
Electrical

The GM series of EDFA products is equipped with a standard 16-pin male DIP connector.

Package

The units are housed within very small modules with input and output connections through single-mode fiber pigtailed and are fitted as standard with super-polished FC/UPC or FC/APC connectors. Other types of connectors are available on request.

Block Diagram





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Absolute Maximum Ratings

(in accordance with Bellcore GR-1312-CORE)

Parameter	Min.	Typical	Max.	Unit
DC Operating Voltage*	4.75	5.0	5.25	V
Operating Temperature Range	0	-	70	°C
Storage Temperature Range	-25	-	85	°C
Operating Humidity Range	5	-	85	%

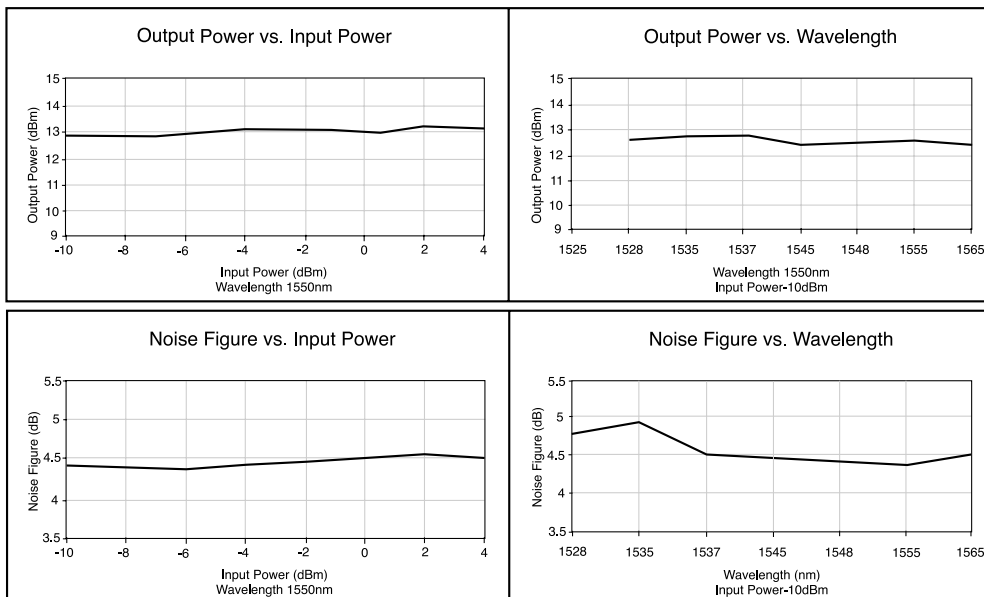
*Flexible voltage can be arranged at customer's request

Optical Parameters

(over the full operating temperature range)

Parameter	Min.	Typical	Max.	Unit
Operation Wavelength Range	1530	-	1565	nm
Small Signal Gain@1550nm		25	-	dB
Output Optical Power	-	10	13 15 17	dBm
Noise Figure @1550nm, Input Power = -6dBm	-	4.5	5.5	dB
Polarization Dependent Gain	-	-	0.5	dB
Pump Leakage to Input/Output	-	-	-30	dBm
Return Loss to Input/Output	40	-	-	dB
Optical Isolation	30	35	-	dB
Reverse ASE Power	-	< -20	-	dBm
Polarization Mode Dispersion	-	-	0.2	ps
Package Dimensions	99 x 61 x 13			mm ³

GM Series EDFA Typical Performance Curves





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GM Series EDFA Electrical Interface

The GM series of EDFA products is equipped with a standard 16-pin male DIP connector. The functionality of each pin is presented as below:

Pin Information

(16 pin connector)

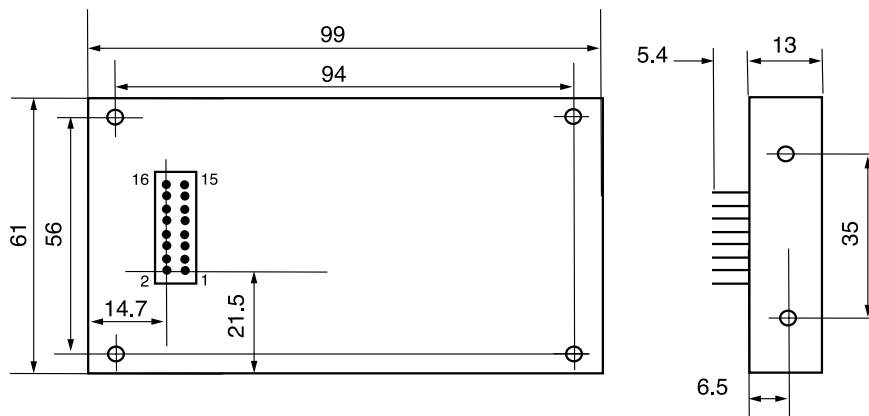
Pin	Symbol	Description
1	LD+	Pump laser anode
2	LD-	Pump laser cathode
3	TEC-	Pump laser TEC cathode
4	TEC-	Pump laser TEC cathode
5	PD2 -	Optical output P-I-N detector power monitor cathode
6	PD2 +	Optical output P-I-N detector power monitor anode
7	PD -	Reverse optical output P-I-N detector power monitor cathode
8	NC	
9	PD +	Reverse optical output P-I-N detector power monitor anode
10	GND	Case ground
11	RT1	Pump laser thermistor – port 1
12	RT2	Pump laser thermistor – port 2
13	TEC +	Pump laser TEC anode
14	TEC +	Pump laser TEC anode
15	PD1 +	Optical input P-I-N detector power monitor anode
16	PD1 -	Optical input P-I-N detector power monitor cathode

Pigtail Fiber

Fiber Type	Standard single-mode fiber
Fiber/Buffer Diameter (mm)	0.9
Pigtail Length (m)	1.0 (or user defined)

Outline Drawing

(all dimensions are in mm; drawings are not to scale)

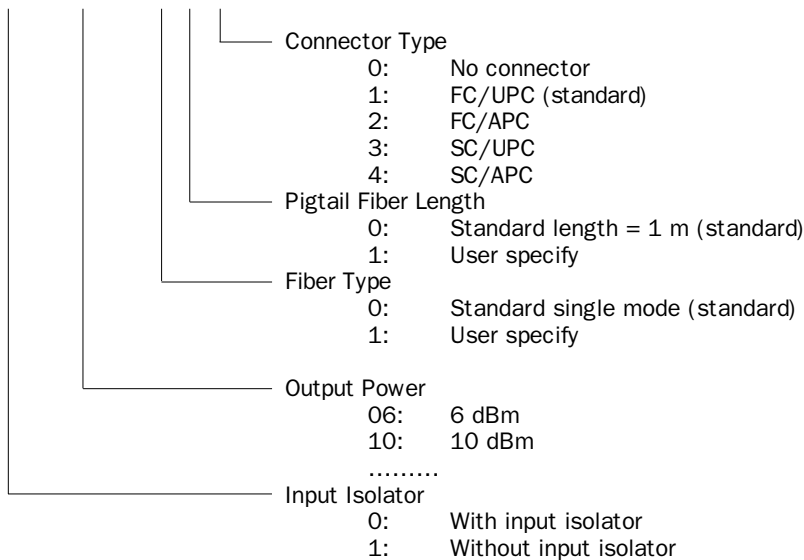




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Ordering Information

G M B 2 X 0 X X - X X X



The following table summarizes the product options and provides examples:

Part Number	Output Power	Nominal Gain
GMB200 06 001	+6 dBm	25 dB
GMB200 08 001	+8 dBm	25 dB
GMB200 10 001	+10 dBm	25 dB
GMB200 11 001	+11 dBm	25 dB
GMB200 12 001	+12 dBm	25 dB
GMB200 13 001	+13 dBm	25 dB
GMB200 14 001	+14 dBm	25 dB
GMB200 15 001	+15 dBm	25 dB
GMB200 16 001	+16 dBm	25 dB
GMB200 17 001	+17 dBm	25 dB

To order or for additional information, please contact us at:

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Safety Information and Handling Precautions

EDFAs are class III laser products. Please read carefully the following safety information prior to handling and installing.



The signal output of the pump laser and EDFA is invisible, yet it can be of high power level and therefore can cause damage to the eyes or skin. Please do not look at the fiber cross section directly without protection devices.



There are precision optical devices inside the EDFA; therefore extreme care should be taken not to impose excess vibration or shaking. Care should also be taken in handling the pigtail fibers since they are easily broken.



There are static sensitive devices inside the EDFA, please make sure proper grounding and electrical power connection.



Do not attempt to open the EDFA by any unauthorized personnel. Please contact Nanovation technical support for assistance.