agere systems

Preliminary Data Sheet
March 2001

1738U-Type Small Form-Factor Erbium-Doped Fiber Amplifier with Uncooled Pump

Compact size and extremely low power consumption make the 1738U-Type EDFA an ideal solution for single-channel, preamplification applications in C-band.

Features

- Economical, compact package: 90 mm x 70 mm x 12 mm
- Extremely low power consumption: <875 mW
- Single-channel amplification in C-band (1528 nm—1562 nm)
- Uncooled 980 nm pump laser module
- Wide operating temperature range: –5 °C to +70 °C
- Optical input tap
- Isolated input and output
- Connectorized single-mode fiber pigtail

Applications

- Single-channel links in:
  - — Metro systems
  - — Long-haul transport
  - — Switch matrix

Description

The 1738U-Type Uncooled Small Form-Factor Erbium-Doped Fiber Amplifier (SFF EDFA) is designed for single-channel amplification in C-band applications. The device is manufactured in an economical SFF package and exhibits extremely low power dissipation over a wide operating temperature range.

Optimum performance and system stability are supported through the use of optical isolation at the input and output. Optical input and output functions are achieved through single-mode fiber pigtails terminated with optical connectors. The EDFA incorporates an optical input tap and monitor photodiode.

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	Min	Max	Unit
Operating Case Temperature Range	T_{OP}	–5	70	°C
Storage Case Temperature Range	Tstg	–40	85	°C
Laser Forward Current	I_F	—	500	mA
Laser Reverse Voltage	V_R	—	2.5	V

Electrical/Optical Operational Characteristics

Table 1. Optical/Electrical Characteristics

Parameter	Symbol	Conditions	Min	Max	Unit
Wavelength Range	λ	—	1528	1562	nm
Optical Output Power	P_{OUT}	P_{IN} = –30 dBm to –8 dBm	–5	—	dBm
Optical Input Power	P_{IN}	—	–30	–8	dBm
Noise Figure	NF	P_{IN} = –30 dBm P_{IN} = –20 dBm P_{IN} = –15 dBm P_{IN} = –8 dBm	— — — —	5.5 5.7 6.8 8.5	dB dB dB dB
Operating Laser Forward Current	$I_{F,OP}$	—	—	350	mA
Operating Laser Forward Voltage	$V_{F,OP}$	—	—	2.5	V
Power Consumption	P_C	—	—	875	mW
ASE Noise Power at Optical Input Port	$P_{ASE,I}$	P_{IN} = –30 dBm, P_{OUT} = –5 dBm	—	–20	dBm
Output Leakage Pump Power	$P_{LEAK,O}$	P_{IN} = –30 dBm, P_{OUT} = –5 dBm, λ = 1562 nm	—	–26	dBm
Reverse Isolation	I_{ISO}	P_{IN} = –30 dBm	25	—	dB
Input Monitor Tap Responsivity	R_{TAP}	—	0.032	0.063	A/W
Polarization Sensitivity	PDG	—	—	0.5	dBp-p
Polarization Mode Dispersion	PMD	—	—	0.5	ps
Optical Input Return Loss	RL_I	—	30	—	dB
Optical Output Return Loss	RL_O	—	30	—	dB

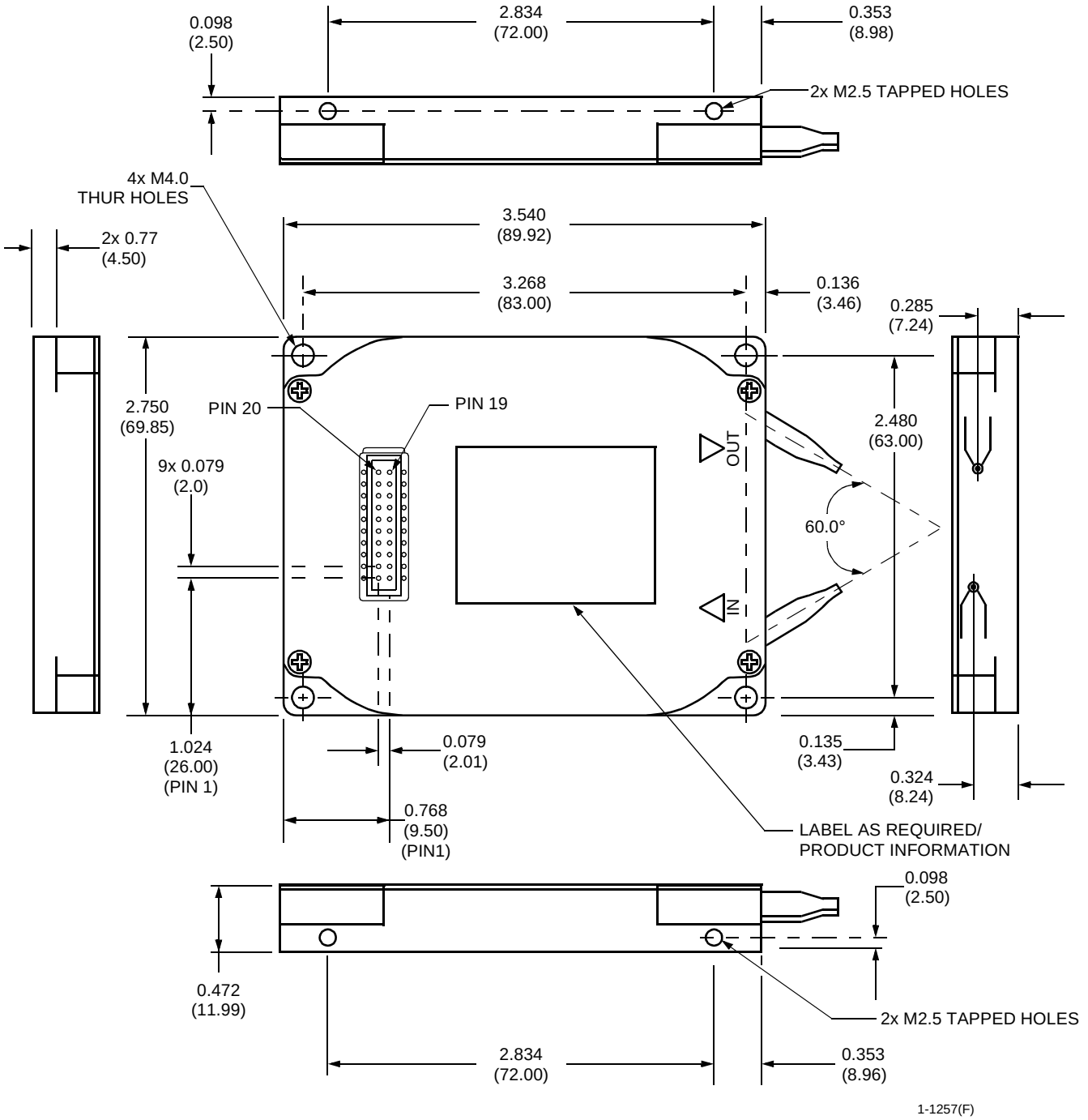
Pin Information

Table 2. Pin Descriptions

Pin	Description	Pin	Description
1	Ground Monitor Photodiode	11	Not Connected
2	Input Monitor Photodiode Cathode	12	Not Connected
3	Input Monitor Photodiode Anode	13	Not Connected
4	Not Connected	14	Not Connected
5	Not Connected	15	Not Connected
6	Thermistor 1	16	Not Connected
7	LD+ (pump anode)	17	Ground Pump
8	LD+ (pump anode)	18	Thermistor 2
9	Pump Monitor Photodiode Cathode	19	LD– (pump cathode)
10	Pump Monitor Photodiode Anode	20	LD– (pump cathode)

Outline Diagram

Dimensions are in inches and (millimeters): 2.75 x 3.54 x 0.47 (70 x 90 x 12).



Laser Safety Information

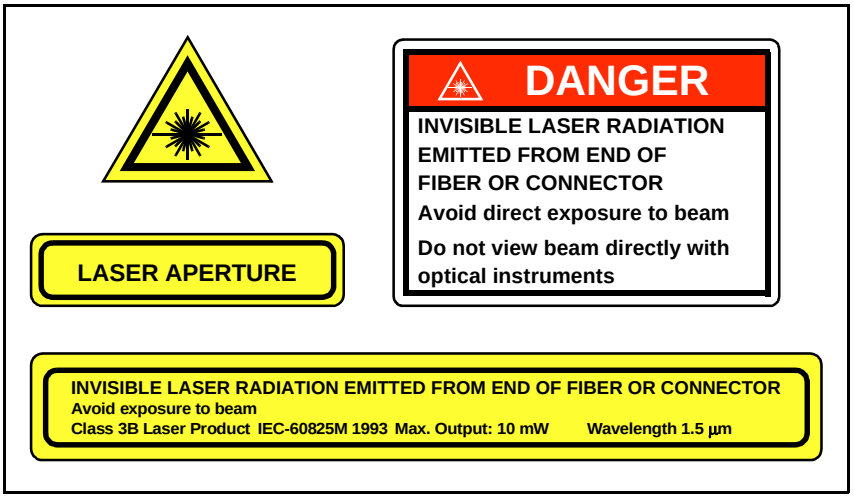
Class IIIb Laser Product

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

This product complies with 21 CFR 1040.10 and 1040.11.
8.8 µm/125 µm single-mode fiber pigtail with connector options
Wavelength = 1.5 µm
Maximum power = 10 mW

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 3. Ordering Information*

Device Code	Connector	Electrical Connection	Comcode
1738UAA	SC/APC	Male 2 x 10 at 2 mm spacing	TBD
1738UBA	LC/APC	Male 2 x 10 at 2 mm spacing	TBD
1738UBA	FC/SPC	Male 2 x 10 at 2 mm spacing	TBD

* For additional ordering information, please contact an Agere Systems account manager at OPTO West, 1-800-362-3891 (for sales staff, please press option 2).

Coding Scheme

Example: 1738U$\alpha\beta\gamma$

α = Optical connector indicator:
- A = SC/APC
- B = LC/APC
- C = FC/APC

β = Electrical connection:
- A = Male 2 x 10 at 2 mm spacing
- B = future use

γ = Future use

For additional information, contact your Agere Systems Account Manager or the following:
INTERNET: **http://www.agere.com**
E-MAIL: **docmaster@micro.lucent.com**
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