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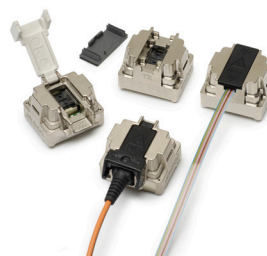
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MiniPOD™

AFBR-812VxyZ, AFBR-822VxyZ

12.5 Gbps/Channel

Twelve Channel, Parallel Fiber Optics Modules



Product Brief

Description

The AFBR-812VxyZ Twelve Channel, Pluggable, Parallel Fiber Optics Transmitter and AFBR-822VxyZ Twelve Channel, Pluggable, Parallel Fiber Optics Receiver are high performance fiber optics modules for short-range parallel multi-lane data communication and interconnect applications. The high density optical modules are designed to operate over multimode fiber systems using a nominal wavelength of 850 nm.

Avago's MiniPOD solution offers system designers two module package options to optimize their cable management and board layout. AFBR-812RxyZ Tx/AFBR-822RxyZ Rx is used with round multi-lane cable assemblies for applications requiring multiple turns of the jumper cable inside the chassis. AFBR-812FxyZ Tx/AFBR-822FxyZ Rx is used with flat ribbon cable assemblies, allowing dense tiling of the modules as the jumper cables can be thread under the dust-cap of the next module. This top mounted optical connection maximizes board layout density by eliminating board space lost to the optical connector and strain relief.

The electrical interface uses a 9×9 MEG-Array connector with 1.27 mm pitch

<http://portal.fciconnect.com/Comergent//fci/drawing/55714.pdf>

The optical interface requires the user to provide a custom designed optical turn 1×12 ribbon cable PRIZM® LightTurn® connector.

The thermal interface provided can require either a user provided heat sink or use of the Avago general purpose clip on heat sink, to maintain the module case temperature to be between 0 °C to 70 °C during continuous operation.

Applications

- 100 GbE and IB-QDR / IB-DDR / IB-SDR and 12.5 Gbps proprietary interconnects
- Data Aggregation, Backplane and Proprietary Protocol and Density Applications
- High Performance and High Productivity computer interconnects
- Switch Fabric interconnects
- Supports Telecom switch, central office, OTN applications

Patent - www.avagotech.com/patents

Features

- 12.5 Gbps with 64b/66b encoded data
- Compliant to IEEE 802.3ba 100GbE (100GBASE-SR10 and nPPI) per lane
- Compatible with 12×QDR Infiniband
- Operates at 10 Gbps per channel with 8b/10b encoded data for IB-QDR application, and at 10.3125 Gbps and up to 12.5 Gbps with 64b/66b encoded data, for 100GbE and proprietary applications
- High Aggregate bandwidth: 150 Gbps per module
- High density footprint: 21.95 mm × 18.62 mm size
- Two package options to optimize internal cable management and system layout
- Separate transmitter and receiver modules
- 850 nm VCSEL array in transmitter; PIN array in receiver
- Links up to 150 m, from 10.3125 Gbps to 11.5 Gbps, and 100 m at 12.5 Gbps with OM4 4700 MHz-km fiber
- Optical Interface: PRIZM® LightTurn® optical turn 1×12 ribbon fiber connector
- Pluggable electrical interface: 9×9 MEG-Array for ease of design and manufacturability
- Low Power consumption: 3.7 W Max per Transmitter/Receiver pair (0 °C to 70 °C operating range)
- Dedicated signals for module address, module reset and host interrupt
- Two Wire Serial (TWS) interface with maskable interrupt for expanded functionality including:
 - Individual channel functions: disable, squelch disable, lane polarity inversion, TX eye margin enable
 - A/D read back: module temperature and supply voltages, per channel laser current and laser power, or received power
 - Status: per channel Tx fault, electrical (transmitter) or optical (receiver) LOS, and alarm flags
 - Programmable equalization integrated with DC blocking caps at transmitter data input
 - Programmable receiver output swing and de-emphasis level
 - Field Upgradable Firmware capability
- 0 °C to 70 °C case temperature continuous operating range. 85 °C supported for short durations

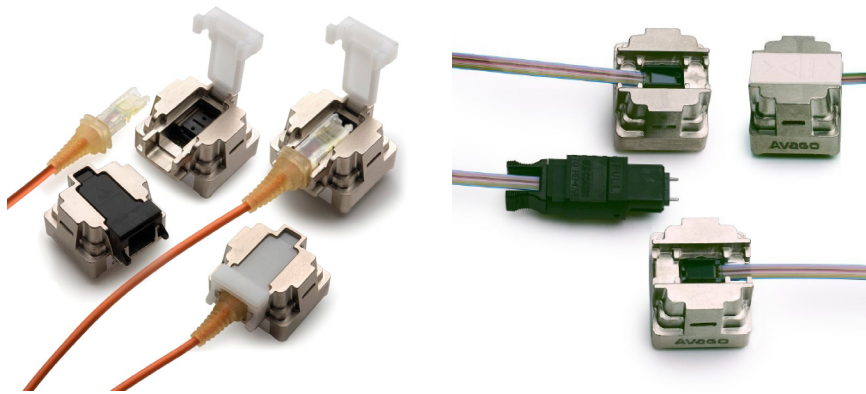


Figure 1. MiniPOD™ Transmitter and Receiver Modules with a) Round Cable and b) Flat Cable: shown with and without dust covers (White = Tx, Black = Rx).

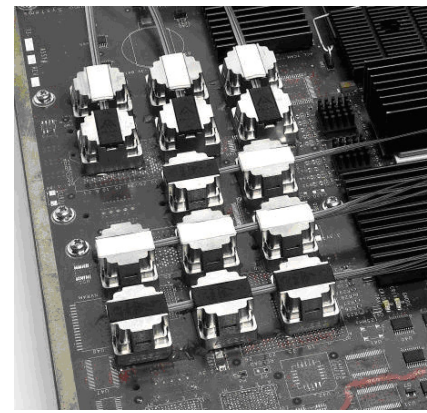


Figure 2. MiniPOD™ Transmitter and Receiver flat ribbon cable modules in a tiled arrangement example.

Part Number Ordering Options

Modules for use with Flat Ribbon Jumper Cable	Transmitter Base Part Number	AFBR-812FxyZ
	Receiver Base Part Number	AFBR-822FxyZ
Modules for use with Round Jumper Cable	Transmitter Base Part Number	AFBR-812RxyZ
	Receiver Base Part Number	AFBR-822RxyZ

Where:

81 = Transmitter; 82 = Receiver

F/R: R = module package for use with round cable;

F = module package for use with Flat ribbon cable

V: R= module package for use with round cable; F = module package for use with Flat ribbon cable

x: N = No Heat Sink, H = Pin Clip-on Heat Sink attached

Y: 1 = 100m

Key Product Parameters

The Avago Technologies MiniPOD™ modules operate at 850 nm and are compliant to the Multi-mode Fiber optical specs in clause 86 and relevant electrical specs in annex 86A of the IEEE 802.3ba specifications.

Parameter	Value	Units	Notes
Data rate per lane	12.5	Gbps	As per 802.3ba: 100GBASE-SR10 and nPPI specifications
Number of operational lanes	12		100GbE operation utilizes the middle ten lanes (Rx and Tx) of the 12 physically defined lanes
Link Length	150	m	To 11.5 Gbps: 4700 MHz-km 50 μm MMF (OM4)
	100	m	2000 MHz-km 50 μm MMF (OM3)
	100	m	To 12.5 Gbps: 4700 MHz-km 50 μm MMF (OM4)
	75	m	2000 MHz-km 50 μm MMF (OM3)
Operating Temperature Range	0-70	°C	Case Temperature
Power Supply Voltage	3.3 and 2.5	V	
Management Interface	Two-Wire Serial		Compatible with industry standard two-wire serial protocol scaled for 1.2 volt LVCMOS. It can also tolerate 3.3V LVTTTL.
Laser Output Power	Class 3R (Class 1M at Fiber Output)		Without optical connector.
Electrical Interface	MEG-Array		1.27mm pitch and 4mm contact mate height
Module Dimensions	18.6 x 22 x 14.5	mm	Flat Ribbon Cable Housing
	18.6 x 22 x 15.6	mm	Round Ribbon Cable Housing

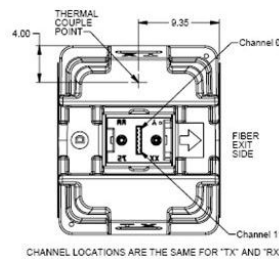
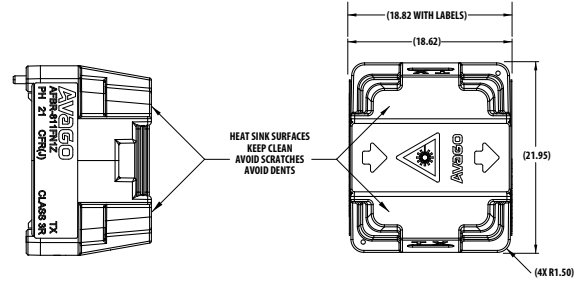
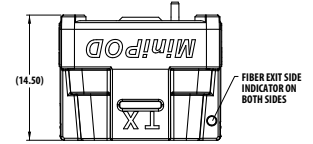
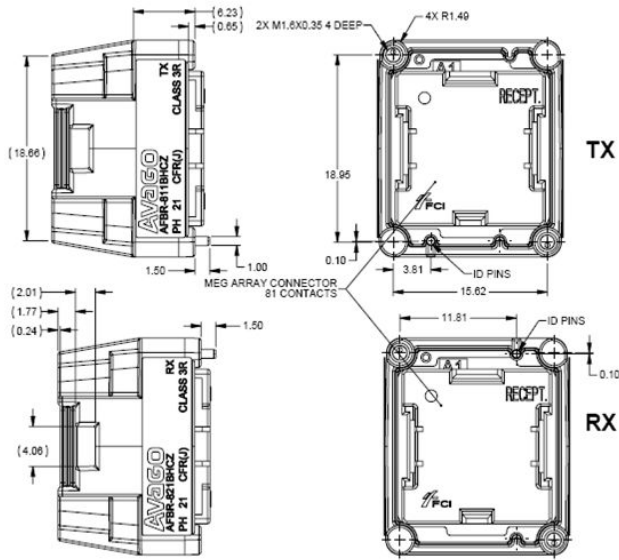


Laser Safety Notice

* A Class 3R laser is considered safe if handled carefully, with restricted beam viewing. With a class 3R laser the maximum permissible exposure can be exceeded, but with a low risk of injury.

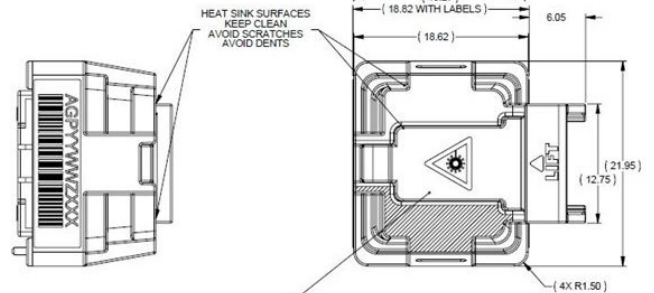
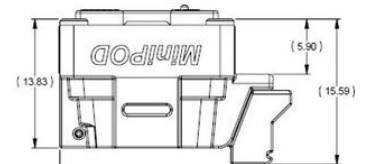
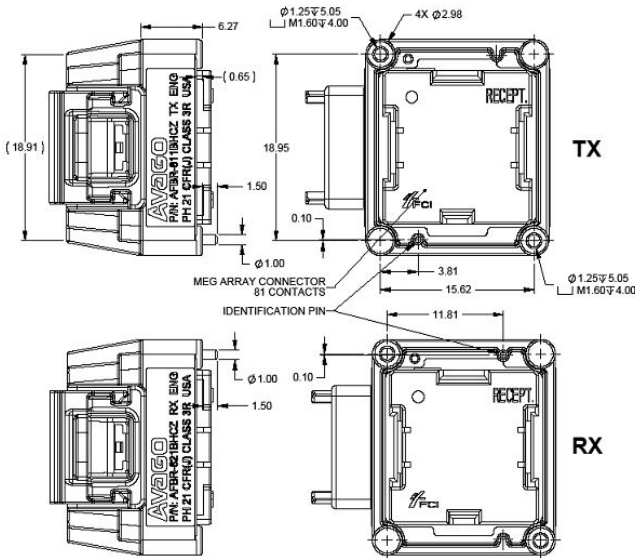
Mechanical Dimensions, Package Outlines

Flat Ribbon Cable Housing

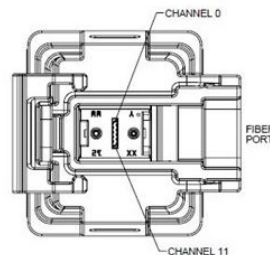


CHANNEL LOCATIONS ARE THE SAME FOR 'TX' AND 'RX'

Round Cable Housing



COVER COLOUR CODE:
TX: WHITE
RX: BLACK



* All dimensions in millimeters: Mechanical dimensions depicted are nominal dimensions and are subject to change

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