Packet-Optical Pluggable EDFA

ECPO-BA-A1
ECPO-PA-A1

The ECPO-BA and ECPO-PA modules are hot-pluggable Erbium Doped Fiber Amplifiers (EDFAs) in a standard QSFP28 package. The modules are designed for packet-optical, low-cost, reduced space, and reduced power Data Center Interconnect (DCI) single-channel and DWDM applications. The modules plug into L2/3 switch QSFP28 ports and completely remove the need of using an expensive open line system.

Product Features

- DWDM amplification in C band
- Ultra compact standard QSFP28 package (LC/UPC connectors)
- Micro processor controlled and management interfaces
- Up to 17 dBm (BA) and 7 dBm (PA) output power
- Low power consumption and excellent noise figure
- Input and output DDM monitoring
- Signal rate independent
- Support both AGC and APC modes
- Telcordia GR-1312-CORE qualified,
- RoHS compliant

Applications

- Power equalization or pre-emphasis amplification for compact metro and DCI networks.

Ordering Information

Part Number	Type	Nominal Gain	Max Output Power	Connector	Temp	DDM	RoHS
ECPO-BA-A1-1717	Booster Amp, type A1	17 dB	17 dBm	Duplex LC/UPC	0~ 70 °C	Supported	Compliant
ECPO-PA-A1-1707	Pre-Amp, type A1	17 dB	7 dBm	Duplex LC/UPC	0~ 70 °C	Supported	Compliant

Optical Specifications

Parameter	Units	Specification			Note
		Min.	Typ.	Max.	
Wavelength Range	nm	1529		1567	48CH
		1545.32		1557.36	16CH
Gain Flatness	dB		3.5	5.0	48CH@Nominal gain
			1	1.5	16CH@Nominal gain
Input Power Range	dBm	-20		0	BA
		-30		-10	PA
Saturated Output Power	dBm		17		BA
			7		PA
Output Power Variation	dB	-0.5		0.5	
Nominal Gain	dB		17		
Gain Range	dB	9		24	
Output Monitor Range	dBm	-10		20	BA
		-20		10	PA
Noise Figure	dB		5.5	6.5	@Nominal gain&Pin=0dBm
Input/Output Port Return Loss	dB	40			
PDG	dB			0.3	
PMD	ps			0.5	
Operation Mode			AGC/APC		Configurable, default AGC
Input LOS Threshold	dBm		-23		BA
			-33		PA
LOS Hysteresis	dB		1		

Control and Electrical Specifications

Parameter	Units	Specification			Note
		Min.	Typ.	Max.	
Input Power Monitor Accuracy	dB	-0.5		0.5	BA@-23~+3 dBm PA@-33~-7 dBm
Output Power Monitor Accuracy	dB	-0.5		0.5	BA@-10~+20 dBm PA@-20~+10 dBm
Gain Accuracy	dB	-0.5		0.5	
Supply Voltage	V	3.15	3.3	3.45	
Power Consumption	W			2.5	Steady state

Absolute Maximum Ratings

Parameter	Units	Specification
Operating Case Temperature	°C	0~+70
Operation Humidity	%RH	5~90
Storage Temperature	°C	-40~85
Storage Humidity	%RH	0~95

Optical Interface

Duplex LC/UPC receptacle

Hardware Connector Pin Definition

PIN	Logic	Symbol	Name/Description	Plug Sequence	Note
1		GND	Module Ground	1	1
2		Reserved	No connect in the module	3	
3		Reserved	No connect in the module	3	
4		GND	Module ground	1	
5		Reserved	No connect in the module	3	
6		Reserved	No connect in the module	3	
7		GND	Module ground	1	
8	LVTTL-I	ModSelL	Module select	3	
9	LVTTL-I	ResetL	Module reset, internal pullup 10kΩ	3	
10		VCC3	+3.3 V power supply	2	
11	OC-I	SCL	I2C serial interface clock	3	3
12	OC-I/O	SDA	I2C serial interface data line	3	3
13		GND	Module ground	1	
14		Reserved	No connect in the module	3	
15		Reserved	No connect in the module	3	
16		GND	Module ground	1	
17		Reserved	No connect in the module	3	
18		Reserved	No connect in the module	3	
19		GND	Module ground	1	
20		GND	Module ground	1	
21		Reserved	No connect in the module	3	
22		Reserved	No connect in the module	3	
23		GND	Module ground	1	
24		Reserved	No connect in the module	3	
25		Reserved	No connect in the module	3	
26		GND	Module ground	1	
27	LVTTL-O	ModPrsL	Module present internal connect to GND	3	
28	LVTTL-O	IntL/INLOS	Interrupt. optionally configurable as INLOS, EDFA loss of input signal	3	
29		VCC3	+3.3 V power supply	2	
30		VCC3	+3.3 V power supply	2	
31	LVTTL-I	LPMode/Tx Dis	Low power mode. Optionally configurable as TxDis via the management interface (SFF-8636)	3	
32		GND	Module ground	1	
33		Reserved		3	
34		Reserved		3	
35		GND	Module ground	1	
36		Reserved		3	
37		Reserved		3	
38		GND	Module ground	1	

Note

1. GND is the symbol for signal and supply (power) common for the module. All are common within the module and all module voltages are referenced to this potential unless otherwise noted. Connect these directly to the host board signal-common ground plane.
2. An alarm condition is present when Pin 4 changes from the normal condition of LVTTL high to a condition LVTTL low. The alarm condition can be for Output Power, Pump Laser Bias, Case Temperature and/or Power Supply Voltage. Read specific alarm condition through I2C interface.
3. Pulled up in the module to a voltage between 3.15 V and 3.45 V.
4. Voltages applied to this pin do not impact operation or performance of the module.
5. Connected in series with a capacitor (0.1uF) and resistor (51Ω) to GND in the module.

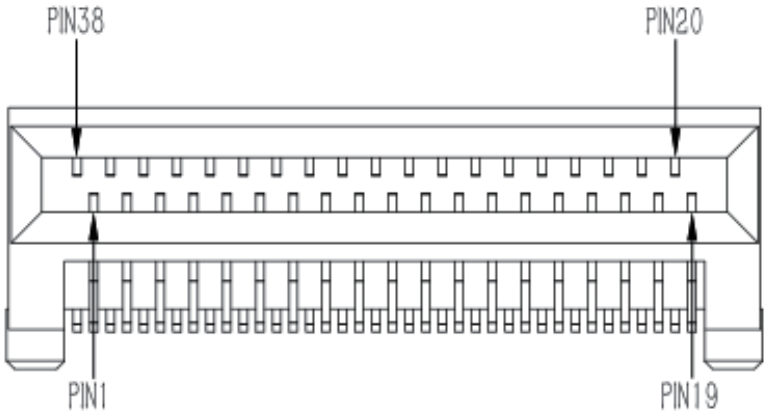

Diagram of 38-position Host Socket Connector for QSFP28, Front View

Digital Diagnostic Monitoring (DDM) Functions

As defined by the SFF-8636, Edgecore's Packet-Optical EDFA modules provide digital diagnostic monitoring (DDM) functions and alarm/warning flags via a 2-wire serial interface, which allows real-time access to the operating parameters including temperature, supply voltage, pump bias current, optical input power, optical output power, and gain report.

Warranty

Please check www.edge-core.com for the warranty terms in your country.

For More Information

To find out more about Edgecore Networks Corporation products and solutions, visit www.edge-core.com.

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Edgecore Networks Corporation is in the business of providing innovative network solutions. In the service provider network, in the data center or in the cloud, Edgecore Networks Corporation delivers the software and systems that transform the way the world connects. Edgecore Networks Corporation serves customers and partners worldwide. Additional information can be found at www.edge-core.com.

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