

SFP⁺-EDFA

Plug and Play EDFA Series



FOA

(SFP⁺-Optical Amplifier)

SFP⁺ Compatible EDFA

The world first plug and play SFP⁺-EDFA, FOA is a full-functioning EDFA module with control circuitry packaged inside. It is totally compatible with conventional SFP⁺ optical transceiver in respect of size and pin-map. Due to the small size and easy installation, the FOA is designed for amplification of optical signals at C-band in fiber optic communications system in 5G network, high speed datacenter, core networks, SDN and CATV networks. The FOA provides very stable output power up to +17 dBm and noise figure of 6 dB in C-band over wide operating temperature range. FOA size (14 x 72 x 13.1 mm) is 15mm longer than conventional SFP⁺ size (14 x 57 x 13.1 mm), combined with extremely low power consumption, allows the FOA to be highly suitable for applications of power equalization or pre-emphasis in densely packaged telecom systems, especially for densely integrated high speed transmitter or receiver card.

Features

- Conventional SFP⁺ compatible size and pin map
- Space efficiency using remaining slot (No extra equipment required)
- EDFA module including micro process control circuit
- Uncooled 980 nm pump laser module
- Extremely low heat generation
- Saturation output power up to +17dBm
- Selectable output power
- Wide input dynamic range
- Significantly low power consumption
- Control & monitoring by I2C
- LVTTTL alarm
- Single + 3.3 V power supply

Applications

- 5G network
- Data center network
- 100G or higher speed channel optical amplifier
- Reach extension for L2/L3 ethernet switch
- Power boosting and pre-emphasis optical amplifier for DWDM metro system
- ROADM system



Optical Fiber Amplifier

FOA (SFP+ Optical Amplifier)

Optical Characteristics

Parameter	Symbol	Booster Specification			Pre-Amp. Specification			Unit
		Min.	Typ.	Max.	Min.	Typ.	Max.	
Signal wavelength range	λ	1527.99	-	1568.36	1527.99	-	1568.36	nm
Input power	P_{IN}	-20	-	+5	-27	-	-10	dBm
Saturation output power	P_{OUT}	-	17 ⁽¹⁾	-	-	10 ⁽²⁾	-	dBm
Gain	G	-	17 ⁽¹⁾	-	-	20 ⁽²⁾	-	dB
Gain flatness	G_{FLAT}	-	5.5	6.5	-	5.5	6.5	dB
Noise figure	NF	-	6.0	7.0	-	6.5	7.5	dB
Optical isolation	ISO	20	-	-	20	-	-	dB
Return loss	RL	40	-	-	40	-	-	dB
Polarization mode dispersion	PMD	-	-	0.5	-	-	0.5	ps
Polarization dependent gain	PDG	-	-	0.5	-	-	0.5	dB
Control scheme		APC or AGC with FLS ⁽³⁾			APC or AGC with FLS ⁽³⁾			

- (1) Input power = 0 dBm, set gain = 17dB, full wavelength range
 (2) Input power = -10 dBm, set gain = 20dB, full wavelength range
 (3) FLS : Forced Laser Shutdown

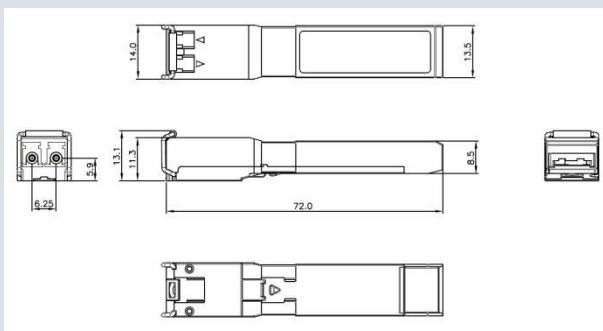
Electric & Environmental Characteristics

Parameter	Specification
Power supply voltage	+3.3 V
Interface	I2C
Alarm	LVTTTL
Operating case temperature	-5 ~ 75 °C
Storage temperature	-40 ~ 85 °C
Storage humidity	5 ~ 85 % R.H
Power consumption*	1.8 W

* in max. input power and full temperature range

Mechanical Dimension

(WxLxH = 14 X 72 X 13.1 [mm])



Control and Monitoring Functions

Parameter	Specification
Control scheme	APC or AGC with FLS
Monitor	IPM / OPM / LD-Bias / Case-Temp
Alarm	LOS / LOP / LD-Bias / Gain

Ordering Information (Example: OFA-TCF-17AP, TDM C-band SFP+ type 17dBm output power EDFA with APC)

O	F	A	-	T	C	F	-	17AP	-	G17 *
	F: EDFA			T: TDM	C: C-band	F: SFP+ -EDFA		17AP: 17dBm Pout		
	S: SOA			C: CATV		Q: QSFP-EDFA		14AP: 14dBm Pout		
				W: DWDM		S: QSFP-SOA		10AG: 10dBm Pout	Gain 20dB	
						X: XFP-EDFA		05AG: 5dBm Pout	Gain 15dB	
								AP: Automatic Power Control	* Only available for AGC	
								AG: Automatic Gain Control		

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