

Optical Fiber Amplifier  
**QOA**  
**QSFP-EDFA**  
**Pluggable EDFA Series**

The world first pluggable QSFP-EDFA, QOA is a full-functioning EDFA module with control circuitry packaged inside. It is totally compatible with conventional QSFP optical transceiver in respect of size and pin-map. Due to the small size and easy installation, the QOA is designed for amplification of optical signals at C-band in fiber optic communications system in high speed datacenter, core networks, access and CATV networks. The QOA provides very stable output power up to 16 dBm and noise figure of 6 dB in C-band over wide operating temperature range. Ultra compact size (18.4 x 78 x 8.5 mm), combined with extremely low power consumption, allows the QOA 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.



QSFP Compatible EDFA

Features

- Conventional QSFP compatible size and pin map
- Cost efficiency with pluggable type
- Space efficiency using remaining slot (No extra equipment required)
- EDFA module including micro process control circuit
- Uncooled 980 nm pump laser module
- Extremely lower the heat generation
- High saturation output power up to 16dBm
- Selectable Output Power
- APC (Automatic Power Control; Default) or AGC(Automatic Gain Control; Optional) with FLS (Forced Laser Shutdown)
- Control & monitoring by I2C
- LVTTTL Alarm
- Single + 3.3 V power supply

Applications

- High Speed Data Center Network
- 100G or higher speed Channel Amplifier
- Reach Extension for L2/L3 Ethernet Switch
- RF over Fiber Network
- Power Boosting and Pre-emphasis Amplifier for DWDM Metro System
- ROADM System

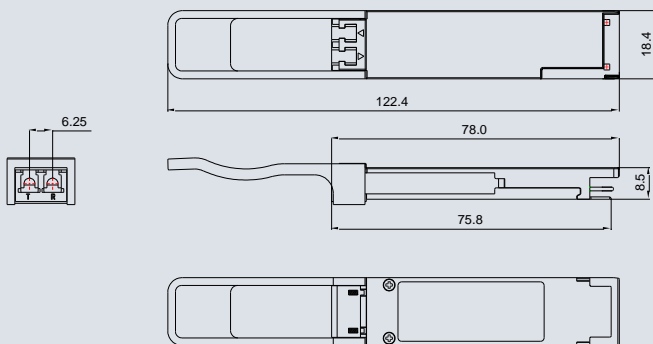
# Optical Fiber Amplifier

## QOA (QSFP Optical Amplifier)

### Optical Characteristics

Parameter	Symbol	Specification			Unit
		Min.	Typ.	Max.	
Signal wavelength range	$\lambda$	1528.77	-	1563.45	nm
# of channels	-	-	-	16	
Input power	$P_{IN}$	-12	-	1	dBm
Saturation Output power <sup>(1)</sup>	$P_{OUT}$	-	16	-	dBm
Gain flatness <sup>(1)</sup>	$G_{FLAT}$	-	-	1 Note.1	dB
Average Gain	$G_{AVG}$	-	15	-	dB
Noise figure <sup>(1)</sup>	NF	-	7.0	8.0	dB
Optical isolation	ISO	20	-	-	dB
Return loss	RL	40	-	-	dB
Polarization mode dispersion	PMD	-	-	0.5	ps
Polarization dependent gain	PDG	-	-	0.5	dB
Control Scheme			AGC		

### Mechanical Dimension (WxLxH = 18.4 X 78 X 8.5 [mm])



- (1) Optical Input Power = 1 dBm, Set Gain = 15dB  
 (2) Note.1 Gain Flatness Guarantee Wavelength Range = 1545.32 ~ 1557.36nm

### Electric & Environmental Characteristics

Parameter	Specification
Power supply voltage	+3.3 V
Interface	I2C
Alarm	LVTTL
Operating case temperature	-5 ~ 75 °C
Storage temperature	-40 ~ 85 °C
Storage humidity	5 ~ 85 % R.H
Power consumption*	1.5 W

\* in normal input power and full temperature range

### 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 / Case-Temp

\* FLS: Forced Laser Shutdown

### Ordering Information

O	F	A	-	T	C	Q	-	xx	yy
	F : EDFA S : SOA			T : TDM W : DWDM C : CATV	C : C-band L : L-band O : O-band	Q : QSFP EDFA S : QSFP SOA X : XFP EDFA		Max. Output Power 17 : 17dBm	Control Methode AG : Automatic Gain Control AP : Automatic Power Control VG : Variable Gain Control

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