

## Semiconductor Optical Amplifier

# QSA

## QSFP-SOA

### Pluggable SOA



QSFP Compatible SOA

The world first pluggable QSFP-SOA, QSA is a full-functioning SOA 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 QSA is designed for amplification of optical signals at 1310nm in fiber optic communications system in high speed datacenter, core networks, access and CATV networks. The QSA provides very stable output power up to +7.0 dBm and noise figure of Typ. 7 dB in O-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 QSA 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 QSFP compatible size and pin map
- Cost efficiency with pluggable type
- Space efficiency using remaining slot (No extra equipment required)
- QSA module including micro process control circuit
- 1310 nm SOA module
- Extremely lower the heat generation
- High saturation output power up to 6.5dBm
- Selectable Output Power
- APC (Automatic Power Control; Default) 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
- PON System
- CATV Networks



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# QSA (QSFP Semiconductor Optical Amplifier)

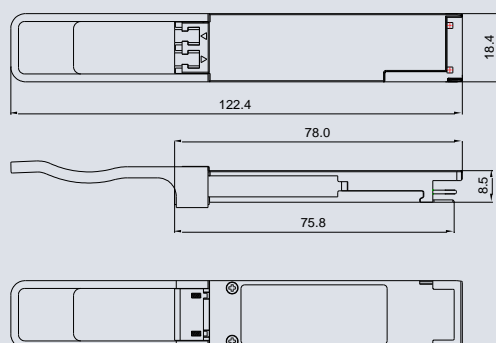
### Optical Characteristics

Parameter	Symbol	Specification			Unit
		Min.	Typ.	Max.	
Signal wavelength range	$\lambda$	1270	-	1330	nm
# of channels	-	1	-	4	
Input power	$P_{IN}$	-25	-	0	dBm
Saturation Output power <sup>(1)</sup>	$P_{OUT}$	-	7.0	-	dBm
Optical Gain <sup>(2)</sup>	G	12	-		dB
Noise figure <sup>(1)</sup>	NF	-	7.0	9.0	dB
Optical isolation	ISO	20	-	-	dB
Return loss	RL	40	-	-	dB
Polarization dependent gain	PDG	-	-	2.0	dB
Control Scheme			APC		

(1) Optical Input Power = - 5.0 dBm

(2) Optical Input Power = - 20.0 dBm

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



### 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*	1.8 W

\* in normal input power and full temperature range

### Control and Monitoring Functions

Parameter	Specification
Control Scheme	APC with FLS*
Monitor	OPM / LD-Bias / Case-Temp
Alarm	LOP / LD-Bias / Case-Temp

\* FLS: Forced Laser Shutdown

### Ordering Information (OSA-TOQ-07AP or OSA-TOQ-20AG)

O	F	A	-	T	C	Q	-	xx	yy
	F : EDFA	T : TDM	C : C-band	Q : QSFP EDFA	Max. Output Power	Control Methode			
	S : SOA	W : DWDM	L : L-band	S : QSFP SOA	07 : 7dBm	AG : Automatic Gain Control			
		C : CATV	O : O-band	X : XFP EDFA	Max. Gain	AP : Automatic Power Control			
				H : Half MSA	20 : 20dB	VG : Variable Gain Control			

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