

SPA4300-GM02 Series
Single Channel Gain Block
MSA Compact EDFA Module

Technical Specification

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1.0 PRODUCT DESCRIPTION

SPA4300-GM02 is a gain block optical Pre-amplifier EDFA module, adopts 70×90×12mm MSA compact package. It is featured with high reliability, superior optical performance and compact reasonable configuration by Industrial standard, creating the most flexible and variable low-cost amplifier in the market. This module is suitable for multiple network application, especially the application that requires 40GB/S transmission speed.

SPA4300-GM02 gain block optical Pre-amplifier EDFA module adopts the standard version of single channel and narrow bandwidth. The module uses high performance pump laser that with cooling function. A standard 20-PIN electric connector (HIROSE DF11-20DP-2DSA) allows the simple electric connection.

SPA4300-GM02 gain block optical Pre-amplifier EDFA module, main installed before the receiver to improve receiver sensitivity and extend signal transmission distance

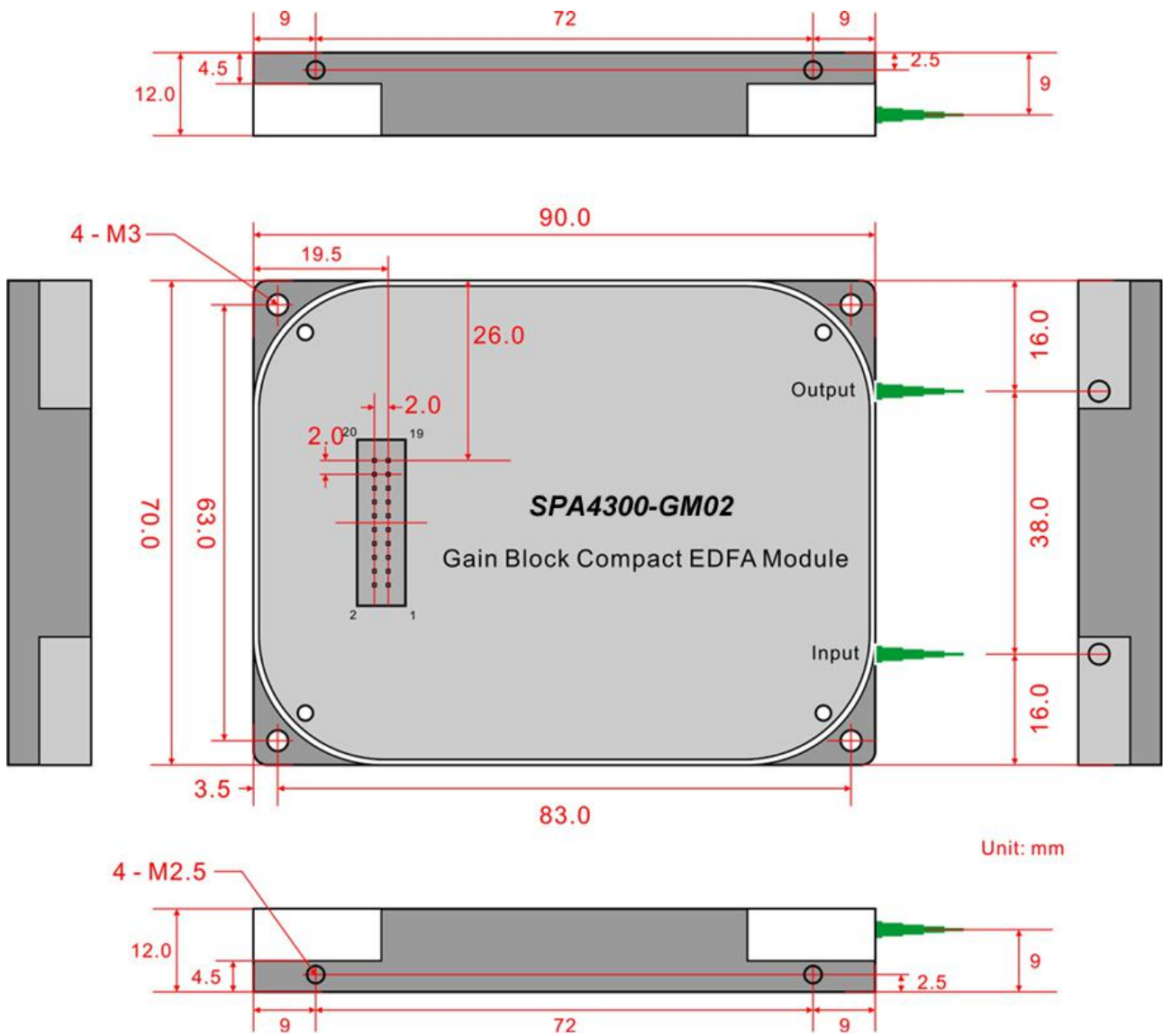
2.0 PRODUCT FEATURE

- Gain Block
- Wide operating temperature range
- 20dB, 25dB, 30dB, 35dB, 40dB, Gain optional
- MSA compact package (70×90×12mm)
- Low power consumption
- Low cost

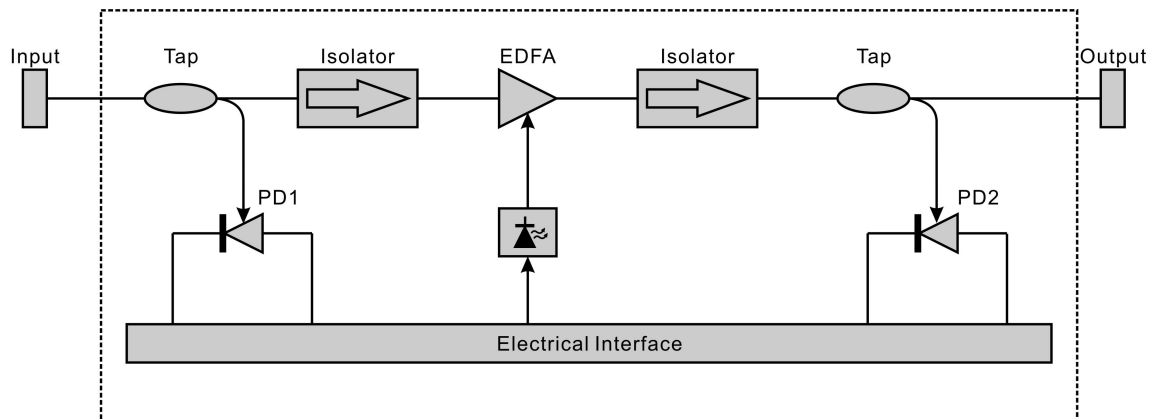
3.0 MAIN APPLICATION

- Metropolitan and access networks
- CATV
- Single-channel or DWDM sub-systems
- Optical Add/Drop and Cross-Connects
- Optical receiver optical power amplification
- Power equalization and flexible pre-emphasis

4.0 Dimensions



5.0 Functional diagram



6.0 Electrical 20-Pin Assignments

Pin	Definition	Pin	Definition
1	Ground, optical power monitor PD	2	Input monitor PD cathode (-)
3	Input monitor PD anode (+)	4	Output monitor PD cathode (-)
5	Output monitor PD anode (+)	6	Thermistor
7	Pump laser diode anode (+)	8	Pump laser diode anode (+)
9	Pump backfacet monitor PD cathode (-)	10	Pump backfacet monitor PD anode (+)
11	TEC anode (+)	12	TEC anode (+)
13	TEC anode (+)	14	TEC cathode (-)
15	TEC cathode (-)	16	TEC cathode (-)
17	Ground, pump laser diode	18	Thermistor
19	Pump laser diode cathode (-)	20	Pump laser diode cathode (-)

Note 1: Electrical connection is made via a male 20 PIN connector (2 rows of 10, pin pitch 2.0mm, 0.5×0.5mm), Samtec TMMH-110-01-G-DV-EC or equivalent.

Note 2: The gain block case is isolated with the pump laser diode case.

7.0 Technique index

7.1 Optic feature & General feature

Performance			Min.	Typ.	Max.	
Optic feature	Operating wavelength range		(nm)	1528		1564
	Input optical power (Pin)		(dBm)	-45	-30	-10
	Signal gain @ Pin = - 30dBm	SPA4320-GM02	(dB)	20		
		SPA4325-GM02		25		
		SPA4330-GM02		30		
		SPA4335-GM02		35		
		SPA4340-GM02		40		
	Noise figure@Pin=-30dBm		(dB)		4.0	4.5
	Polarization dependent gain (PDG)		(dB)			0.3
	Polarization mode dispersion (PMD)		(ps)			0.3
	Polarization dependent loss(PDL)		(dB)			0.3
	Pump power leakage		(dB)			-30
	Output & input isolation		(dB)	30		
Return loss	UPC	(dB)	45			
	APC		55			
General feature	Fiber type			SMF-28, 900μm loose tube		
	Connector type			LC,SC, FC,		
	Connector polish			UPC, APC		
	Operating temp.		(°C)	-5		70
	Store temp.		(°C)	-40		+85
	Relative humidity		(%RH)	+5		+95
	Size(W) × (L) × (H)		(mm)	40× 70 × 12		

Note: 1. Optional built-in filter to reduce the noise figure of EDFA, such as adopt C34 (1550.12nm) , applicable SDH network

7.2 Input and Output Monitor PD Specifications

Performance		Min.	Typ.	Max.
Input monitor PD responsivity	($\mu\text{A}/\text{mW}$)	30	-	75
Output monitor PD responsivity	($\mu\text{A}/\text{mW}$)	4.0	-	25
Monitor PD reverse voltage	(V)	-	5	20
Monitor PD forward current	(mA)	-	-	10
Dark current (-5V, 25°C)	(nA)	-	-	1

7.3 Pump Laser Specifications

Performance		Min.	Typ.	Max.
Pump laser threshold current	(mA)	-	40	55
Pump laser operating current (BOL)	(mA)	-	-	900
Pump laser operating voltage	(V)	-	-	2.6
TEC current (max. $\Delta T=50^\circ\text{C}$)	(A)	-	1.5	1.7
TEC voltage (max. $\Delta T=50^\circ\text{C}$)	(V)	-	-	2.6
Thermistor resistance (25°C)	(K Ω)	9.5	10	10.5

8.0 PRODUCT SERIES

Model	Gain (dB) (Pin=-30dBm)	Output power (dBm) (Pin=-30dBm)	Noise figure (dB)	Filter
SPA4320-GM02/S-000	20	-10	<4.5	Without filter
SPA4325-GM02/S-000	25	-5	<4.5	
SPA4330-GM02/S-000	30	0	<4.5	
SPA4335-GM02/H-000	35	5	<4.5	
SPA4325-GM02/S-XXX	25	-5	<4.0	With filter
SPA4330-GM02/S-XXX	30	0	<4.0	
SPA4335-GM02/H-XXX	35	5	<4.0	
SPA4340-GM02/H-XXX	40	10	<4.0	

9.0 ORDER INFORMATION

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Product series	Optical bandwidth	Product Type	Gain	Module Type	Exterior	Type	Built-in filter	Connector	Fiber length
Single-channel PA EDFA Module	4 C-Band (1528~1564)	3 PA	15 15dB	GM Gain block module	01 40 × 70 × 12	S Standard	000	LA LC/APC	05 0.5m
			20 20dB		02 70 × 90 × 12		C34 1550.12nm Applicable SDH network		08 0.8m
		FM Full function module	25 25dB	H Low noise, high gain	05 125 × 150 × 22	CXX 100GHz ITU Standard wavelength		SA SC/APC	10 1.0m
			30 30dB				SP SC/UPC		
			35 35dB					FA FC/APC	
			40 40dB				FP FC/UPC		
			HXX 50GHz ITU Standard wavelength					CBL 1528~1543nm	
			CRe 1547~1563nm						