OPTICAL AMPLIFIERS SELECTION GUIDE

Finisar offers a wide selection of optical amplifiers, ranging in optical and electrical specification parameters, and in a variety of form factors and communications interfaces.

This selection guide seeks to help end-users to identify the amplifier(s) that best suit their application needs by providing an “at a glance” comparison of the specification parameters.

The part numbers referenced in the following tables represent a small portion of the full capabilities and offerings of our optical amplifier families. These tables include only the products that are available for purchase by any customer. Customized solutions for special applications are available upon request.

I Ultraspan® EDFAs

Finisar's UltraSpan® family of optical amplifiers offer the power of optical amplification in a user-friendly, network-interfaced, rack-mountable platform. They are ideal for field deployment and integration in new or existing network elements. Ultraspan amplifiers can provide stand-alone amplification or work in conjunction with existing systems, complementing or enhancing their performance capabilities.

Parameter	P/N➔	FOA-M2200PB-EFG1C-AA015		FOA-R2100PB-EPB2C-AA010		FOA-M2000PB-EFG2C-AA066	
	Unit	Specification		Specification		Specification	
		Min	Max	Min	Max	Max	Max
Form Factor	mm	1RU Rack Mount 442x240x43.6		1RU Rack Mount 442x240x43.6		1RU Rack Mount 442x240x43.6	
Amplifier Type	-	WDM FGA		WDM FGA PowerBooster with OSC EDFA		Dual WDM FGA EDFAs	
Operating Wavelength Range	nm	1529.1	1564.2	1529.1	1564.2	1530	1564
Input Power Range	dBm	-15	12	-5	21	-35	3
Output Power Range	dBm	-2	18	5	26	-8	20
Saturated Output Power	dBm	17		25.5		20	
Settable Gain Range	dB	5	18	5.5	6.5	17	29
Optimal Flat Gain	dB	17		6		23	
Gain/Power Setting Accuracy	dB	-0.5	+0.5		±0.5		±0.5
Gain Flatness vs. Wavelength	dB		±0.6		±0.75		±0.6
Dynamic gain tilt	dB/dB		0.85	N/A			0.9
Gain / Power Stability	dB		±0.1		±0.1		±0.1
Noise Figure (at OFG or equivalent)	dB		6.5		9		6
Return loss	dB	40		40		40	
PDG	dB		0.3		0.4		0.3
PMD	ps		0.3		0.2		0.3
Multi-Path Interference	dB		-40		-40		-40
Laser Safety Classification	-	Class 1M		Class 1M with APR		Class 1M	
Optical Connectors	-	2: In, Out		3: In, Out, Monitor Out		2: In, Out	
Operating Modes	-	AGC, APC, Manual		APC, Manual		AGC, APC, Manual	
Power Supply Voltage	V	110 (AC)	240 (AC)	-76 (DC)	-36 (DC)	-76 (DC)	-36 (DC)
Power Consumption	W		40		55		50
Operating Case Temperature	℃	-5	55	-5	55	-5	55
Communications Protocol	-	Ethernet and RS-2132		Ethernet and RS-2132		Ethernet and RS-2132	
Interface	-	SNMP v2 or web-based GUI		SNMP v2 or web-based GUI		SNMP v2 or web-based GUI	
Ethernet cable P/N	-	18-10-0138R		18-10-0138R		18-10-0138R	
Power Cable P/N	-	1133098 (US AC) 1133099 (EU AC)		18-10-0089R		18-10-0089R	
19" Brackets Kit P/N	-	50-60-0102-01R		50-60-0102-01R		50-60-0102-01R	
21" Brackets Kit P/N	-	50-60-0103-01R		50-60-0103-01R		50-60-0103-01R	
23" Brackets Kit P/N	-	50-60-0104-01R		50-60-0104-01R		50-60-0104-01R	
ETSI Brackets Kit P/N	-	50-60-0105-01R		50-60-0105-01R		50-60-0105-01R	

II Ultraspan Raman and ROPA

Finisar's Ultraspan® family of Raman and ROPA optical amplifiers offer the power of optical amplification in a user-friendly, network-interfaced, rack-mountable platform ideal for field deployment and integration in new or existing network elements. Ultraspan amplifiers can provide stand-alone amplification or work in conjunction with existing systems, complementing or enhancing their performance capabilities.

		1RU Platform						3RU Platform							
Parameter	**P/N➔**	**FOA-R9100PR-RBW2C-AA003**		**FOA-R9100PR-RBW3C-AA004**		**FOA-R9200PR-RFW3C-AA037**		**FOA-R9400PR-RPA3C-AA001**		**FOA-R9100SA-RBW6C-AA016**		**FOA-R9100SA-RBW6C-AA015**		**FOA-R9400SA-RPA6C-AA017**	
	Unit	**Specification**		**Specification**		**Specification**		**Specification**		**Specification**		**Specification**		**Specification**	
		Min	**Max**	**Min**	**Max**	**Min**	**Max**	**Min**	**Max**	**Min**	**Max**	**Min**	**Max**	**Min**	**Max**
Form Factor	mm	1RU Rack Mount 442x240x43.6		1RU Rack Mount 442x240x43.6		1RU Rack Mount 442x240x43.6		1RU Rack Mount 442x240x43.6		3RU Rack Mount 448x239x132.4		3RU Rack Mount 448x239x132.4		3RU Rack Mount 448x239x132.4	
Amplifier Type	-	Counter-Propagating Raman Amplifier		Counter-Propagating Raman Amplifier		Co-Propagating Raman Amplifier		ROPA Pump Unit		Counter-Propagating Raman Amplifier		Co-Propagating Raman Amplifier		ROPA Pump Unit	
Operating Wavelength Range	nm	1528	1567	1529	1564	1529.2	1564.2	1533	1565	1528.2	1566.5	1528.2	1566.5	1532	1566.5
Total Pump Power	mW	450	490	680	710	680	710	800	840	1600	2000	1600	2000	1600	2000
Input Signal Power Range (pumps off)	dBm	-45	-10	-44	5	-10	26	N/A		-50	5	-10	23	-45	5
Signal Insertion Loss	dB		1.6		1.8		1.8		1.6		1.8		2		2
Nominal Gain for G.652	dB		10		14.5		9	N/A			30		27	22	
Nominal Gain for Leaf	dB		13		17.5		10	N/A			N/A		N/A	N/A	
Nominal Gain for TrueWave	dB		15		20		11.5	N/A			N/A		N/A	N/A	
Nominal Gain for TeraLight	dB		14		19		N/A	N/A			N/A		N/A	N/A	
Spectral Gain Flatness	dB		1		1.2		1.2	N/A		1.5	2.0		N/A	N/A	
Effective Noise Figure	dB		-1		-0.5		N/A	N/A		-4	-2.5		N/A	N/A	
OSC Wavelength Range	nm	1500	1520	1500	1520	1500	1520	1500	1520	1500	1520	1500	1520	1500	1520
Raman Gain at OSC Wavelength	dB	5		10		6		N/A		15		12		N/A	
OSC Insertion Loss	dB		2.5		1.8		1.8		1.8		1.8		1.8		1.8
Return loss	dB	40		40		40		40		40		40		40	
PDL	dB		0.15		0.15		0.15		0.15		0.2		0.2		0.2
PDG	dB		0.6		0.2		0.2	N/A			0.3		0.3		0.3
PMD	ps		0.2		0.2		0.2		0.2		0.2		0.2		0.2
RIN (any pump)	dB/Hz		-110		-110		-115		-110		-110		-110		-110
Laser Safety Classification	-	Class 1M		Class 1M with APR		Class 1M with APR		Class 1M with APR		Class 1M with APR		Class 1M with APR		Class 1M with APR	
Optical Connectors	-	4: In, Out, Monitor in, Monitor Out		3: In, Out, Monitor Out		3: In, Out, Input Monitor		3: In, Out, Output Monitor		3: In, Out, Output Monitor		3: In, Out, Output Monitor		3: In, Out, Output Monitor	
Operating Modes	-	AGC, Manual		AGC, Manual		AGC, Manual		Manual		AGC, Manual		AGC, Manual		Manual	
Power Supply Voltage	V	-76 (DC)	-36 (DC)	-76 (DC)	-36 (DC)	-76 (DC)	-36 (DC)	-76 (DC)	-36 (DC)	-76 (DC)	-36 (DC)	-76 (DC)	-36 (DC)	-76 (DC)	-36 (DC)
Power Consumption	W		55		55		55		155		155		155		155
Operating Case Temperature	℃	-5	55	-5	55	-5	55	-5	55	-5	55	-5	55	-5	55
Communications Protocol	-	Ethernet and RS-2132		Ethernet and RS-2132		Ethernet and RS-2132		Ethernet and RS-2132		Ethernet and RS-2132		Ethernet and RS-2132		Ethernet and RS-2132	
Interface	-	SNMP v2 or web-based GUI		SNMP v2 or web-based GUI		SNMP v2 or web-based GUI		SNMP v2 or web-based GUI		SNMP v2 or web-based GUI		SNMP v2 or web-based GUI		SNMP v2 or web-based GUI	
Ethernet cable P/N	-	18-10-0138R		18-10-0138R		18-10-0138R		18-10-0138R		18-10-0138R		18-10-0138R		18-10-0138R	
Power Cable P/N	-	18-10-0048R		18-10-0048R		18-10-0089R		18-10-0089R		18-10-0089R		18-10-0089R		18-10-0089R	
19" Brackets Kit P/N	-	50-60-0102-01R		50-60-0102-01R		50-60-0102-01R		50-60-0102-01R		50-60-0102-01R		50-60-0102-01R		50-60-0102-01R	
21" Brackets Kit P/N	-	50-60-0103-01R		50-60-0103-01R		50-60-0103-01R		50-60-0103-01R		50-60-0103-01R		50-60-0103-01R		50-60-0103-01R	
23" Brackets Kit P/N	-	50-60-0104-01R		50-60-0104-01R		50-60-0104-01R		50-60-0104-01R		50-60-0104-01R		50-60-0104-01R		50-60-0104-01R	
ETSI Brackets Kit P/N	-	50-60-0105-01R		50-60-0105-01R		50-60-0105-01R		50-60-0105-01R		50-60-0105-01R		50-60-0105-01R		50-60-0105-01R	

3RU Platform

1RU Platform

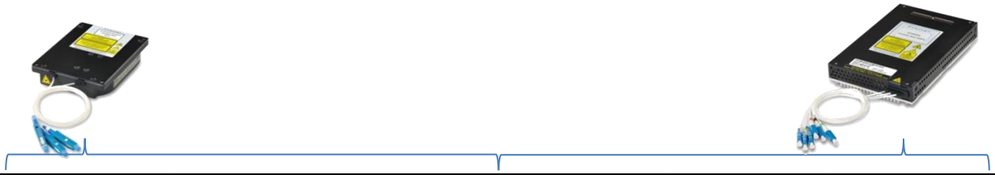
III Fixed Gain Amplifiers (FGAs)

Finisar's Fixed Gain Amplifiers (FGAs) are typically single-stage EDFAs whose gain spectrum is either non-flattened, or flattened at a specific gain setting (Optimal Flat Gain). They can be used as boosters at the transmission side of a link, preamplifiers at the receive side, or inline amplifiers at the mid-span. Output power and gain can be controlled by the end user, and gain tilt occurs whenever the set gain differs from the OFG. In the following table "Single Channel" refers to non-gain flattened amplifiers, WDM to gain flattened ones.

Parameter		P/N➔	FOA-M1100MB-ESC1C-AA001		FOA-M1500CB-ESC1C-AA011		FOA-M2200CB-EFG1C-AA002		FOA-M2200CB-EFG1C-AA003		FOA-M2200CB-EFG1C-AA004		FOA-M2200CB-EFG1C-AA005		FOA-M2200CB-EFG1C-AA006		FOA-M2200CB-EFG1C-AA007		FOA-M2200CB-EFG1C-AA008		FOA-M2300CD-EFV1C-AA009	
		Unit	Specification		Specification		Specification		Specification		Specification		Specification		Specification		Specification		Specification		Specification	
			Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max
Form Factor		mm	70x45x12		90x70x15		90x70x15		90x70x15		90x70x15		90x70x15		90x70x15		90x70x15		90x70x15		90x70x15	
Amplifier Type		-	Single Channel		OSC EDFA		WDM FGA		WDM FGA		WDM FGA		WDM FGA		WDM FGA		WDM FGA		WDM FGA		WDM FGA + Output VOA	
Operating Wavelength Range		nm	1528.77	1567.13	1504.5	1517.5	1529	1563	1528.77	1564	1528.77	1565	1529	1563	1528.77	1565.00	1528.77	1565.00	1529	1563	1529.5	1563
Input Power Range	Booster mode	dBm	-10	5	-2	7	-27	2	-25	8	-35	-5	-24	5	-25	10	-25	10	-25	8	-18	2
	Pre-amp mode						-35	-3	-40	-5			-32	0	-35	0	-40	-5				
Output Power Range	Booster mode	dBm	5	16	13		-7	17	-7	17.4	-7	17	-5	20	-5	21	-5	21	-5	20.8	-15	19
	Pre-amp mode						-10	13	-7	17.4			-10	13								
Saturated Output Power		dBm	16		+13		17			17.4	17		20		20		20		21		19	
Settable Gain Range	Booster mode	dB	5	26	N/A	N/A	10	20	4	28	15	30	10	20	15	25	10	26	10	20	0	20
	Pre-amp mode	dB					13	25	13	33			13	25	15	30	15	33			VOA, not gain range	
Optimal Flat Gain		dB	N/A		N/A		15		23		23		15		22		26		20		22	
Gain/Power Setting Accuracy	Booster mode	dB	-0.5	+0.5	-0.5	+1	-0.5	0.5	-0.5	0.5	-0.5	0.5	-0.5	0.5	-0.5	0.5	-0.5	0.5	-0.5	0.5	-0.5	0.5
	Pre-amp mode	dB					-0.5	0.5	-0.5	0.5			-0.5	0.5	-0.5	0.5	-0.5	0.5				
Gain Flatness vs. Wavelength		dB	N/A		N/A			±0.6		±0.6		±0.5		±0.6		±0.6		±0.6		±0.6		1.5pk-pk
Dynamic gain tilt		dB/dB	N/A		N/A			±0.06		0.9		0.9		0.9		0.9		0.9		0.9		N/A
Gain / Power Stability		dB	-0.2	0.2	-0.1	0.1		±0.1		±0.1		±0.1		±0.1		±0.1		±0.1		±0.1		±0.1
Noise Figure (at OFG or equivalent)		dB		6.5		8		6		5.5		5.5		6		5.5		5.5		5.5		5.5
Return loss		dB	40		40		40		40		40		40		40		40		40		40	
PDG		dB		0.5		0.3		0.5		0.4		0.3		0.5		0.4		0.4		0.5		0.5
PMD		ps		0.3		0.15		0.3		0.2		0.3		0.3		0.2		0.2		0.3		0.3
Multi-Path Interference		dB		-40		-40		-40		-40		-40		-40		-40		-40		-40		-40
Laser Safety Classification		-	Class 1M		Class 1M		Class 1M		Class 1M		Class 1M		Class 1M		Class 1M		Class 1M		Class 1M		Class 1M	
Optical Connectors		-	2: In, Out		2: In, Out		2: In, Out		3: In, Out, Out Mon		3: In, Out, Out Mon		2: In, Out		3: In, Out, Out Mon		3: In, Out, Out Mon		3: In, Out, Out Mon		3: In, Out, Out Mon	
Operating Modes		-	APC, Manual		APC, Manual		AGC, APC, Manual		AGC, APC, Manual		AGC, APC, Manual		AGC, APC, Manual		AGC, APC, Manual		AGC, APC, Manual		AGC, APC, Manual		AGC, APC, Manual	
Power Supply Voltage		V	2.97	3.63	3.13	3.46	4.75	5.25	4.75	5.25	4.75	5.25	4.75	5.25	4.75	5.25	4.75	5.25	3.15	3.45	4.75	5.25
Power Consumption		W		2.5		9.5		8		8		8		11		11		8		12		8
Operating Case Temperature		°C	0	70	0	70	0	70	0	70	0	70	0	70	0	70	0	70	0	70	0	70
Communications Protocol		-	RS-232		RS-232		RS-232		RS-232		RS-232 LVTTL		RS-232		RS-232 LVTTL		RS-232 LVTTL		RS-232		RE-232 LVTTL	
Default Baud Rate		Baud	9600		19200		19200		9600		19200		19200		19200		19200		19200		57600	
Eval Board P/N		-	1178581		1185403		1185403		1185403		1185403		1185403		1185403		1185403		1185403		1185402	
Eval Board Cable P/N		-	18-10-0006R		18-10-0006R		18-10-0006R		18-10-0006R		18-10-0006R		18-10-0006R		18-10-0006R		18-10-0006R		18-10-0006R		18-10-0006R	

IV Variable Gain Amplifiers (VGAs)

Finisar's compact Variable Gain Amplifiers (VGAs) are available in two form factors. Compact VGAs combine the ubiquity of the EDFA MSA form factor (90x70mm) with the advanced feature of a variable gain range; with up to 20dBm output power. Other VGAs with a larger form factor enable more complex functions and higher output power (up to 23dBm). VGAs find their application as booster, pre, or inline amplifiers, and are all suitable for WDM applications, their gain spectrum being flat.



Parameter	P/N➔	FOA-M7300CD-EVG1C-AA002		FOA-M7300CD-EVG1C-AA003		FOA-M7300CD-EVG1C-AA004		FOA-M7100DA-EVG2C-AA013		FOA-M7100DA-EVG2C-AA014		FOA-R7100DA-EVG2C-AA015	
	Unit	Specification		Specification		Specification		Specification		Specification		Specification	
		Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max
Form Factor	mm	90x70x16.5		90x70x16.5		90x70x16.5		100x150x18		100x150x18		100x150x18	
Amplifier Type	-	WDM VGA		WDM VGA		WDM VGA with Mid-stage access		WDM VGA with Mid-stage access		WDM VGA with Mid-stage access		WDM VGA with Mid-stage access	
Operating Wavelength Range	nm	1529.5	1564	1529.5	1564	1529.5	1564	1529.5	1564	1529.5	1564	1529.5	1564
Input Power Range	dBm	-38	5	-27	10	-27	8	-40	-3.5	-42	5	-38	6
Output Power Range	dBm	-8	17	-8	19.5	-8	18	--2	20.5	-5	20.5	-2	23
Saturated Output Power	dBm	17		19.5		18		20.5		20.5		23	
Gain Range	dB	15	30	10	25	10	25	25	40	17	40	17	40
Gain/Power Setting Accuracy	dB	-0.25	+0.25	-0.25	+0.25	-0.25	+0.25	-0.5	0.5	-0.4	0.4	-0.4	0.4
Gain Flatness vs. Wavelength	dB		±0.6		±0.6		±0.6		±0.6		±0.6		±0.6
Gain / Power Stability	dB		±0.1		±0.1		±0.1		±0.1		±0.2		±0.2
Settable Gain Tilt Range	dB	-2	2	-2	2	-2	2	-3.5	0	-2	0	-2	0
Mid-Stage Loss	dB	N/A		N/A		0	4	4	9	4	9.5	4	9.5
Noise Figure[1]	dB	5.5	11.5	5.6	14.5	5.8	18.5	6.1	7.2	5.6	12.5	6.6	16.3
Return loss	dB	40		40		40		45		40		40	
PDG	dB		0.3		0.3		0.3		0.3		0.3		0.5
PMD	ps		0.3		0.3		0.3		0.2		0.2		0.3
Multi-Path Interference	dB		-40		-40		-40		-40		-40		-40
Laser Safety Classification	-	Class 1M		Class 1M		Class 1M		Class 1M		Class 1M		Class 1M with APR	
Optical Connectors	-	3: In, Out, Out Mon		2: In, Ou3: In, Out, Out Mon		5: In, out, Out mon, MSA in, MSA Out		5: In, out, Out mon, MSA in, MSA Out		5: In, out, Out mon, MSA in, MSA Out		5: In, out, Out mon, MSA in, MSA Out	
Operating Modes	-	AGC, APC, Manual		AGC, APC, Manual		AGC, APC, Manual		AGC, APC, Manual		AGC, APC, Manual		AGC, APC, Manual	
Power Supply Voltage	V	4.75	5.25	4.75	5.25	4.75	5.25	4.75	5.25	4.75	5.25	4.75	5.25
Power Consumption	W		10		13		11		17		17		26
Operating Case Temperature	°C	0	70	0	70	0	70	0	70	0	70	0	70
Communications Protocol	-	RS-232		RS-232		RS-232 LVTTL		RS-232 LVTTL		RS-232 LVTTL		RS-232 LVTTL	
Default Baud Rate	Baud	19200		19200		9600		19200		19200		19200	
Eval Board P/N	-	1185403		1185403		1185403		50-45-0069-01R		50-45-0069-01R		50-45-0069-01R	
Eval Board Cable P/N	-	18-10-0006R		18-10-0006R		18-10-0006R		18-10-0006R		18-10-0006R		18-10-0006R	

Notes

1. Max NF at minimum gain setting; min NF at maximum gain setting

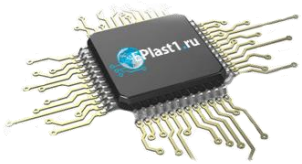
Компания «ЭлектроПласт» предлагает заключение долгосрочных отношений при поставках импортных электронных компонентов на взаимовыгодных условиях!

Наши преимущества:

- Оперативные поставки широкого спектра электронных компонентов отечественного и импортного производства напрямую от производителей и с крупнейших мировых складов;
- Поставка более 17-ти миллионов наименований электронных компонентов;
- Поставка сложных, дефицитных, либо снятых с производства позиций;
- Оперативные сроки поставки под заказ (от 5 рабочих дней);
- Экспресс доставка в любую точку России;
- Техническая поддержка проекта, помощь в подборе аналогов, поставка прототипов;
- Система менеджмента качества сертифицирована по Международному стандарту ISO 9001;
- Лицензия ФСБ на осуществление работ с использованием сведений, составляющих государственную тайну;
- Поставка специализированных компонентов (Xilinx, Altera, Analog Devices, Intersil, Interpoint, Microsemi, Aeroflex, Peregrine, Syfer, Eurofarad, Texas Instrument, Miteq, Cobham, E2V, MA-COM, Hittite, Mini-Circuits,General Dynamics и др.);

Помимо этого, одним из направлений компании «ЭлектроПласт» является направление «Источники питания». Мы предлагаем Вам помощь Конструкторского отдела:

- Подбор оптимального решения, техническое обоснование при выборе компонента;
- Подбор аналогов;
- Консультации по применению компонента;
- Поставка образцов и прототипов;
- Техническая поддержка проекта;
- Защита от снятия компонента с производства.



Как с нами связаться

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