



MPB Communications Inc.

Preliminary data sheet

EOA-UR Compact Package

Erbium-Doped-Fiber Pre-Amplifier Gain Blocks



Pumped by low-power consumption lasers, the EOA-UR series of compact EDFA gain blocks are the ideal solution for C- or L-band single-channel preamplification.

Features

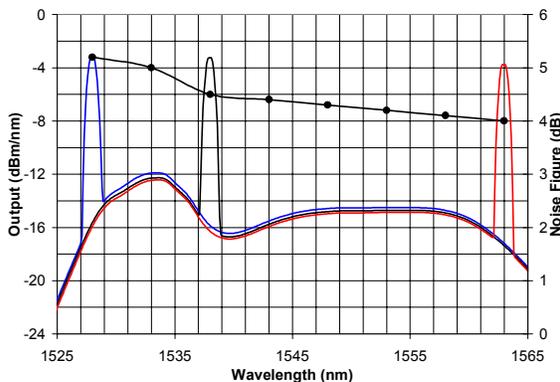
- C- or L-band amplification
- Compact size
- Low power consumption
- Large input signal range
- Large small-signal gain
- Flat gain
- Low Noise Figure
- Input and output monitors for system diagnosis.
- Wide operational temperature range.

Applications

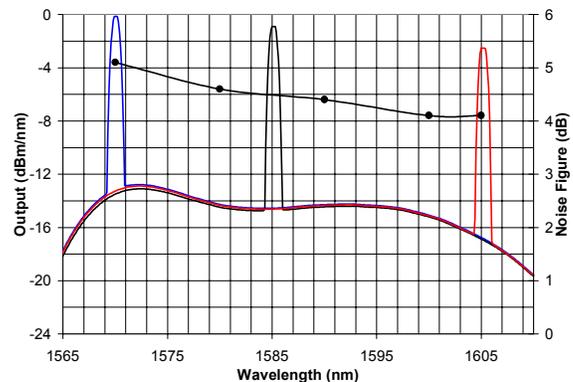
- Single-channel receiver pre-amplification in Metro networks or Long-Haul links.
- Signal loss compensation at Add/Drop nodes

Description

In 1995, MPB Communications launched their first long-haul, unrepeated telecom systems based on high-power boosters and quantum-limited noise-figure EDFAs. Since then, the company's EDFA portfolio has constantly been upgraded to meet wider-bandwidth and system customization requirements. Featuring compact size and low power consumption, the EOA-U Series of compact pre-amplifiers gain blocks are designed for single-channel amplification. They are available in the C- and L-bands. They are designed to accommodate a large dynamic input power range while preserving good gain flatness and low noise figure. MPB Communications is dedicated to close customer collaboration: our standard amplifier designs can readily be modified to optimize amplifier performance to specific operational regimes.



Experimental noise-figure results (dots) and OSA output spectra (solid lines) of the C-band EOA-UR00-C35 gain block recorded at -30 -dBm input power and at various input-signal wavelengths (1528, 1538 and 1563 nm).



Experimental noise-figure results (dots) and OSA output spectra (solid lines) of the L-band EOA-UR00-L35 gain block recorded at -30 -dBm input power and at various input-signal wavelengths (1570, 1585 and 1605 nm).

Optical Specifications

Parameter	Conditions	Specifications		Unit
		C-Band	L-Band	
Operational Wavelength Range	Single channel operation	1528 – 1563	1570 – 1605	nm
Input Dynamic Range		-30 to -5		dBm
Small Signal Gain	$P_{in} = -30$ dBm	≥ 25	≥ 27	dB
Noise Figure	Without input isolator, at $T = 25^{\circ}\text{C}$ $P_{in} = -30$ dBm, $P_{out} \sim -3$ dBm	≤ 5.5	≤ 5.5	dB
	$P_{in} = -15$ dBm, $P_{out} \sim -3$ dBm	≤ 5	≤ 5.5	dB
	$P_{in} = -5$ dBm, $P_{out} \sim 0$ dBm	≤ 7	≤ 7.5	dB
Gain Flatness	$P_{in} = -30$ dBm to -5 dBm Single channel operation over wavelength range	$\leq \pm 1.5$	$\leq \pm 1.5$	dB
Saturated Output Power	$P_{in} = -5$ dBm	≥ 6	≥ 9	dBm
Optical Input / Output Monitor Tap	Standard configuration	2 / 1		%
Input and Output Monitor Responsivity	Standard configuration	0.01		A/W
Output isolation	Standard configuration	> 32		dB
Input Isolation	Optional	> 32		dB
Backward ASE	$P_{in} = -30$ dBm with input isolator	< -15		dBm

Electrical Specifications/ Environmental conditions

Parameter	Symbol	Value		Units
		C-Band	L-Band	
Storage Case Temperature Range	T_{st}	-40 to +85		$^{\circ}\text{C}$
Operating Case Temperature Range	T_{op}	0 to 70		$^{\circ}\text{C}$
Laser Forward Current	I_p	< 350		mA
Laser Forward Voltage	V_p	< 2.5		V
Maximum Power Consumption	P_c	2	3	W

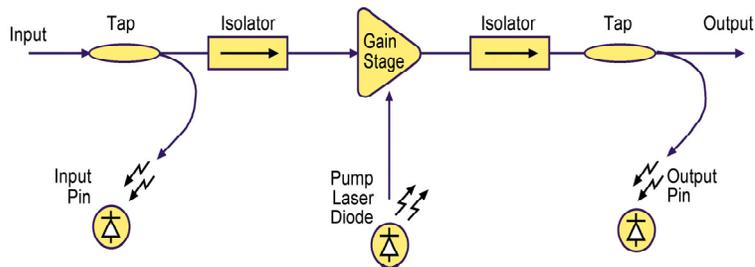
PIN Configuration

Electrical connections are made via a 16 pin, 2 mm shrouded male connector.

PIN No.	Description	PIN No.	Description
1	Laser Cathode	9	Thermistor
2	Laser Anode	10	Thermistor
3	Cooler -	11	GND
4	Cooler -	12	GND
5	NC or Pump Monitor PD Cathode ¹	13	Input Monitor Photodiode Anode
6	NC or Pump Monitor PD Anode ¹	14	Input Monitor Photodiode Cathode
7	Output Monitor Photodiode Anode	15	Cooler +
8	Output Monitor Photodiode Cathode	16	Cooler +

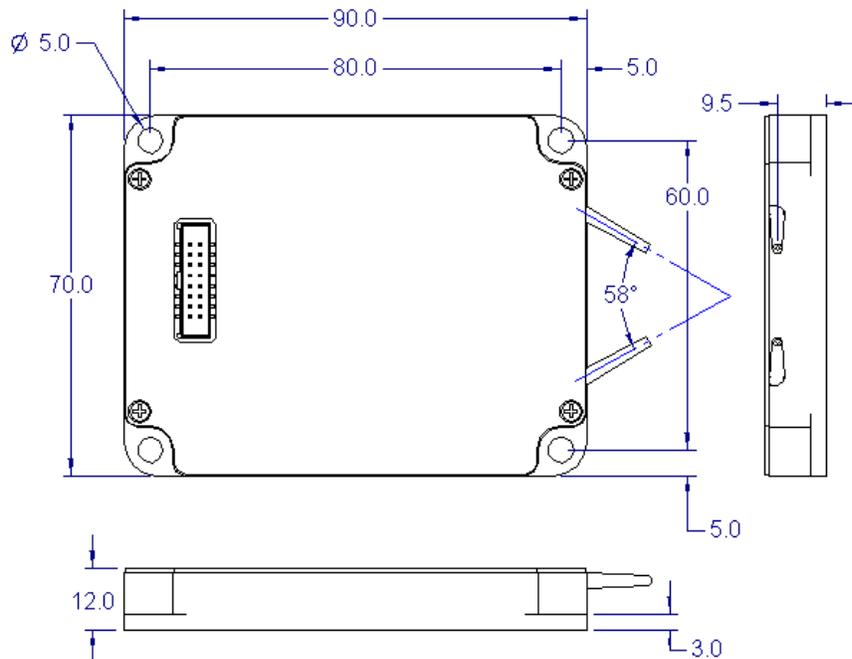
¹ Depending on model.

Block Diagram



Mechanical Specifications

Optical connections are made through singlemode 50-cm long, 900- μ m tight buffer fiber pigtailed terminated on FC/APC connectors as standard. The units are housed within a package allowing a heatsink to be attached onto the base. Tapped holes are also provided for easy board mounting. Dimensions are in millimeters: 70 mm x 90 mm x 12 mm



Safety Specifications

The EOA-U Compact Package EDF Pre-Amplifier Gain Blocks deliver fiber-coupled output power of up to 10 mW and are therefore Class 3A sources of optical radiation. They are intended as OEM products for incorporation into fiber-optic-telecommunications systems and as such require additional features for full compliance with FDA/CRDH 21 CFR 1040.10 and 1040.11 and IEC 60825-1: 1993 radiation performance standards.



Ordering Information

EOA – UR00 –	---	--	A –	--	1
<i>Operational Wavelength range</i>					
C35: 1528 -1563nm					
L35: 1570 -1605nm					
<i>Input isolator</i>					
0: None					
1: Yes					
<i>Built-in Electronics</i>					
A: Direct access to pump					
<i>Connector Type</i>					
1: FC/APC (standard)					
2: FC-UPC					
3: E2000-APC					
4: SC-UPC					
5: SC-APC					
6: Other (specify)					
<i>Pigtail Length</i>					
1: 50 cm					
2: Other (specify)					
<i>Pigtail Jacket</i>					
1: 900-µm tight buffer					

All data listed in this specification sheet is subjected to change without notice. MPBC reserves the right to revise or update the datasheet.