Gain Flattening Filter

C-Band, L-Band

DATASHEET

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The GAFF series bandpass filters provide a fixed wavelength passband based on advanced thin-film filter technology and micro-optical packaging. They feature excellent uniformity, a wide selection of wavelength ranges, low insertion loss, excellent temperature stability, and specified attenuation within designated blocking bands. These characteristics offer great flexibility for a wide range of customer applications. The wavelength blocking range is limited on both sides of the passband; however, edge filters can be added to further extend the blocking range if required. We also provide customized optical solutions to meet customers' specific application needs.

Features

- Wide Operating Wavelength Range
- Low Insertion Loss
- Flat Spectral Gain
- High Stability and Reliability
- Epoxy Free Optical Path

Applications

- Fiberoptic Amplifiers

Specifications

Parameter		Min	Typical	Max	Unit
Operation Wavelength		C-Band: 1528 -1565nm or custom; L-Band: 1570 – 1610nm or custom			nm
Insertion Loss			≤ 0.60		dB
Modulation Depth	C-Band	1		3	dB
	L-Band	3.1		6	
Peak to Peak Error Function	C-Band		≤ 0.50		dB
	L-Band		≤ 0.80		
Polarization Dependent Loss (PDL)			≤ 0.10		dB
Return Loss			≥ 50		dB
Optical Power			≤ 500		mW
Operating Temperature		0		+70	°C
Storage Temperature		-40		+85	°C

* All values referenced are without connector.

RoHS COMPLIANT

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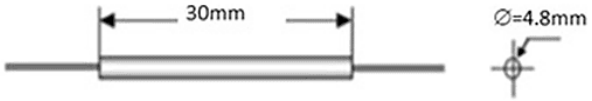
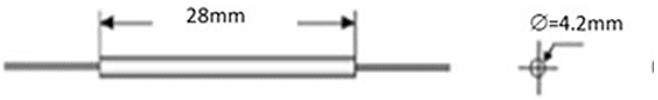
Mechanical Dimensions (mm)

A Package

M Package



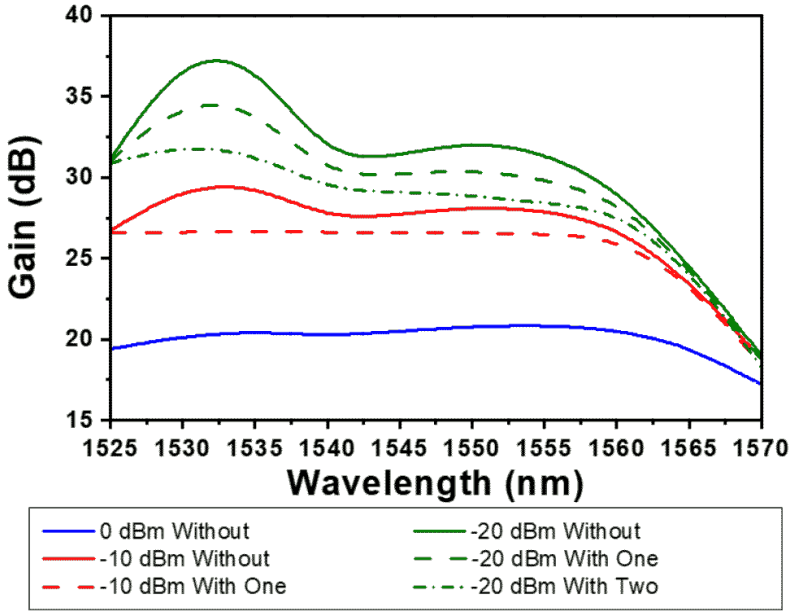
N Package



*Product dimensions may change without notice. This is sometimes required for non-standard specifications.

Port Configurations

Typical Spectrum - Gain vs Wavelength



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Ordering Information (Part Number)

	☐	☐	☐	☐	☐
Prefix	**Center Wavelength**	**Fiber Type**	**Fiber Cover**	**Fiber Length**	**Connector[1]**
GAFF-	C-band = C L-band = L Special = 0	SM28 = 1 Special =0	Bare = 1 0.9mm tube = 2 Special = 0	0.25m = 1 0.5m = 2 Special = 0	None = 1 FC/PC = 2 FC/APC = 3 SC/PC = 4 SC/APC = 5 ST/PC = 6 LC/PC = 7 Special = 0

[1]. The default connector configuration uses fiber with 0.9 mm buffer protection. The connector cannot be installed directly onto bare fiber because the bare fiber is prone to damage during shipping. However, the connector can be assembled on bare fiber if a 3 cm protective loose tube is added for reinforcement. The customer may remove this protective tube after testing. The optical power handling of a standard connector is less than 0.5 W for SMF-28 fiber and decreases further for smaller-core fibers.

Application Notes

Fiber Core Alignment
Note that the minimum attenuation for these devices depends on excellent core-to-core alignment when the connectors are mated. This is crucial for shorter wavelengths with smaller fiber core diameters that can increase the loss of many decibels above the specification if they are not perfectly aligned. Different vendors' connectors may not mate well with each other, especially for angled APC.

Fiber Cleanliness
Fibers with smaller core diameters (<5 μm) must be kept extremely clean, contamination at fiber-fiber interfaces, combined with the high optical power density, can lead to significant optical damage. This type of damage usually requires re-polishing or replacement of the connector.

Maximum Optical Input Power
Due to their small fiber core diameters for short wavelength and high photon energies, the damage thresholds for device is substantially reduced than the common 1550nm fiber. To avoid damage to the exposed fiber end faces and internal components, the optical input power should never exceed 20 mW for wavelengths shorter 650nm. We produce a special version to increase the how handling by expanding the core side at the fiber ends.

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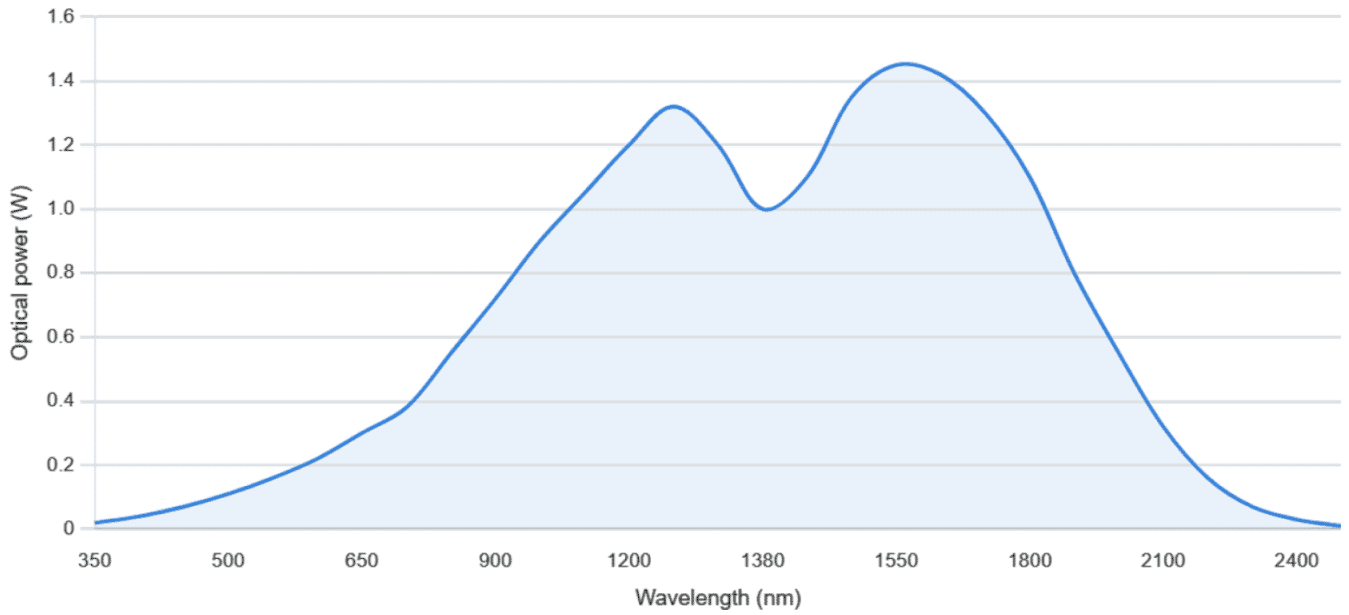
Regular Single Mode / Polarization Maintaining Fiber Optical Power Handing vs Wavelength



Single mode fiber optical power is limited by nonlinear effects in addition to absorption that increase loss and generate heat. The curve shows the approximate safe CW power envelope for standard single-mode fiber. Actual limits depend on fiber design, core size, length, and laser characteristics. Specialty fibers can significantly increase the power limit.

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