

Ultra-Broadband Fiber Optical Circulator (for OCTs)

Short NIR 840nm, 950nm, 1060nm, >100nm bandwidth, low PMD



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We produce a family of ultra-broadband fiber optical circulators covering a wavelength range of up to 160nm. These circulators are polarization-independent, having a flat >25dB typical isolation, as indicated in the graph below. We offer four wavelength bands centered at 650nm, 850nm, 950nm, and 1060nm. This unique performance attribute makes it an ideal choice for OCT and other optical fiber sensing systems. Agiltron has a volume circulator production operation for making custom-designs meeting special applications or cost requirements. The wavelength and range not listed can be specially ordered.

Features

- Flat Isolation Over 100nm
- Low PMD
- OEM and Custom Build Available
- High Reliability
- Polarization Dependent

Applications

- OCT
- Sensor
- Lab Use
- Instruments

Specifications

Parameter	Min	Typical	Max	Unit
Center Wavelength	650		1060	nm
Wavelength bandwidth	100		170	nm
Isolation	20	25	30	dB
Polarization Dependent Loss			0.25	dB
PMD	Regular PMD version	1	3	ps
	Low PMD version	0.05	0.3	
Insertion Loss ^[1]	650nm		2.2	dB
	840nm		1.5	
	950nm		1.3	
	1030nm		1.3	
Optical Power Handling ^[2]		0.2	5	W
Return Loss ^[3]	50		55	dB
Operating Temperature	0		65	°C
Storage Temperature	-40		85	°C

Notes:

- [1]. Exclude the connector for SM. The connector adds 0.3dB each
- [2]. Defined at 850nm & SMF version.
- [3]. RL <=35dB for MMF version.

Note: For a polarized input light version, the isolation is optimized to block the light reflection of the same polarization. Although lights of other polarizations may also be blocked, the extinction may be poor. PM isolators can be specially made to block backward propagating lights of all polarizations. PM isolators can also be made with a light polarizing function.

Note: The specifications provided are for general applications with a cost-effective approach. If you need to narrow or expand the tolerance, coverage, limit, or qualifications, please [click this link](#):

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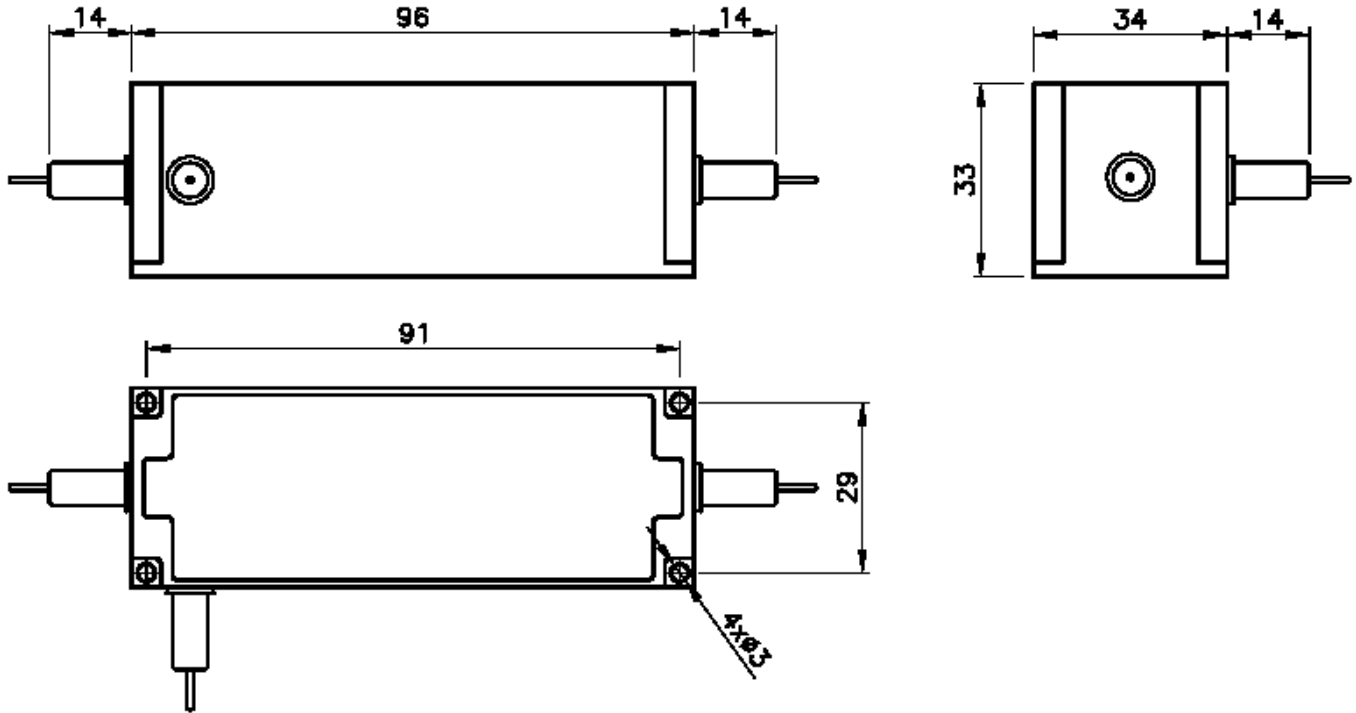
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Mechanical Dimensions (mm)- Typical



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

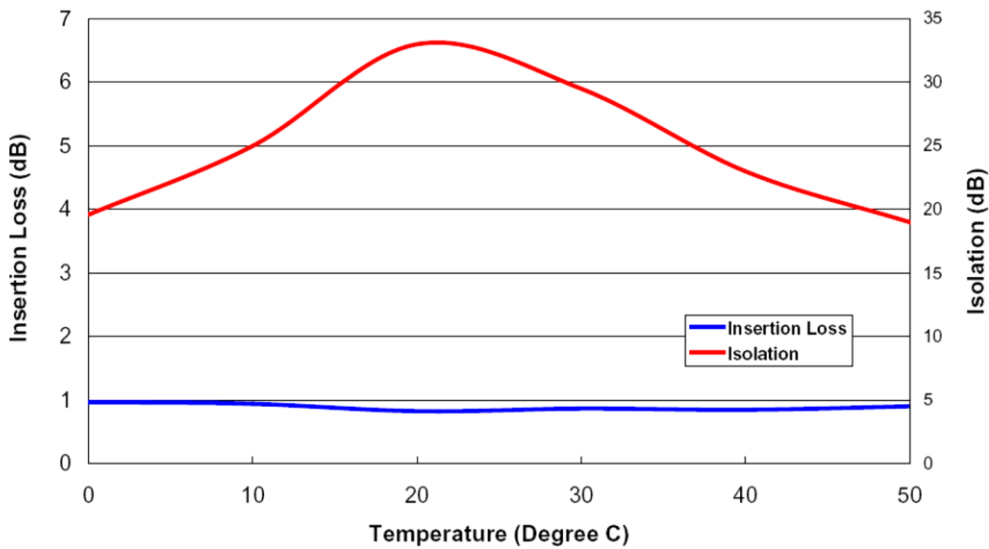
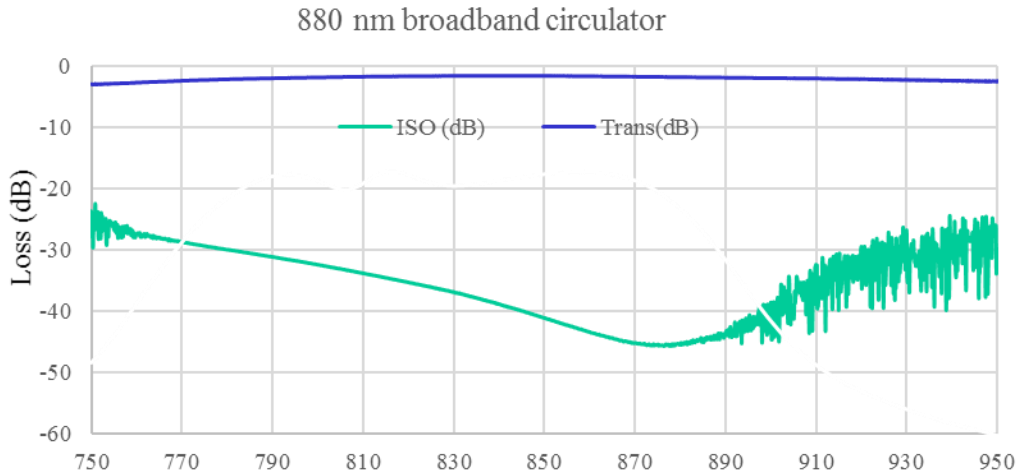
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Optical Performance (Typical single stage isolator @ 840nm)



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Ordering Information (Part Number) System

Prefix	Type	Wavelength	Grade	Package	Forward Power	Backward Power	Fiber Type	Fiber Cover	Connector ^{[1][2]}
OCLT-	Broadband & polarization independent = B1 Broadband & polarization dependent = B2	840nm = 8 1030nm = 3 1060nm = 1 980nm = 9 780nm = 7 650nm = 6 Special = 0	Regular = 1 Low PMD = 2 Special = 0	Regular = 1 Special = 0	0.2W = S 0.5W = N 1W=1 2W=2 5W=5 10W=A 50W=B Special=0	200mW = 1 500mW = 2 1W = 3 Special = 0	HI1060 = 2 HI980 = 9 HI780 = 7 PM980 = A PM850 = B PM780 = D MM50/125 = 5 Special = 0	Bare fiber = 1 0.9mm tube = 3 Special = 0	None = 1 FC/PC = 2 FC/APC = 3 SC/PC = 4 SC/APC = 5 ST/PC = 6 LC/PC = 7 LC/APC = A LC/UPC = U Special = 0

[1]. High power connector is available in special, and should be ordered in pair separately

[2]. The connector cannot be installed directly onto bare fiber, as it 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 can remove this protective tube after testing. The optical power handling of a standard connector is less than 0.5 W for SM28 fiber and decreases further with smaller core fibers.

Note: Red color for special order with long lead time.

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 handling by expanding the core side at the fiber ends.