

# Fiber Optical Circulator 800 -1060nm



Up to 50W, polarization ER up to 30dB , crosstalk up to 70dB



This Series Optical Circulators is a three-port device that allows light to travel in only one direction. A signal entering Port 1 will exit Port 2 with minimal loss, while a signal entering Port 2 will exit Port 3 with minimal loss. Light entering port 2 experiences a large amount of loss at port 1, and light entering port 3 experiences a large amount of loss at ports 2 and 1. Optical circulators are non-reciprocal devices. We uniquely offer high crosstalk between PM input signal at port 1 and reflection signal at port 3 up to 70dB, and high optical power of up to 50W, high polarization extinction ratio of up to 30dB. With our proprietary magnetic-optics technology and proven advanced micro-optics design, the circulator features low insertion loss, high isolation, high power handling, and high stability. Optical circulators are widely used in sensor and communication systems. Agiltron also provides customized designs to meet special applications.

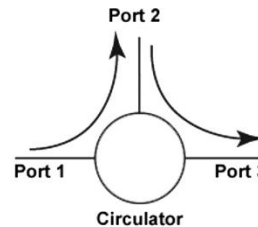
All the performance specifications are for single mode. The performances are degraded for multimode and will be built based on best effort using a laser source with a mode filing ratio of about 12 CPR.

## Features

- Low Insertion Loss
- High Isolation
- Low PDL
- High Stability
- High Reliability
- Cost Effective

## Applications

- Sensor
- Laser
- Test and Measurement
- Instrumentation



## Specifications

Parameter	Min	Typical	Max	Unit	
Center Wavelength	750		1070	nm	
Operating Bandwidth	Regular	± 40		nm	
	Broadband	± 90		nm	
Insertion Loss <sup>[1]</sup>		1.0	1.8	dB	
Wavelength Dependent Loss			0.2	dB	
Isolation	Single Stage	20	25	28	dB
	Dual Stage	45		50	dB
Polarization Dependent Loss (SM)		0.1	0.2	dB	
Polarization Extinction Ratio (PM)	Regular	20		26	dB
	Special	30		33	dB
Cross Talk	45	50	70	dB	
Return Loss	50			dB	
Optical Power Handling	0.3		50	W	
Storage Temperature	-10		60	°C	
Fiber Type	See order information				

### Notes:

[1]. Excluding connectors. Related to the configuration and wavelength

**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.

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Rev 10/23/25

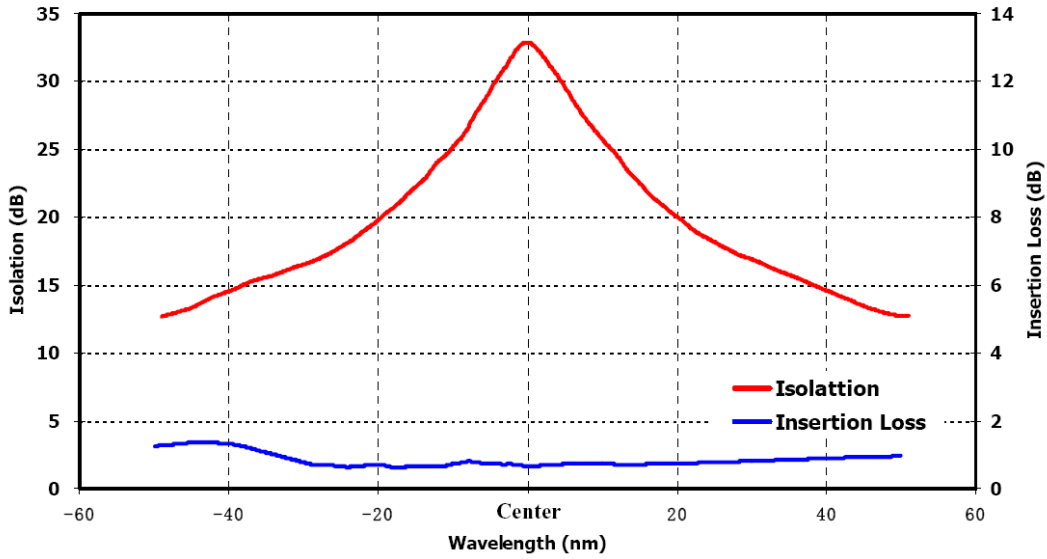
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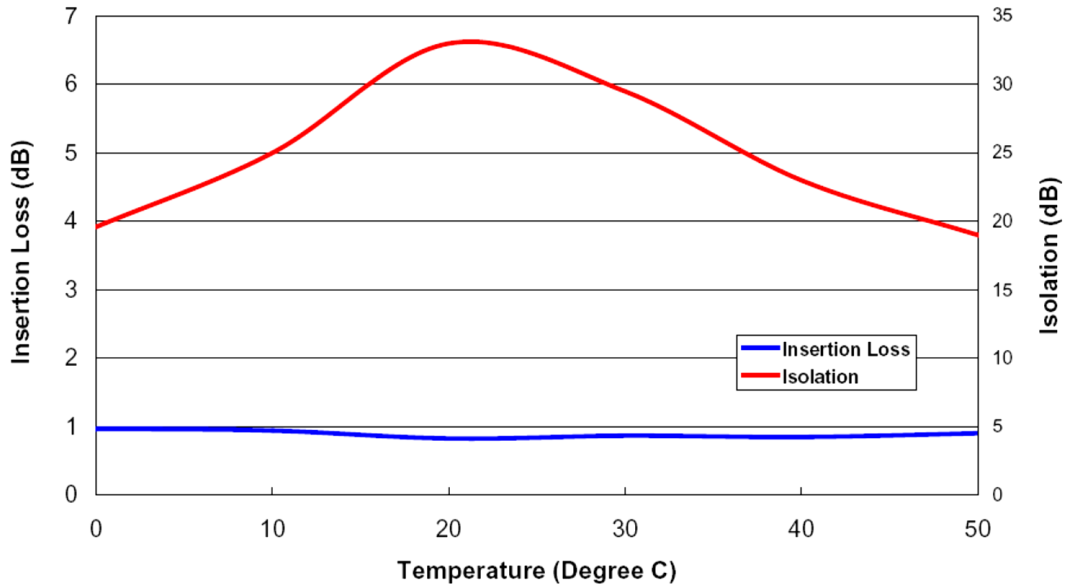
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### Optical Performance



IL/Iso Vs. Temp @ Center Wavelength



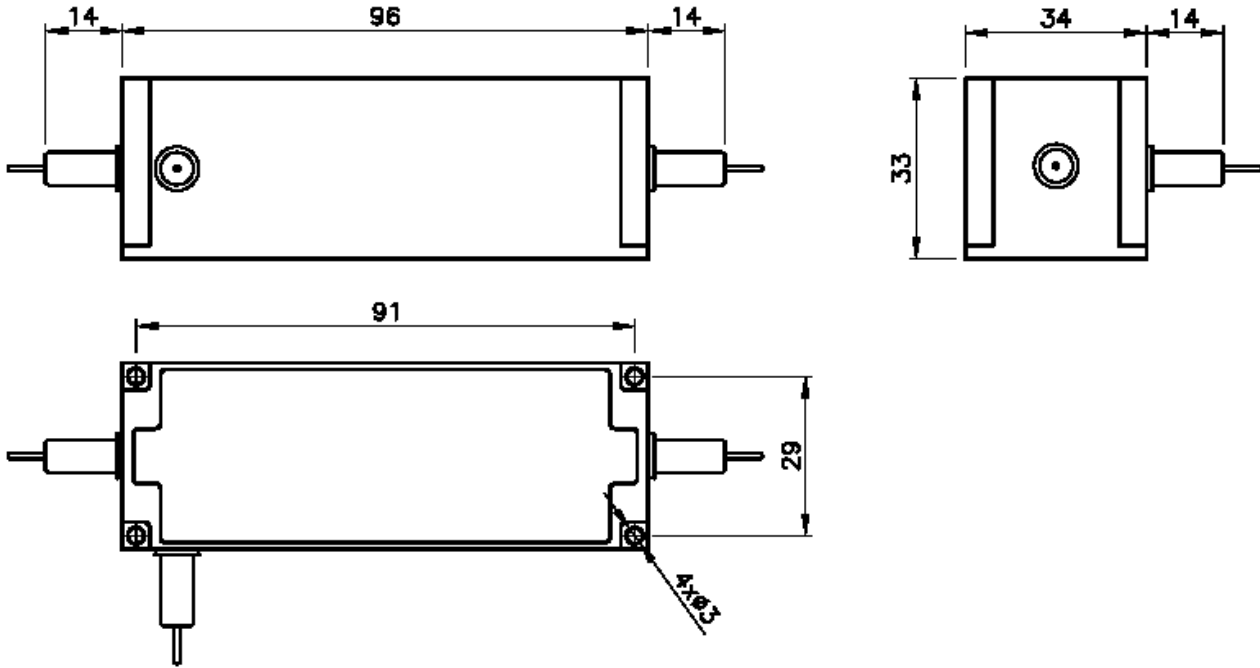
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### Mechanical Dimensions (mm)



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

### Ordering Information (Part Number)

Prefix	Type	Crosstalk	Center Wavelength	Power	PM ER	Fiber Type	Fiber Cover	Fiber Length	Connector <sup>[1][2]</sup>
OCST-	Polarization Independent = 1 Polarization Maintaining = 2 Polarizing = 3 Multimode = 4	45dB = 1 60dB = 2 65dB = 3	1060 nm = 1 1030 nm = 3 850 nm = 8 980 nm = 9 780 nm = 7 Special = 0	0.5W = 1 2W = 2 5W = 5 10W = A 20W = B 30W = C 50W = D 1W = F Special = 0	Non = 1 20dB = 2 26dB = 3 30dB = 4	PM980 = 1 HI1060 = 2 SMF-28e = 3 HI780 = 7 PM780 = 5 SM800 = 8 HI980 = 9 PM850 = A Special = 0	0.9mm = 3 0.25 mm = 2 Bare Fiber = 1 Special = 0	0.25m = 1 0.5m = 2 1.0m = 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]. Regular fiber connector has PER ~22dB. Connector with PER >27 dB is available using special process

[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.

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### Application Notes

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#### **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  $\mu\text{m}$ ) 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.