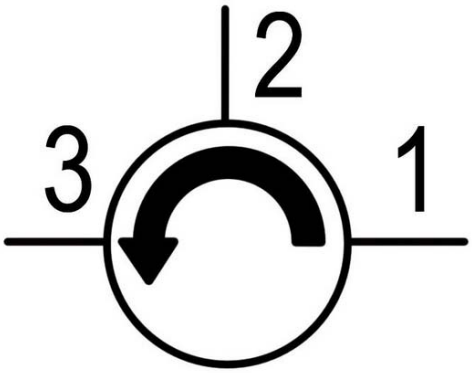
Sintec Optronics

Fiber Optical Circulators

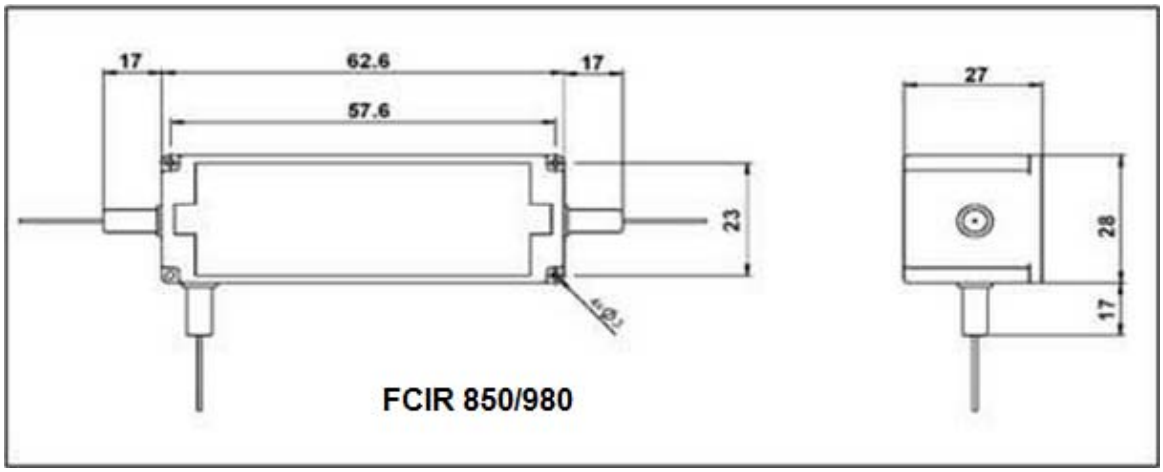


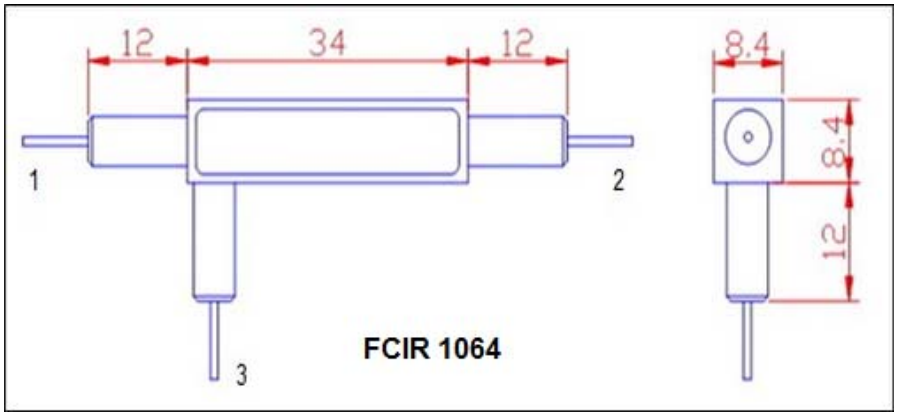
An **optical circulator** is a special fiber-optic component that can be used to separate optical signals that travel in opposite directions in an optical fiber, analogous to the operation of an electronic circulator. An optical circulator is a three-port device designed such that light entering any port exits from the next. This means that if light enters port 1 it is emitted from port 2, but if some of the emitted light is reflected back to the circulator, it does not come out of port 1, but instead exits from port 3. Circulators can be used to achieve bi-directional transmission over a single fiber. Because of its high isolation of the input and reflected optical powers and its low insertion loss, optical circulators are widely used in advanced communication systems and fiber-optic sensor applications.

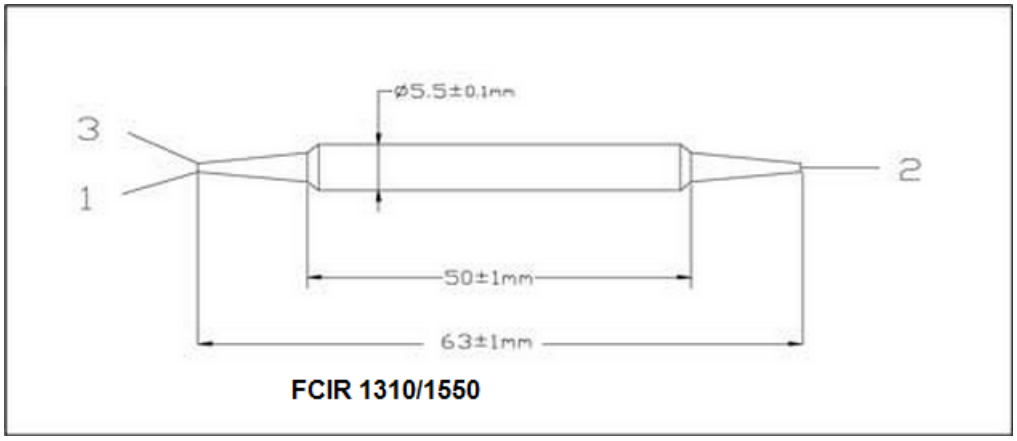
Optical circulators are non-reciprocal optics, which means that changes in the properties of light passing through the device are not reversed when the light passes through in the opposite direction. This can only happen when the symmetry of the system is broken, for example by an external magnetic field.

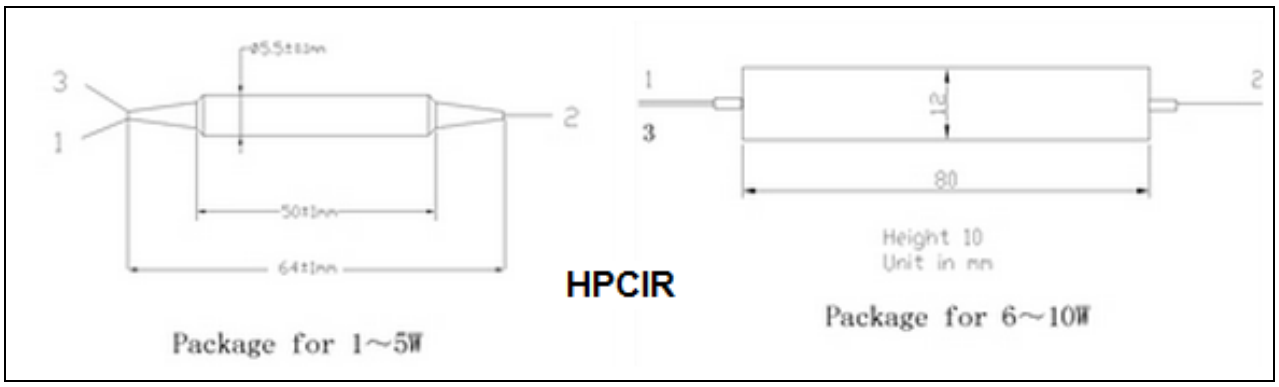
STOZ Series Polarization Insensitive Optical Fiber Circulator

		STOZ-FCIR	STOZ-FCIR	STOZ-FCIR	STOZ-HPCIR (High Power)
# of ports		3	3	3	3
Config		1x2	1x2	1x2	1x2
Center Wavelength (λc)	nm	850 or 980	1064	1310 or 1550	1550
Operating Wavelength Range	nm	±10	±5	±20	±20
Typ. Isolation at 23℃	dB	-	28	-	-
Min. Isolation at 23℃	dB	20	23	45	40
Typ. Insertion Loss at 23℃	dB	1.3	1.5	0.7	0.9
Max. Insertion Loss at 23℃	dB	-	2	0.8	1.2
Max. Insertion Loss at -5～70℃	dB	1.8	-	-	-
Min. Directivity	dB		45	-	-
Min. Return Loss	dB	50	50	55	50
Min Extinction Ratio	dB	-	-	-	-
Min Cross Talk	dB	45	-	50	50
Max. PDL	dB	0.2	0.2	0.1	0.2
Min. PMD		-	-	0.1	0.1
Max. Optical Power (CW)	W	0.3	0.3	0.5	1, 3, 5, 10, or specify
Max. Tensile Load	N	5	5	5	5
Fiber Type		HI1060 or see order info	HI1060	SMF-28e	SMF-28e
Operating Temperature	℃	-5 to +70	-5 to +70	-5 to +70	-5 to +70
Storage Temperature	℃	-40 to +85	-40 to +85	-40 to +85	-40 to +85
Package dimensions	mm	L62.6xW28xH27	-	Dia5.5 x 63mm	-


17
62.6
17
57.6
23
27
28
17
FCIR 850/980


12
34
12
8.4
8.4
12
1
2
3
FCIR 1064


ø5.5±0.1mm
3
1
2
50±1mm
63±1mm
FCIR 1310/1550


3
1
2
50±1mm
64±1mm
Package for 1~5W
HPCIR
1
3
2
12
80
Height 10
Unit in mm
Package for 6~10W

Ordering Information

STOZ-FCIR-①①-②②②-③③-④

STOZ-HPCIR-①①-②②-③③-④-⑤⑤-⑥⑥-⑦

85 ①: Wavelength
85 - 850nm
98 - 980nm
06 - 1064nm
31 – 1310nm
55 – 1550nm
SS - Specify

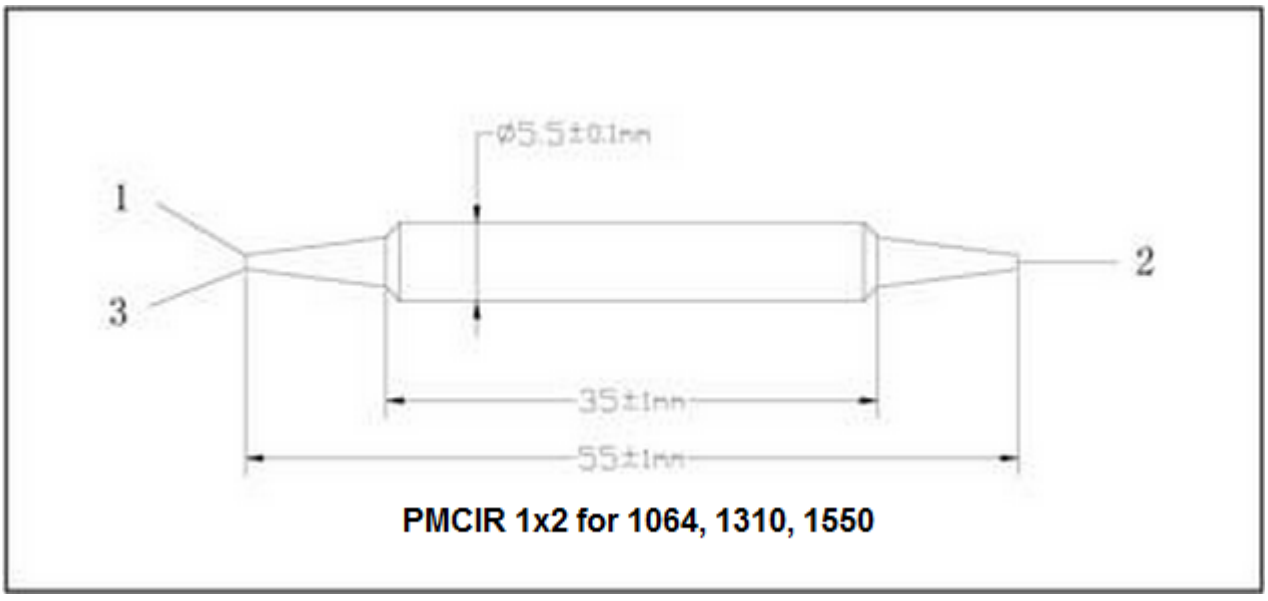
③③: Fiber Jacket on Port 1, 2, & 3
B - 250um Bare Fiber
L - 900um Loose Tube
S – Specify

②②②: Connector type on Port 1,2&3
1 - FC/UPC
2 - FC/APC
3 - SC/UPC
4 - SC/APC
N - None
S - Specify

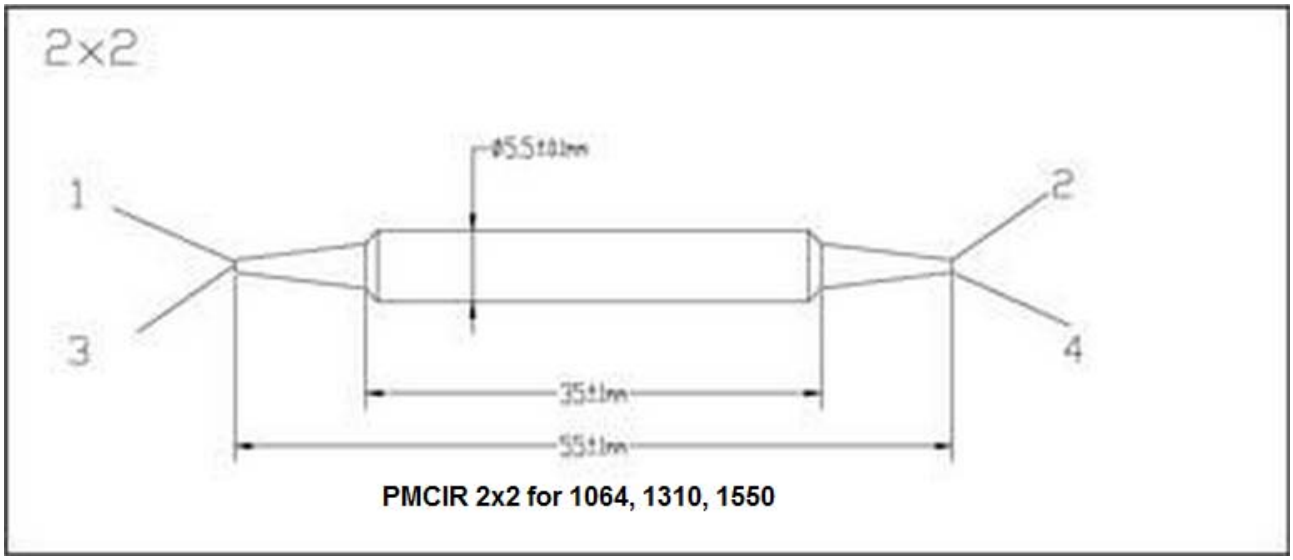
④④: Fiber Length
1 - 1.0m
S – Specify

STOZ Series Polarization Maintaining Optical Circulator

		STOZ-PMCIR	STOZ-PMCIR	STOZ-PMCIR	STOZ-PMCIR	STOZ-PMCIR	STOZ-PMCIR
Number of ports		3	3	3	4	4	4
Configure		1x2	1x2	1x2	2x2	2x2	2x2
Type			A	B		A	B
Center Wavelength (λc)	nm	1064	1310 or 1550	1310 or 1550	1064	1310 or 1550	1310 or 1550
Operating Wavelength Range	nm	±5	±30	±20	±5	±30	±20
Typ. Isolation at 23℃	dB	30	46	30	35	50	30
Min. Isolation at 23℃	dB	25	40	20	28	40	20
Typ. Isolation at -5～50℃	dB	-	-	-	25	-	-
Min. Isolation at -5～50℃	dB	-	-	-	20	-	-
Peak Isolation	dB	-	52	40	-	55	40
Typ. Insertion Loss at 23℃	dB	1.8	0.7	0.6	2.1	0.8	0.7
Max. Insertion Loss at 23℃	dB	2.1	0.9	0.8	2.3	1.1	1.0
Typ. Insertion Loss at -5～50℃	dB	-	-	-	2.6	-	-
Max. Insertion Loss at -5～50℃	dB	-	-	-	2.8	-	-
Min. Return Loss	dB	50	55	55	50	55	55
Min Extinction Ratio	dB	20	22	20	20	20	20
Min Cross Talk	dB	50	50	50	50	50	50
Max. Optical Power (CW)	mW	300	500	500	300	500	500
Max. Tensile Load	N	5	5	5	5	5	5
Fiber Type		PM 980 Panda	PM Panda	PM Panda	PM 980 Panda	PM Panda	PM Panda
Operating Temperature	℃	-5 to +50	-5 to +70	-5 to +70	-5 to +50	-5 to +70	-5 to +70
Storage Temperature	℃	-40 to +85	-40 to +85	-40 to +85	-40 to +85	-40 to +85	-40 to +85



PMCIR 1x2 for 1064, 1310, 1550



PMCIR 2x2 for 1064, 1310, 1550

Ordering Information

STOZ-PMCIR-06-②-③③③③-④④④④

①①: Wavelength
06 – 1064nm
SS - Specify

②: Port
2 – 2x2

③③③③: Connector Type on Part 1, 2, 3, 4
1 - FC/UPC
2 - FC/APC
3 - SC/UPC
4 - SC/APC
N - None
S - Specify

④④④④: Fiber Jacket on Port 1, 2, 3, 4
B – 250um Panda fiber
D – 400um Panda Fiber
L - 900um Loose Tube Panda Fiber
S - Specify

④: Fiber Length
0.8 – 0.8m
S – Specify

Ordering Information

STOZ-PMCIR-31-②-③-④④④-⑤⑤⑤-⑥
STOZ-PMCIR-55-②-③-④④④-⑤⑤⑤-⑥

①①: Wavelength
31 – 1310nm
55 – 1550nm
SS - Specify

②: Type
A – Type A
B – Type B

③: Port
2 – 2x2

④④④④: Connector Type on Part 1, 2, 3, 4
1 - FC/UPC
2 - FC/APC
3 - SC/UPC
4 - SC/APC
N - None
S - Specify

⑤⑤⑤⑤: Fiber Jacket on Port 1, 2, 3, 4
B – 250um Panda fiber
D – 400um Panda Fiber
L - 900um Loose Tube Panda Fiber
S - Specify

⑥: Fiber Length
0.8 – 0.8m
S – Specify

Sintec Optronics

STLC Series Polarization Insensitive Optical Fiber Circulator

The polarization insensitive optical circulator is a non-reciprocal devices that routes incoming signals from any port to the next. It is characterized with low insertion loss, high isolation, low PDL, low PMD and excellent environmental stability and reliability. It is widely used in fiber amplifier systems, optical fiber sensors and bi-direction communication systems.

Key Features:

* Low insertion loss
* Compact package
* Stable and reliable performance
* Customized configurations available

Applications:

* Fiber amplifier
* Fiber laser

Type	3 Ports PICIR		4 Ports PICIR
Operating Wavelength (nm)	1064±5	1310 or 1550±20	
Insertion Loss (1→2, 2→3, 3→4)(dB)	≤2.0	≤0.8	≤1.0
Polarization Dependent Loss (dB)	≤0.2	≤0.1	≤0.2
Polarization Mode Dispersion (ps)	≤0.1	≤0.1	≤0.1
Isolation(2→1, 3→2, 4→3) (dB)	≥23	≥45	≥38
Crosstalk (dB)	≥45	≥50	
Return loss(dB)	≥50		
Power Handling (mW)	≤300	≤500	
Fiber Type	Hi1060	SMF-28e XB	
Operating Temperature(℃)	-5 ~ +50	-5 ~ +70	
Storage Temperature(℃)	-40 ~ +85		
Dimensions (mm)	L34xW8.4xH8.4	Φ5.5×L50	Φ5.5×L65