

## Shin-Etsu OPTICAL ISOLATORS

### Product description

Optical isolators are devices that allow the transmission of laser beams emitted from a laser diode to travel in only one direction. When built into the laser modules which form the light sources for optical communications, optical fiber joints, and other components, they protect the laser diode by intercepting light reflected back from the optical fiber conductors.

### Product characteristics

- Very low transmission light loss
- Excellent thermal characteristics
- Effective in all optical wavelengths, including WDM (wavelength division multiplex), which transmit huge volumes of information

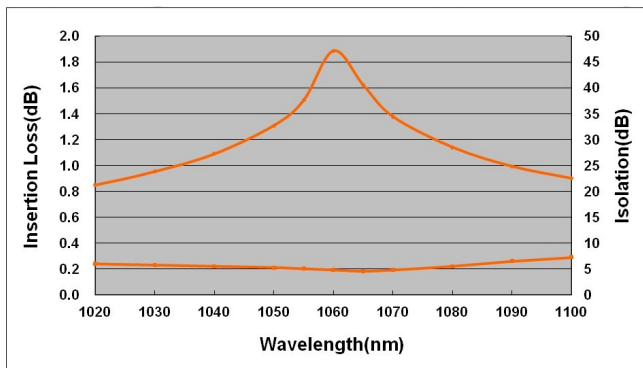
### Main Types of Isolators

- High Power Optical Isolators
- Free-space Optical Isolators
- Fiber-optic Isolators
- Fiber to Free-space Isolators

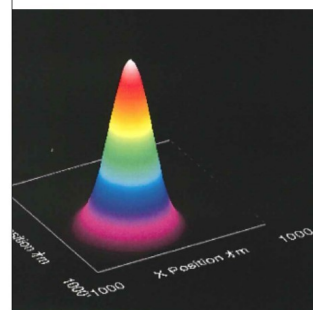
### 1um High Power Isolators

| Specifications / PN   | FS-XX-XX-257415-PI       | FS-XX-XX-317415-PI | FS-XX-XX-195630-PD       | FS-XX-XX-256830-PD | FS-XX-XX-316850-PD | FS-XX-XX-368460-PD |
|-----------------------|--------------------------|--------------------|--------------------------|--------------------|--------------------|--------------------|
| Center wavelength     | 1050-1070nm              |                    | 1000-1100nm              |                    |                    |                    |
| Power Handling        | 30W                      | 50W                | 15W                      | 30W                | 50W                | 100W               |
| Clear Aperture        | 1.5mm                    |                    | 1.5mm                    | 3.0mm              | 5.0mm              | 6.0mm              |
| Beam Dia.(1/e2)       | 1.0mm                    |                    | 0.7mm                    | 1.5mm              | 2.5mm              | 3.0mm              |
| Package type          | B                        | C                  | A                        | B                  | C                  | D                  |
| Type of Isolator      | PI (Displacer)           |                    | PD (PBS)                 |                    |                    |                    |
| Insertion Loss        | 0.2dB max.               |                    | 0.3dB max.               | 0.2dB max.         |                    |                    |
| Isolation (0-50deg.C) | 30dB min.<br>(20dB min.) |                    | 30dB min.<br>(20dB min.) |                    |                    |                    |
| PDL                   | 0.1dB max.               |                    | -                        |                    |                    |                    |
| PER                   | -                        |                    | 30dB min.                |                    |                    |                    |
| Return Loss           | 50dB min.                |                    | 50dB min.                |                    |                    |                    |
| Operating Temp.       | 0-50 deg.C               |                    |                          |                    |                    |                    |
| Storage Temp.         | -20-70 deg.C             |                    |                          |                    |                    |                    |

### Wavelength Characteristics for Free-space Isolators



### Transmitted Beam Profile



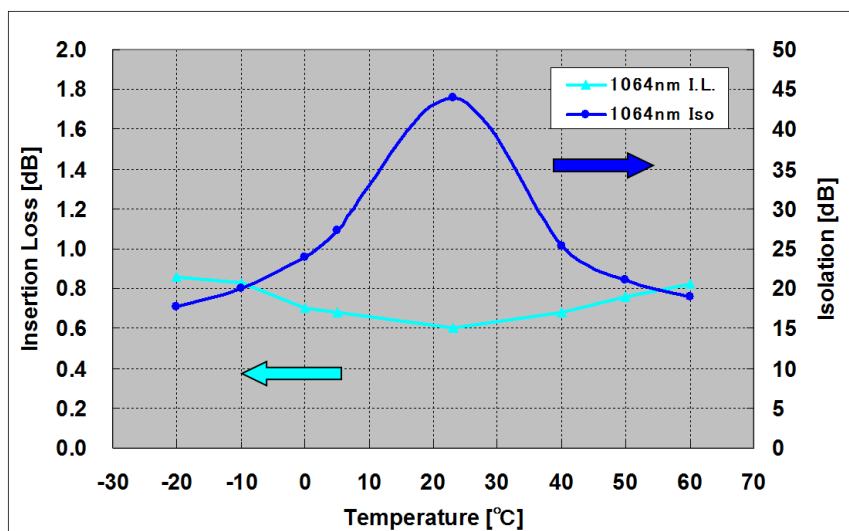
### Middle Power Isolators

| Specifications/ PN    | FS-XXX-01-121620-PD   | FS-XXX-01-182248-PD | FS-XX-XX-226830-PD    | FS-XX-XX-226840-PD |
|-----------------------|-----------------------|---------------------|-----------------------|--------------------|
| Center wavelength     | 633-790nm             |                     | 800-980nm             |                    |
| Power Handling        | 1W                    |                     | 10W                   |                    |
| Clear Aperture        | 2.0mm                 | 4.8mm               | 3.0mm                 | 4.0mm              |
| Beam Dia.(1/e2)       | 1.0mm                 | 2.4mm               | 1.5mm                 | 2.0mm              |
| Package type          | E                     | E'                  | F                     |                    |
| Type of Isolator      | PD (Glass Polarizer)  |                     | PD (PBS)              |                    |
| Insertion Loss        | 1.5dB max.            |                     | 0.5dB max.            |                    |
| Isolation (0-50deg.C) | 30dB min. (20dB min.) |                     | 30dB min. (20dB min.) |                    |
| PDL                   | -                     |                     | -                     |                    |
| PER                   | 30dB                  |                     | 30dB min.             |                    |
| Return Loss           | 50dB min.             |                     | 50dB min.             |                    |
| Operating Temp.       | 0-50 deg.C            |                     |                       |                    |
| Storage Temp.         | -20-70 deg.C          |                     |                       |                    |

### Fiber-optic Isolators

| Specifications/PN          | IL-XX-10-25102-XXX      | IL-XX-20-25107-XXX      |
|----------------------------|-------------------------|-------------------------|
| Center wavelength          | 1000-1100nm             |                         |
| Power Handling             | 10W *                   | 20W **                  |
| Fiber type                 | SMF, PMF, LMA, Others   |                         |
| Type of Isolator           | PI, PD                  |                         |
| Insertion Loss (0-50deg.C) | 1.0dB max. (1.2dB max.) | 0.8dB max. (1.0dB max.) |
| Isolation (0-50deg.C)      | 30dB min. (20dB min.)   |                         |
| PDL                        | -                       |                         |
| PER                        | 20dB min.               |                         |
| Return Loss                | 45dB min.               |                         |
| Operating Temp.            | 0-50 deg.C              |                         |
| Storage Temp.              | -20-70 deg.C            |                         |

### Temperature Characteristics for Fiber Optic Isolators



### Product Number

Center Wavelength (nm) Outer Dia.(mm) × Length(mm)

**FS-1064-15-256820-PI**

| Product Name            | Handling Power (W) | Aperture Size(mm) | Isolator Type                |
|-------------------------|--------------------|-------------------|------------------------------|
| FS: Free Space          | 10:10W             | 08:0.8mm          | PD: Polarization Dependent   |
| IL: In-Line with Fiber) | 15:15W             | 15:1.5mm          | PI: Polarization Independent |
| PT: Fiber to Free-space | 20:20W             | 30:3.0mm          | Fiber type                   |
|                         | 30:30W             | 40:4.0mm          |                              |
|                         | 50:50W             | 50:5.0mm          |                              |

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