

# CrystaLatch™ Bypassable Optical Circulator

(Protected by U.S. patents 7224860, 6757101, 6577430 and pending patents)

## Product Description

The CL Series bypassable Optical circulator works in either circulator mode or bypass mode. In the circulator mode, it works as a regular 3 port circulator, light entering port 1 passes out through port 2, and light entering port 2 passes out through port 3. In the bypass mode, light entering port 1 will output through port 3 bypassing port 2. Switching between these two working modes is activated via an electrical control signal. This is achieved using patent pending non-mechanical configurations, which also features Latching operation that preserves the selected working mode after the drive signal is removed. The all solid state bypassable circulator features low insertion loss, high channel isolation, fast switching speed and extremely high reliability and repeatability.



## Performance Specifications

| Parameter                    | Min                         | Typical | Max                | Unit  |
|------------------------------|-----------------------------|---------|--------------------|-------|
| Operation Wavelength         | 1520                        | 1550    | 1570               | nm    |
| Insertion Loss <sup>1</sup>  |                             | 0.8     | 1.2                | dB    |
| Isolation                    | 40                          | 50      |                    | dB    |
| Directivity                  | 40                          | 50      |                    | dB    |
| Switch Speed (rise, fall)    | 5                           | 50      | 200                | µs    |
| Repetition Rate              |                             | 2K      |                    | Hz    |
| Durability                   | 10 <sup>11</sup>            |         |                    | cycle |
| Polarization Dependent Loss  |                             | 0.1     | 0.2                | dB    |
| Polarization Mode Dispersion |                             |         | 0.2                | ps    |
| Return Loss                  | 50                          |         |                    | dB    |
| Operating Temperature        | 0                           |         | 70                 | °C    |
| Optical Power Handling       |                             | 300     | 500 <sup>2,3</sup> | mW    |
| Storage Temperature          | -40                         |         | 85                 | °C    |
| Fiber Type                   | Corning SMF28 or equivalent |         |                    |       |
| Package Dimension            | (L)61.5x(W)8.4x(H)8.4 mm    |         |                    |       |

1. Measured without connectors
2. High power version available.
3. Continuous operation, for pulse operation call.

## Features

- Solid-State High Speed
- Low Insertion Loss
- High Isolation
- Fail-Safe Latching
- Non-Mechanical
- Compact & Rugged
- Direct Low Voltage Drive

## Applications

- Optical Signal Routing
- PMD compensation
- Network Protection/ Restoration
- Burst Switching
- Configurable Add/Drop
- Signal Monitoring
- Instrumentation

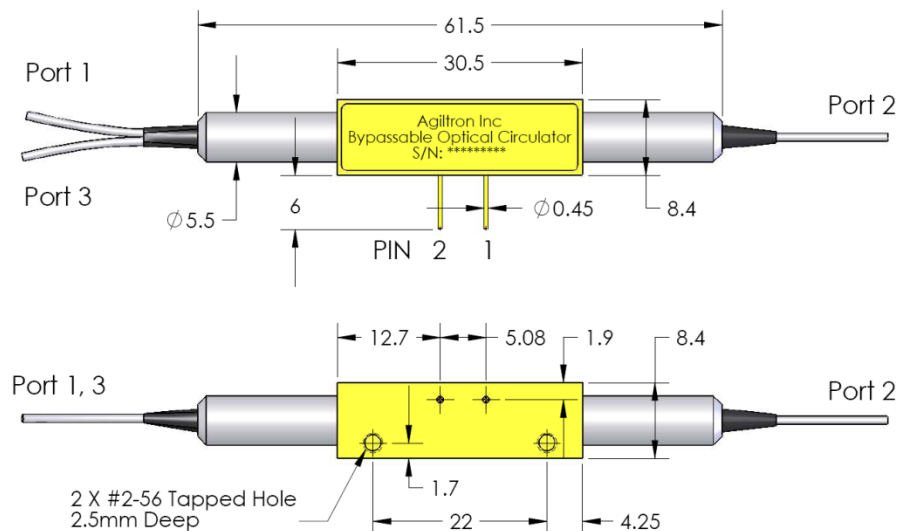
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## Electrical Driving Information

|                           |           |         |           |      |
|---------------------------|-----------|---------|-----------|------|
| Working Mode              | Pin 1     |         | Pin 2     |      |
| Circulator (Port 1->2->3) | +5V Pulse |         | GND       |      |
| Bypass (Port 1->3)        | GND       |         | +5V Pulse |      |
| Electrical Parameter      | Minimum   | Typical | Maximum   | Unit |
| Pulse Voltage             | 4.5       | 5       | 5.5       | V    |
| Pulse Duration            | 0.2       | 0.3     | 0.5       | ms   |
| Device Resistance         | 31        | 35      | 42        | Ω    |

Driving kit with RS232 and TTL interfaces and Windows™ GUI is available.

## Mechanical Footprint Dimensions (mm)



## Ordering Information

| CLBC-       | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>           | <input type="checkbox"/>                 | <input type="checkbox"/>  | <input type="checkbox"/> |
|-------------|--------------------------|--------------------------|--------------------------|--------------------------|------------------------------------|--|---|--------------------------|
| Type        | Wavelength               | Switch                   | Package                  | Fiber Type               | Fiber Length                       | Connector                                |   |                          |
| 3 port = C3 | 1550nm = 5               | Dual stage = 2           | Standard = 1             | SMF28 = 1                | Bare fiber=1<br>900um loose tube=3 | 0.25m=1<br>0.5m=2<br>1.0m=3<br>Special=0 | None=1<br>FC/PC=2<br>FC/APC=3<br>SC/PC=4<br>SC/APC=5<br>ST/PC=6<br>LC=7<br>Duplex LC=8<br>Special=0 |                          |

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