Multi-functional Integrated Optical Chip, 1550 nm

The Optilab MIOC-1550-BC is the key component of Fiber Optic Gyroscope (FOG) for rotational rate sensing and inertial navigation systems. This Integrated Optic Chip (IOC) device is composed of a polarizer, a Y-junction coupler and dual electro optic phase modulators. Based on Lithium Niobate (LiNbO3), MIOC-1550 is fabricated with Proton Exchange (PE) optical waveguides. The MIOC-1550-BC features Polarization Extinction Ratio (PER) exceeding 60 dB that can minimize bias drift which results from polarization crosstalk induced non-reciprocity. The MIOC-1550-BC assures high reliability and performance over wide temperature range, contact Optilab for more information.

- **Features**
  - 1550 ± 20 nm operation
  - PM input and output port
  - Low insertion loss 3.5 dB
  - Polarization extinction ratio > 60 dB
  - Low $V_{\pi}$ voltage 4V
  - Polarization crosstalk < -20 dB
  - Unpackaged chip available

- **Use in**
  - Fiber Optic Gyroscope (FOG)
  - Fiber Optic Current Sensor (FOCS)
  - Hydrophone and other optic sensitive fields
  - Research and development

**Functional Diagram**

```
Input Port

<table>
<thead>
<tr>
<th>Phase Modulator</th>
<th>Output 1</th>
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<tr>
<td>Phase Modulator</td>
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Output 2
```
**SPECIFICATIONS**

**GENERAL**

- **Operating Wavelength**: 1550 ± 20 nm
- **Pigtailed Insertion Loss**: ≤ 3.5 dB; 3.0 dB available
- **Split Ratio**: 50 ± 5%
- **Half-wave Phase Modulation Voltage, \( V\pi \)**: 4 V
- **Polarization Extinction Ratio**: ≥ 60 dB
- **Intensity Modulation**: ≤ 0.1%
- **Electrode Type**: Push-pull
- **Pigtail Compatibility**: 80 \( \mu \)m Clad
- **Operating Temperature**: -45 °C to +70 °C

**MECHANICAL**

- **Dimensions**: 1 mm x 1.8 mm x 22.5 mm
- **Electrode**: Gold Plated
- **Substrate Material**: LiNbO3
- **Crystal Orientation**: X-cut, Y-propagation
- **Waveguide Process**: Proton Exchange
- **Output Waveguide Spacing**: 400 \( \mu \)m