The Optilab MIOC-1550-SB 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-SB is fabricated with Proton Exchange (PE) optical waveguides. The MIOC-1550-SB features Polarization Extinction Ratio (PER) exceeding 60 dB that can minimize bias drift which results from polarization crosstalk induced non-reciprocity. The MIOC-1550-SB 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**

![Functional Diagram](image-url)
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
PM Pigtail Crosstalk: ≤ -20 dB
Intensity Modulation: ≤ 0.1% 
Electrode Type: Push-pull
Pigtail Compatibility: 80μm Clad
Operating Temperature: -45 °C to +70 °C

MECHANICAL

Dimensions: 1.75 mm x 7 mm x 26 mm
Electrode: Gold Plated
Substrate Material: LiNbO3
Crystal Orientation: X-cut, Y-propagation
Waveguide Process: Proton Exchange

Sample Test Data

<table>
<thead>
<tr>
<th></th>
<th>Input Port</th>
<th>Output Port 1</th>
<th>Output Port 2</th>
</tr>
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<tbody>
<tr>
<td>Extinction Ratio -5°C (dB)</td>
<td>31.3</td>
<td>24.3</td>
<td>28</td>
</tr>
<tr>
<td>Extinction Ratio -25°C (dB)</td>
<td>33.1</td>
<td>26.2</td>
<td>30.8</td>
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<tr>
<td>Extinction Ratio -25°C (dB)</td>
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<td>24.5</td>
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<tr>
<td>Coupling Ratio (%)</td>
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<tr>
<td>$V_\pi$ (V)</td>
<td>&lt; 4.5 V</td>
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<tr>
<td>Insertion Loss</td>
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<td>3.7</td>
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</table>