

# MIOC-1550-22-SP



## DEVICE

### Multi-functional Integrated Optical Chip Submount, 1550 nm, 22 mm Chip Length, w/ PM Fiber Pigtailed

## OVERVIEW

The Optilab MIOC-1550-22-SP 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-1550-22-SP is fabricated with Annealed Proton Exchange (APE) optical waveguides. The MIOC-1550-22-SP features Polarization Extinction Ratio (PER) exceeding 60 dB that can minimize bias drift which results from polarization crosstalk induced non-reciprocity. The MIOC-1550-22-SP assures high reliability and performance over wide temperature range and is fiber pigtailed (input/output) with a variety of PM fiber configurations. Contact Optilab for more information.

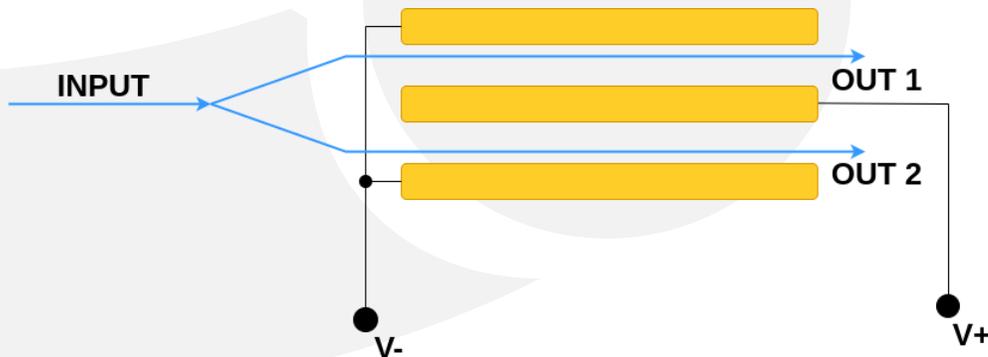
## FEATURES

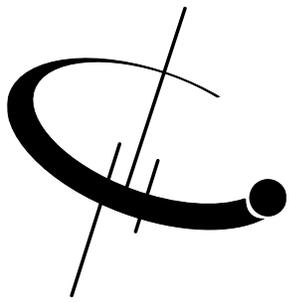
- 1550 ± 20 nm operation
- Low insertion loss
- Polarization extinction ratio > 60 dB
- Low  $V_{\pi}$  voltage
- Low Polarization crosstalk
- PM fiber pigtailed

## USE IN

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

## FUNCTIONAL DIAGRAM





# MIOC-1550-22-SP

ABSOLUTE MAXIMUM RATING ( $T_c = 25\text{ }^\circ\text{C}$  unless otherwise specified)

Parameter	Symbol	Conditions	Min	Max	Unit
Optical Input Power	$OP_{in}$	CW		100	mW
Drive Voltage	$V_{in}$	CW or Pulse	-25	+25	V
Operation Case Temperature	$T_c$		-45	75	$^\circ\text{C}$
Storage Temperature	$T_{st}$		-45	85	$^\circ\text{C}$
Soldering Time	$T_{sld}$	$\leq 260\text{ }^\circ\text{C}$		10	sec

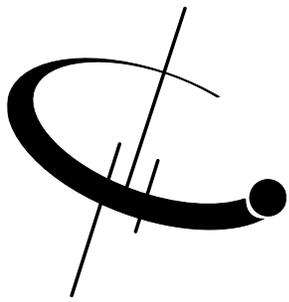
GENERAL SPECIFICATIONS at Room Temperature ( $T_c = 25\text{ }^\circ\text{C}$ )

Parameter	Symbol	Unit	P Grade	A Grade	B Grade
Operating Wavelength	$\lambda$	nm	1520 ~ 1570		
Insertion Loss	IL	dB	$\leq 3.1$	$\leq 3.6$	$\leq 4.1$
Splitting Ratio	SR	%	$50 \pm 2$	$50 \pm 3$	$50 \pm 5$
Half Wave Voltage	$V_{pi}$	V	$\leq 4.0$	$\leq 4.1$	$\leq 4.3$
Pigtail Polarization Crosstalk	XT	dB	$\leq -30$	$\leq -27$	$\leq -25$
Chip Polarization Extinction Ratio	PER	dB	$\geq 60$		
Residual Intensity Modulator	RIM	%	$\leq 0.1$	$\leq 0.1$	$\leq 0.2$
Optical Back Reflection Loss	OBRL	dB	$\geq 50$	$\geq 47$	$\geq 45$
Fiber Length	L	m	$\geq 0.9$		

Performance Over Full Temperature Range ( $-45\text{ }^\circ\text{C} \sim +75\text{ }^\circ\text{C}$ )

Parameter	Unit	P Grade	A Grade	B Grade
Insertion Loss Variation	dB	$\leq 0.3$	$\leq 0.5$	$\leq 0.7$
Splitting Ratio	%	$50 \pm 3$	$50 \pm 5$	$50 \pm 5$
Pigtail Polarization Crosstalk	dB	$\leq -27$	$\leq -25$	$\leq -20$





# MIOC-1550-22-SP

## Ordering Option:

MIOC-1550-LL-FF-G-XX-YY-ZZ

### LL: Chip Length

- 18: 18 mm
- 22: 22 mm

### FF: Form Factor

- BC: Bare chip
- SB: Bare chip on submount
- SP: Fiber pigtailed w/ submount
- PG: Packaged

### G: Grade

- P: Premium grade
- A: A grade
- B: B grade

### XX: Input Fiber

- YY: Output Fiber #1
- ZZ: Output Fiber #2

For each fiber:

First digit: Fiber Type

Second digit: Alignment direction

### Fiber Type Option:

- 0: No fiber pigtail
- 1: Corning RCPM15, 80/165  $\mu\text{m}$
- 2: Corning PM15-U25D, 125/250  $\mu\text{m}$

### Fiber Alignment Direction Option:

- 0: Not applicable
- 1: Slow axis aligned to TE mode
- 2: Fast axis aligned to TE mode
- 3: 45° alignment

## MECHANICAL DRAWING

