POLARITON TECHNOLOGIES

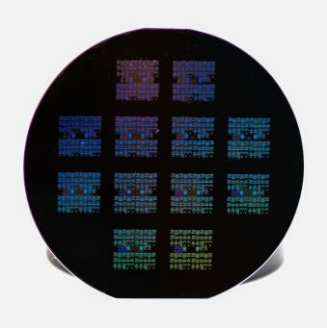
110 GHz Plasmonic Balanced Mach-Zehnder Modulator

Description

The plasmonic Mach-Zehnder Modulator (MZM) is an ideal solution for high-speed electro-optic conversion in the C-Band. Featuring a bandwidth of beyond 110 GHz makes it a first choice for applications in measurement systems, radio-over-fiber (RoF) systems and for high-data-rate optical transport.

Key Features

- 3 dB electro-optic bandwidth >110 GHz
- C-band operation
- Lumped, low-capacitance RF design
- Chip dimensions 1.5 mm x 2 mm



Performance Data

Operating wavelength	1520 – 1570 nm
Insertion loss (IL)	< 18 dB
Static extinction ratio (ER)	> 25 dB
DC bias on/off voltage	< 1.5 V
3dB EO bandwidth	> 110 GHz
$V_{\pi, eq}$ @ 100 kHz @ 50 Ohm*	< 5 V

Maximum Ratings

Optical input power: long term Optical input power: 500 h**	0 dBm 3 dBm
RF input power @ 50 Ohm	18 dBm
DC voltage at RF input	0 V
DC bias voltage DC bias current	2.5 V 20 mA
Operating / storage temperature	~ 25 °C

Mechanical and Optical Specifications

Optical input and output	Grating coupler (GC), 127 um pitch
Center wavelength at GC angle	1550 nm at 8°
Electrical RF interface	G-S-G, 60 – 200 µm pitch
Electrical DC interface	+/-, 30 – 230 µm pitch

* Plasmonic modulators are high-impedance devices. Twice the voltage provided by a 50-Ohm signal source will drop across the plasmonic modulator. Using a DC source or a high-impedance-matched driver, double the voltage is required to switch the modulator from the on to the off state.
** With a V_{π} degradation < 2.5%.

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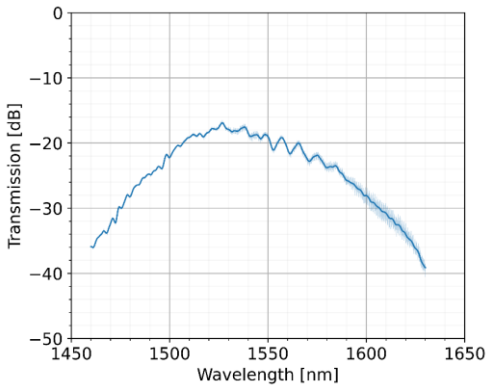
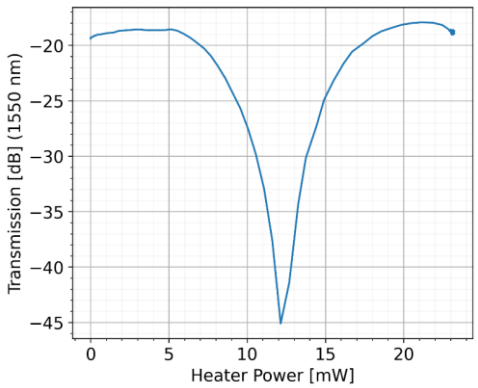
Version POL-000202CMZDSH_rev1_bMZM-C110-2023Q3

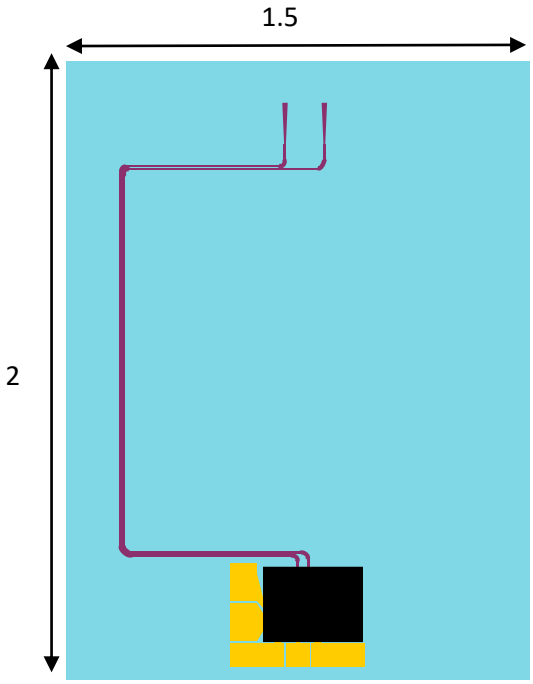
Insertion Loss



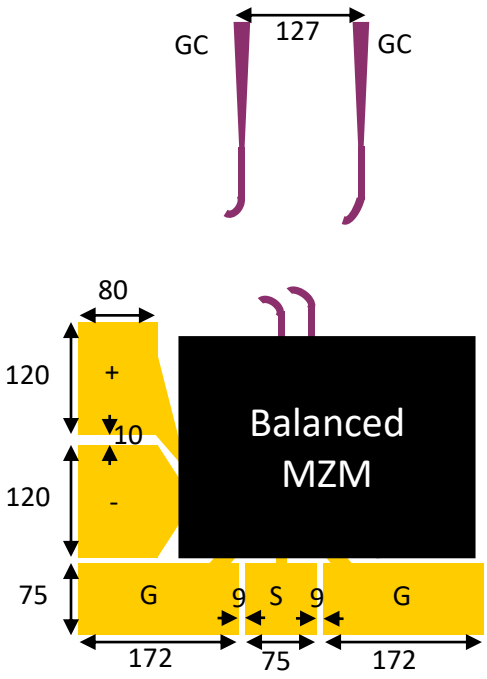
DC Bias Power



Chip Drawing and Dimensions [mm]



Device Drawing and Dimensions [µm]



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