

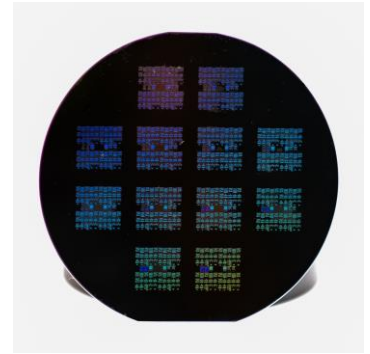
## 110 GHz Plasmonic Dual-Drive IQ Modulator

### Description

The plasmonic dual-drive IQ-Mach-Zehnder modulator 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 coherent applications with high symbol rates.

### 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
$V_{n,eq}$ @ 100 kHz @ 50 Ohm*	< 5 V

### Maximum Ratings

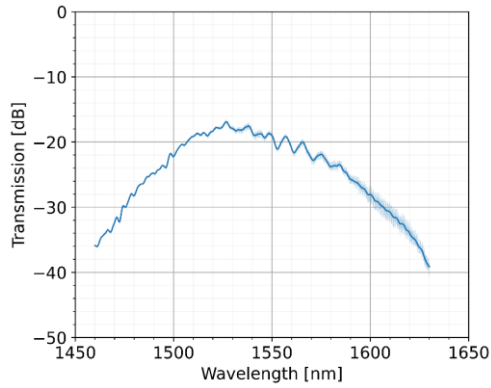
Optical input power: long term	0 dBm
RF input power @ 50 Ohm	18 dBm
DC voltage at RF input	0 V
DC bias voltage	2.5 V
DC bias current	20mA
Operating / storage temperature	~ 25 °C

### Mechanical and Optical Specifications

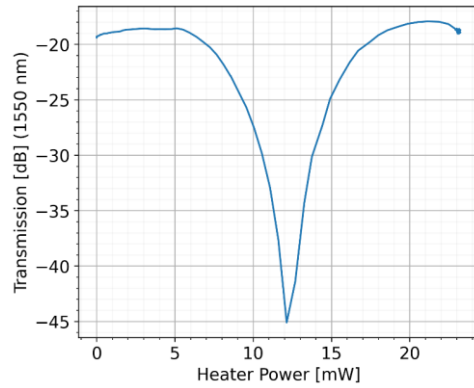
Optical input and output	Grating coupler (GC), 127 µm pitch
Center wavelength at GC angle	1550 nm at 8°
Electrical RF interface	G-S / $\bar{S}$ -G, 100-300-100 µm pitch
Electrical DC interface	+ - / + - / + -, 150 µm pitch

\* 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.

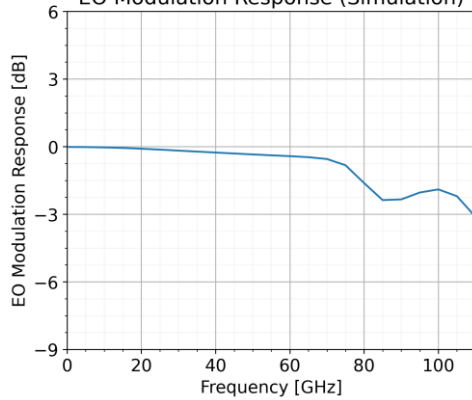
Insertion Loss



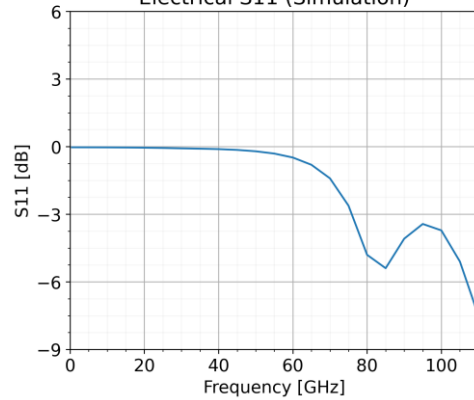
DC Bias Power



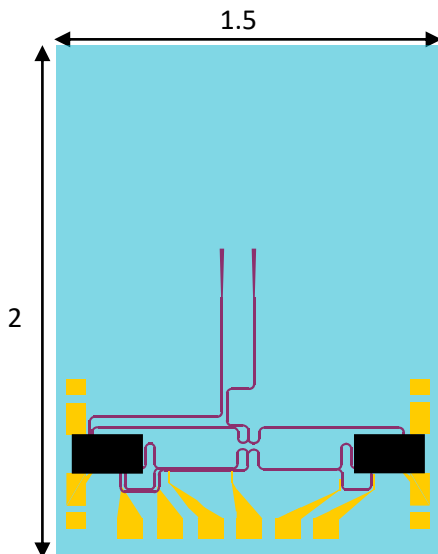
EO Modulation Response (Simulation)



Electrical S11 (Simulation)



Chip Drawing and Dimensions [mm]



Device Drawing and Dimensions [ $\mu\text{m}$ ]

