

110 GHz Plasmonic Differential-Drive Ring Resonator Modulator

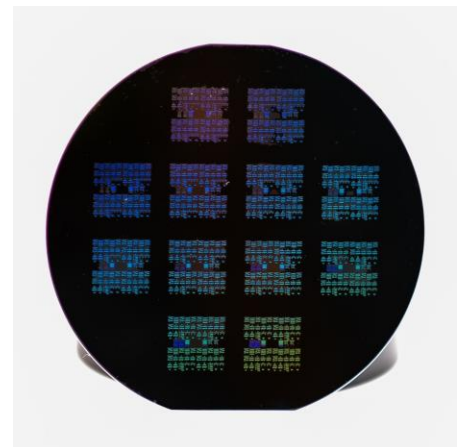
Description

The plasmonic Ring Resonator Modulator (RRM) 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.

The RRM has a resonant spectrum with peaks and extinctions. This allows for a change of the operating point by tuning the wavelength of the laser source, making an additional voltage source obsolete.

Key Features

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



Performance Data

Insertion loss (IL)	< 10 dB
Static extinction ratio (ER)	> 8 dB
3-dB EO bandwidth	> 110 GHz
Spectral Modulation Shift	> 0.15 nm/V
Free Spectral Range	~ 7 nm

Maximum Ratings

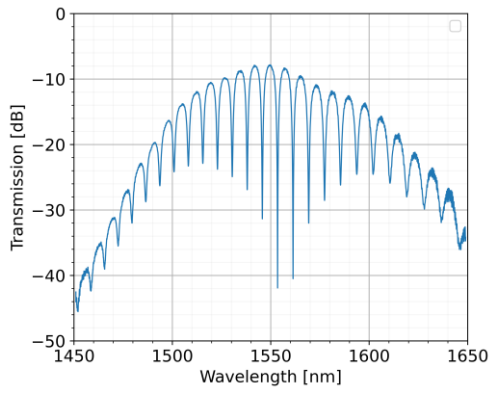
Optical input power*	0 dBm
RF input power @ 50 Ohm	18 dBm
DC voltage at RF input	0 V
Operating / storage temperature	~ 25 °C

Mechanical and Optical Specifications

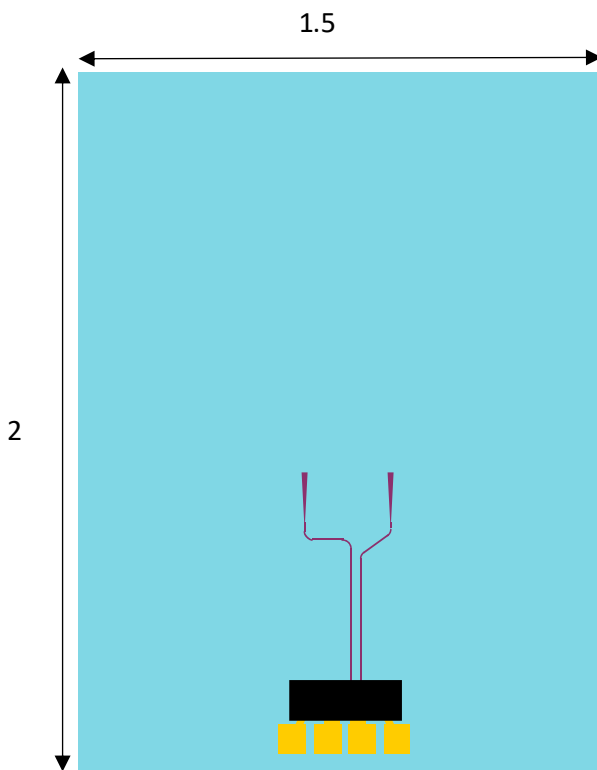
Optical input and output	Grating coupler (GC), 127 μm pitch
Center wavelength at GC angle	1550 nm at 8°
Optical source needed	Tunable Laser Source, 1550 nm ± 10 nm range
Electrical RF interface	G-S-S-G, 80 μm x 80 μm, 100 μm pitch

* Operation time of 8000 h with a V_{IT} degradation < 2.5%.

Transmission Spectrum



Chip Drawing and Dimensions [mm]



Device Drawing and Dimensions [μm]

