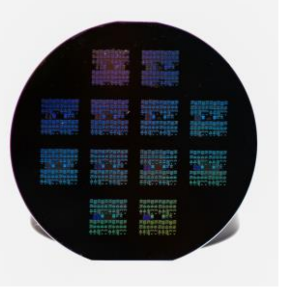
O/C Band 110 GHz
Ring Resonator Modulator

Key Features

- 3-dB electro-optical bandwidth >110 GHz
- Lumped, low-capacitance RF design
- Chip dimensions 1.5 mm x 2 mm
- O/C band operation
- Possible electrical drive: Single, differential, or dual
- Available as single or 4-channel device



Performance Data

	O band	C band
Peak wavelength	1310 nm	1550 nm
Insertion loss (IL)	<10 dB	<8 dB
Static extinction ratio (ER)	>8 dB	>8 dB
DC bias on/off voltage	<1.5 V	<1.5 V
3-dB EO bandwidth	>110 GHz	>110 GHz
$V_{drive, eq}$ @ 50 Ohm*	<2 V	<2 V
Free Spectral Range	~ 4.7 nm	~ 4.7 nm

Maximum Ratings

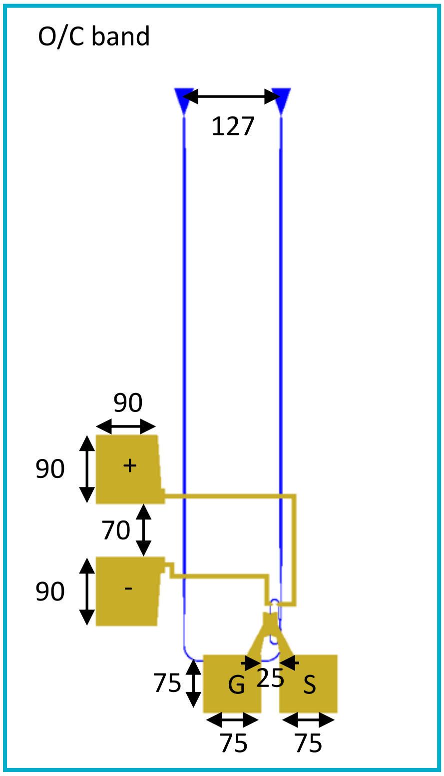
	O band	C band
Optical input power**	tbd	0 dBm
RF input power @ 50 Ohm	18 dBm	18 dBm
DC voltage at RF input	0 V	0 V
DC bias voltage DC bias current	2.5 V 15 mA	2.5 V 15 mA
Operating / storage temperature	~25 °C	~25 °C

* 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.
** Operation time of 8000 h at 20°C with a V_{drive} degradation < 10%.

Mechanical and Optical Specifications

	O band	C band
Optical input and output	Grating coupler (GC), 127 um pitch	Grating coupler (GC), 127 um pitch
Center wavelength at GC angle	1310 nm at 8°	1550 nm at 8°
Optical source needed	Tunable laser source, 1310 nm ± 10 nm range	Tunable laser source, 1550 nm ± 10 nm range
Electrical RF interface	G-S, S-G, S-S̄, S̄-S, or S_1-S_2 30 – 170 µm pitch	G-S, S-G, S-S̄, S̄-S, or S_1-S_2 30 – 170 µm pitch
Electrical DC interface	+/-, 75 – 245 µm pitch	+/-, 75 – 245 µm pitch

Drawings and Dimensions



Transmission Spectrum