C-band 28GBaud InP Mach-Zehnder-Modulator

General Description

The Indium-Phosphide Mach-Zehnder-Modulator is ideally suited for optical transport applications within the C-band. It features a unique traveling-wave-electrode design, resulting in slow roll-off and zero chirp.

Applications

28GBaud OOK, 4PAM, 2PSK, ODB

Features

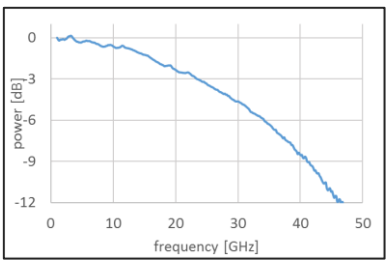
- C-band operations (1527-1568nm)
- Traveling-wave-electrode design with zero chirp
- Adjustable Vπ
- Small foot print (6.2 x 0.385 x 0.2mm)
- AR-coated facets with spot size converter for efficient optical coupling

Operating Conditions / Absolute Maximum Ratings

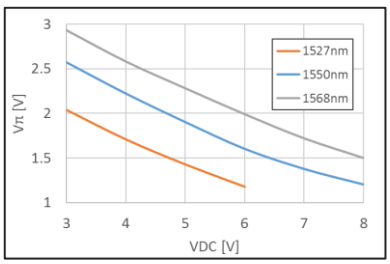
Parameter	Unit	Min	Typ	Max
Optical wavelength	nm	1527	1550	1568
Optical input power	dBm		10	16
Chip temperature	°C		40	60
Bias voltage VDC	V	3		10
Phase-voltage	V	-10		0

Performance

Parameter	Symbol	Unit	Typ	Comments
Insertion loss	IL	dB	5	@ max. transmission, 1550nm
Extinction ratio (DC)	ER	dB	>20	
3dB EO cut-off frequency	f_{3dB}	GHz	22	
Bias voltage	VDC	V	5	
Phase voltage	P1 | P2	V	-3	quadrature point
Vπ		V	2.0	@ VDC= +5V, 1550nm



Small signal response (S21 eo)



Vπ = f (VDC)

Fraunhofer Institute for Telecommunications, Heinrich-Hertz Institute, HHI

Einsteinufer 37
10587 Berlin
Germany

Fraunhofer HHI

Contact: Klemens Janiak Phone: +49 30 31002-574 Mail: klemens.janiak@hhi.fraunhofer.de

C-band 28GBaud InP Mach-Zehnder-Modulator

General Instructions / Precautions

An InP-Mach-Zehnder-Modulator contains several semiconductor-p-i-n junctions, a faulty DC-operation will result in an irreversible damage of the device. Please use the electric circuit diagram for correct DC-wiring. Don't exceed maximum values for Phase- and VDC-voltages. VDC has to be always positive, referenced against GND. Phase voltages has to be always negative, referenced against VDC. Use voltage sources with integrated current limiter.

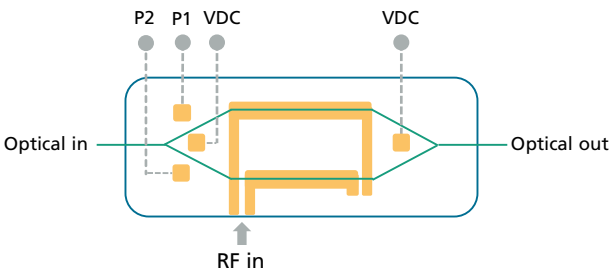
Limits: VDC : 3 mA, Phase: 1 mA.

The use of an external temperature controller is highly recommended, otherwise the operating point is not stable over time.

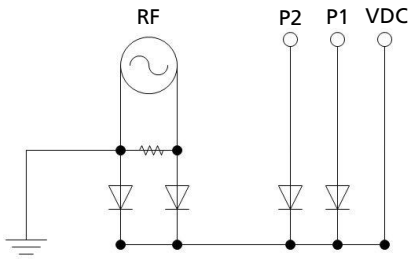
Connections / Specifications

- Optical coupling: SSMF with tapered fiber / lense recommended
- Contact-pad material: Au
- DC-pad dimensions: 85 x 85µm
- RF-pitch: 100µm, external 50Ω needed for RF-operation

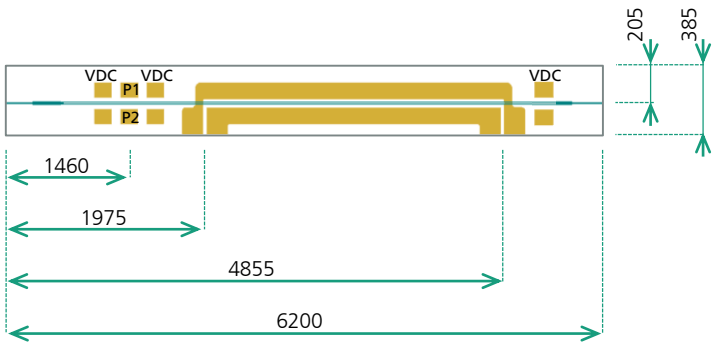
Device diagram



Electric circuit diagram



Chip layout / dimensions [µm]



Chip photo

Part Number

- Chip: MZM_D_C_22_19

Fraunhofer Institute for Telecommunications, Heinrich-Hertz Institute, HHI

Einsteinufer 37
10587 Berlin
Germany

Fraunhofer HHI

Contact: Klemens Janiak Phone: +49 30 31002-574 Mail: klemens.janiak@hhi.fraunhofer.de