O-band 56GBaud InP Mach-Zehnder-Modulator

General Description

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

Applications

56GBaud, 4PAM, 2PSK

Features

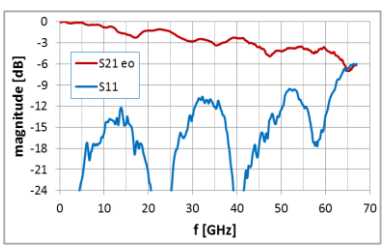
- O-band operations (1280-1340nm)
- High bandwidth
- Traveling-wave-electrode design with zero chirp
- Evaluation-board with integrated TEC-control included
- Adjustable Vπ

Operating Conditions / Absolute Maximum Ratings

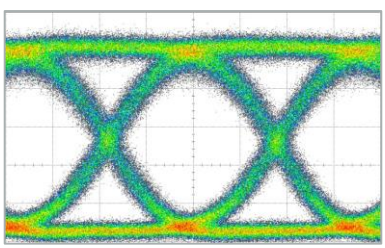
Parameter	Unit	Min	Typ	Max
Optical wavelength	nm	1280	1310	1340
Optical input power	dBm		10	16
Temperature	°C		25	50
Bias voltage V_{bias}	V	3		10
Phase-voltage	V	-10		0
TEC-control supply voltage	V		5	
TEC-control driving current	A		0.3	1

Performance

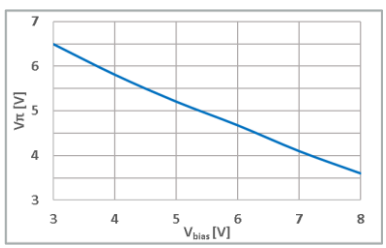
Parameter	Symbol	Unit	Typ	Comments
Insertion loss	IL	dB	7.0	@ max. transmission
Extinction ratio (dynamic)	ER	dB	>10	@ 56GBaud
Extinction ratio (DC)	ER	dB	>20	
3dB EO cut-off frequency	f_{3dB}	GHz	35	
Bias voltage	V_{bias}	V	8	
Phase voltage	P1 | P2	V	-3	quadrature point
Vπ		V	3.5	@ V_{bias}= +8V



Small signal response



Eye diagram @ 56GBaud (RF-V_{pp}: 3.5V)



Vπ = f (V_{bias}) @ 1310 nm

HHI reserves the right to change specifications without any prior notice at any time

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

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General Instructions / Precautions

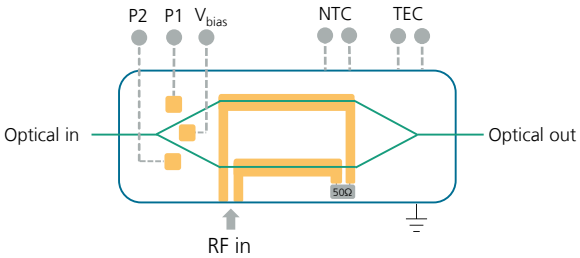
An InP-Mach-Zehnder-Modulator contains several semiconductor-p-i-n junctions, a faulty DC-operation will result in an irreversible damage of the device. Please use the electric circuit diagram for correct DC-wiring. Don't exceed maximum values for Phase- and Bias-voltages. V_{bias} has to be always positive,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

Limits: V_{bias} : 3 mA, Phase: 1 mA.

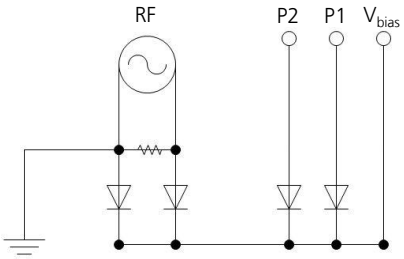
Connections / Specifications

- Optical connections: SSMF with FC/APC connectors
- RF: single ended, 1.85mm female
- DC: Evaluation board with integrated TEC-control and preconfigured cable assembly (4mm banana jacks)

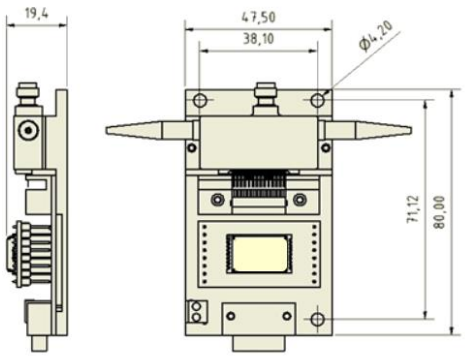
Device diagram



Electric circuit diagram



Drawings / pictures evaluation board and module



Part Numbers

- Module: MZM_M_O_35_19
- Evaluation board: EVAL_M_19

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Einsteinufer 37
10587 Berlin
Germany

Fraunhofer HHI

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