

C-band 56GBaud 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

56GBaud OOK, 4PAM, 2PSK

Features

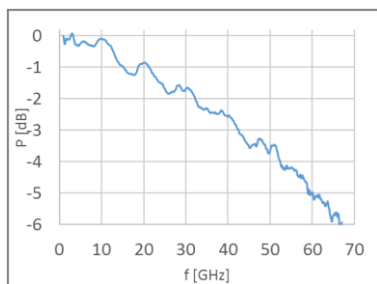
- C-band operations (1527-1568nm)
- High bandwidth
- Traveling-wave-electrode design with zero chirp
- Adjustable $V\pi$
- Small foot print (8.0 x 0.5 x 0.2mm)
- AR-coated facets with spot size converter for efficient optical coupling

Operating Conditions / Absolute Maximum Ratings

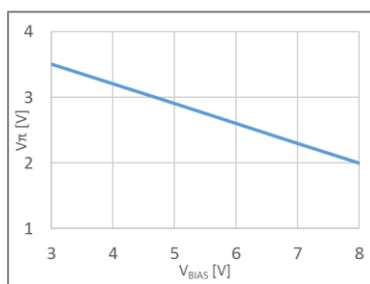
Parameter	Unit	Min	Typ	Max
Optical wavelength	nm	1527	1550	1568
Optical input power	dBm		10	16
Temperature	°C		40	50
Bias voltage V_{bias}	V	3		10
Phase-voltage	V	-10		0

Performance

Parameter	Symbol	Unit	Typ	Comments
Insertion loss	IL	dB	6	@ max. transmission
Extinction ratio (DC)	ER	dB	>20	
3dB EO cut-off frequency	$f_{3\text{dB}}$	GHz	40	
Bias voltage	V_{bias}	V	8	
Phase voltage	P1 P2	V	-3	quadrature point
$V\pi$		V	2.0	@ $V_{\text{bias}} = +8\text{V}$



Small signal response (S21 eo)



$V\pi = f(V_{\text{bias}})$ @ 1550nm

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.

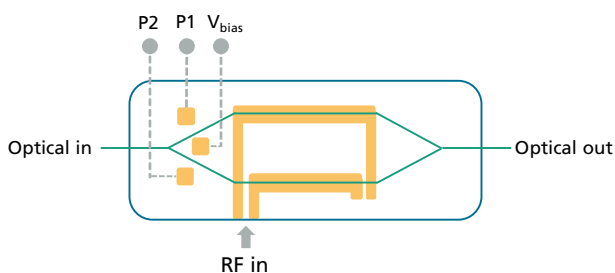
Limits: V_{bias} : 3 mA, Phase: 1 mA.

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

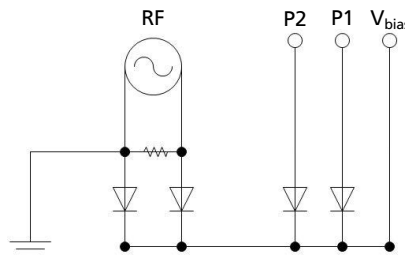
Connections / Specifications

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

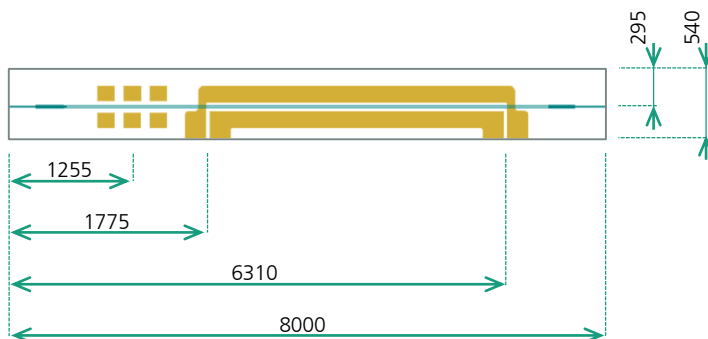
Device diagram



Electric circuit diagram



Chip dimensions [μm]



Part Number

- Chip: MZM_D_C_40_19

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