



10GHz 1310nm Low-drive Electro-Optic Intensity Modulator IM-1310-10G-LTZ

Overview

IM-1310-10G is used for optical signal intensity modulation and pulse shaping. The device is composed of a high polarization extinction ratio polarizer, a integrated push-pull electro-optic Mach-Zander interferometer and a integrated electro-optical DC bias controller. Based on Lithium Niobate (LiNbO₃) material, IM-1310-10G is fabricated with optical waveguides using High Temperature Proton Exchange (HTPE) process and the group-velocity matched electrodes for high-frequency region. The IM-1310-10G features on-off extinction ratio (ER) exceeding 25 dB with low-drive voltage of 6 Volts at 10 GHz. The device is highly reliable in performance, operates over very wide temperature range and has extended file time in comparison with competing technologies such as InP and silicon photonics.

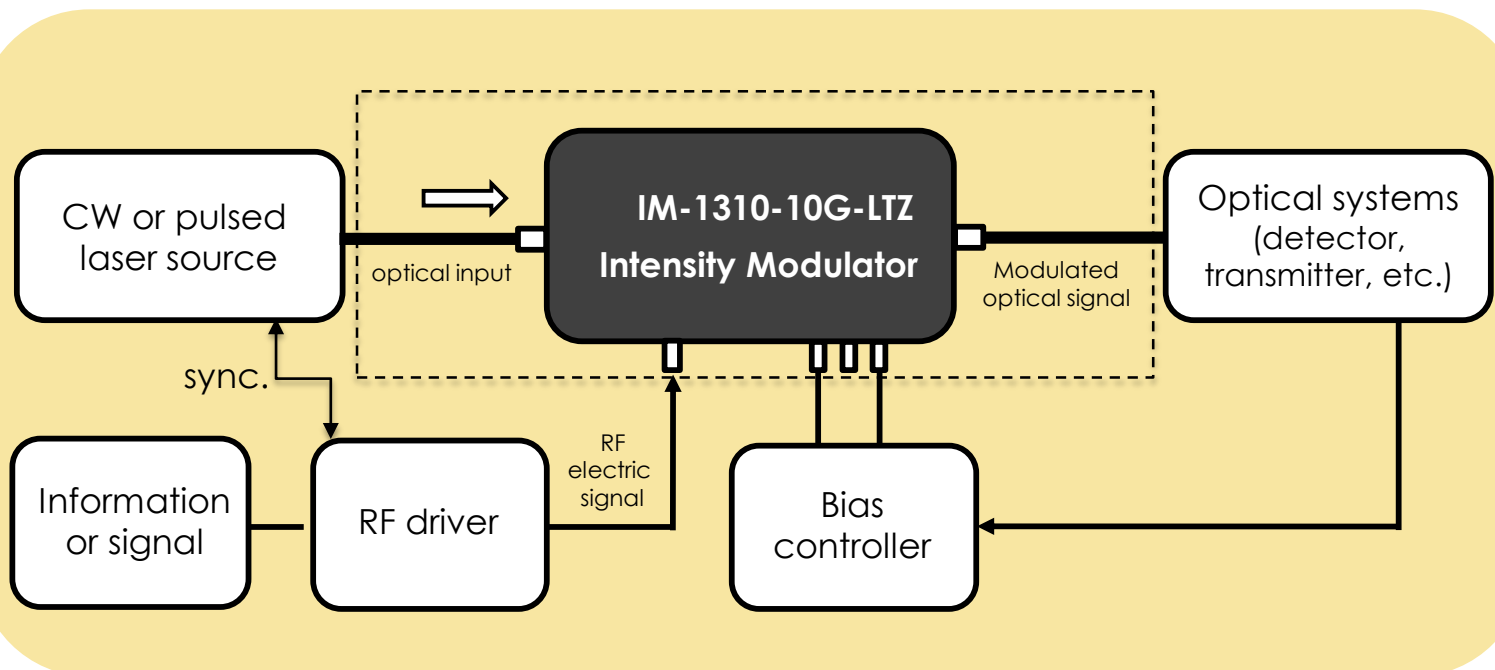
Features

- ▶ 1310 ± 30 nm operation
- ▶ EO bandwidth (-3dB)
 - > 10 GHz, Max. to 20 GHz
- ▶ Insertion loss : typ. 4.5 dB, max. 5dB
- ▶ V_{π} (RF port, at 1 GHz) < 4.5 V
- ▶ V_{π} (RF port, at 10 GHz) < 6.0 V
- ▶ Polarizer integrated
- ▶ Polarization extinction ratio > 60 dB

Applications

- ▶ Telecommunication & Lidar
- ▶ NRZ, RZ, DPSK formats
- ▶ CWDM applications
- ▶ pulsed shaping and laser modulation
- ▶ quantum key distribution (QKD) system
- ▶ Analog transmission link
- ▶ Delay lines telemetry systems
- ▶ RF-over-fiber (RFoF) system

Application Diagram





Specifications	
Model	IM-1310-10G-LTZ
Substrate	X-cut, Y-propagation Lithium Niobate
Operation wavelength	1310 ± 30 nm
Input optical power	70 mW (typ.), 100 mW (max.)
Chirp value	≤ 0.2 (zero chirp design)
Insertion loss (bare chip)	typ. 4.0 dB, max. 4.5 dB
Insertion loss (pigtailed)	typ. 4.5 dB, max. 5.0 dB
$V_{\pi,RF}$ (RF port, 1 GHz)	≤ 4.5 V
$V_{\pi,RF}$ (RF port, 10 GHz)	≤ 6.0 V
$V_{\pi,Bias}$ (Bias port)	Typ. 5.5 V (at 1 GHz)
On-off extinction ratio (ER)	≥ 25 dB, up to 30 dB
EO 3dB Bandwidth (RF Port)	≥ 10 GHz, Max. to 20 GHz available
Polarization extinction ratio	≥ 60 dB
Optical return loss	≤ -45 dB
Return Loss (RF Port)	≤ -10 dB (DC to 10 GHz)
RF Input Power	26 dBm max.
Impedance (RF Port)	50 ± 5 Ω
RF electrode type	Push-pull
Chip polished angle	6 ± 0.5 degree
Chip dimension	45 mm (L) x 1.8 mm (W) x 1 mm (H), tolerance 10 %
Operating Temperature	- 30 °C ~ + 70 °C
Storage Temperature	- 50 °C ~ + 80 °C

Mechanical Drawing

