Product Definition Sheet
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Lucent Technologies
Bell Labs Innovations

40 Gbits/s Lithium Niobate Electro-Optic Modulator

Features

- Ti-diffusion process
- Dual-drive technology
- Thin-film, 50 Ω termination in package for minimal reflections
- Low modulation voltages
- Tested to Bellcore 468
- Angled interfaces for minimal optical reflections
- Hermetic package
- Separate dc bias electrode

Benefits

- Excellent long-term bias stability over a full operational temperature range of 0 °C to 70 °C
- Adjustable chirp for long distances at high bit rates
- Internal polarizer

Applications

- Digital high-speed telecommunications
  — SONET OC-768
  — Undersea communications
- Internet data communications
- SONET test equipment

Note: This product definition sheet is intended as an aid in the process of defining a new product. The product described is available only as a model and should be used only for evaluation. This product definition sheet serves only as a basis for discussion that may or may not lead to the generation of a final specification for development. The information contained herein must not be construed as a commitment to develop, manufacture, or deliver the device described by this document. If, in fact, such a device is developed, it is likely the specification will differ, as may features and functionality.

Description

Representing the latest advancements in high-speed lithium niobate technology, the 40 Gbits/s Electro-Optic Modulator is designed for long-wavelength, single-mode, external amplitude modulation applications. It uses an integrated Mach-Zehnder configuration to convert single polarization CW light from a semiconductor (DFB) laser into a time-varying optical output signal. Using the source in the CW mode eliminates the need for demanding, high-speed performance from the laser and reduces its cost.

The dual-drive design inherently offers the capability to adjust the phase of the voltages on the electrodes, which produces zero-chirp modulation operation. The modulator is tested to, and meets the intent of, TR-NWT-00468.

Absolute Maximum Ratings

Stresses in excess of the absolute maximum ratings can cause permanent damage to the device. These are absolute stress ratings only. Functional operation of the device is not implied at these or any other conditions in excess of those given in the operational sections of the data sheet. Exposure to absolute maximum ratings for extended periods can adversely affect device reliability.

Parameter	Symbol	Min	Max	Unit
Storage Temperature	T_{stg}	–40	85	°C
Optical Input Power @ 1.5 µm	P_{IN}	—	30	mW
RF Voltage (RF input)	V_{RF}	—	20	V
dc Voltage (dc input)	V_{dc}	–20	20	V
Operating Temp.	T_{OP}	0	70	°C

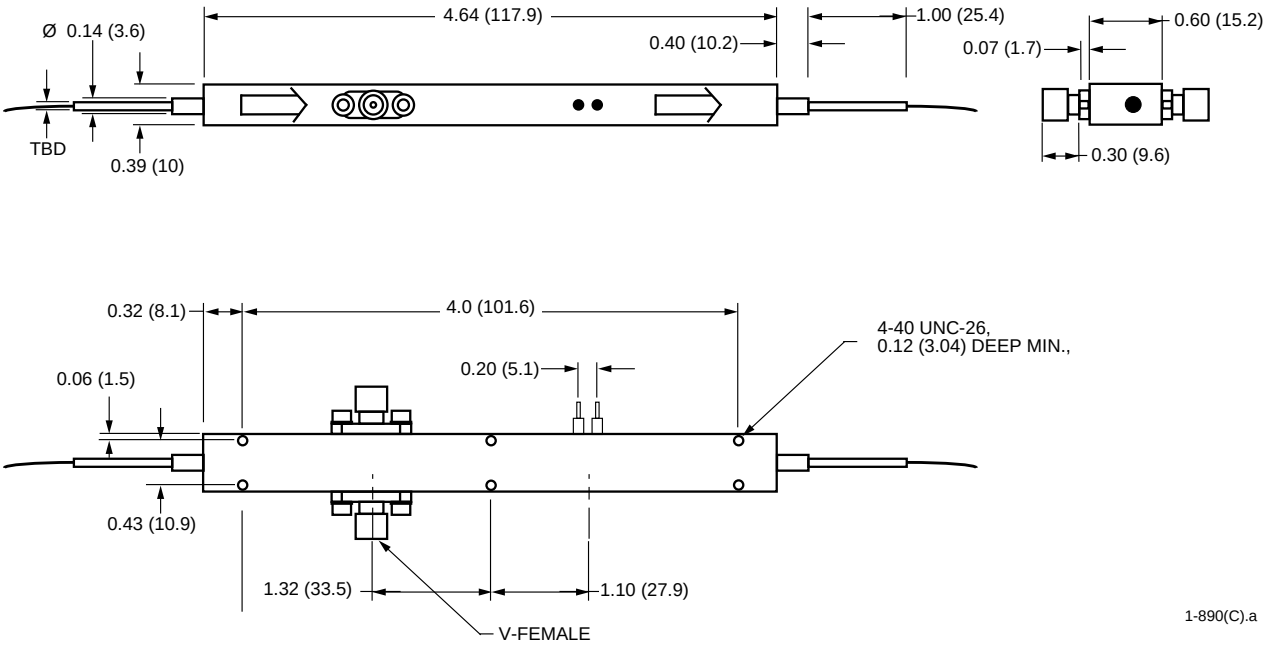
Characteristics

Table 1. Optical/Electrical Characteristics (T_C = 25 °C)

Parameter	Min	Typ	Max	Unit
Operating Wavelength	1525	1550	1565	nm
Optical Insertion Loss	—	6	—	dB
S11 Optical Return Loss	—	–40	—	dB
Bandwidth	—	30	—	GHz
Drive Voltage (V_π) @ dc	—	6	—	V
Electrode Impedance	—	47	—	Ω
S11 Electrical Return Loss	—	–15	—	dB

Outline Diagram

Dimensions are in inches and (millimeters).



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