

40 GHz Multi-Band Lithium Niobate Phase Modulator without Polarizer



Description

LNP6119

The LNP6119 is a broadband LiNbO₃ z-cut phase modulator designed to support operation at 1310 nm and 1550 nm. The electro-optic response (S_{21}) is smooth from DC to 40 GHz. The input fiber is polarization-maintaining (PM), and the output fiber is standard single mode fiber; both terminated with FC/PC connectors. The input FC/PC connector key is aligned to the slow axis of the PM fiber, which is in turn aligned with the extraordinary mode of the chip. The RF input connector is a field-replaceable 1.85 mm (V) connector. A separate low-frequency phase modulator, in series with the RF phase modulator, is available through a separate set of pins.

The LNP6119 does not have an internal polarizer. Both the ordinary and extraordinary polarization modes are supported. Optimal modulation is achieved with the extraordinary mode.

Specifications

LNP6119			
Optical Specifications	Min	Typical	Max
Operating Wavelength ^a	1260 nm	-	1625 nm
Insertion Loss (1310 nm)	-	5.0 dB	5.5 dB
Insertion Loss (1550 nm)	-	4.0 dB	4.5 dB
Optical Return Loss	40 dB	-	-
Optical Input Power	-	-	100 mW
RF Electrical Specifications^b	Min	Typical	Max
E/O Bandwidth (-3 dB)	-	35 GHz	-
Operating Frequency Range	DC to 40 GHz (Minimum)		
RF V_{π} (@ 10 GHz)	-	7.0 V	-
RF V_{π} (@ 30 GHz)	-	8.5 V	9.5 V
S ₁₁ (DC to 30 GHz)	-	-12 dB	-10 dB
S ₁₁ (30 to 40 GHz)	-	-10 dB	-8 dB
RF Port Input Power	-	-	24 dBm
Low-Frequency Modulator Specifications^b	Min	Typical	Max
Operating Frequency Range	DC to 1 MHz (Typical)		
V_{π} (@ 1 kHz)	-	10 V	-
Environmental Specifications	Min	Typical	Max
Operating Temperature	0 °C	-	70 °C
Storage Temperature	-40 °C	-	85 °C



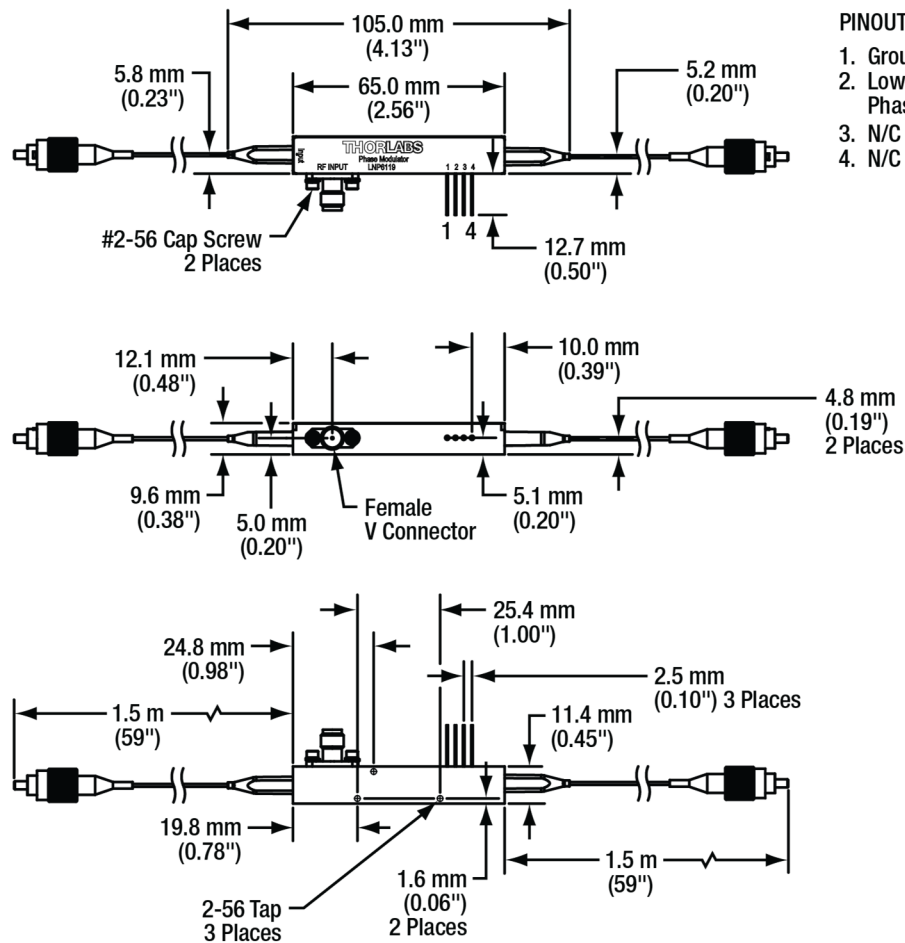
a. The modulator is designed for use at the specified wavelengths. Using the modulator at other wavelengths may cause an increase in the optical loss that is not covered under warranty. In some cases, this loss can be temporary; for instance, the increase in loss caused by shorter wavelengths can usually be reversed by heating the modulator to 80 °C for an hour.

b. At 1550 nm

LNP6119	
Mechanical Specifications	
Crystal Orientation	Z-Cut
RF Connector	Female 1.85 mm (V)
Fiber Type	Input: PANDA Polarization Maintaining Output: SMF-28 ^{®†} Single Mode
Fiber Connectors	2.0 mm Narrow Key FC/PC
Fiber Lead Length	1.5 m (Typ.)
Fiber Jacket	Ø900 µm Loose Tube

†SMF-28 is a registered trademark of Corning.

Mechanical Drawing



STANDARD INPUT FIBER	
FIBER TYPE	PM
CONN. TYPE	FC/UPC
KEY	NARROW
KEY ALIGNMENT	SLOW AXIS

STANDARD OUTPUT FIBER	
FIBER TYPE	SM
CONN. TYPE	FC/UPC
KEY	NARROW
KEY ALIGNMENT	N/A