

TFLN Phase Modulator

(Preliminary Version)

Features

- ※ Bandwidth up-to 40 GHz
- ※ Low half-wave voltage 2.8 V
- ※ Low insertion loss 4.5 dB
- ※ Small device size



Description of TFLN Phase Modulator

The thin-film lithium niobate (TFLN) phase modulator is an exceptional opto-electric converter device, which was developed in-house and showcased unparalleled performance. This device is manufactured using advanced coupling and micro-electronic processes, and realizes high opto-electric conversion efficiency on TFLN. Compared to other commercial bulk lithium niobate-based modulators, our products provide superior characteristics on half-wave voltage, stability, and device size, significantly enhancing critical performance in digital optical communications and telecommunication networks.

Specifications

Category	Parameters	Symbol	Unit	Performance	
Optical Features	Operating Wavelength	λ	nm	~ 1550	
	Optical Return Loss	ORL	dB	≤ -27	
	Optical Insertion Loss	IL	dB	Max: 5.5 Typ: 4.5	
Electrical Features	3dB Bandwidth (from 2 GHz)	S21	GHz	X1 : 2	X1 : 4
				20	40
	RF Load	Rm	Ohm	50 \pm 10	
	RF V_{π} (@ 50 KHz)	V_{π}	V	Max: 3.0 Typ: 2.8	
Work Condition	RF Return Loss (10 MHz to 40 GHz)	S11	dB	≤ -10	
	Operating Temperature	T _o	°C	-20~70	

Absolute Maximum Ratings

Working over maximum ratings could significantly reduce device reliability and cause irreversible damage.

Parameters	Symbol	Optional	Min.	Max.	Unit
RF Input Power	Sin	X2 : 4	-	23	dBm
		X2 : 5	-	29	
RF Swing Voltage	Vpp	X2 : 4	-4.465	+4.465	V
		X2 : 5	-8.915	+8.915	
RF RMS Voltage	Vrms	X2 : 4	-	3.16	V
		X2 : 5	-	6.30	
Optical Input Power	Pin. max	-	-	23	dBm
Heater Bias Voltage	Vh	-	0	4	V
Storage Temperature	Ts	-	-40	85	°C
Relative Humidity (no condensation)	RH	-	5	90	%

S21 Measurement (Typical)

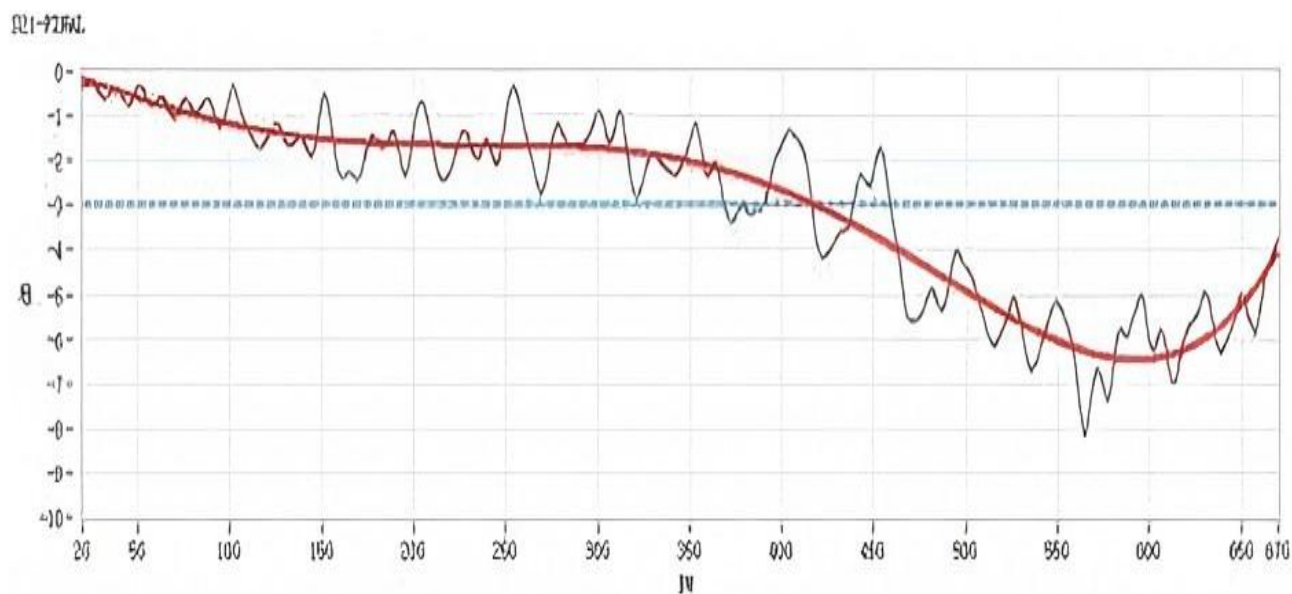
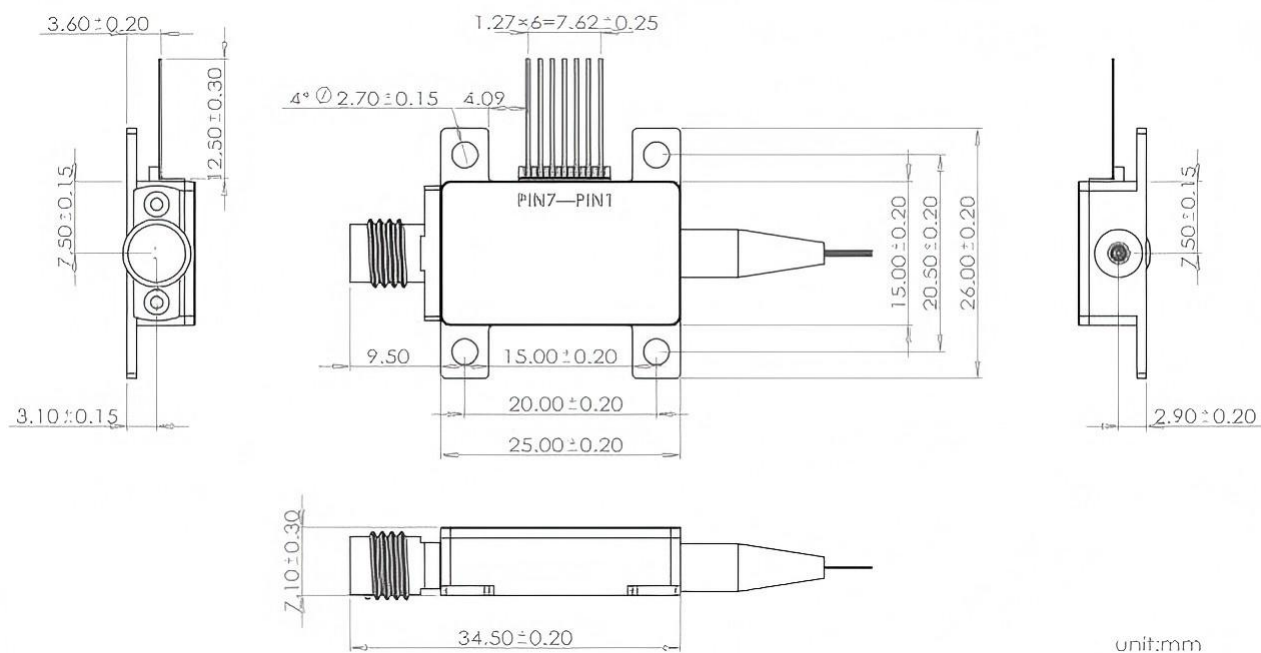


Figure 1: S21

Package and Pins (Unit: mm)



PIN	Symbol	Description
1	-	N/A
2	-	N/A
3	-	N/A
4	-	N/A
5	-	N/A
6	-	N/A
7	-	N/A
RF	RF connector*	2.92mm connector
In	Input fiber	FC/APC, PMF
Out	Output fiber	FC/APC, PMF

* Customizable 1.85mm connector.

Ordering Information

P/N: NY-X₁ - C6PPBP5-X₂

Optional Model	Description	Optional Code
X ₁	RF 3dB Bandwidth	2 or 4
X ₂	Maximum RF Swing Voltage	4 or 5

Product Description:

C-band LiNbO₃ TFLN phase modulator device, polarization maintaining fiber as optical input and output.

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