

# TFLN Intensity Modulator

## (Integrated Light Source)

### Features

- ※ High RF Bandwidth up-to 40 GHz
- ※ Low half-wave voltage down-to 2 V
- ※ Low insertion loss down-to 4.5 dB
- ※ Small device size



### Description of TFLN Intensity Modulator

The thin-film lithium niobate (TFLN) intensity modulator is an exceptional opto-electric converter device, which was developed in-house and showcased unparalleled performance. This device features thermal-optic bias control interface and 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.

### Absolute Maximum Ratings

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

Parameters	Symbol	Min.	Max.	Unit
RF Input Power	Sin	-	23	dBm
RF Swing Voltage	Vpp	-4.465	+4.465	V
RF RMS Voltage	Vrms	-	3.16	V
Optical Input Power	Pin. max	-	20	dBm
Heater Bias Voltage	Vh	0	5	V
Storage Temperature	Ts	-40	85	°C
Relative Humidity (no condensation)	RH	5	90	%

## Specifications

Category	Parameters	Symbol	Unit	Performance	
Optical Features	Operating Wavelength (@ 25 °C 350mA)	$\lambda$	nm	1550nm $\pm$ 2	
	Optical Extinction Ratio (@ DC)	ER	dB	$\geq$ 20	
	Optical Return Loss	ORL	dB	$\leq$ -27	
	Optical Output Power (@ 25 °C 350mA)	P <sub>out</sub>	dBm	$\leq$ 12	
	Relative Noise Intensity	RIN <sub>LD</sub>	dBc/Hz	Max: -158 Typ: -160	
Electrical Features	3 dB Bandwidth (from 2 GHz)	S <sub>21</sub>	GHz	X <sub>1</sub> : 2	X <sub>1</sub> : 4
				20	40
	RF Load	R <sub>m</sub>	Ohm	50 $\pm$ 10	
	RF V <sub><math>\pi</math></sub> (@ 50 KHz)	V <sub><math>\pi</math></sub>	V	Max: 3.5 Typ: 3.0	
	Heater Resistance	R <sub>h</sub>	Ohm	80 $\pm$ 5	
	Heater P <sub><math>\pi</math></sub> (@ DC)	P <sub><math>\pi</math></sub>	mw	$\leq$ 100	
Work Condition	Operating Temperature*	T <sub>o</sub>	°C	$\leq$ -10	
				-40 ~ +75	

\*Customization is available.

## S21 & S11 Measurement (Typical)

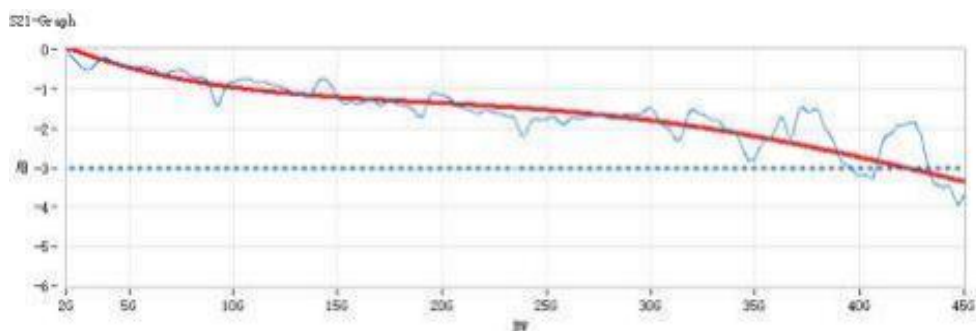


Figure 1: S21

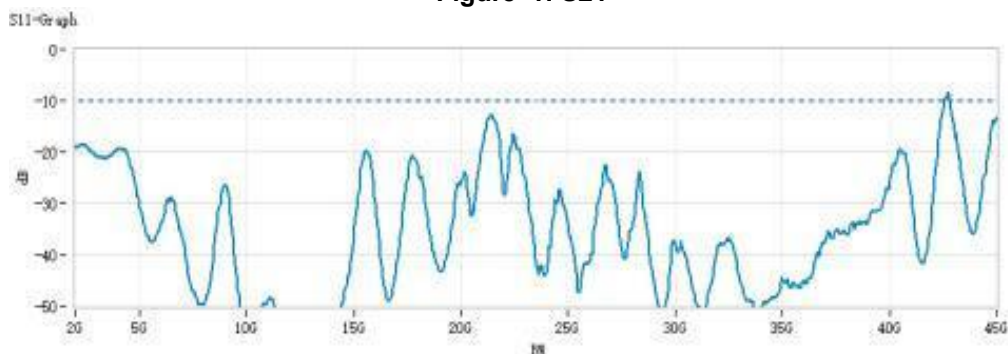
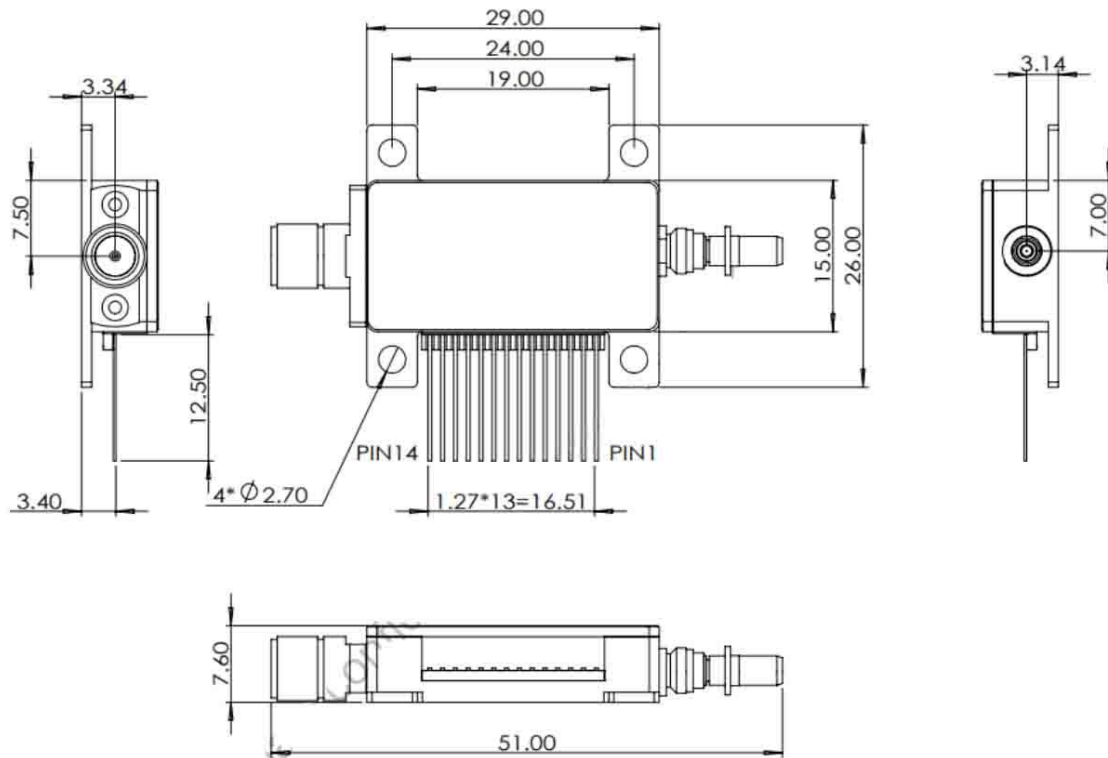


Figure 2: S11

## Package and Pins ( Unit: mm)



PIN	Symbol	Description
1	TEC+	Tec Positive
2	TEC-	Tec Negative
3	LD+	Ld Positive
4	LD-	Ld Negative
5	NULL	-
6	NULL	-
7	Rth-	Bottom Of Thermistor
8	Rth+	Top Of Thermistor
9	MPD0-	MZ modulator input optical power monitor MPD cathode
10	MPD1-	MZ modulator output optical power monitor MPD cathode
11	MPD0 & MPD1+	MPD0 and MPD1 share the anode
12	Bias+	Bias input positive
13	Bias-	Bias input negative
14	NULL	Optional shell ground
RF	RF connector	SMA, 1.85mm / 2.92mm
Out	Output fiber	SMF

## Ordering Information

P/N:NY-X1-CXNPBB61

Optional Model	Description	Optional Code
X <sub>1</sub>	RF 3dB Bandwidth	2 or 4

Product Description: LiNbO<sub>3</sub> TFLN intensity modulator device, polarization maintaining fiber as optical input and output.

## Contact Information

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## Statement

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