

## Thin film lithium niobate phase modulator

### Product description

Thin film lithium niobate phase modulator is a high-performance electro-optic conversion device, which is independently developed by our company and has complete independent intellectual property rights. The product is packaged by high-precision coupling process technology to achieve ultra-high electro-optical conversion efficiency. Compare with that traditional lithium niobate modulator, the product has the characteristics of low half-wave voltage, high stability and small device size, and can be widely apply to the fields of digital optical communication, microwave photonics, backbone communication networks, communication scientific research projects and the like.

### Product features

- RF bandwidth up to 40 GHz
- Half-wave voltage down to 3 V
- Insertion loss as low as 4.5 dB
- Small device size



### Technical parameters

Category	Parameter	Symbol	Unit	Indicators
Optical Performance (@ 25 ° C)	Operating Wavelength (*)	$\lambda$	nm	~1550
	Optical return loss	ORL	dB	$\leq -27$
	Optical insertion loss (*)	IL	dB	Maximum: 5.5 Typical value: 4.5

<b>Electrical properties</b> (@25°C)	3 dB electro-optic bandwidth (From 2 GHz)	$S_{21}$	GHz	X <sub>1</sub> : 2 Minimum: 18 Typical value: 20	X <sub>1</sub> : 4 Minimum: 36 Typical value: 40
	RF half-wave voltage (@ 50 kHz)	$V_{\pi}$	V	Maximum: 3.5 Typical value: 3.0	
	RF return loss (2 to 40 GHz)	$S_{11}$	dB	≤ -10	
<b>Working conditions</b>	Operating temperature	$T_O$	°C	-20~70	

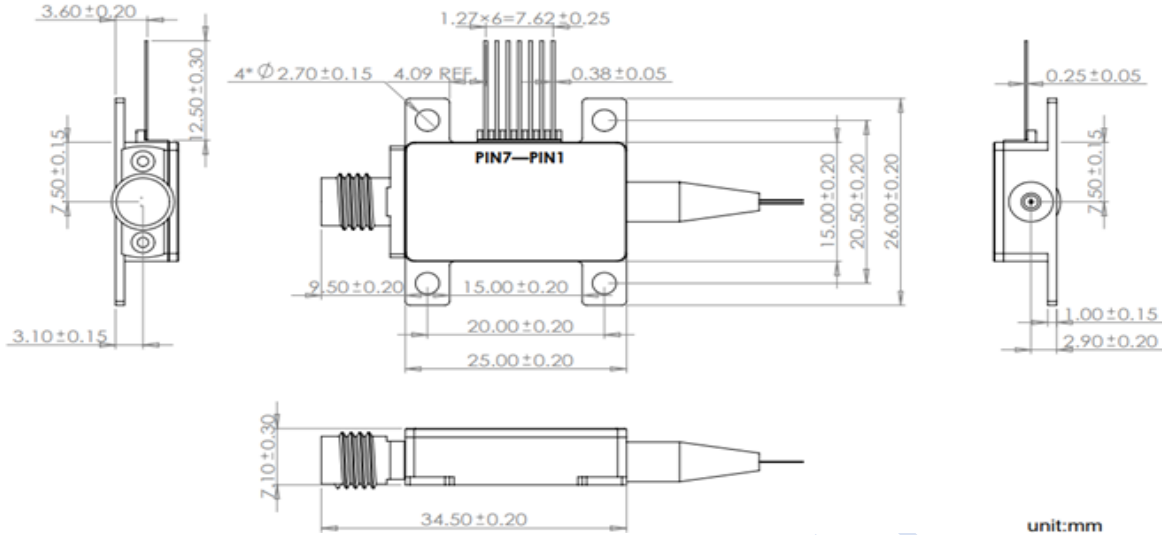
\* Customizable.

## Damage threshold

If the device works beyond the maximum damage threshold, it will cause irreversible damage to the device, and such device damage is not within the scope of maintenance service.

Parameter	Symbol	Optional	Minimum value	Maximum value	Unit
RF input power	$S_{in}$	X <sub>2</sub> : 4	-	18	dBm
		X <sub>2</sub> : 5	-	29	
RF Input Swing Voltage	$V_{pp}$	X <sub>2</sub> : 4	-2.5	+2.5	V
		X <sub>2</sub> : 5	-8.9	+8.9	
RF Input RMS Voltage	$V_{rms}$	X <sub>2</sub> : 4	-	1.78	V
		X <sub>2</sub> : 5	-	6.30	
Optical input power	$P_{in}$	-	-	20	dBm
Storage temperature	$T_s$	-	-40	85	°C
Relative humidity (no condensation)	RH	-	5	90	%

## Package dimensions and pin definitions (mm)

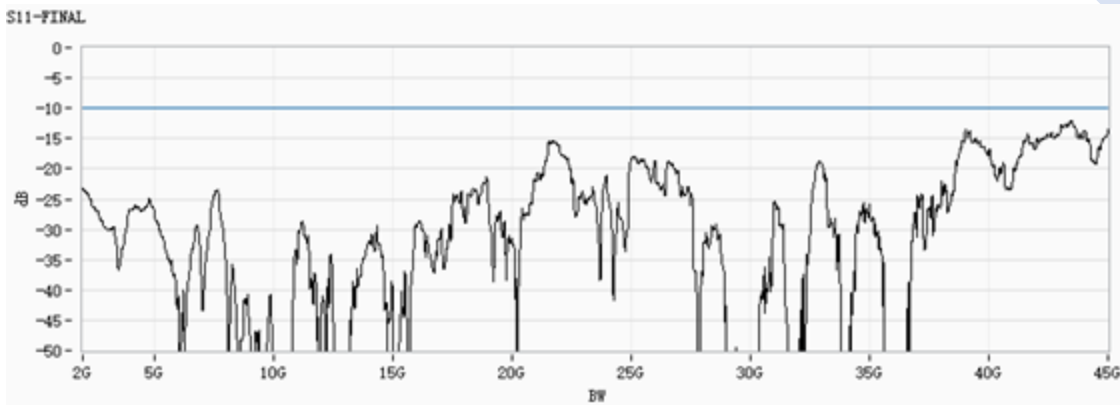
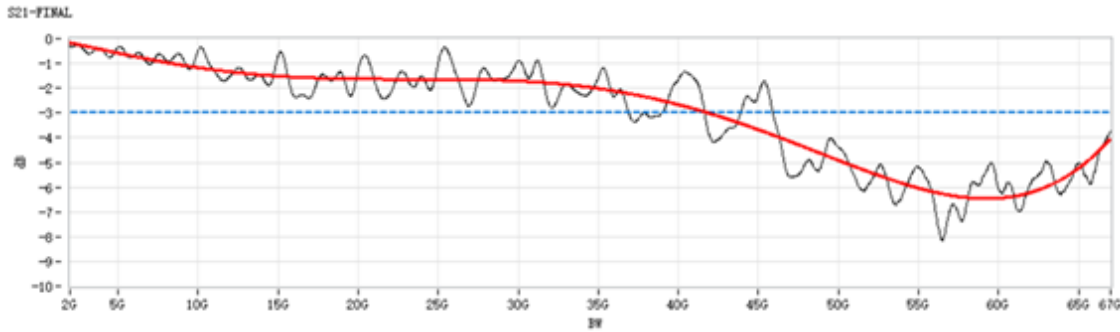


Note: Data marked with REF. Are reference values only.

Pin	Symbol	Description
1	-	No definition
2	-	No definition
3	-	No definition
4	-	No definition
5	-	No definition
6	-	No definition
7	-	No definition
RF	RF Connector (*)	2.92 mm K connector
In	Incoming optical fiber	FC/APC, PMF
Out	Light-emitting fiber	FC/APC, PMF

\* Customizable 1.85 mm connector or J connector.

## S21 Test Sample (40 GHz Typical)



## Ordering information

HC- LB-X<sub>1</sub>C6PPBP6X<sub>2</sub>

Optional	Description	Option number
X <sub>1</sub>	3 dB electro-optic bandwidth	2 : 20G 4: 40G
X <sub>2</sub>	Maximum RF input power	4 or 5

Product description: 20 GHz/40 GHz thin-film lithium niobate phase modulator.