

□ Description

- modulator 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. Our products provide superior characteristics on half-wave voltage, stability, and device size, significantly enhancing critical performance in digital optical communications and telecommunication networks.

□ Product Description

- C-band TFLN 20/30/40 GHz IQ modulator device.

□ Features

- Bandwidth up-to 40 GHz
- Low half-wave voltage 3.5 V
- Low insertion loss ≤ 8 dB

□ Specifications

Category	Parameters	Symbol	Unit	Performance		
Optical Features	Operating Wavelength	λ	nm	~1550		
	Optical Extinction Ratio (@ DC)	ER	dB	≥ 20		
	Optical Return Loss	ORL	dB	≤ -27		
	Optical Insertion Loss (*)	IL	dB	≤ 8		
Electrical Features	3 dB Bandwidth (from 2 GHz)	S_{21}	GHz	X ₁ : 2	X ₁ : 3	X ₁ : 4
				Min: 18 Typ: 20	Min: 26 Typ: 30	Min: 36 Typ: 40
	Child RF V_{π} (@ 50 kHz)	$V_{\pi-C}$	V	3 ~ 3.5		
	Heater Resistance	R_h	Ohm	4000 \pm 10%		
	Heater P_{π} (@ DC)	P_{π}	mw	≤ 40		
RF Return Loss (10 MHz to 40 GHz)	S_{11}	dB	≤ -10			
Work Condition	Operating Temperature	T_o	°C	-10~60		

* Lower insertion loss is available for customization.

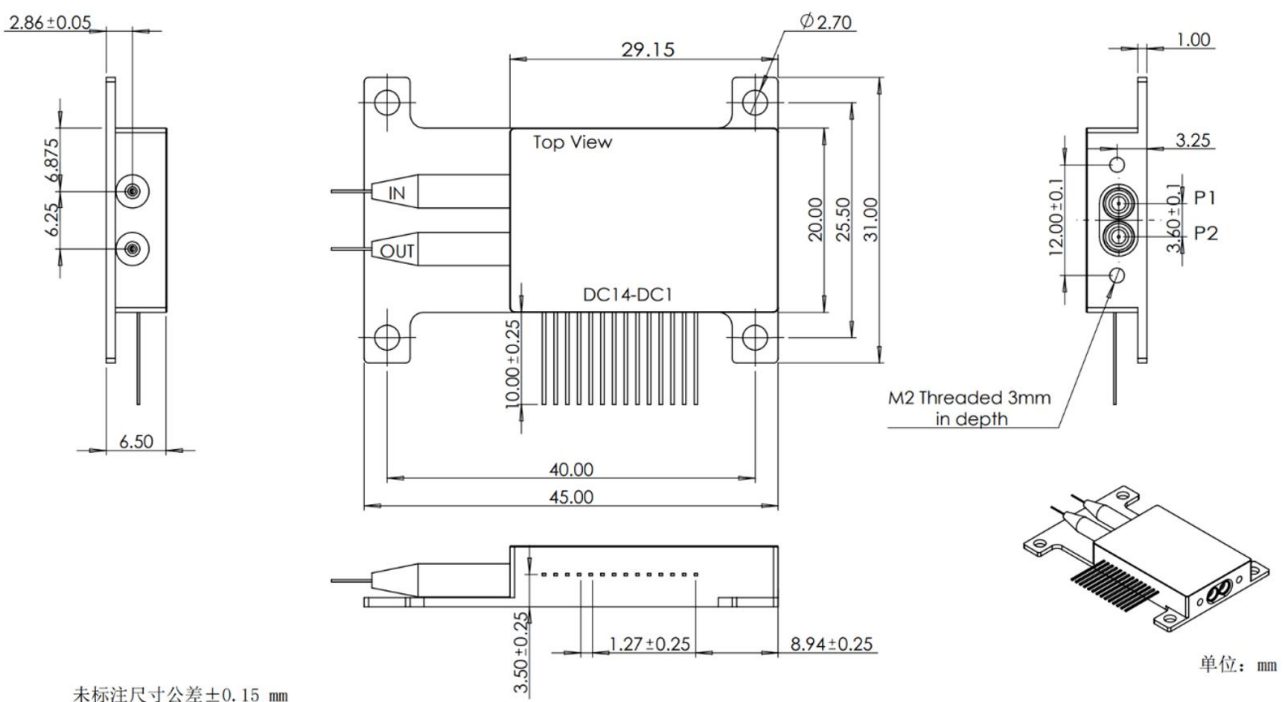
▣ Absolute Maximum Ratings

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

Parameters	Symbol	Min.	Max.	Unit
RF Input Power (*)	S_{in}	-	23	dBm
RF Swing Voltage (*)	V_{pp}	-	8.93	V
RF RMS Voltage (*)	V_{rms}	-	3.16	V
Heater Bias Voltage	U_{heater}	-	15	V
Storage Temperature	T_s	-40	85	°C
Relative Humidity (no condensation)	RH	5	90	%

* Higher RF input power is customizable.

▣ Package and Pins (Unit: mm)



PIN	Symbol	Description	PIN	Symbol	Description
RF1	P1	RF Input "I"	7	DC7	Parent MZM bias2
RF2	P2	RF Input "Q"	8	DC8	N/A
1	DC1	N/A	9	DC9	P MZM MPD anode
2	DC2	I1(Child MZM I) bias	10	DC10	P MZM MPD cathode
3	DC3	I2(Child MZM I) bias	11	DC11	Q MZM MPD anode
4	DC4	Q1(Child MZM Q) bias	12	DC12	Q MZM MPD cathode
5	DC5	Q2(Child MZM Q) bias	13	DC13	I MZM MPD anode
6	DC6	Parent MZM bias1	14	DC14	I MZM MPD cathode

Notes:

- Both input and output are PM fibers, FC/APC connectors.
- RF adaptor type is SSMP (i.e. SMPM or GPPO).

S21 Measurement (20GHz Typical)

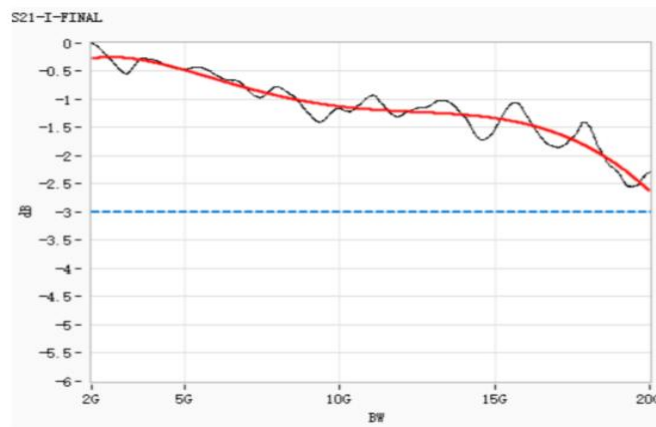


Figure : S21

Ordering Code : HC-X₁C8PPBC61

Optional Model	Description	Optional Code
X ₁	RF 3dB Bandwidth	2 or 3 or 4