

10 GHz Lithium Niobate Intensity Modulator with Internal Photodetector

LN81S-FC



Description

The LN81S-FC is a broadband LiNbO₃ intensity modulator built with an integrated photodetector. This modulator can provide intensity modulation from DC to 15 GHz with a very low V_π. The bias voltage is applied to a separate input. The bias can be monitored using the internal photodiode, eliminating the need for an external tap coupler. The input fiber is polarization-maintaining (PM), and the output fiber is standard single mode fiber, both terminated with FC/UPC connectors. The key of the input FC/UPC connector 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 SMP (GPO®-compatible) connector.

Specifications

LN81S-FC			
Optical Specifications	Min	Typical	Max
Operating Wavelength ^a	1525 nm	-	1605 nm
Optical Insertion Loss	-	4.0 dB	5.0 dB
Optical Return Loss	40 dB	-	-
Optical Extinction Ratio (@ DC)	20 dB	-	-
Optical Input Power	-	-	100 mW
Electrical Specifications	Min	Typical	Max
E/O Bandwidth (-3 dB)	10 GHz	14 GHz	-
Operating Frequency Range	DC to 15 GHz (Min)		
RF V _π (@ 1 GHz)	-	5.6 V	6.5 V
DC Bias V _π (@ 1 kHz)	-	6.5 V	10.0 V
S11 (DC to 10 GHz)	-	-12 dB	-10 dB
RF Port Input Power	-	-	24 dBm
Photodetector Specifications	Min	Typical	Max
Reverse Bias Voltage	-5.5 V	-	-3.0 V
Responsivity	0.1 mA/mW	-	0.5 mA/mW
Output Optical Power Monitoring Range	-5 dBm	-	10 dBm
Mechanical Specifications			
Crystal Orientation	X-Cut		
RF Connection	Male SMP (GPO® Compatible), Full Detent		
Fiber Type	Input: PANDA Polarization Maintaining Output: SMF-28® Single Mode		
Fiber Lead Length	1.5 m (Typ.)		



- 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.

LN81S-FC (cont.)			
Environmental Specifications	Min	Typical	Max
Operating Temperature	0 °C	-	70 °C
Storage Temperature	-40 °C	-	85 °C

Mechanical Drawing

