

## 40 GHz Lithium Niobate Intensity Modulator

### LN05S-FC



### Description

The LN05S-FC is a broadband LiNbO<sub>3</sub> Z-cut intensity modulator. The electro-optic response (S21) is smooth from DC to 40 GHz with a low V<sub>π</sub>. The input fiber is polarization-maintaining (PM), and the output fiber is standard single mode fiber, both terminated with FC/PC connectors. The key of the input FC/PC 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 V connector. The bias voltage is applied through a separate SMA input.

The LN05S-FC includes an internal polarizer that is aligned with the extraordinary mode of the chip.

### Specifications

LN05S-FC			
Optical Specifications	Min	Typical	Max
Operating Wavelength <sup>a</sup>	1525 nm	-	1605 nm
Optical Insertion Loss	-	4.5 dB	5.5 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)	30 GHz	35 GHz	-
Operating Frequency Range	DC to 40 GHz (Min)		
RF V <sub>π</sub> (@ 1 GHz)	-	5.5 V	6.0 V
DC Bias V <sub>π</sub> (@ 1 kHz)	-	3.5 V	5.0 V
S11 (DC to 30 GHz)	-	-12 dB	-10 dB
S11 (30 to 40 GHz)	-	-10 dB	-8 dB
RF Port Input Power	-	-	24 dBm
Mechanical Specifications			
Crystal Orientation	Z-Cut		
RF Connection	Female 1.85 mm (V)		
Fiber Type	Input: PANDA Polarization Maintaining Output: SMF-28® Single Mode		
Fiber Lead Length	1.5 m (Typ.)		
Environmental Specifications	Min	Typical	Max
Operating Temperature	0 °C	-	70 °C
Storage Temperature	-40 °C	-	85 °C



- 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.

## Mechanical Drawing

