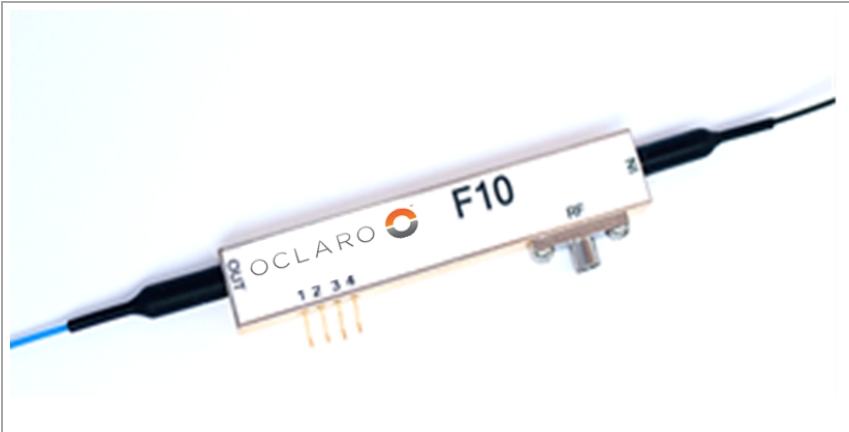


F10

Intensity Modulator with Low Drive Voltage



Oclaro F10 intensity modulator is based on the Mach-Zehnder Interferometer architecture. It is manufactured using the highly reliable Titanium indiffusion technology in x-cut, y-propagating Lithium Niobate substrates.

The F10 is a zero-chirped, x-cut single-drive modulator designed for high bit rate advanced Metro to Long Haul communication systems that requires the superior performance of x-cut Lithium Niobate and is also suitable for other applications like high frequency fiber optics links or instrumentation.

The F10 modulator contains an integrated photo detector that may be used to set and lock the DC bias on the modulator as well as provide an estimate of the modulator output optical power.

Features:

- Very Low Drive Voltage
- GPO (male) RF input
- C and L-Band Operation
- E/O Bandwidth for up to 12.5 Gb/s Modulation Speed
- Low Insertion Loss
- High Extinction Ratio
- Integrated Monitor Photodiode
- Zero-Chirped Modulator
- Integrated Polarizer
- Surface Mountable with Gull-Wing DC Pins
- RoHS Compliant

Applications:

- External Intensity Modulation from 10 Gb/s to 12.5 Gb/s NRZ and Electrical RZ
- High Frequency Fiber Optic Links
- Analog Microwave over Fiber (RoF)
- Instrumentation

Absolute Maximum Ratings

Parameter	Min	Typ	Max	Unit	Conditions
Maximum Input Power (Electrical)			25	dBm	RF-port, AC coupled
Maximum Input Power (Optical)			100	mW	CW
Maximum Operating Temperature Variation Rate			1	°C/min	
Storage Temperature Range	-40		+85	°C	
Operating Temperature Range	0		+70	°C	

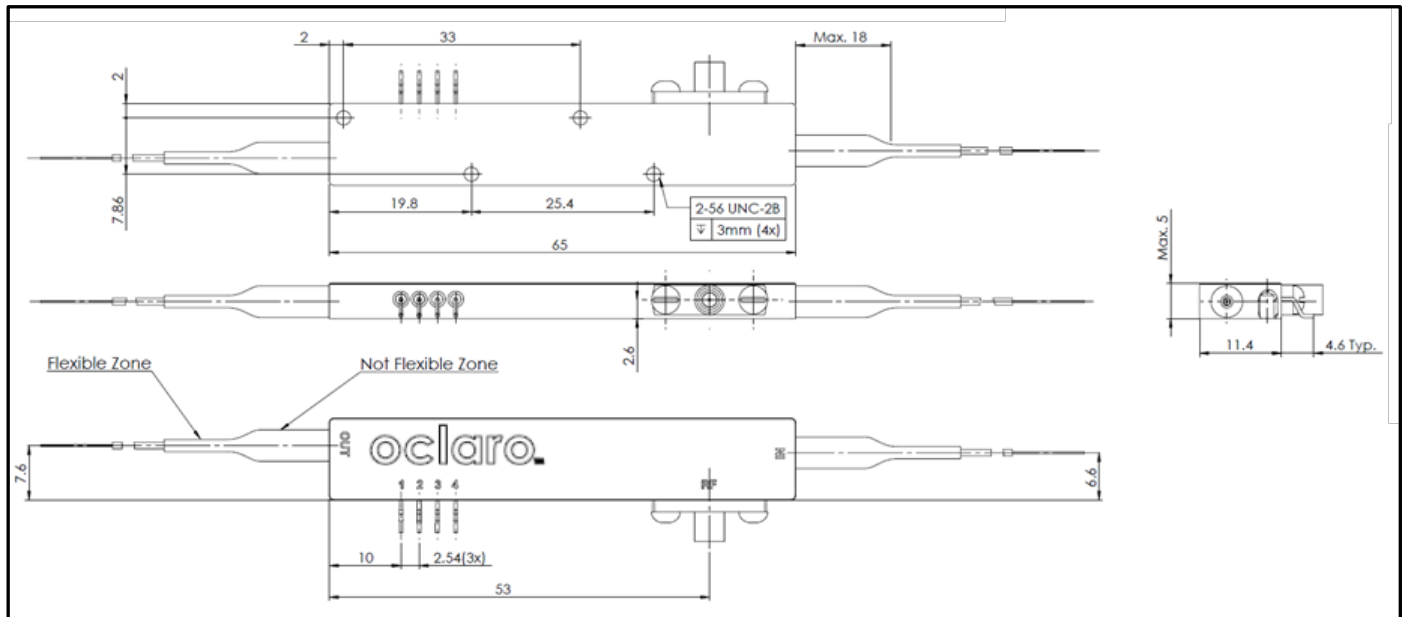
Optical and Electrical Specification

$T_{op}=25^{\circ}\text{C}$, unless otherwise specified

Typical values shown unless otherwise stated

Optical	Value	Unit
Operating Wavelength Range	C and L Band	
Insertion Loss	≤ 5.0	dB
Extinction Ratio (DC)	24	dB
Chirp	0	nominal
Optical Return Loss	≥ 45	dB
Frequency Range	Value	Unit
S_{21} Electro Optical Bandwidth (-3 dBc)	≥ 10	GHz
S_{11} Electrical Return Loss	11	dB
RF V_{π} Voltage (@ 1 kHz)	≤ 6.5	V
Bias V_{π} Voltage (@ 1 kHz)	5.5	V
PRBS Electrical Drive Voltage (V_{amp})	4.5	V
Dynamic Extinction Ratio	≥ 6	dB
Photodiode Responsivity (referred to output power - non-inverting)	≥ 20	mA/W
Linearity	± 10	%

Mechanical Outline



Higher resolution drawing available on request.

Pin-Out Information

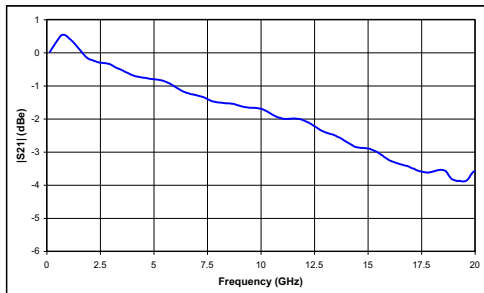
Pin Number	Symbol	Description
1	PD-C	Photodiode Cathode
2	PD-A	Photodiode Anode
3	B	MZ DC Bias
4	GND	Ground
5	RF	RF Input (GPO Male)

Pin-Out and Fibre Specification

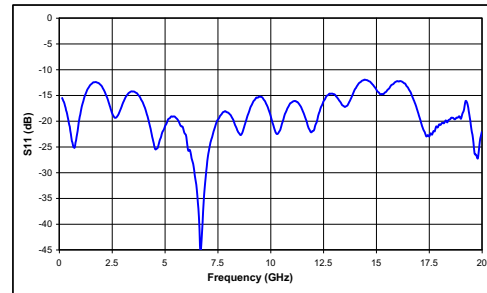
Parameter	Description
RF Connector	GPO male
Bias and PD Connector	Lead pins
Input Fibre	Corning / Fujikura SM15P UV/UV400
Output Fibre	Corning SMF-28™

Performance Characteristics F10-0

Electro Optical Response



Electrical Return Loss



Ordering Information

Please refer to your Oclaro sales representative for product variant availability and product ordering information.

Flammability Rating

The Fibre Pigtailed are rated UL 94 V-0 (Fujikura fibre) or are compliant to ASTM D-2863-87 requirements (Corning fibre SMF-28) Boots, Loose tube and Connectors are UL94 V-0 rated.

RoHS Compliance



Oclaro is fully committed to environment protection and sustainable development and has set in place a comprehensive program for removing polluting and hazardous substances from all of its products. The relevant evidence of RoHS compliance is held as part of our controlled documentation for each of our compliant products. RoHS compliance parts are available to order, please refer to the ordering information section for further details.

Contact Information

www.oclaro.com

Important Notice

Performance figures, data and any illustrative material provided in this data sheet are typical and must be specifically confirmed in writing by Oclaro before they become applicable to any particular order or contract. In accordance with the Oclaro policy of continuous improvement specifications may change without notice. Further details are available from any Oclaro sales representative.



Caution - use of controls or adjustments or performance of procedures other than those specified herein may result in hazardous radiation exposure.

D00487-PB Issue V0.1 14 February 2013
 ©Oclaro 2013. Oclaro the Oclaro, Inc. logo, and all other Oclaro, Inc product names and slogans are trademarks or registered trademarks of Oclaro, Inc. in the U.S.A. or other countries. Information in this datasheet is subject to change without notice.