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[20G Intensity Modulator \(SD20\)](#)

20G Intensity Modulator SD20 Data Sheet [www.lumentum.com](#) 2 This new 20G modulator builds the bridge between 10G and 40G The 20G modulator allows system designers to take advantage of cost-effective electronics available at 20 GHz Electronic circuit complexity is significantly reduced compared to 40G A single

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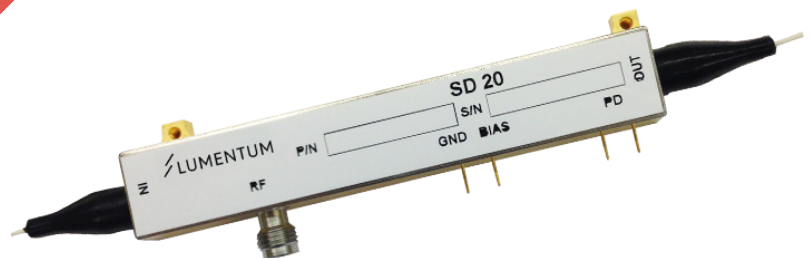
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20G Intensity Modulator

SD20



This new 20G modulator builds the bridge between 10G and 40G. The 20G modulator allows system designers to take advantage of cost-effective electronics available at 20 GHz. Electronic circuit complexity is significantly reduced compared to 40G. A single 40G data stream can be generated by multiplexing two 20G signals. The low V_{π} (@ 20 GHz) enables full period operation at half bit rate to generate a 40G CS-RZ optical clock signal. Additionally, 20G transmission enables the maximum NRZ-bandwidth efficiency in DWDM systems running at 50 GHz channel spacing, and is less sensitive to chromatic fiber dispersion than at 40G. Suitable driver amplifiers are available through Lumentum recommended partners.

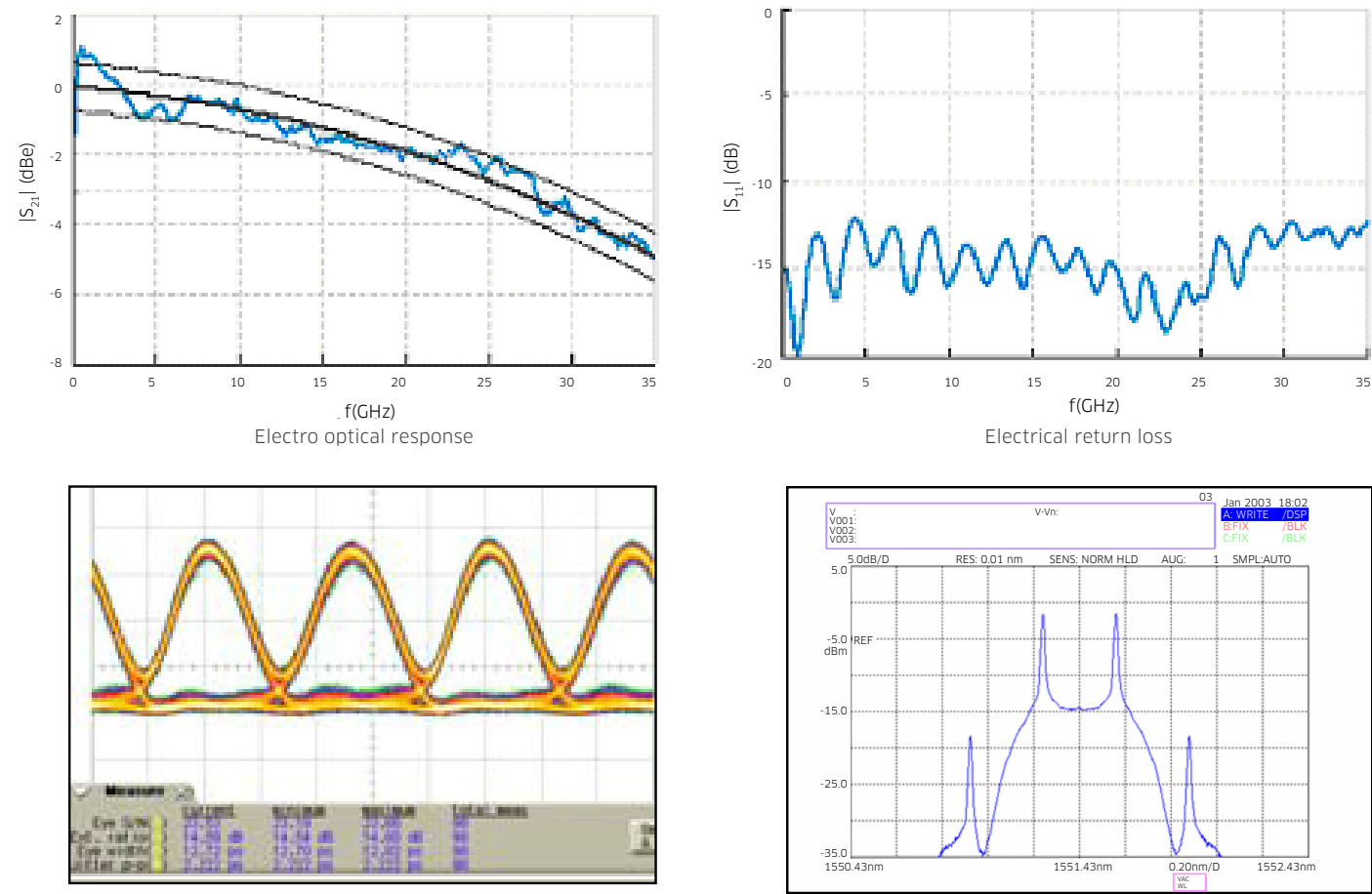
Key Features

- Titanium-indiffused waveguides
- >20 GHz bandwidth for up to 25G operation
- C- and L-band operation
- Zero chirp, no spectral broadening
- Reduced V_{π} (@ 20 GHz)
- High extinction ratio
- Small footprint
- Integrated photodiode
- PM output fiber
- V-Connector

Applications

- Chirp-free signal generation
- 20+G NRZ modulation
- 40+G signal generation via 20+G multiplexing (OTDM interleaving)
- Terrestrial and submarine long- and ultra-long-haul systems
- (CS-)RZ pulse generation at 20+G and 40+G

Performance Characteristics



40G CS-RZ signal from cascading with an NRZ data modulator

Absolute Maximum Ratings

Parameter	Conditions	Min	Max	Unit
Maximum input power (electrical)			25	dBm
Maximum input power (optical)	CW		100	mW
Maximum operating temperature variation rate			1	°C/min
Storage temperature range		-40	+85	°C
Operating temperature range		0	+70	°C

Specifications

Parameters	Typical	Units
Optical		
Operating wavelength range	C and L band	
Insertion loss	3.2	dB
Extinction ratio (DC)	≥ 20	dB
Dynamic extinction ratio	13	dB
Optical return loss (without connectors)	≥ 45	dB
Chirp	± 0.1	
Electrical		
S_{21} electro-optic bandwidth (-3 dBe)	≥ 20	GHz
S_{11} return loss	≤ -10	dB
RF V_{π} Voltage (@ 1 kHz)	5.0	V
RF V_{π} Voltage (@ 20 GHz)	6.0	V
Bias V_{π} Voltage (@ 1 kHz)	5.5	V
PRBS electrical drive voltage	5.0	V
Photodiode responsivity	10^{-3}	A/W
Input connector impedance	50	Ohm

Where not specified, parameters are measured at 25 °C.

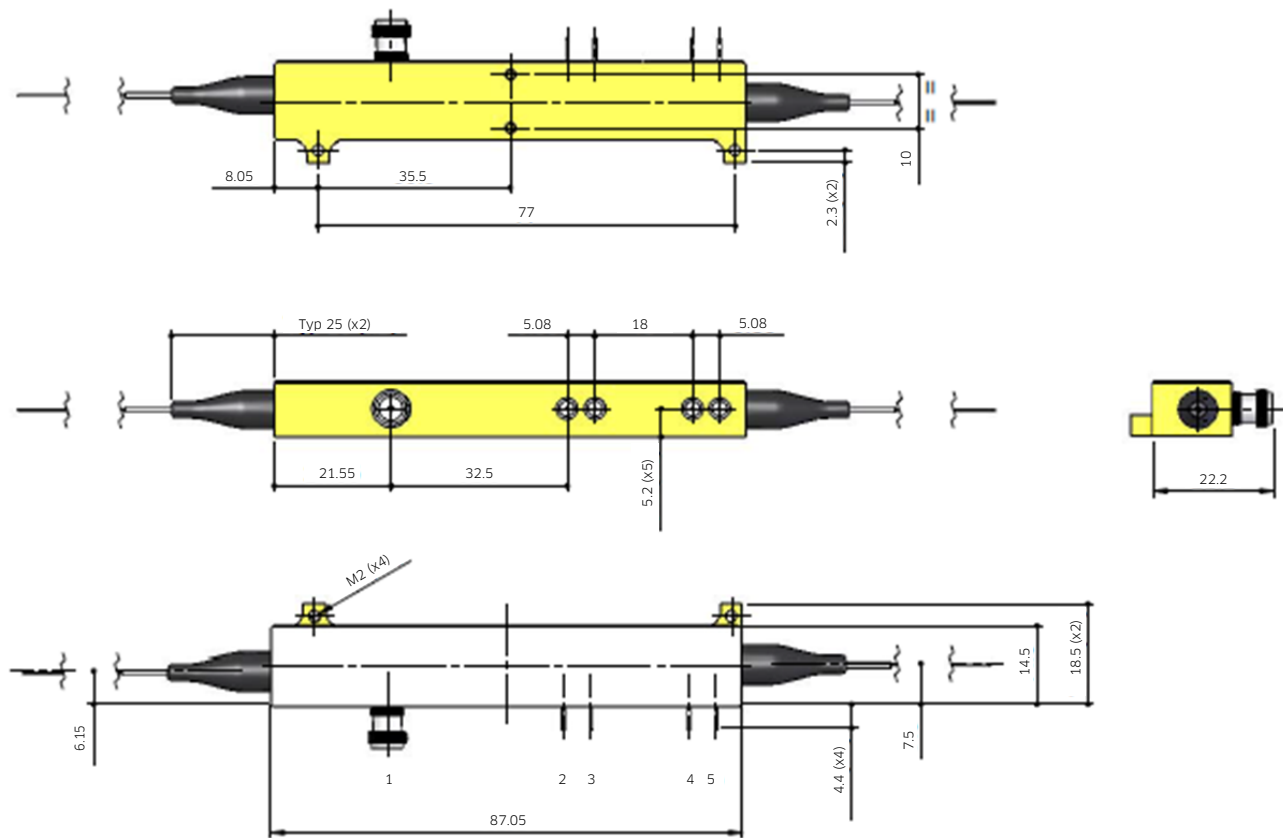
Pin-Out and Fiber Specifications

RF connector	V-Connector ¹
Bias and PD connector	LEAD pins
Input fiber	Corning/Fujikura SM15P UV/UV250 (Panda fiber)
Output fiber	Corning/Fujikura SM15P UV/UV250 (Panda fiber) ²

Note 1. V-Connector is a registered trademark of the Anritsu Corporation.

Note 2. Other output fibers are available upon request.

Package Footprint



Pin #	Description
1	RF Input
2	Ground
3	Bias
4	Photodiode cathode
5	Photodiode anode

Ordering Information:

For more information on this or other products and their availability, please contact your local Lumentum account manager or Lumentum directly at customer.service@lumentum.com.

Product Description	Part Number
20G intensity modulator, SD20	7910508-A

