

PowerBit™ SD-20

20 Gb/s Intensity Modulator

Features:

- Titanium-Indiffused Waveguides
- > 20 GHz Bandwidth for up to 25 Gb/s Operation
- C and L-Band Operation
- Zero Chirp, No Spectral Broadening
- Reduced $V\pi$ (@ 20 GHz)
- High Extinction Ratio
- Small Footprint
- Integrated Photodiode
- PM Output Fiber
- GPPO Connector Available

Applications:

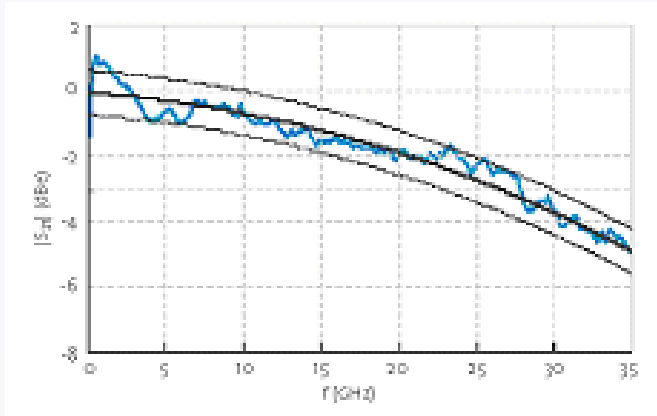
- Chirp-Free Signal Generation
- 20+ Gb/s NRZ Modulation
- 40+ Gb/s Signal Generation via 20+ Gb/s Multiplexing (OTDM interleaving)
- Terrestrial and Submarine Long and Ultra Long-Haul Systems
- (CS-)RZ Pulse Generation at 20+ Gb/s and 40+ Gb/s



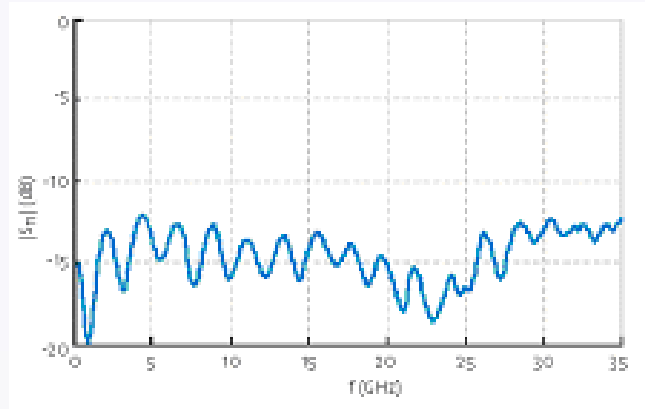
This new 20 Gb/s modulator builds the bridge between 10 and 40 Gb/s. The 20 Gb/s modulator allows system designers to take advantage of cost effective electronics available at 20 GHz. Electronic circuit complexity is significantly reduced compared to 40 Gb/s. A single 40 Gb/s data stream can be generated by multiplexing two 20 Gb/s signals. The low $V\pi$ (@ 20 GHz) enables full period operation at half bit rate to generate a 40 Gb/s CS-RZ optical clock signal. Additionally, 20 Gb/s 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 40 Gb/s. Suitable driver amplifiers are available through Oclaro recommended partners.

Performance Characteristics

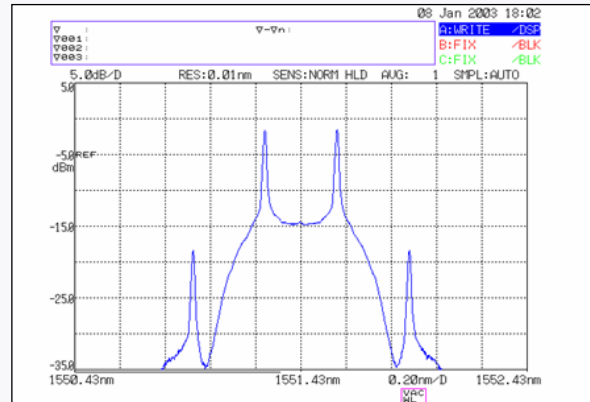
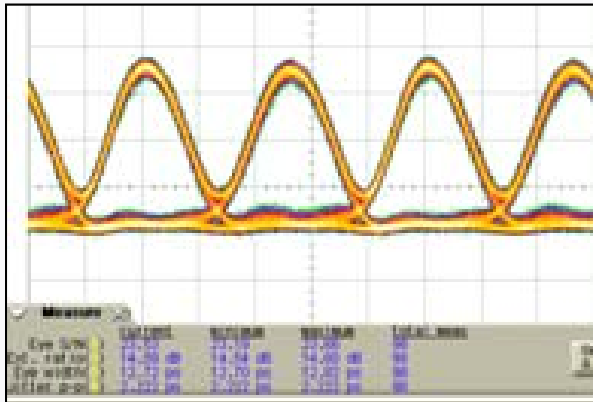
Electro Optical Response



Electrical Return Loss



40 Gb/s 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		Units
Optical		
Operating Wavelengths 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 (± 0.03 typ)	
Electrical		
S ₂₁ Electro Optical Bandwidth (-3 dBe)	≥ 20	GHz
S ₁₁ Return Loss	≤ -10	dB
RF V Voltage (@ 1 kHz)	4.5	V
RF V Voltage (@ 20 GHz)	6.0	V
Bias V Voltage (@ 1 kHz)	5.0	V
PRBS Electrical Drive Voltage	5.0	V
Photodiode Responsivity	10^{-3}	A/W
S ₂₁ Electro Optical Bandwidth (-3 dBe)	≥ 20	GHz

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

Pin-Out and Fiber Specifications

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

Note 1. Other output fibers are available upon request.

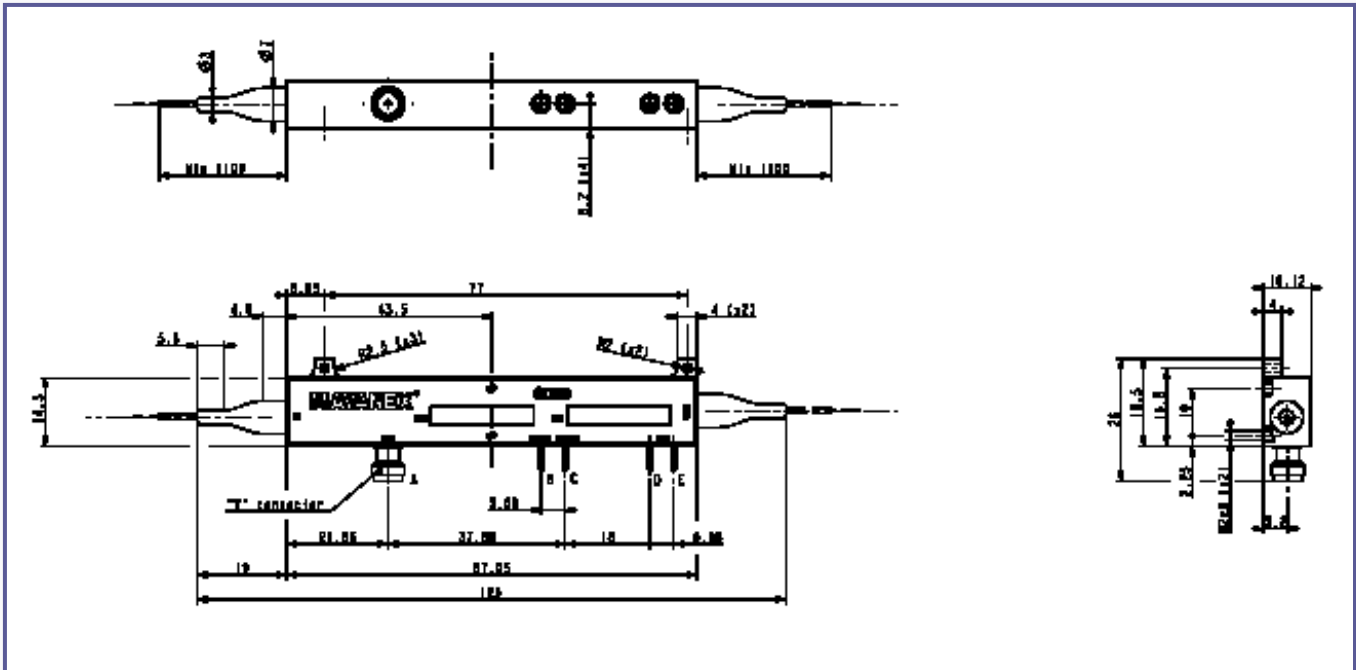
Note 2. V-Connector is a registered trademark of the Anritsu Corporation.

Ordering Information

Part Number
SD20-0-20P-PP-yyzz-00

yy; zz	Input; Output Connectors	NC = No Connectors FP = FC/PC FA =FC/APC SP =SC/PC SA = SC/APC	Other connector s available upon request; all connectors on PM fiber are polarization maintaining
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Package Footprint



Pin #	Description
A	RF Input
B	Ground
C	Bias
D	Photodiode Cathode
E	Photodiode Anode



Contact Information

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