

Amplifier Hybrid with Thin Film Coupler and Isolator

AHC Series



Key Features

- Multifunction device: isolation, pump multiplexing and/or tap
- Wide wavelength flatness over signal/pump wavelength range
- High power handling
- High reliability
- Compact design
- High WDM/isolator isolation

Applications

- EDFA
- Raman amplifiers
- Other custom configurations (integrated modules) such as optical supervisory channel (OSC) at 1510 nm and 1625 nm

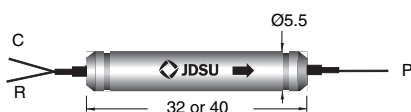
This device is a combination of a polarization independent optical isolator, and either a WDM filter or tap coupler. These devices are ideal for high power applications.

The AHC Series Integrated Component has extremely low polarization sensitivity, low insertion loss and high isolation for both WDM filter and isolators. Designed for compact and easy installation, it eliminates splices, requires less fiber routing and reduces losses when compared to discrete components.

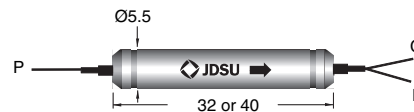
Its high performance provides exceptionally stable signal isolation and wavelength division multiplexing over wide wavelength/temperature ranges and all polarization states. It is ideal for fiber amplifier and WDM network applications.

Dimensions Diagram

(Specifications in mm unless otherwise noted.)



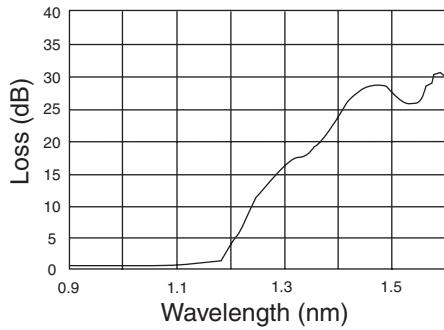
Backward Pump/Tap



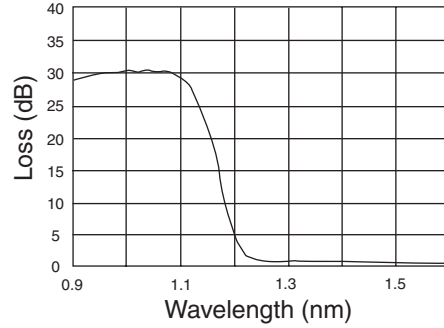
Forward Pump

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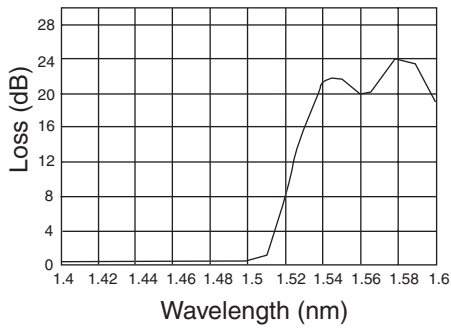
980/1550 nm Model: 980 Channel



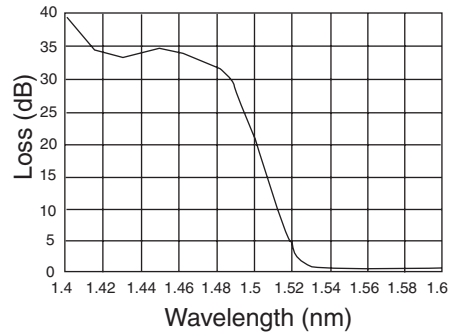
980/1550 nm Model: 1550 Channel



1480/1550 nm Model: 1480 Channel



1480/1550 nm Model: 1550 Channel



Tap Ratio and Insertion Loss Table

Code	Tap Ratio	One-Stage Isolator C to P Insertion Loss	One-Stage Isolator C to R Insertion Loss	Two-Stage Isolator C to P Insertion Loss	Two-Stage Isolator C to R Insertion Loss
1	1%	0.6 dB Max.	20±1 dB	0.7 dB Max.	20±1 dB
2	2%	0.6 dB Max.	17±1 dB	0.7 dB Max.	17±1 dB
3	3%	0.7 dB Max.	15±1 dB	0.8 dB Max.	15±1 dB
4	4%	0.7 dB Max.	14±1 dB	0.8 dB Max.	14±1 dB
5	5%	0.8 dB Max.	13±1 dB	0.9 dB Max.	13±1 dB
A	1.8%	0.6 dB Max.	17.5±1 dB	0.7 dB Max.	17.5±1 dB
T	10%	1.0 dB Max.	10±1 dB	1.1 dB Max.	10±1 dB

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Specifications

Parameter		Tap and One-Stage Isolator	Tap and Two-Stage Isolator	1480 WDM and One-Stage Isolator	1480 WDM and Two-Stage Isolator	980 WDM and One-Stage Isolator	980 WDM and Two-Stage Isolator
Signal central wavelength, λ_c		C, L or S	C, L or S	C, L or 1 (C=1550 nm, L=1590 nm, 1=1570 nm, S=1510 nm)	C, L or 1	C, L or 1	C, L or 1
Signal wavelength range, λ_s		C, L or S	C, L or S	C, L or 1 (C=1530 to 1580 nm, L=1590±20 nm, 1=C+L=1530 to 1610nm, S=1490 to 1530 nm)	C, L or 1	C, L or 1	C, L or 1
Pump channel wavelength range, λ_p		N/A	N/A	1465 to 1495 nm	1465 to 1495 nm	950 to 1010 nm	950 to 1010 nm
Port configuration		Backward (note ¹)	Backward (note ¹)	Forward or backward (note ²)	Forward or backward (note ²)	Forward or backward (note ²)	Forward or backward (note ²)
Insertion loss at λ_s (note ³)	Max.	See table on page 2	See table on page 2	0.5 dB	0.6 dB	0.6 dB	0.7 dB
Wavelength dependent variation at λ_s and C, L, or S bands (note ³)	Max.	0.2 dB	0.2 dB	0.15 dB	0.2 dB	0.15 dB	0.2 dB
Wavelength dependent variation at λ_s and C+L band (note ³)	Max.	NA	NA	0.25 dB	0.3 dB	0.25 dB	0.3 dB
PDL at λ_s (note ³)	Max.	0.1 dB	0.2 dB	0.06 dB	0.08 dB	0.06 dB	0.08 dB
PMD at λ_s (note ³)	Max.	0.05 ps	0.05 ps	0.05 ps	0.05 ps	0.05 ps	0.05 ps
Isolation of isolator at λ_s (note ⁴)	Min.	30 dB	42 dB	30 dB	45 dB	30 dB	45 dB
Isolation of WDM at λ_p (note ⁵)	Min.	N/A	N/A	30 dB	30 dB	30 dB	30 dB
Insertion loss (C to R) at λ_p	Max.	See table on page 2	See table on page 2	0.4 dB	0.4 dB	0.6 dB	0.6 dB
PDL (C to R) at λ_p	Max.	0.05 dB	0.05 dB	0.05 dB	0.05 dB	0.1 dB	0.1 dB
Directivity (P to R) at λ_s	Min.	55 dB	55 dB	60 dB	60 dB	60 dB	60 dB
Directivity (R to P) at λ_p	Min.	N/A	N/A	60 dB	60 dB	60 dB	60 dB
Optical return loss	Min.	50 dB	50 dB	50 dB	50 dB	50 dB	50 dB
Maximum optical power (standard)		500 mW	500 mW	500 mW	500 mW	150 mW	150 mW
Maximum optical power (high power option)		2000 mW	2000 mW	2000 mW	2000 mW	450 mW	450 mW
Tensile load	Max.	5 N	5 N	5 N	5 N	5 N	5 N
Operating temperature		-5 to 70 °C					
Storage temperature		-40 to 85 °C					
Package dimensions (D x L)		5.5 mm x 32 mm for bare fiber and 5.5 mm x 40 mm for bare fiber or loose tube					
Fiber type		PureMode Hi 1060 for ports transmitting 980 nm (standard), SMF-28 for all others (standard)					
Pigtail color code (bare fiber)		Black (C port); Clear (R & P ports)					
Pigtail color code (loose tube)		Red (C port); Blue (R & P ports)					
Device marking		JDSU logo, JDSU model name and device serial number					

Note: Parameters are specified for the signal wavelength range and/or pump wavelength range, all polarization states and operating temperature range without connector.

1. Backward tap: C (input), R (tap) and P (output).

2. Backward pumped: C (λ_s input and λ_p output), R (λ_p input) and P (λ_s output). Forward pumped: C (λ_s and λ_p output), R (λ_p input) and P (λ_s input).

3. Forward: P to C and Backward: C to P.

4. Forward: C to P and Backward: P to C. The isolation data are specified at 23 °C. The isolation range is $\lambda_c \pm 12$ nm or $\lambda_c \pm 30$ nm for one-stage or two-stage isolator, respectively.

5. Isolation of WDM is given for both C to P and P to C directions.

