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

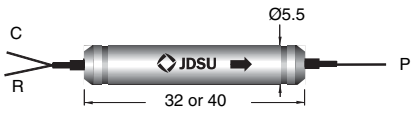
This device is a combination of a polarization independent optical isolator, and either a WDM filter or tap coupler. These devices are ideal for high power applications.

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.

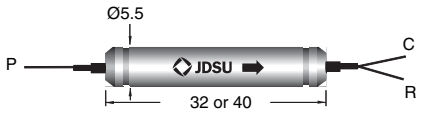
Its high performance provides exceptionally stable signal isolation and wavelength division multiplexing over wide wavelength/temperature ranges and all polarization states. It is ideal for fiber amplifier and WDM network applications.

Dimensions Diagram

(Specifications in mm unless otherwise noted.)

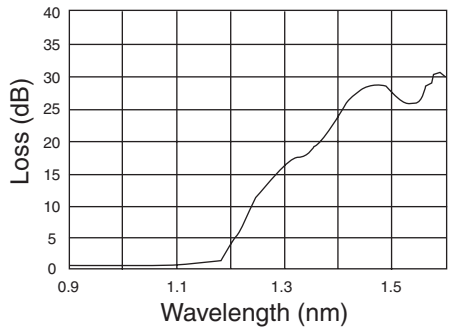


Backward Pump/Tap

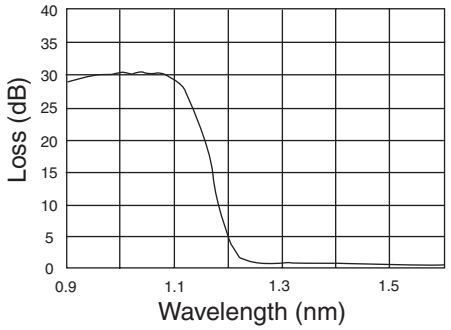


Forward Pump

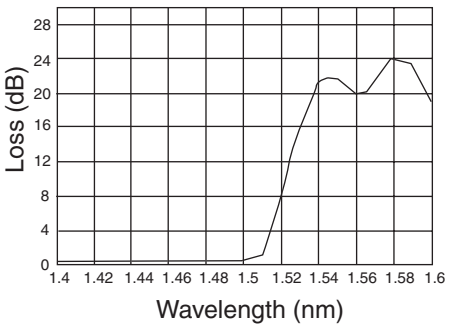
980/1550 nm Model: 980 Channel



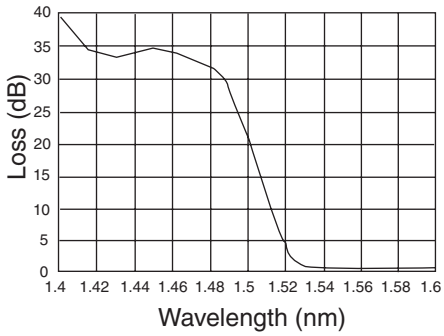
980/1550 nm Model: 1550 Channel



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

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, L or 1	C, L or 1	C, L or 1
		(C=1550 nm, L=1590 nm, 1=1570 nm, S=1510 nm)					
Signal wavelength range, λ_S		C, L or S	C, L or S	C, L or 1	C, L or 1	C, L or 1	C, L or 1
		(C=1530 to 1580 nm, L=1590±20 nm, 1=C+L=1530 to 1610nm, S=1490 to 1530 nm)					
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.	60 dB	60 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.

Ordering Information

For more information on this or other products and their availability, please contact your local JDSU account manager or JDSU directly at 1-800-498-JDSU (5378) in North America and +800-5378-JDSU worldwide or via e-mail at customer.service@jdsu.com.

Sample: AHC-C30R10000

AHC- □ □ □ □ **0** □

Code	Signal Wavelength
C	C-band
L	L-band
S	S-band
1	C+L-bands

Code	Pump Wavelength
0	No pump option
3	1480 nm
5	980 nm

Code	Tap Ratio
0	No tap option
1	1%
2	2%
3	3%
4	4%
5	5%
A	1.8%
T	10%

Code	Isolator, Pump Configuration, Package Length
J	One-stage, forward-pumped, 32 mm (L)
K	One-stage, forward-pumped, 40 mm (L)
N	One-stage, backward-pumped or tap, 32 mm (L)
Q	One-stage, backward-pumped or tap, 40 mm (L)
R	Two-stage, forward-pumped, 40 mm (L)
S	Two-stage, forward-pumped, 32 mm (L)
V	Two-stage, backward-pumped (or tap), 40 mm (L)
Z	Two-stage, backward-pumped (or tap), 32 mm (L)

Code	Fiber Pigtail Length
1	1 meter
2	2 meters
4	0.5 meter
5	1.5 meters

Code	Fiber Buffer Type
0	250 µm bare fiber
1	900 µm loose tube

Code	Power Handling Option
0	Standard: 150 mW at 980 nm and 500 mW for all others
H	High Power: 450 mW at 980 nm and 2000 mW for all others

Code	Connectors
0	No connector
1	FC/PC
2	FC/SPC
3	FC/APC
4	SC/SPC
5	SC/APC
8	ST
9	FC/UPC
A	SC/UPC
B	LC/SPC
C	LC/UPC

Note: Other configuratons and wavelengths are available on custom basis.

SMF-28 and PureMode are registered trademarks of Corning Incorporated.
ST and LC are registered trademarks of Lucent Technologies.

All statements, technical information and recommendations related to the products herein are based upon information believed to be reliable or accurate. However, the accuracy or completeness thereof is not guaranteed, and no responsibility is assumed for any inaccuracies. The user assumes all risks and liability whatsoever in connection with the use of a product or its application. JDSU reserves the right to change at any time without notice the design, specifications, function, fit or form of its products described herein, including withdrawal at any time of a product offered for sale herein. JDSU makes no representations that the products herein are free from any intellectual property claims of others. Please contact JDSU for more information. JDSU and the JDSU logo are trademarks of JDS Uniphase Corporation. Other trademarks are the property of their respective holders. ©2006 JDS Uniphase Corporation. All rights reserved. 10134045 Rev. 004 02/06 AHC.DS.CC.AE