

Attenuators

Singlemode Build Out Attenuators

Product Facts

- A range of fixed attenuation values. Standard values of 1 through 20 and 25 dB
- UPC and APC offer Excellent Return Loss
- LC, SC, FC, ST, and D4 styles
- Attenuation is wavelength independent and polarization insensitive
- Low PDL
- Low modal noise
- High reliability
- Very low reflectance
- Vibration resistant
- Dual Window and Broadband Bandpass
- End face geometry per GR-326
- Designed to comply with Telcordia GR-910

Applications

- Power leveling in DWDM transmission systems
- Test and Measurement
- Power attenuation at the receiver

Available Collateral

- Test reports qualifying product to Telcordia GR-910 (2004)
- Application Specification 114-1129
- Installation/Cleaning Instruction Sheet 408-8895
- Product Specification 108-2099

<http://www.tycoelectronics.com/documents>

- Customer Drawings



Tyco Electronics high performance Build Out Attenuators utilize a unique all-fiber construction to absorb the optical signal.

By employing a Tyco Electronics' technology, the design minimizes

reflectance, attenuation tolerance, and PDL while maximizing reliability, environmental stability, and power handling. There are no filters, air gaps, or core mismatches.

Specifications

Attenuation Values —
1-20 dB and 25 dB (Fixed)

Reflectance —
≤ -55 and -65 dB for UPC and APC polish, respectively

Operating Temperature —
-40°C to +75°C

Vibration Resistance —
< 0.1 x attenuation

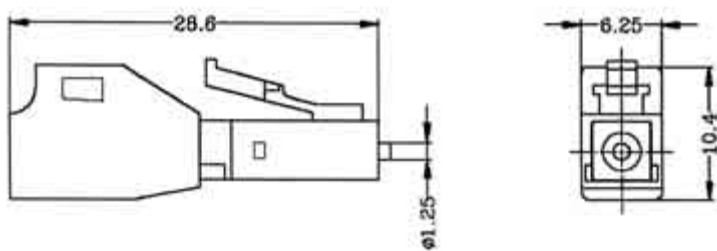
Customizable Features

- Attenuation tolerance
- Attenuation values in 1 dB increments
- Labeling
- Kitting/Packaging
- Wavelength Dependent Loss
- Reflectance:
 - UPC to -55 dB max.
 - APC to -65 dB max.

Attenuators (Continued)

Singlemode LC Attenuators, Build Out Style, Fixed Value

LC/UPC



Note: Additional attenuation values available upon request.

Broadband Bandpass Attenuators Operating Wavelength 1260-1360 nm & 1430-1625 nm

Attenuation (dB)	Part Number
1	1693560-1
2	1693560-2
3	1693560-3
4	1693560-4
5	1693560-5
6	1693560-6
7	1693560-7
8	1693560-8
9	1693560-9
10	1-1693560-0
11	1-1693560-1
12	1-1693560-2
13	1-1693560-3
14	1-1693560-4
15	1-1693560-5
16	1-1693560-6
17	1-1693560-7
18	1-1693560-8
19	1-1693560-9
20	2-1693560-0
25	2-1693560-5

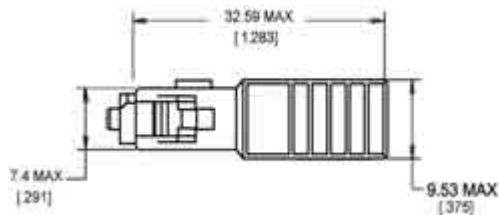
Note: Attenuation Tolerance, Ambient
 ≥ 5 dB: $\pm .10 \times$ nominal
attenuation value
 < 5 dB: ± 0.50 dB
Reflectance ≤ -55 dB

Note: All part numbers are RoHS
compliant.

Attenuators (Continued)

Singlemode SC Attenuators, Build Out Style, Fixed Value

SC/UPC



Note: Additional attenuation values available upon request.

Dual Window Attenuators Operating Wavelength 1310/1550 nm ± 25 nm

Attenuation (dB)	Part Number
1	5209943-1
2	5209943-2
3	5209943-3
4	5209943-4
5	5209943-5
6	5209943-6
7	5209943-7
8	5209943-8
9	5209943-9
10	1-5209943-0
11	1-5209943-1
12	1-5209943-2
13	1-5209943-3
14	1-5209943-4
15	1-5209943-5
16	1-5209943-6
17	1-5209943-7
18	1-5209943-8
19	1-5209943-9
20	2-5209943-0
25	2-5209943-5

Note: Attenuation Tolerance, Ambient
 ≥ 5 dB: $\pm .10 \times$ nominal
attenuation value
 < 5 dB: ± 0.50 dB
0 dB: 0.50 dB max
Reflectance ≤ -55 dB

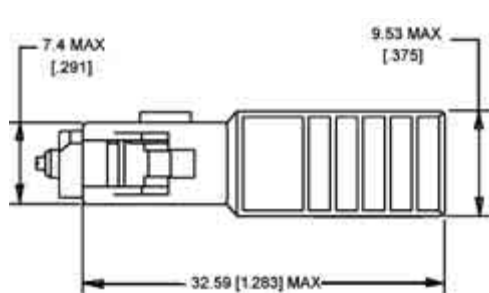
Broadband Bandpass Attenuators Operating Wavelength 1260-1360 nm & 1430-1625 nm

Attenuation (dB)	Part Number
1	5209250-1
2	5209250-2
3	5209250-3
4	5209250-4
5	5209250-5
6	5209250-6
7	5209250-7
8	5209250-8
9	5209250-9
10	1-5209250-0
11	1-5209250-1
12	1-5209250-2
13	1-5209250-3
14	1-5209250-4
15	1-5209250-5
16	1-5209250-6
17	1-5209250-7
18	1-5209250-8
19	1-5209250-9
20	2-5209250-0
25	2-5209250-5

Note: Attenuation Tolerance, Ambient
 ≥ 5 dB: $\pm .10 \times$ nominal
attenuation value
 < 5 dB: ± 0.50 dB
0 dB: 0.50 dB max.
Reflectance ≤ -55 dB

Singlemode SC Attenuators, Build Out Style Fixed Value

SC/APC 8°



Note: Additional attenuation values available upon request.

* 9° APC Available (Part Number 5417496-X)

Dual Window Attenuators Operating Wavelength 1310/1550 nm ± 25 nm

Attenuation (dB)	Part Number
1	5209597-1
2	5209597-2
3	5209597-3
4	5209597-4
5	5209597-5
6	5209597-6
7	5209597-7
8	5209597-8
9	5209597-9
10	1-5209597-0
11	1-5209597-1
12	1-5209597-2
13	1-5209597-3
14	1-5209597-4
15	1-5209597-5
16	1-5209597-6
17	1-5209597-7
18	1-5209597-8
20	2-5209597-0
25	2-5209597-5

Note: Attenuation Tolerance, Ambient
 ≥ 5 dB: $\pm .10 \times$ nominal
attenuation value
 < 5 dB: ± 0.50 dB
Reflectance ≤ -60 dB

Broadband Bandpass Attenuators Operating Wavelength 1260-1360 nm & 1430-1625 nm

Attenuation (dB)	Part Number
1	5417021-1
2	5417021-2
3	5417021-3
4	5417021-4
5	5417021-5
6	5417021-6
7	5417021-7
8	5417021-8
9	5417021-9
10	1-5417021-0
11	1-5417021-1
12	1-5417021-2
13	1-5417021-3
14	1-5417021-4
15	1-5417021-5
16	1-5417021-6
17	1-5417021-7
18	1-5417021-8
19	1-5417021-9
20	2-5417021-0
25	2-5417021-5

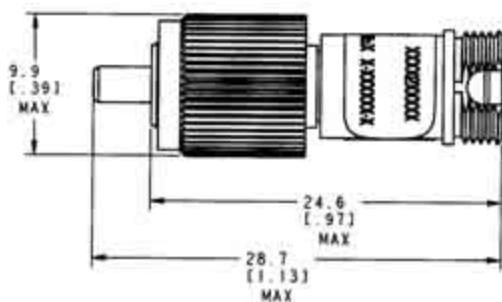
Note: Attenuation Tolerance, Ambient
 ≥ 5 dB: $\pm .10 \times$ nominal
attenuation value
 < 5 dB: ± 0.50 dB
Reflectance ≤ -65 dB

Note: All part numbers are RoHS compliant.

Attenuators (Continued)

Singlemode FC Attenuators, Build Out Style, Fixed Value

FC/UPC



Note: Additional attenuation values available upon request.

Dual Window Attenuators Operating Wavelength 1310/1550 nm ± 25 nm

Attenuation (dB)	Part Number
1	5209948-1
2	5209948-2
3	5209948-3
4	5209948-4
5	5209948-5
6	5209948-6
7	5209948-7
8	5209948-8
9	5209948-9
10	1-5209948-0
11	1-5209948-1
12	1-5209948-2
13	1-5209948-3
14	1-5209948-4
15	1-5209948-5
16	1-5209948-6
17	1-5209948-7
18	1-5209948-8
19	1-5209948-9
20	2-5209948-0
25	2-5209948-5

Note: Attenuation Tolerance, Ambient
 ≥ 5 dB: $\pm .10 \times$ nominal
attenuation value
 < 5 dB: ± 0.50 dB
Reflectance ≤ -55 dB

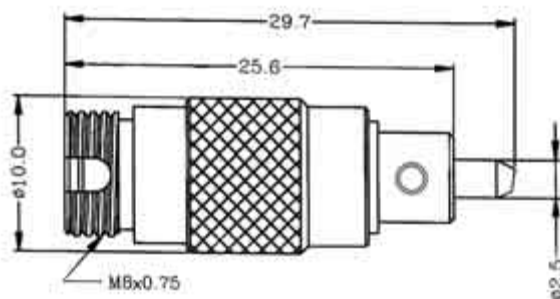
Broadband Bandpass Attenuators Operating Wavelength 1260-1360 nm & 1430-1625 nm

Attenuation (dB)	Part Number
1	5209285-1
2	5209285-2
3	5209285-3
4	5209285-4
5	5209285-5
6	5209285-6
7	5209285-7
8	5209285-8
9	5209285-9
10	1-5209285-0
11	1-5209285-1
12	1-5209285-2
13	1-5209285-3
14	1-5209285-4
15	1-5209285-5
16	1-5209285-6
17	1-5209285-7
18	1-5209285-8
19	1-5209285-9
20	2-5209285-0
25	2-5209285-5

Note: Attenuation Tolerance, Ambient
 ≥ 5 dB: $\pm .10 \times$ nominal
attenuation value
 < 5 dB: ± 0.50 dB
0 dB: 0.50 dB max.
Reflectance ≤ -55 dB

Singlemode FC Attenuators, Build Out Style, Fixed Value

FC/APC (8°)



Note: Additional attenuation values available upon request.

Dual Window Attenuators Operating Wavelength 1310/1550 nm ± 25 nm

Attenuation (dB)	Part Number
1	1754722-1
2	1754722-2
3	1754722-3
4	1754722-4
5	1754722-5
6	1754722-6
10	1-1754722-0
12	1-1754722-2
15	1-1754722-5
18	1-1754722-8
20	2-1754722-0
25	2-1754722-5

Note: Attenuation Tolerance, Ambient
 ≥ 5 dB: $\pm .10 \times$ nominal
attenuation value
 < 5 dB: ± 0.50 dB
Reflectance ≤ -65 dB

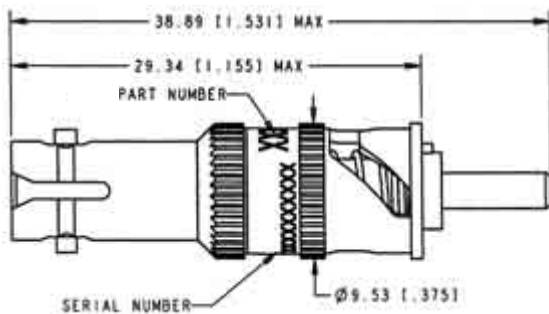
Note: All part numbers are RoHS compliant.



Attenuators (Continued)

Singlemode ST Attenuators, Build Out Style, Fixed Value

ST/UPC



Dual Window Attenuators Operating Wavelength 1310/1550 nm ± 25 nm

Attenuation (dB)	Part Number
1	5417549-1
2	5417549-2
3	5417549-3
4	5417549-4
5	5417549-5
6	5417549-6
7	5417549-7
8	5417549-8
9	5417549-9
10	1-5417549-0
11	1-5417549-1
12	1-5417549-2
13	1-5417549-3
14	1-5417549-4
15	1-5417549-5
16	1-5417549-6
17	1-5417549-7
18	1-5417549-8
19	1-5417549-9
20	2-5417549-0
25	2-5417549-5

Note: Attenuation Tolerance, Ambient
 ≥ 5 dB: $\pm .15 \times$ nominal
attenuation value
 < 5 dB: ± 0.75 dB
Reflectance ≤ -55 dB

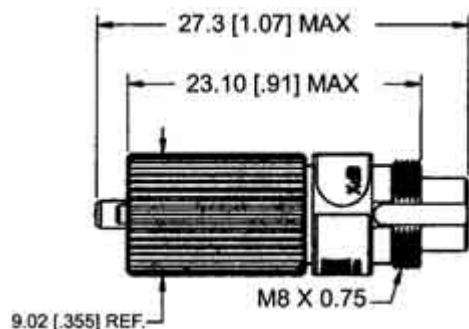
Broadband Bandpass Attenuators Operating Wavelength 1260-1360 nm & 1430-1625 nm

Attenuation (dB)	Part Number
1	5417399-1
2	5417399-2
3	5417399-3
4	5417399-4
5	5417399-5
6	5417399-6
7	5417399-7
8	5417399-8
9	5417399-9
10	1-5417399-0
11	1-5417399-1
12	1-5417399-2
13	1-5417399-3
14	1-5417399-4
15	1-5417399-5
16	1-5417399-6
17	1-5417399-7
18	1-5417399-8
19	1-5417399-9
20	2-5417399-0
25	2-5417399-5

Note: Attenuation Tolerance, Ambient
 ≥ 5 dB: $\pm .10 \times$ nominal
attenuation value
 < 5 dB: ± 0.50 dB
0 dB: 0.50 dB max.
Reflectance ≤ -55 dB

Singlemode D4 Attenuators, Build Out Style, Fixed Value

D4/PC



Note: Additional attenuation values
available upon request.

Dual Window Attenuators

Operating Wavelength 1310/1550 nm ± 25 nm

Attenuation (dB)	Part Number
5	5209570-5
10	1-5209570-0
15	1-5209570-5
20	2-5209570-0

Note: Attenuation Tolerance, Ambient
 ≥ 5 dB: $\pm .15 \times$ nominal
attenuation value
 < 5 dB: ± 0.75 dB
Reflectance ≤ -45 dB

Note: All part numbers are RoHS compliant.

Attenuators (Continued)

In Line Attenuators

Product Facts

- A range of fixed attenuation values. Standard values of 1 through 20, and 25 dB
- UPC offers Excellent Return Loss
- Attenuation is wavelength independent and polarization insensitive
- Low PDL
- Low modal noise
- High reliability
- ≤ -60 dB Reflectance (unconnectorized)
- Low cost
- Vibration resistant
- Single and Dual Window
- Designed to comply with Telcordia GR-910

Applications

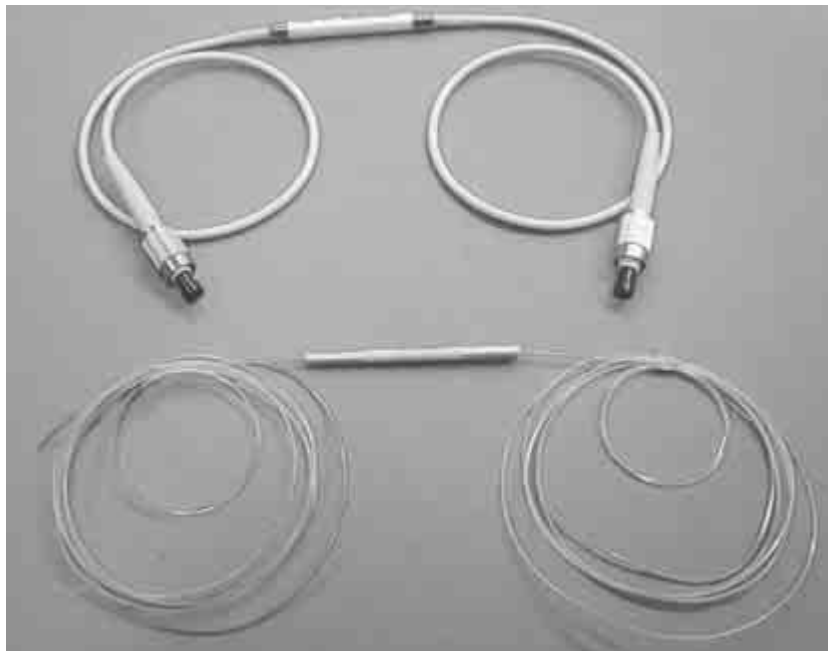
- Power leveling in DWDM transmission systems
- Test and Measurement
- Power attenuation at the receiver

Available Collateral

- Product Specification
108-2103 Heavy Duty
3 mm cable
108-2130 Medium Duty
900 μ m cable
- Customer Drawings

Customizable Features

- Lead lengths
- Connectorized types, including SC, FC, ST, & LC
- LC available in Medium Duty (900 μ m cable) only
- Available in Heavy Duty (3 mm cable) and Medium Duty (900 μ m cable)



Specifications

Attenuation Values —
1-20 dB and 25 dB (Fixed)

Reflectance —
 ≤ -55 and -60 dB for UPC and unterminated respectively

Operating Temperature —
 -40°C to $+75^{\circ}\text{C}$

Vibration Resistance —
 $< 0.1 \times$ attenuation

Tyco Electronics' high performance In Line Attenuators utilize a unique all fiber construction to absorb the optical signal.

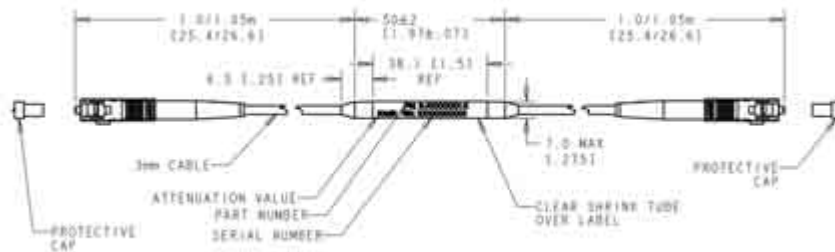
By employing a Tyco Electronics' technology,

the design minimizes reflectance, attenuation tolerance, and PDL while maximizing reliability, environmental stability, and power handling. There are no filters, air gaps, or core mismatches.



Attenuators (Continued)

Singlemode In Line Attenuators, Heavy Duty (3 mm cable), Fixed Value SC - SC



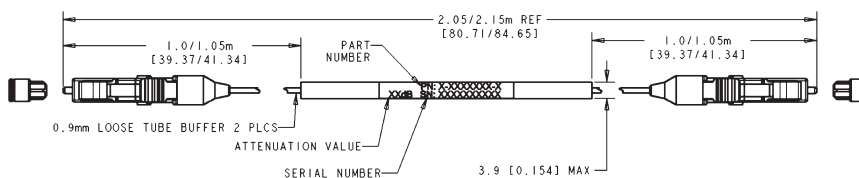
Dual Window In Line Attenuators

Operating Wavelength
1310/1550 nm ±25 nm

Attenuation (dB)	Part Number
1	6588517-1
2	6588517-2
3	6588517-3
4	6588517-4
5	6588517-5
6	6588517-6
7	6588517-7
8	6588517-8
9	6588517-9
10	1-6588517-0
11	1-6588517-1
12	1-6588517-2
13	1-6588517-3
14	1-6588517-4
15	1-6588517-5
16	1-6588517-6
17	1-6588517-7
18	1-6588517-8
19	1-6588517-9
20	2-6588517-0
25	2-6588517-5

Note: Attenuation Tolerance, Ambient
 ≥ 5 dB: $\pm .10 \times$ nominal
attenuation value
 < 5 dB: ± 0.50 dB
Reflectance ≤ -55 dB

Singlemode In Line Attenuators, Medium Duty (900 μ m cable), Fixed Value LC to LC



Dual Window In Line Attenuators

Operating Wavelength
1310/1550 nm ±25 nm

Attenuation (dB)	Part Number
1	6588564-1
2	6588564-2
3	6588564-3
4	6588564-4
5	6588564-5
6	6588564-6
7	6588564-7
8	6588564-8
9	6588564-9
10	1-6588564-0
11	1-6588564-1
12	1-6588564-2
13	1-6588564-3
14	1-6588564-4
15	1-6588564-5
16	1-6588564-6
17	1-6588564-7
18	1-6588564-8
19	1-6588564-9
20	2-6588564-0
25	2-6588564-5

Note: Attenuation Tolerance, Ambient
 ≥ 5 dB: $\pm .10 \times$ nominal
attenuation value
 < 5 dB: ± 0.50 dB
Reflectance ≤ -50 dB

Note: All part numbers are RoHS compliant.