

## 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

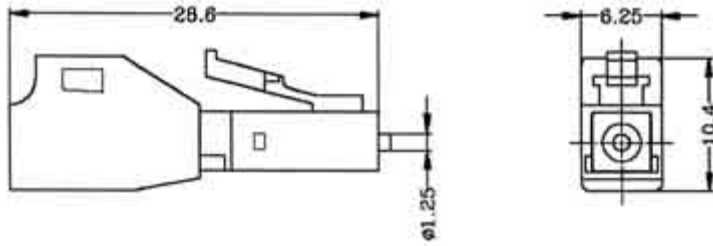
#### Customizable Features

- 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

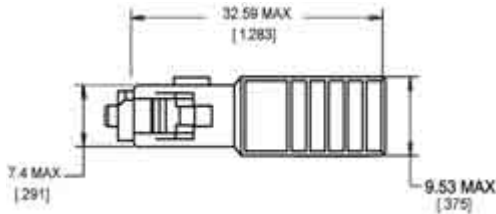
**Note:** Attenuation Tolerance, Ambient  
 $\geq 5$  dB:  $\pm .10$  x nominal  
attenuation value  
 $< 5$  dB:  $\pm 0.50$  dB  
Reflectance  $\leq -55$  dB

**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: ± .10 x nominal attenuation value  
 < 5 dB: ± 0.50 dB  
 0 dB: 0.50 dB max  
 Reflectance ≤ -55 dB

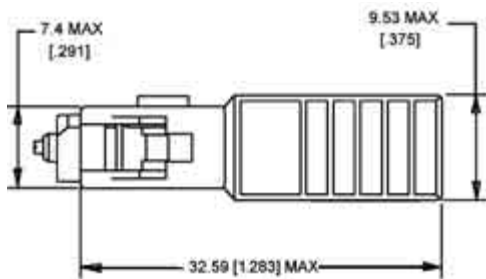
**Broadband Bandpass Attenuators Operating Wavelength 1260-1360 nm & 1430-1625 nm**

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: ± .10 x 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: ± .10 x 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

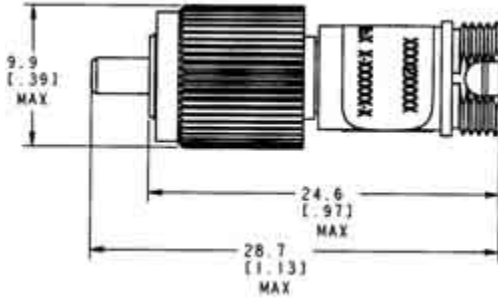
**Note:** Attenuation Tolerance, Ambient  
 ≥ 5 dB: ± .10 x nominal attenuation value  
 < 5 dB: ± 0.50 dB  
 Reflectance ≤ -65 dB

**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: ± .10 x nominal attenuation value  
 < 5 dB: ± 0.50 dB  
 Reflectance ≤ -55 dB

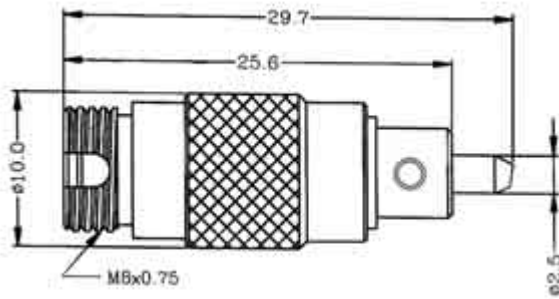
**Broadband Bandpass Attenuators  
Operating Wavelength  
1260-1360 nm & 1430-1625 nm**

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: ± .10 x 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

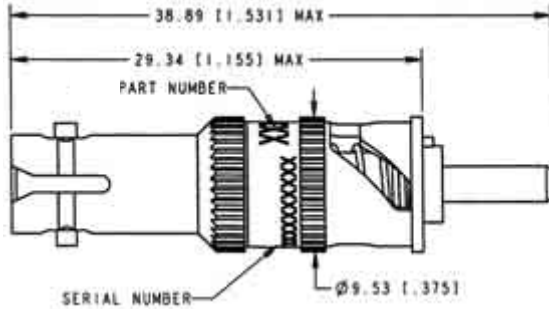
**Note:** Attenuation Tolerance, Ambient  
 ≥ 5 dB: ± .10 x nominal attenuation value  
 < 5 dB: ± 0.50 dB  
 Reflectance ≤ -65 dB

**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: ± .15 x nominal  
 attenuation value  
 < 5 dB: ± 0.75 dB  
 Reflectance ≤ -55 dB

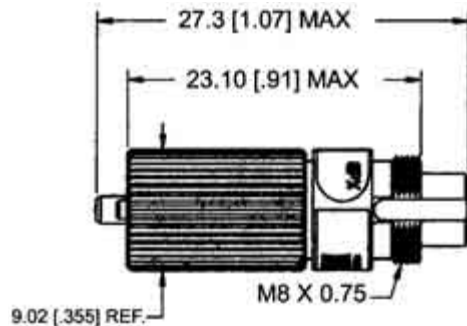
**Broadband Bandpass Attenuators  
Operating Wavelength  
1260-1360 nm & 1430-1625 nm**

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: ± .10 x 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: ± .15 x 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**

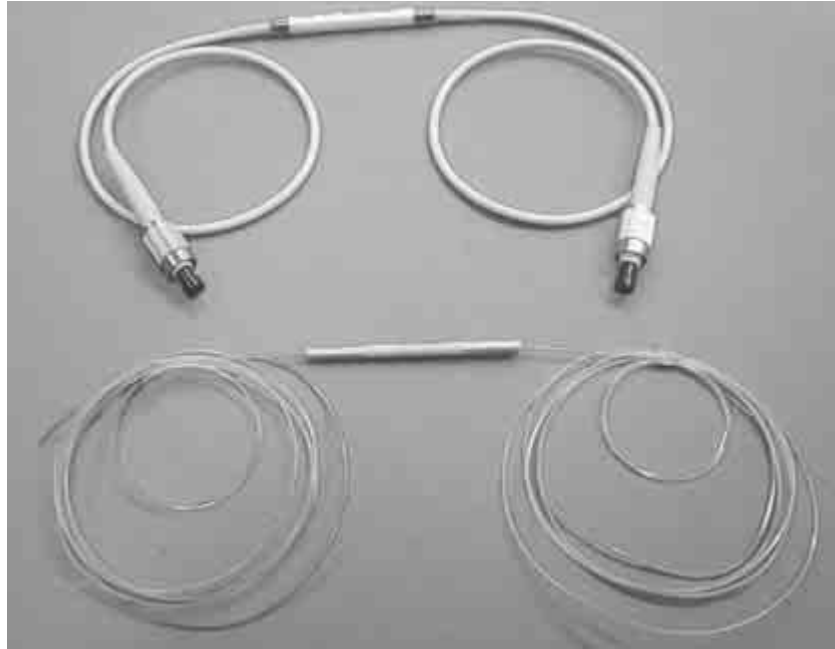
- Power leveling in DWDM transmission systems
- Test and Measurement
- Power attenuation at the receiver

**Available Collateral**

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

**Customizable Features**

- Lead lengths
- Connectorized types, including SC, FC, ST, & LC
- LC available in Medium Duty (900 μm cable) only
- Available in Heavy Duty (3 mm cable) and Medium Duty (900 μm 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°C
- Vibration Resistance** — < 0.1 x attenuation

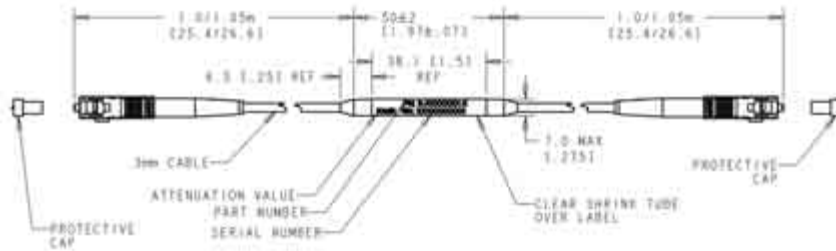
Tyco Electronics' high performance In Line Attenuators utilize a unique all fiber construction to absorb the optical signal.

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**

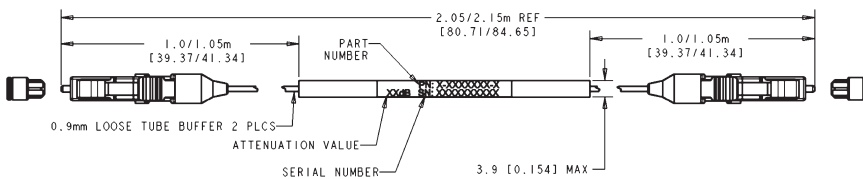


**Dual Window In Line Attenuators  
Operating Wavelength  
1310/1550 nm ±25 nm**

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: ± .10 x nominal attenuation value  
 < 5 dB: ± 0.50 dB  
 Reflectance ≤ -55 dB

**Singlemode In Line Attenuators, Medium Duty (900 μm 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: ± .10 x nominal attenuation value  
 < 5 dB: ± 0.50 dB  
 Reflectance ≤ -50 dB

**Note:** All part numbers are RoHS compliant.