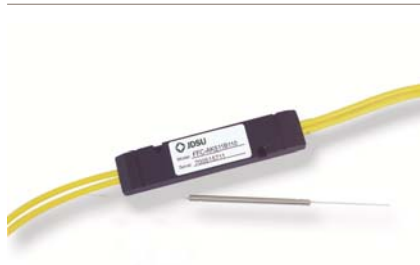


## Fused Coupler, Two Window



### Key Features

- Provides 1310 nm and 1550 nm wavelength coverage
- Broadband operation  $\pm 40$  nm
- High power handling
- Wide range of regular parts available "to go"
- Proven reliability

### Applications

- Passive optical networks
- CATV
- Network expansion
- Fixed attenuation (select configuration option 0)

The two window fused coupler splits or combines light with high performance over two wavelength regions, maintaining a broad bandwidth in both. This component is manufactured with a highly automated process to achieve consistent quality and reliability.

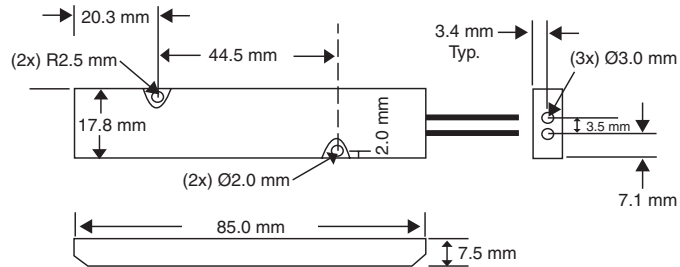
Regular parts are available with a wide variety of tap ratios, housing and connector options and can therefore be readily specified in a wide variety of applications, enabling rapid design cycles and new project builds. Reliability is assured through qualification to Telcordia GR-1221.

### Compliance

- Telcordia GR-1221

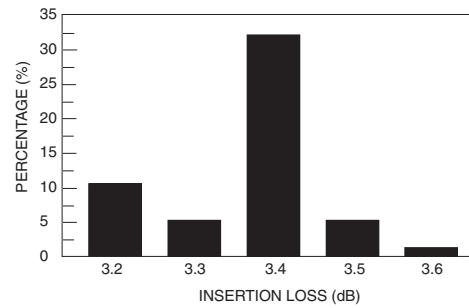
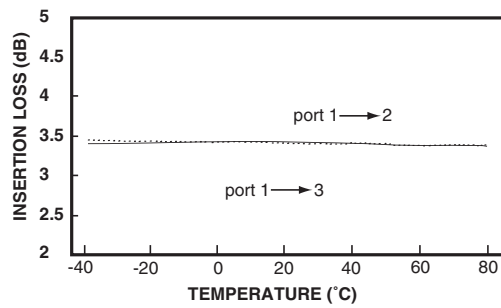
Dimensions Diagram: 1x2 Model, H-Package

(Specifications in mm unless otherwise noted. 3mm cable shown.)



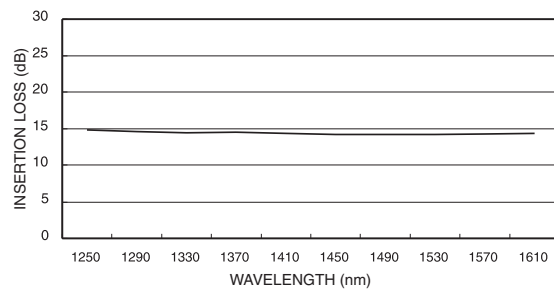
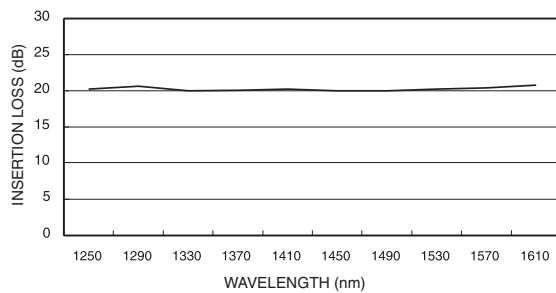
50/50 Temperature Stability

50/50 Insertion Loss



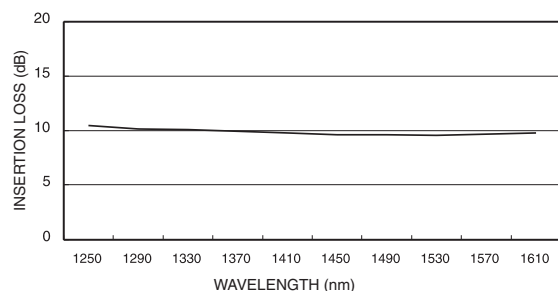
Wavelength Stability: 1310 and 1550 nm 1/99 Port 2 (1%)

Wavelength Stability: 1310 and 1550 nm 5/95 Port 2 (5%)

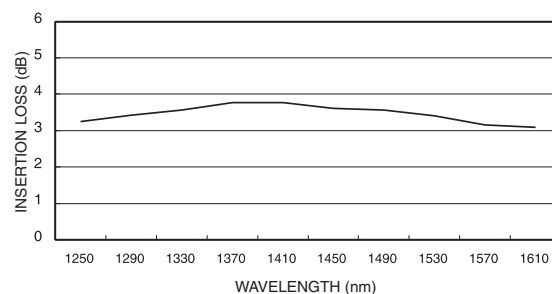


## 3

Wavelength Stability: 1310 and 1550 nm 10/90 Port 2 (10%)



Wavelength Stability: 1310 and 1550 nm 50/50 Port 2 (50%)



## Coupling Ratio/PDL Conversion Chart

| Coupling Ratio | PDL Grade 1 (Tap Port Only) | PDL Grade 2 (Tap Port Only) |
|----------------|-----------------------------|-----------------------------|
| 40 ~ 50 %      | 0.15 dB                     | 0.20 dB                     |
| 30 ~ 39 %      | 0.20 dB                     | 0.20 dB                     |
| 10 ~ 29 %      | 0.30 dB                     | 0.30 dB                     |
| 1 ~ 9 %        | 0.35 dB                     | 0.35 dB                     |

## Qualification and Reliability Tests

| Parameter                     | Specification                                  |
|-------------------------------|------------------------------------------------|
| High temperature storage test | 85 °C for 2,000 hours                          |
| Damp heat test                | 50 °C/90% RH for 2,000 hours                   |
| Water immersion test          | 43±2 °C, pH of 5.5±0.5 for 7 days              |
| Vibration test                | 10 to 2,000 Hz, 20 g's, 3 axes                 |
| Shock test                    | 3 axes, 40 g's, 11 ms, 5 blows each direction  |
| Fiber torsion test            | 180° twist, 5 times both directions, 5 N force |
| Fiber pulling test            | 5 N for 1 minute                               |

## 4

## Insertion Loss

| Coupling Ratio | Attenuation | Grade | Signal Path<br>Insertion Loss (Min./Max.) | Tap Path (or Attenuator Path)<br>Insertion Loss (Min./Max.) |
|----------------|-------------|-------|-------------------------------------------|-------------------------------------------------------------|
| 1%             | 20 dB       | 1     | NA/0.3 dB                                 | 15.5/23.5 dB                                                |
| 1%             | 20 dB       | 2     | NA/0.4 dB                                 | 14.8/24.1 dB                                                |
| 2%             | 17 dB       | 1     | NA/0.3 dB                                 | 14.0/19.8 dB                                                |
| 2%             | 17 dB       | 2     | NA/0.4 dB                                 | 13.8/21.0 dB                                                |
| 3%             | 15 dB       | 1     | NA/0.4 dB                                 | 12.8/18.2 dB                                                |
| 3%             | 15 dB       | 2     | NA/0.4 dB                                 | 12.8/19.5 dB                                                |
| 5%             | 13 dB       | 1     | NA/0.4 dB                                 | 11.8/14.6 dB                                                |
| 5%             | 13 dB       | 2     | NA/0.5 dB                                 | 10.6/18.9 dB                                                |
| 10%            | 10 dB       | 1     | 0.3/0.6 dB                                | 9.6/11.3 dB                                                 |
| 10%            | 10 dB       | 2     | 0.2/0.8 dB                                | 8.3/12.7 dB                                                 |
| 20%            | 7 dB        | 1     | 0.8/1.2 dB                                | 6.5/7.9 dB                                                  |
| 20%            | 7 dB        | 2     | 0.7/1.4 dB                                | 5.9/8.5 dB                                                  |
| 30%            | 5.2 dB      | 1     | 1.3/1.9 dB                                | 4.7/6.0 dB                                                  |
| 30%            | 5.2 dB      | 2     | 1.2/2.1 dB                                | 4.3/6.4 dB                                                  |
| 33%            | 4.8 dB      | 1     | 1.4/2.1 dB                                | 4.2/5.6 dB                                                  |
| 33%            | 4.8 dB      | 2     | 1.3/2.3 dB                                | 3.9/5.9 dB                                                  |
| 40%            | 4 dB        | 1     | 1.8/2.7 dB                                | 3.5/4.7 dB                                                  |
| 40%            | 4 dB        | 2     | 1.7/2.9 dB                                | 3.2/5.0 dB                                                  |
| 50%            | 3 dB        | 1     | 2.6/3.6 dB                                | 2.6/3.6 dB                                                  |
| 50%            | 3 dB        | 2     | 2.3/3.9 dB                                | 2.3/3.9 dB                                                  |

## Specifications

| Parameter (50/50 coupling ratio)    |         | Grade 1            | Grade 2            |
|-------------------------------------|---------|--------------------|--------------------|
| Center wavelength                   |         | 1310, 1550 nm      | 1310, 1550 nm      |
| Insertion loss (without connectors) | Maximum | 3.6 dB             | 3.9 dB             |
| Excess loss (without connectors)    | Typical | 0.1 dB             | 0.3 dB             |
| Uniformity                          | Maximum | 0.8 dB             | 1.1 dB             |
| Polarization dependent loss         | Maximum | 0.15 dB            | 0.2 dB             |
| Optical return loss                 | Minimum | 50 dB              | 50 dB              |
| Directivity                         | Minimum | 55 dB              | 55 dB              |
| Temperature coefficient             | Typical | 0.002 dB/°C        | 0.002 dB/°C        |
| Package dimensions                  |         |                    |                    |
| S package (D x L)                   |         | 3.0 x 54 mm        | 3.0 x 54 mm        |
| L package (D x L)                   |         | 3.6 x 70 mm        | 3.6 x 70 mm        |
| H package (L x W x H)               |         | 85 x 17.8 x 7.5 mm | 85 x 17.8 x 7.5 mm |
| Operating temperature <sup>1</sup>  |         | -40 to 85 °C       | -40 to 85 °C       |
| Storage temperature <sup>1</sup>    |         | -50 to 85 °C       | -50 to 85 °C       |

1. -20 to 70 °C for 3.0 mm cable.

**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](mailto:customer.service@jdsu.com).

**Sample: FFC-AKS11B110**

FFC-

A

| Code | Passband Wavelength |
|------|---------------------|
| A    | 1310/1550 nm±40 nm  |

| Code | Housing        |
|------|----------------|
| H    | Ø 3.0 mm cable |
| L    | Ø 900 µm fiber |
| S    | Ø 250 µm fiber |

| Code | Grade   |
|------|---------|
| 1    | Grade 1 |
| 2    | Grade 2 |

B

| Code | Fiber Type     |
|------|----------------|
| 1    | Corning SMF-28 |

| Code | Pigtail Length |
|------|----------------|
| 0    | 0.5 meter      |
| 1    | 1 meter        |
| 2    | 2 meters       |
| 3    | 3 meters       |
| 4    | 4 meters       |
| 5    | 5 meters       |
| 6    | 6 meters       |
| 7    | 7 meters       |
| 8    | 8 meters       |
| 9    | 9 meters       |
| A    | 10 meters      |

| Code | Connectors |
|------|------------|
| 0    | NONE       |
| 1    | FC/PC      |
| 2    | FC/SPC     |
| 3    | FC/APC     |
| 4    | SC/SPC     |
| 5    | SC/APC     |
| 6    | BICONIC    |
| 7    | D4         |
| 8    | ST         |
| 9    | FC/UPC     |
| A    | SC/UPC     |
| B    | LC         |
| C    | MU         |

| Code | Coupling Ratio |
|------|----------------|
| 1    | 1%             |
| 2    | 2%             |
| 3    | 3%             |
| 5    | 5%             |
| A    | 10%            |
| C    | 20%            |
| E    | 30%            |
| F    | 33%            |
| H    | 40%            |
| K    | 50%            |

| Code | Configuration    |
|------|------------------|
| 0    | 1x1 (attenuator) |
| 1    | 1x2              |
| 2    | 2x2              |

| Code | Bandwidth |
|------|-----------|
| B    | Broadband |

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