

*Technical Report of EZ Splice / FMSEZ-025*

This technical report demonstrates the reliability performance of the FMSEZ-025 EZ Splice. The report is provided for Fujikura's sales partners, distributors, or agents to better understand the product and smoothly promote them.

All technical data are deemed reliable, but not guaranteed. These data are meant to provide clients better understanding of the products' overall performance.

If you have any questions, feel free to contact Fujikura.

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## Technical Report of EZ Splice / FMSEZ-025

### <Features>

The FMSEZ-025 has its own mechanism of "Push-pull-wedge". Unlike 3M's Mechanical Splice, the "Push-pull-wedge" mechanism achieves clamping both bare fiber part and coating part simultaneously. And then this clamping mechanism enhances strength against fiber twist.

Fiber holders ensure proper cleaving length and good fiber contact.

The FMSEZ-025 is applied for 125um-cladding/250um-coated single fiber, and used for either single-mode or multi-mode fibers. Available soon will be a 0.25/0.9mm version that can be applied for either 250um-coated fibers or 900um-coated fibers.



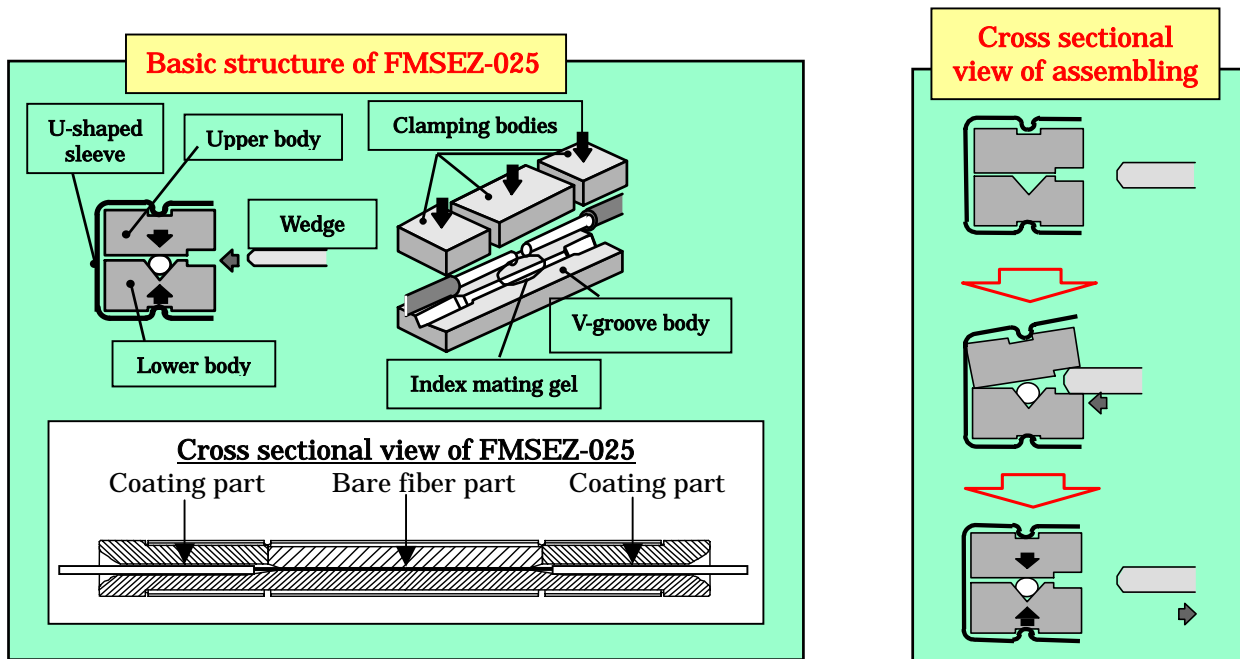
1. Description

(1) Applications

- 125um single fiber 250um coated
- Either singlemode or multimode fibers

(2) Structure

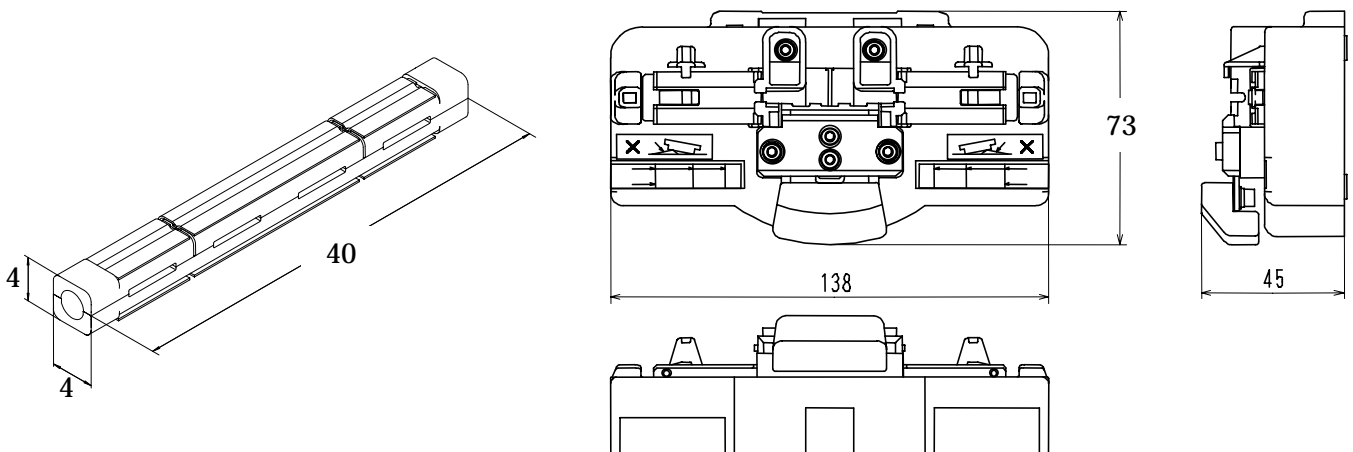
Both bare fiber part and coating part is clamped simultaneously as below figure.



(3) Dimensions

FMSEZ-025 ; L 40 \* W4 \* H 4 (mm)

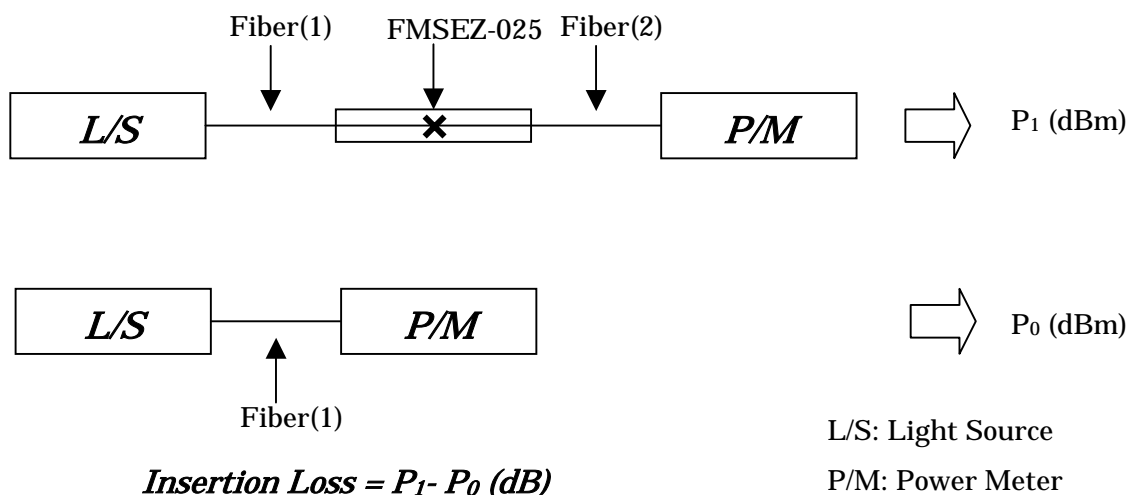
Assembly tool ; L 138 \* W73 \* H 45 (mm)



## 2. Test items and procedure

Product performance	Mechanical performance	Environmental performance
<ul style="list-style-type: none"> <li>- Insertion loss</li> <li>- Return loss</li> </ul>	<ul style="list-style-type: none"> <li>- Pull test (Axial pull)</li> <li>- Pull test (Off axial pull)</li> <li>- Vibration test</li> <li>- Impact test</li> <li>- Twist test</li> </ul>	<ul style="list-style-type: none"> <li>- Heat cycles</li> <li>- High temperature</li> <li>- Low temperature</li> <li>- Humidity cycles</li> <li>- Heat and humidity test</li> <li>- Salt spray test</li> <li>- Water immersion</li> </ul>

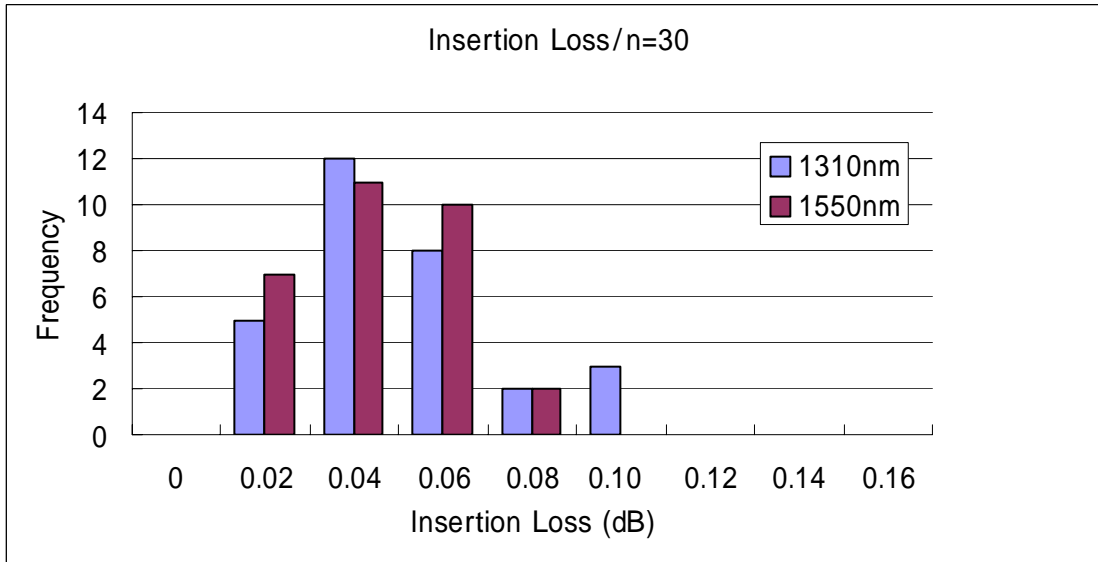
- All the tests were carried out with “heterogeneous” optical fibers (different lots of same type fibers),
- Measurement values in all the tests indicate actual insertion and return losses,
- Fibers in all the tests were cleaved with Fujikura CT-20,
- The test items were carried out individually, not in series,
- Thirty (30) splices were constructed for product performance, and ten (10) splices were constructed for mechanical/environmental performance,
- Insertion losses were measured by cut-back method as below



### 3. Performance

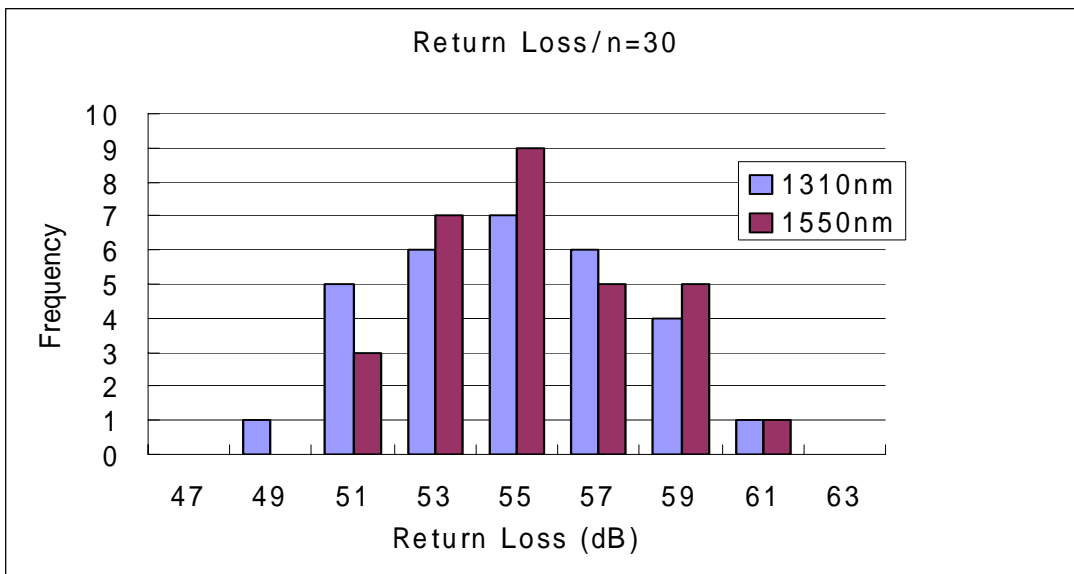
#### (1) Product performance

##### Insertion loss



No.	Test	Wavelength	Mean Loss	Max Loss
1.1	Insertion loss	1310nm	0.05dB	0.09dB
		1550nm	0.04dB	0.07dB

##### Return loss



No.	Test	Wavelength	Mean Loss	Min Loss
1.2	Return loss	1310nm	54.2dB	49.3dB
		1550nm	56.7dB	50.6dB

(2) Mechanical performance

2.1 Axial pull

Standards : IEC 61300-2-6      Condition : Axial pull, 3.0N

2.2 Off axial pull

Standards : JIS5961              Condition : Off axis pull 90 ° , 0.05N

2.3 Vibration

Standards : IEC 61300-2-1      Condition : Vibrate 3 axes 120hours

2.4 Impact

Standards : IEC 61300-2-1      Condition : Impact test, 100G

2.5 Twist

Standards : IEC 61300-2-5      Condition : Twist ± 90 , 10 cycles

Table-1 Data of Mechanical Performance

No.	Test	Wavelength	Insertion Loss			Return Loss	
			Mean	Max	Change	Mean	Min
2.1	Axial pull	1310nm	0.05dB	0.11dB	0.03dB	53.9dB	49.0dB
		1550nm	0.04dB	0.07dB	0.02dB	56.5dB	50.3dB
2.2	Off axial pull	1310nm	0.05dB	0.10dB	0.02dB	54.1dB	49.2dB
		1550nm	0.04dB	0.07dB	0.02dB	56.5dB	50.4dB
2.3	Vibration	1310nm	0.05dB	0.08dB	0.02dB	54.2dB	49.3dB
		1550nm	0.04dB	0.07dB	0.02dB	56.6dB	50.6dB
2.4	Impact	1310nm	0.05dB	0.08dB	0.02dB	54.1dB	49.2dB
		1550nm	0.05dB	0.07dB	0.02dB	56.7dB	50.4dB
2.5	Twist	1310nm	0.04dB	0.11dB	0.02dB	54.0dB	49.1dB
		1550nm	0.04dB	0.09dB	0.02dB	56.5dB	50.6dB

“Change” in the table means a maximum value among changes from initial values.

(3) Environmental performance

3.1 Heat cycles

Standards : IEC 61300-2-22

Condition : -40 to +70 , 10 cycles

3.2 High temperature

Standards : IEC 61300-2-18

Condition : 70 , 240hours

3.3 Low temperature

Standards : IEC 61300-2-17

Condition : -40 , 240hours

3.4 Humidity cycles

Standards : IEC 61300-2-21

Condition : -10 to +65 , 95% RH, 10 cycles

3.5 Heat and humidity test

Standards : GR-326-CORE

Condition : +85 , 336hours >>> +60 /95%RH, 336hours  
>>> -40 to +75 , 42 cycles

3.6 Salt spray

Standards : IEC 61300-2-26

Condition : 5% salt spray for 24hours

3.7 Water immersion

Standards : Fujikura condition

Condition : 72 hours in +40 water

Table-2 Data of Environmental Performance

No.	Test	Wavelength	Insertion Loss			Return Loss	
			Mean	Max	Change	Mean	Min
3.1	Heat cycles	1310nm	0.05dB	0.10dB	0.04dB	53.8dB	42.5dB
		1550nm	0.04dB	0.08dB	0.04dB	56.4dB	43.3dB
3.2	High temperature	1310nm	0.05dB	0.09dB	0.04dB	54.0dB	46.8dB
		1550nm	0.04dB	0.08dB	0.03dB	56.5dB	47.5dB
3.3	Low temperature	1310nm	0.05dB	0.11dB	0.04dB	53.5dB	37.7dB
		1550nm	0.04dB	0.07dB	0.03dB	55.1dB	39.2dB
3.4	Humidity cycles	1310nm	0.05dB	0.09dB	0.03dB	53.9dB	40.3dB
		1550nm	0.04dB	0.08dB	0.02dB	55.7dB	42.2dB
3.5	Heat and humidity test	1310nm	0.05dB	0.12dB	0.06dB	53.9dB	43.5dB
		1550nm	0.04dB	0.10dB	0.05dB	56.2dB	44.8dB
3.6	Salt spray	1310nm	0.05dB	0.08dB	0.02dB	54.0dB	49.1dB
		1550nm	0.04dB	0.07dB	0.02dB	56.6dB	50.4dB
3.7	Water immersion	1310nm	0.05dB	0.11dB	0.05dB	54.1dB	49.4dB
		1550nm	0.04dB	0.10dB	0.03dB	56.6dB	50.5dB

“Change” in the table means a maximum value among changes from initial values.

+++++ End of Technical Report +++++