

Vertical Launch Connectors

SMA, 2.92 mm, 2.4 mm, 1.85 mm & 1.0 mm

withwave

Versatile RF & MW Test Solutions

Withwave's Vertical Launch Connectors are specially designed for solderless vertical PCB launch on test & measurement board. These connectors have excellent electrical transition performance up to **26.5, 50 GHz, 67 GHz & 110 GHz** respectively as well as reduce installation time by eliminating soldering.



1.0 mm type (110 GHz)

■ Features

- DC to 26.5 GHz(SMA), 40 GHz(2.92 mm) ,50 GHz(2.4 mm), 67 GHz(1.85 mm), 110 GHz(1.0 mm)
- SMA, 2.92 mm, 2.4 mm, 1.85 mm & 1.0 mm type (Female, Male)
- Excellent Vertical transition (VSWR <1.3, 1.85 & 1.0 mm type: VSWR <1.6)
- Easy & Solderless Installation on designed substrate

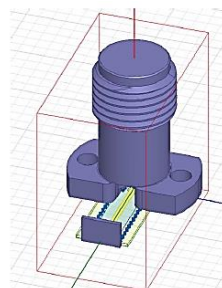
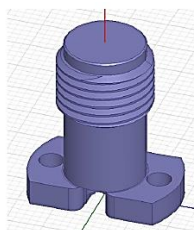
■ Application

- Test and measurement
- High Speed Digital Test Boards
- Test and Characterization Boards



■ Design Assistance

- 3D Model for Mechanical Layout (STEP file)
- **ANSYS HFSS models** (version 17.0 or newer) for 3D EM(Electromagnetic) Simulation



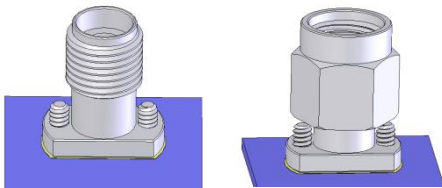
■ Specification (SMA Connector)

| Scope | Items | Specification |
|------------|----------------|---------------------------|
| Electrical | Freq. range | DC to 26.5 GHz |
| | Impedance | 50 Ohm |
| | VSWR(Max) | 1.3 : 1 (DC to 26.5 GHz) |
| Material | Connector type | SMA type (Female, Male) |
| | Body & Block | Stainless Steel |
| | PIN | BeCu with Gold Plated |

* RoHS Compliant

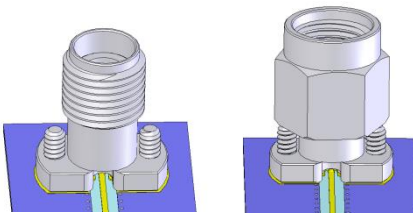
■ Ordering Information (SMA Connector)

Stripline type



| Application | Type | Part No. |
|-------------|--------|-----------|
| Stripline | Female | VC06FS001 |
| | Male | VC06MS001 |

Microstrip type



| Application | Type | Part No. |
|-------------|--------|-----------|
| Microstrip | Female | VC06FS002 |
| | Male | VC06MS002 |

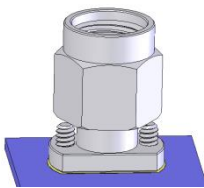
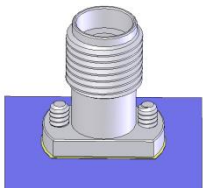
■ Specification (2.92 mm Connector)

| Scope | Items | Specification |
|------------|----------------|-----------------------------|
| Electrical | Freq. range | DC to 40 GHz |
| | Impedance | 50 Ohm |
| | VSWR(Max) | 1.3 : 1 (DC to 40 GHz) |
| Material | Connector type | 2.92 mm type (Female, Male) |
| | Body & Block | Stainless Steel |
| | PIN | BeCu with Gold Plated |

* RoHS Compliant

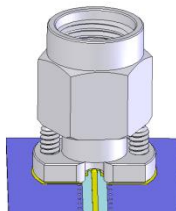
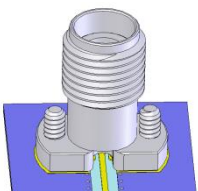
■ Ordering Information (2.92 mm Connector)

Stripline type



| Application | Type | Part No. |
|-------------|--------|-----------|
| Stripline | Female | VC03FS001 |
| | Male | VC03MS001 |

Microstrip type



| Application | Type | Part No. |
|-------------|--------|-----------|
| Microstrip | Female | VC03FS002 |
| | Male | VC03MS002 |

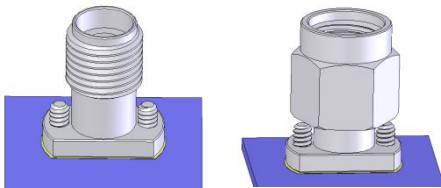
■ Specification (2.4 mm Connector)

| Scope | Items | Specification |
|------------|----------------|----------------------------|
| Electrical | Freq. range | DC to 50 GHz |
| | Impedance | 50 Ohm |
| | VSWR(Max) | 1.3 : 1 (DC to 50 GHz) |
| Material | Connector type | 2.4 mm type (Female, Male) |
| | Body & Block | Stainless Steel |
| | PIN | BeCu with Gold Plated |

* RoHS Compliant

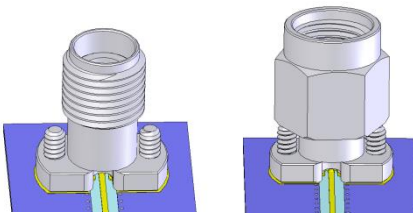
■ Ordering Information (2.4 mm Connector)

Stripline type



| Application | Type | Part No. |
|-------------|--------|-----------|
| Stripline | Female | VC02FS001 |
| | Male | VC02MS001 |

Microstrip type



| Application | Type | Part No. |
|-------------|--------|-----------|
| Microstrip | Female | VC02FS002 |
| | Male | VC02MS002 |

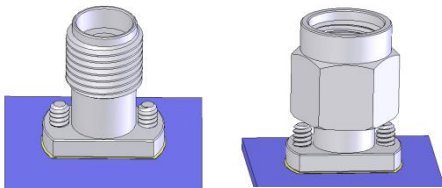
■ Specification (1.85 mm Connector)

| Scope | Items | Specification |
|------------|----------------|-------------------------|
| Electrical | Freq. range | DC to 67 GHz |
| | Impedance | 50 Ohm |
| | VSWR(Max) | 1.6 : 1 (DC to 67 GHz) |
| Material | Connector type | 1.85 mm type (Female) |
| | Body & Block | Stainless Steel |
| | PIN | BeCu with Gold Plated |

* RoHS Compliant

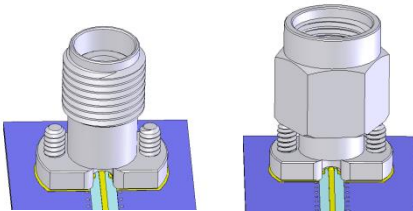
■ Ordering Information (1.85 mm Connector)

Stripline type



| Application | Type | Part No. |
|-------------|--------|-----------|
| Stripline | Female | VC01FS001 |
| | Male | VC01MS001 |

Microstrip type



| Application | Type | Part No. |
|-------------|--------|-----------|
| Microstrip | Female | VC01FS002 |
| | Male | VC01MS002 |

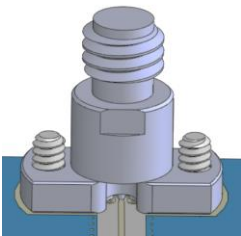
■ Specification (1.0 mm Connector)

| Scope | Items | Specification |
|------------|----------------|--------------------------|
| Electrical | Freq. range | DC to 110 GHz |
| | Impedance | 50 Ohm |
| | VSWR(Max) | 1.6 : 1 (DC to 110 GHz) |
| Material | Connector type | 1.0 mm type (Female) |
| | Body & Block | Stainless Steel |
| | PIN | BeCu with Gold Plated |

* RoHS Compliant

■ Ordering Information (1.0 mm Connector)

Microstrip type



| Application | Type | Part No. |
|-------------|--------|-----------|
| Microstrip | Female | VC00FS002 |



Vertical Launch Connectors

SMA, 2.92 mm, 2.4 mm, 1.85 mm & 1.0 mm

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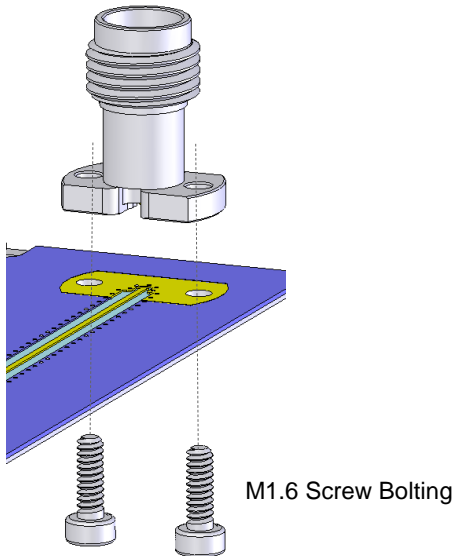
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Installation Procedure

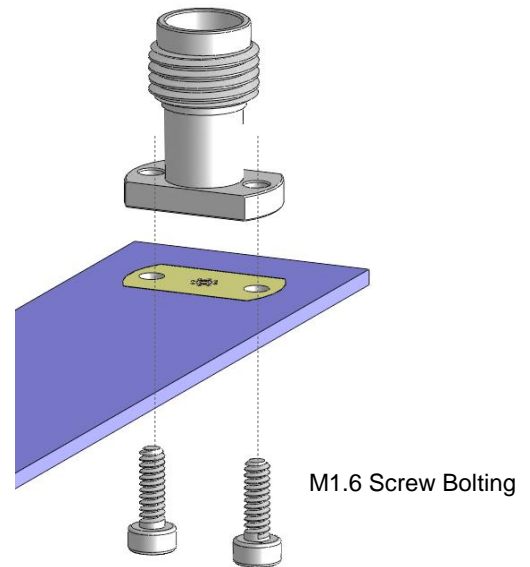
STEP 1 :

Launch vertical connector on the position of substrate.

Microstrip Line



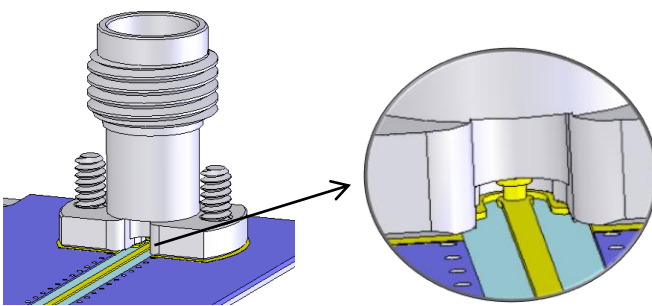
Stripline



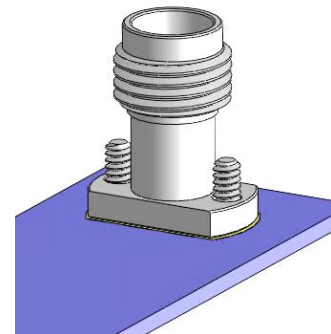
STEP 2:

Ensure Connector Body should be tighten against the substrate using two screws while ensuring center pin should be centered on the trace.

Microstrip Line



Stripline

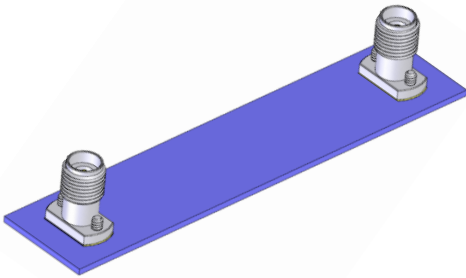


SMA Connector

■ Test Result (Stripline type)

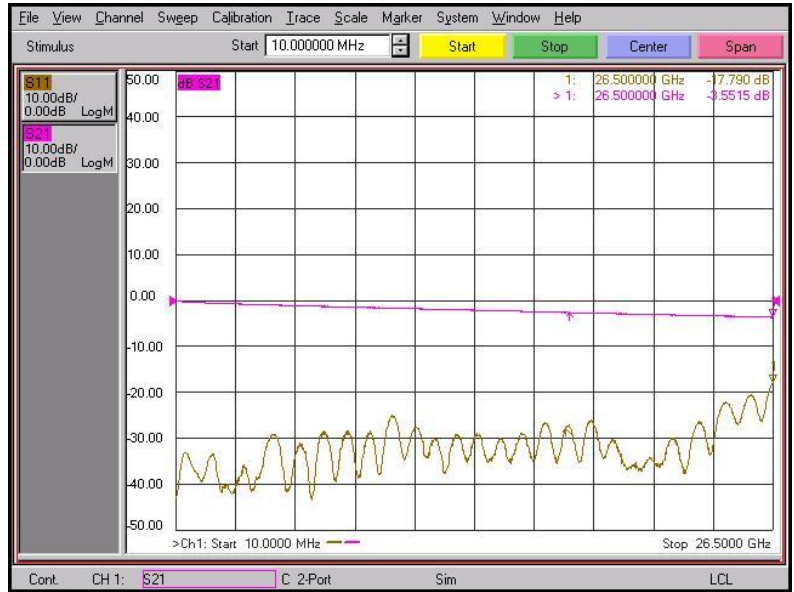
Female type

Part No. : VC06FS001



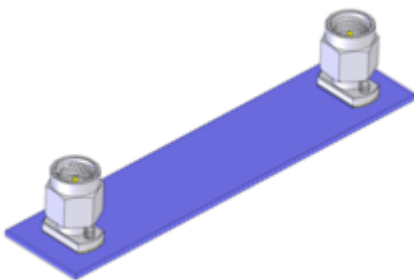
- Substrate : RO4003C(8 mil)
- Trace length : 70 mm (stripline)

Freq. : 10 MHz to 26.5 GHz



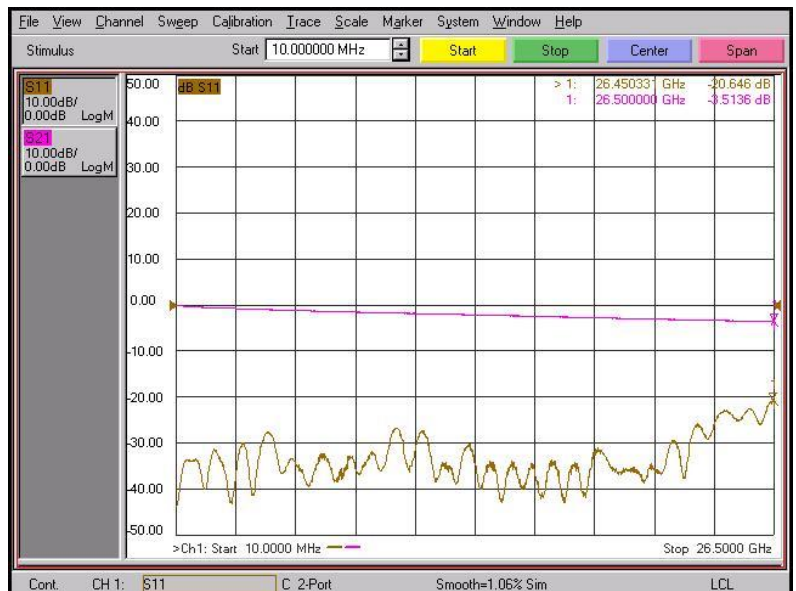
Male type

Part No. : VC06MS001



- Substrate : RO4003C(8 mil)
- Trace length : 70 mm (stripline)

Freq. : 10 MHz to 26.5 GHz

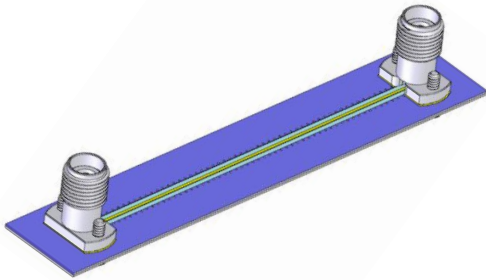


SMA Connector

■ Test Result (Microstrip type)

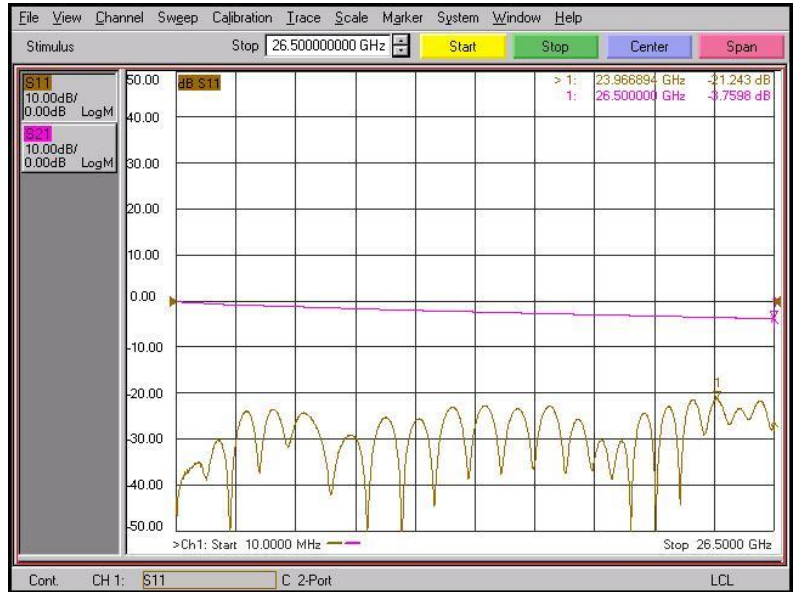
Female type

Part No. : VC06FS002



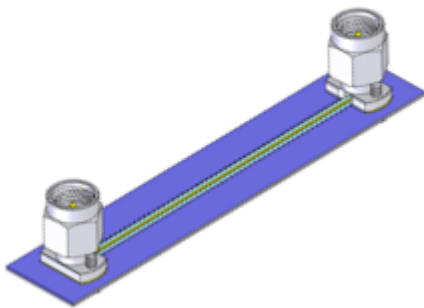
- Substrate : RO4003C(8 mil)
- Trace length : 60 mm (microstrip)

Freq. : 10 MHz to 26.5 GHz



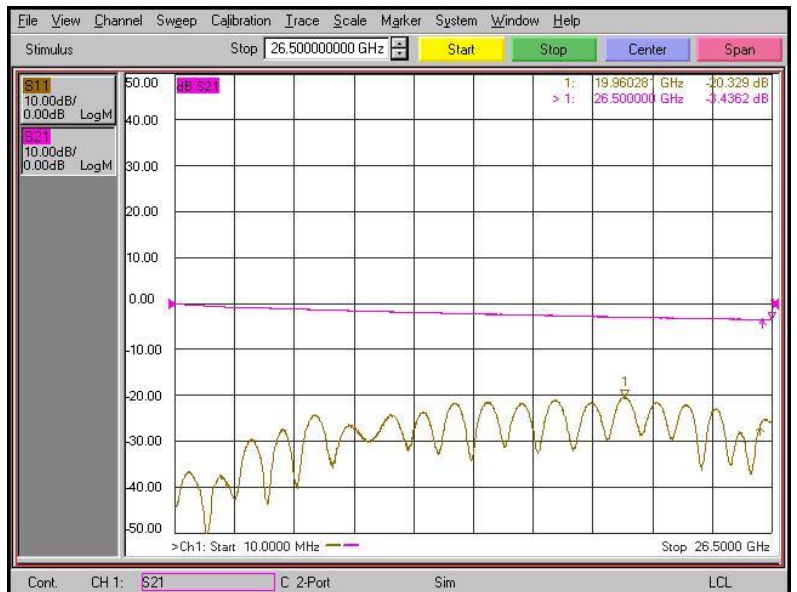
Male type

Part No. : VC06MS002



- Substrate : RO4003C(8 mil)
- Trace length : 60 mm (microstrip)

Freq. : 10 MHz to 26.5 GHz

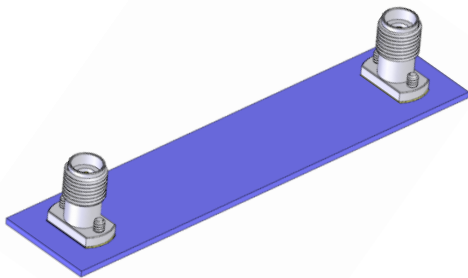


2.92 mm Connector

■ Test Result (Stripline type)

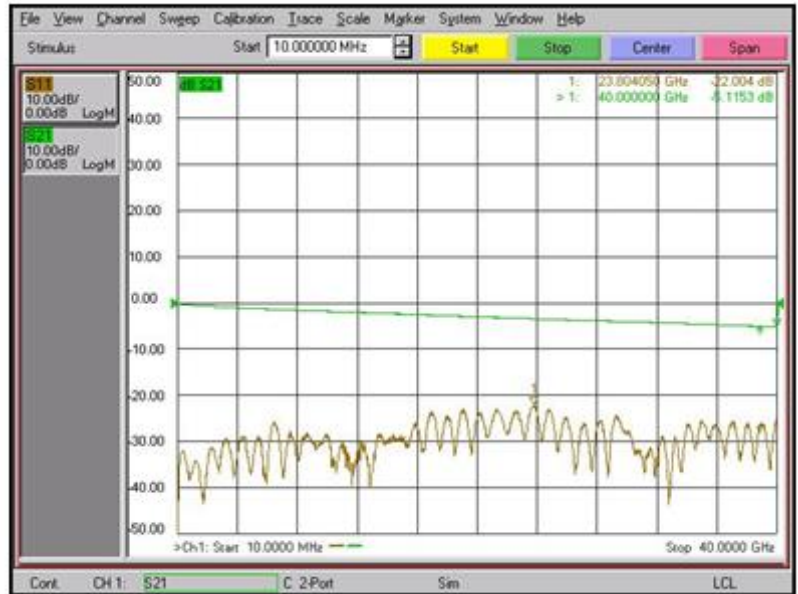
Female type

Part No. : VC03FS001



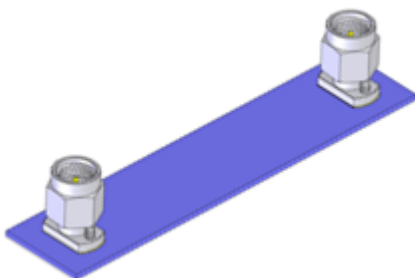
- Substrate : RO4003C(8 mil)
- Trace length : 70 mm (stripline)

Freq. : 10 MHz to 40 GHz



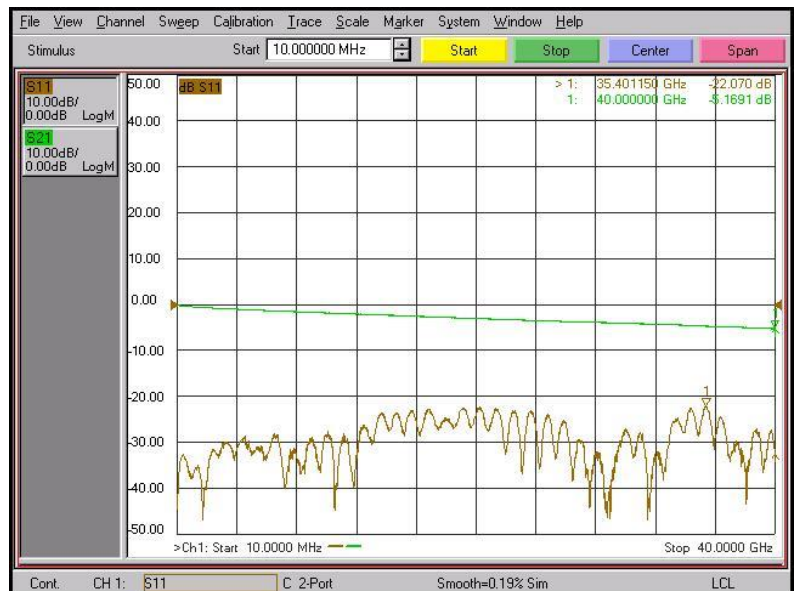
Male type

Part No. : VC03MS001



- Substrate : RO4003C(8 mil)
- Trace length : 70 mm (stripline)

Freq. : 10 MHz to 40 GHz



■ Test Result (Stripline type)

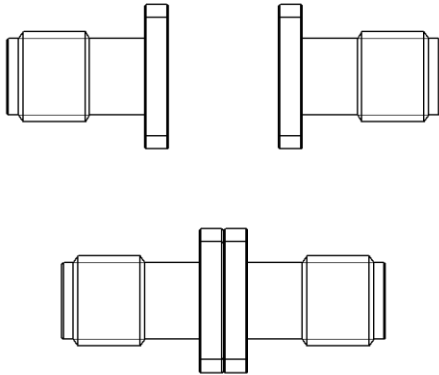
Female type

Part No. : VC03FS001

Back to Back Test

Vertical 2.92 mm

Vertical 2.92 mm



Freq. : 10 MHz to 40 GHz

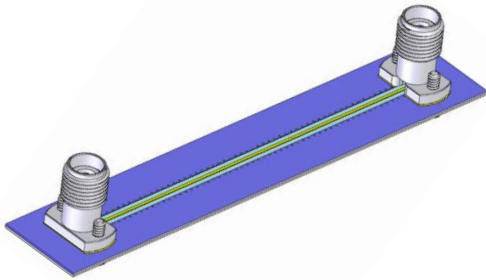


2.92 mm Connector

■ Test Result (Microstrip type)

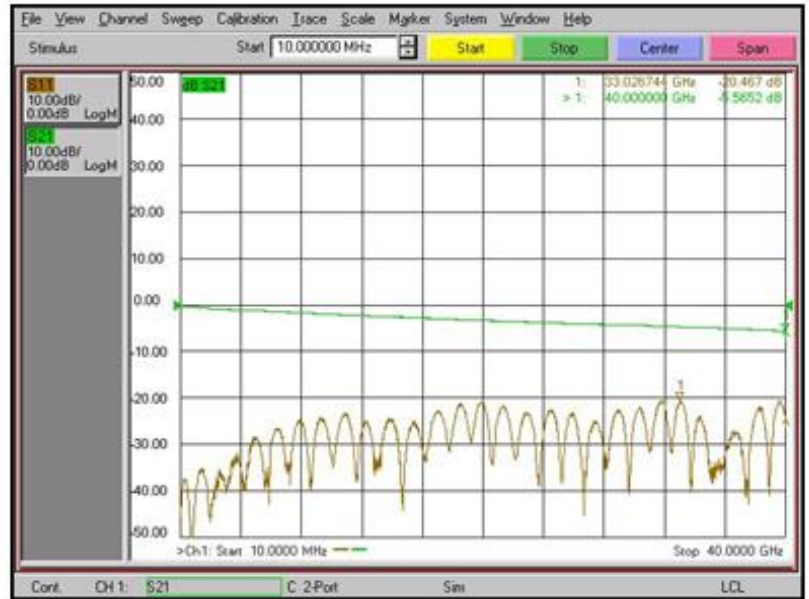
Female type

Part No. : VC03FS002



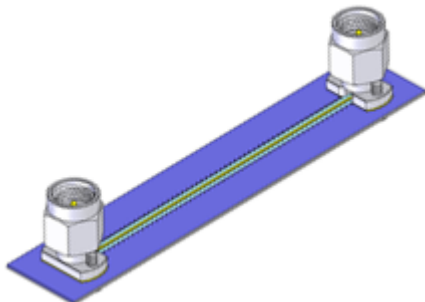
- Substrate : RO4003C(8 mil)
- Trace length : 60 mm (microstrip)

Freq. : 10 MHz to 40 GHz



Male type

Part No. : VC03MS002



- Substrate : RO4003C(8 mil)
- Trace length : 60 mm (microstrip)

Freq. : 10 MHz to 40 GHz



Vertical Launch Connectors

SMA, 2.92 mm, 2.4 mm, 1.85 mm & 1.0 mm

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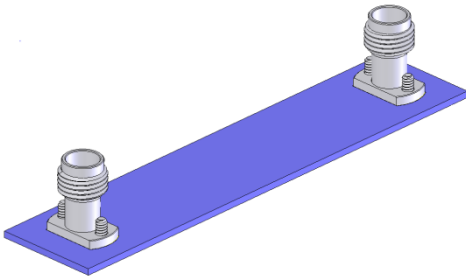
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2.4 mm Connector

■ Test Result (Stripline)

Female type

Part No. : VC02FS001



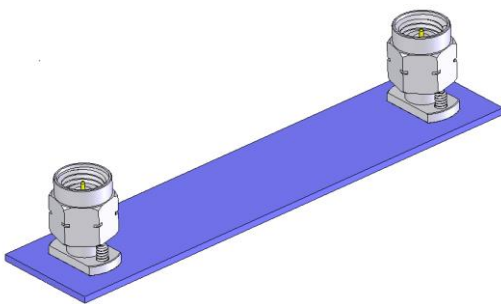
- Substrate : RO4003C(8 mil)
- Trace length : 70 mm (stripline)

Freq. : 10 MHz to 50 GHz



Male type

Part No. : VC02MS001



- Substrate : RO4003C(8 mil)
- Trace length : 70 mm (stripline)

Freq. : 10 MHz to 50 GHz

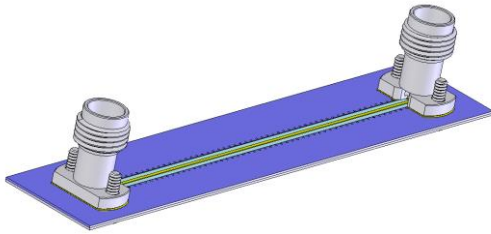


2.4 mm Connector

■ Test Result (Microstrip type)

Female type

Part No. : VC02FS002



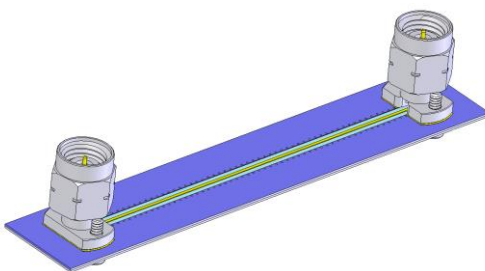
- Substrate : RO4003C(8 mil)
- Trace length : 60 mm (microstrip)

Freq. : 10 MHz to 50 GHz



Male type

Part No. : VC02MS002



- Substrate : RO4003C(8 mil)
- Trace length : 60 mm (microstrip)

Freq. : 10 MHz to 50 GHz



1.85 mm Connector

■ Test Result (Stripline)

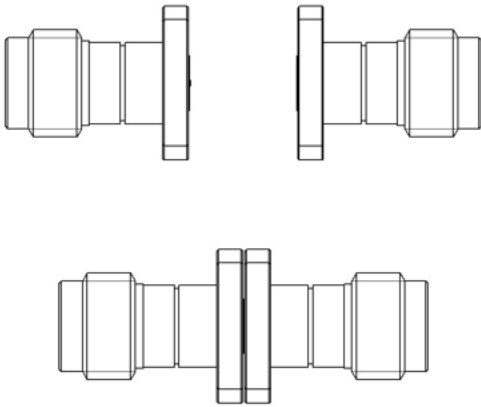
Female type

Part No. : VC01FS001

Back to Back Test

Vertical 1.85 mm

Vertical 1.85 mm



Freq. : 10 MHz to 67 GHz

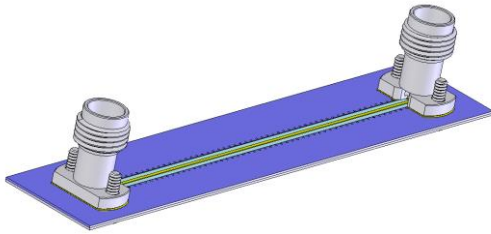


1.85 mm Connector

■ Test Result (Microstrip type)

Female type

Part No. : VC01FS002



- Substrate : RO4003C(8 mil)
- Trace length : 60 mm (microstrip)

Freq. : 10 MHz to 67 GHz

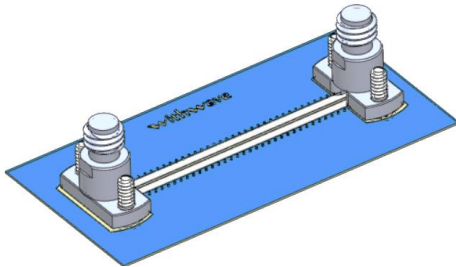


1.0 mm Connector

■ Test Result (Microstrip type)

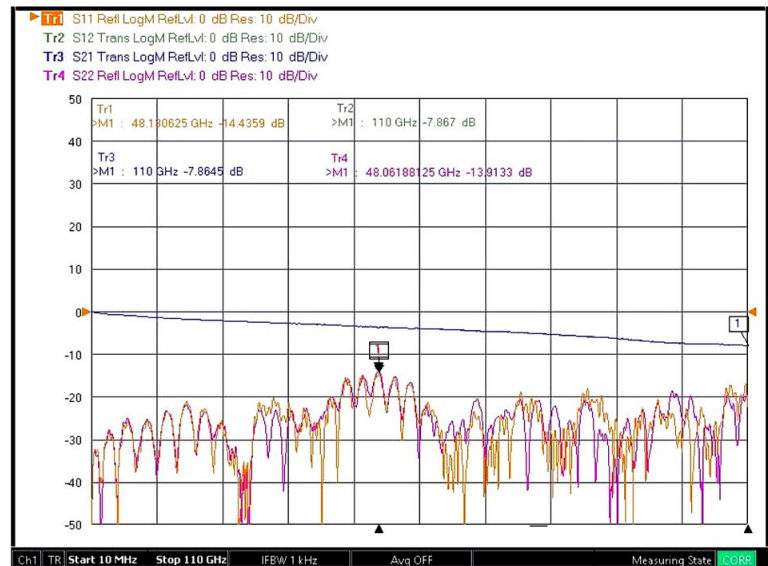
Female type

Part No. : VC00FS002



- Substrate : RO3003(5 mil)
- Trace length : 30.15 mm (microstrip)

Freq. : 10 MHz to 110 GHz



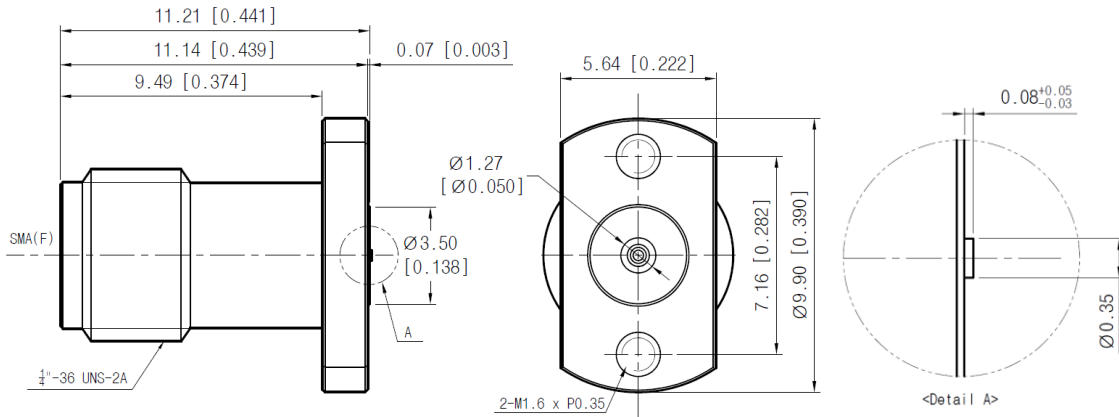
SMA Connector

■ Drawing

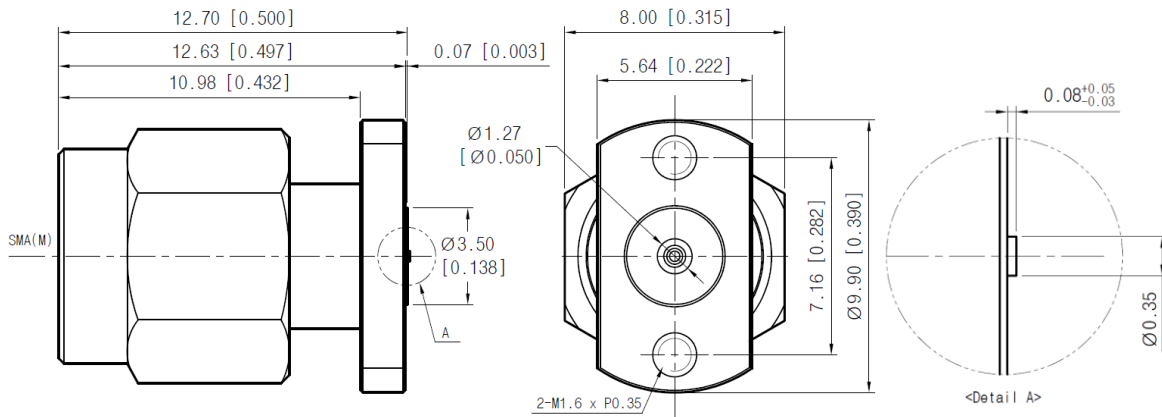
Stripline type

Unit : mm

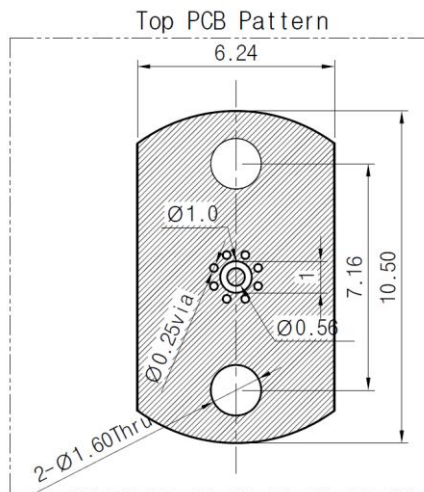
Female type



Male type



<Recommended PCB pattern>



* PCB : R04003C 8mil

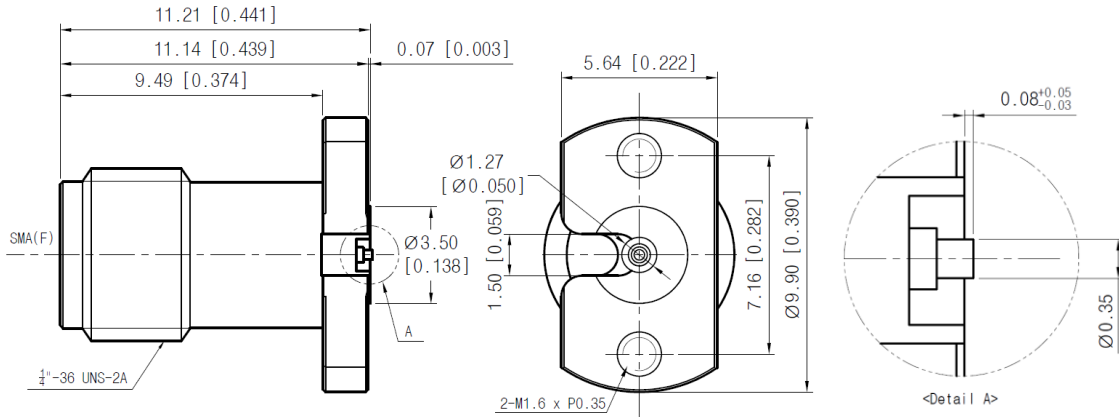
SMA Connector

■ Drawing

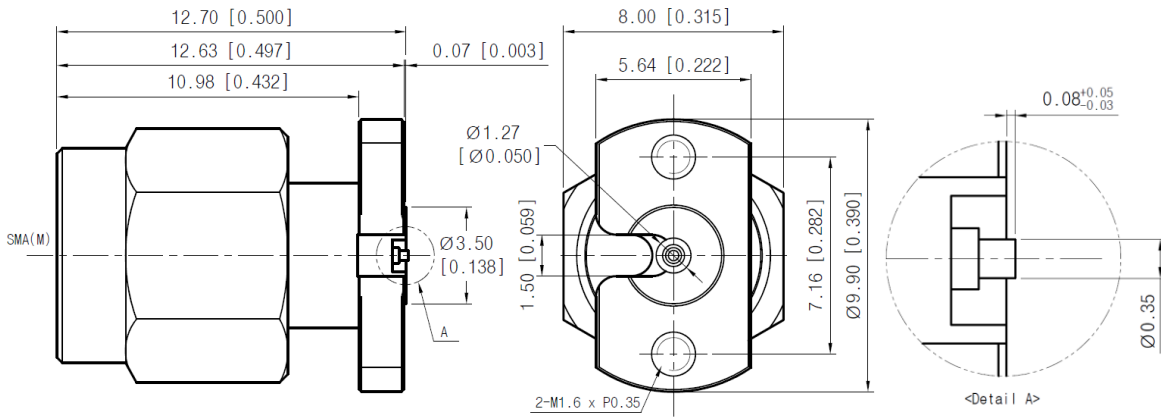
Microstrip type

Unit : mm

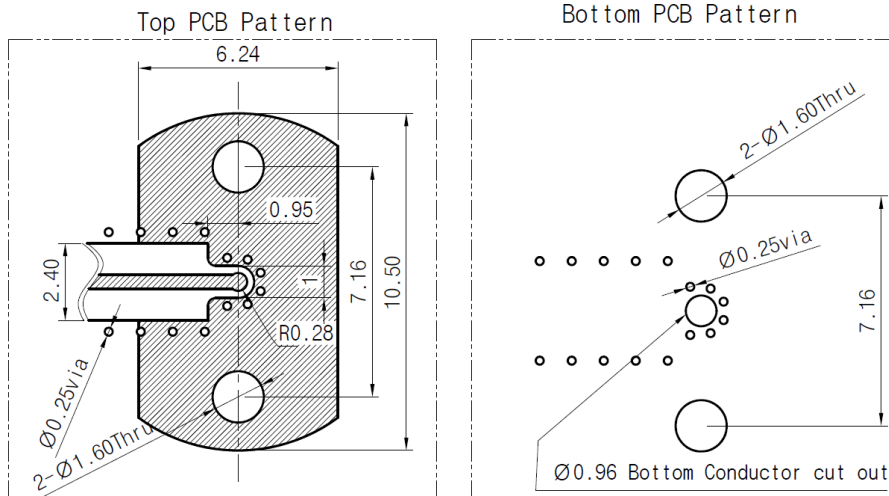
Female type



Male type



<Recommended PCB pattern>



* PCB : R04003C 8mil

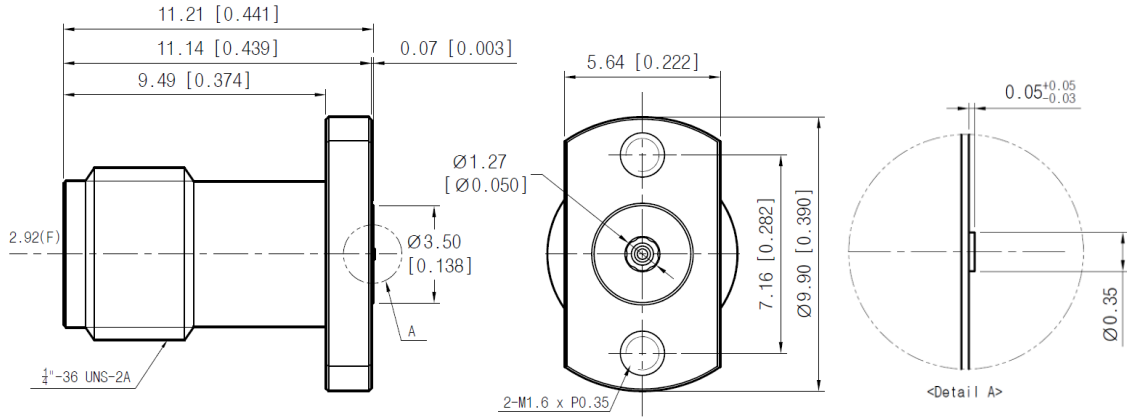
2.92 mm Connector

■ Drawing

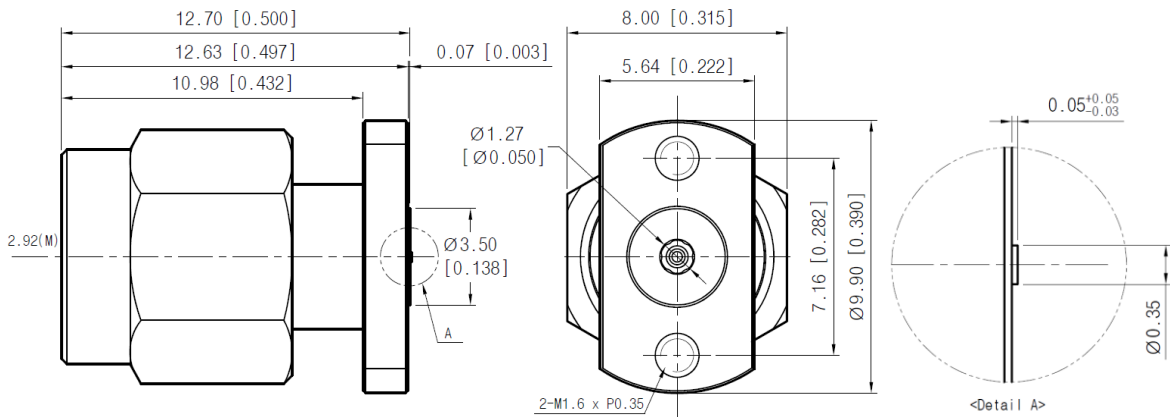
Stripline type

Unit : mm

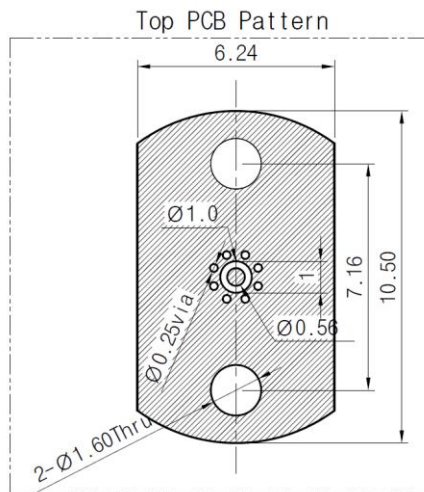
Female type



Male type



<Recommended PCB pattern>



* PCB : R04003C 8mil

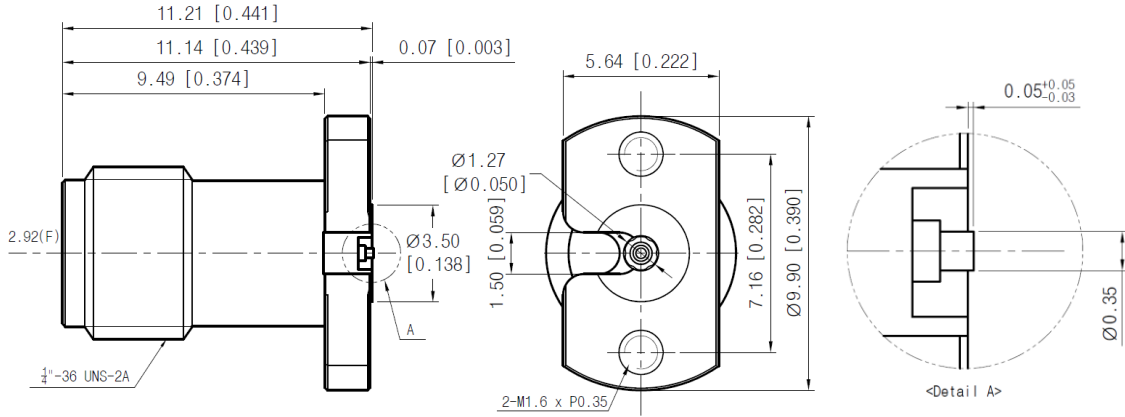
2.92 mm Connector

■ Drawing

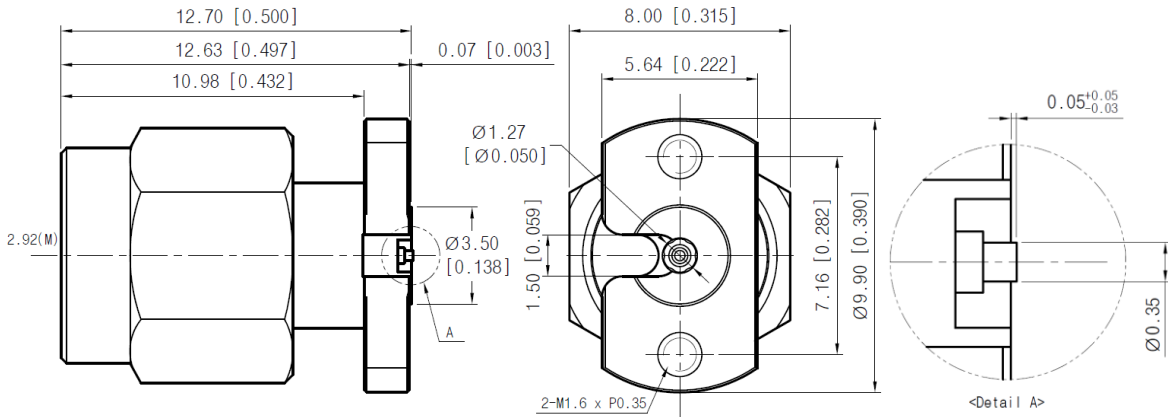
Microstrip type

Unit : mm

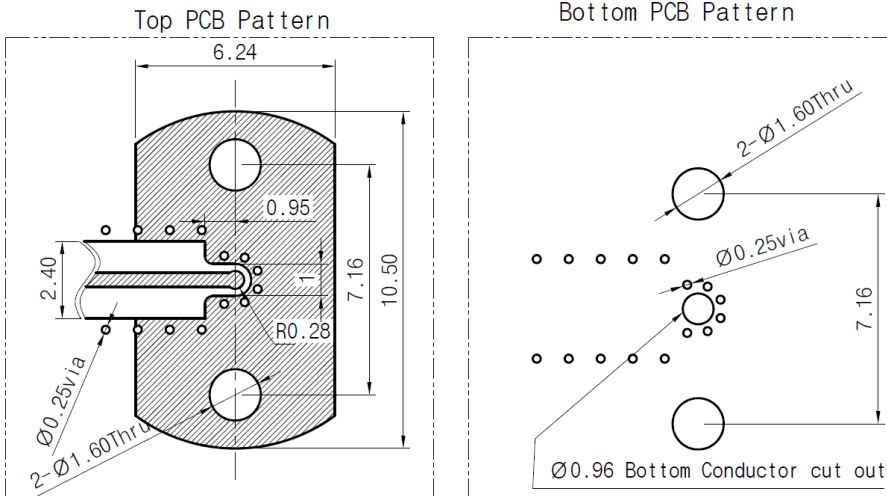
Female type



Male type



<Recommended PCB pattern>



* PCB : R04003C 8mil

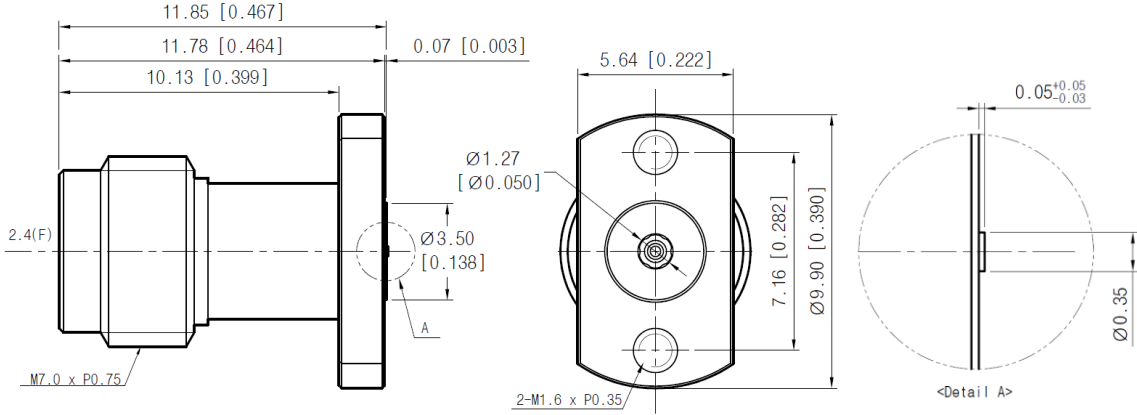
2.4 mm Connector

■ Drawing

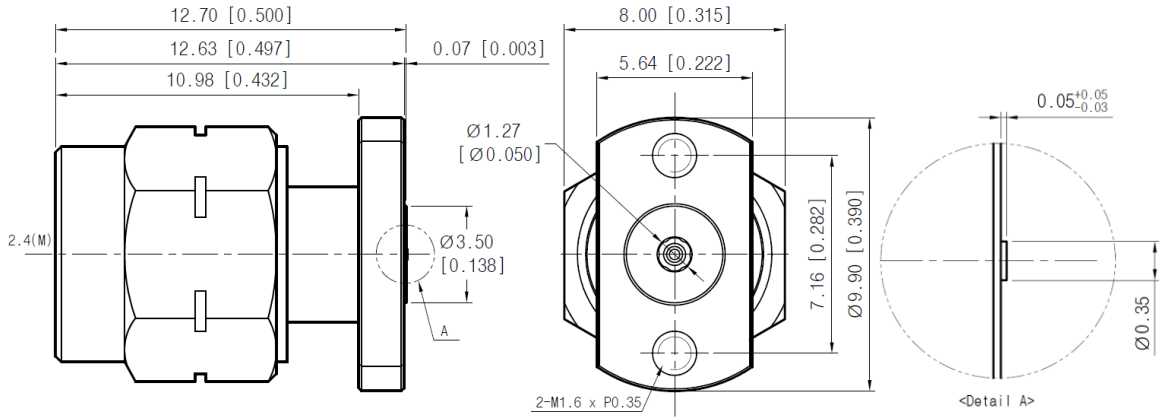
Stripline type

Unit : mm

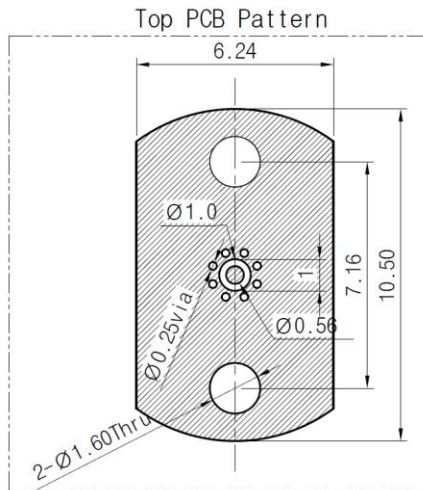
Female type



Male type



<Recommended PCB pattern>



* PCB : R04003C 8mil

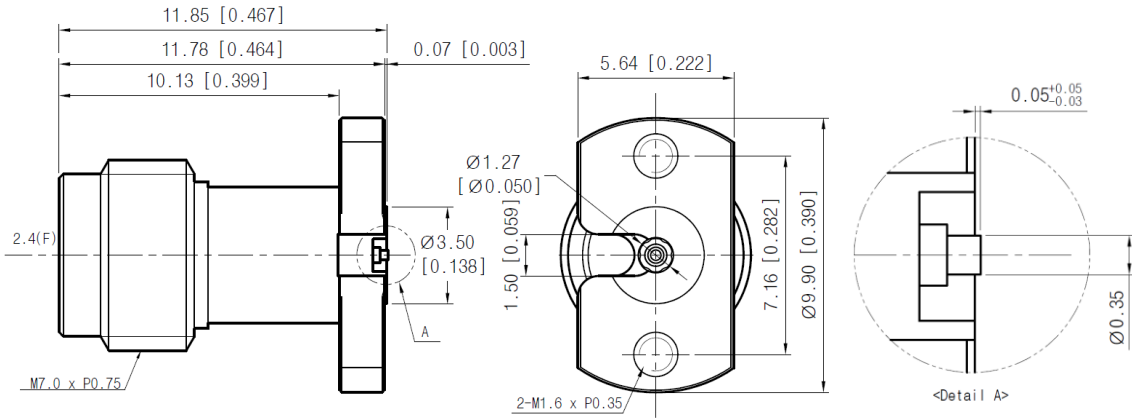
2.4 mm Connector

■ Drawing

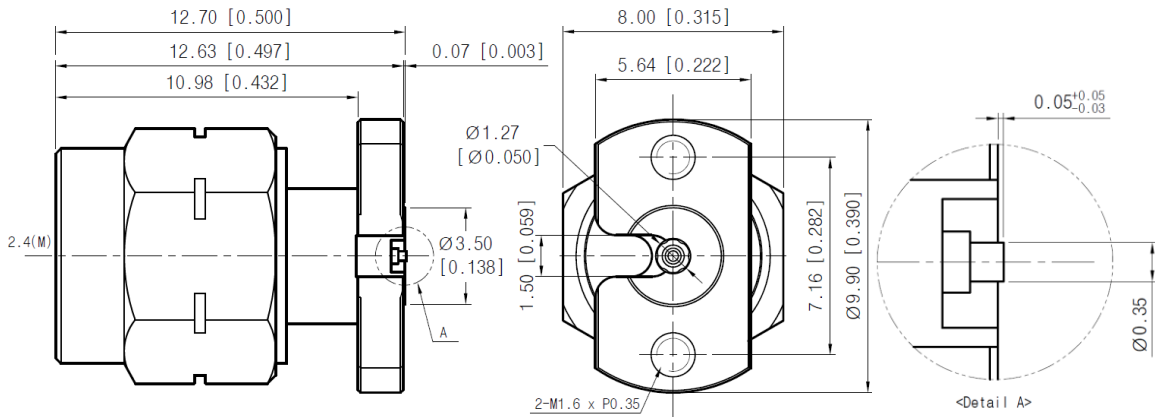
Microstrip type

Unit : mm

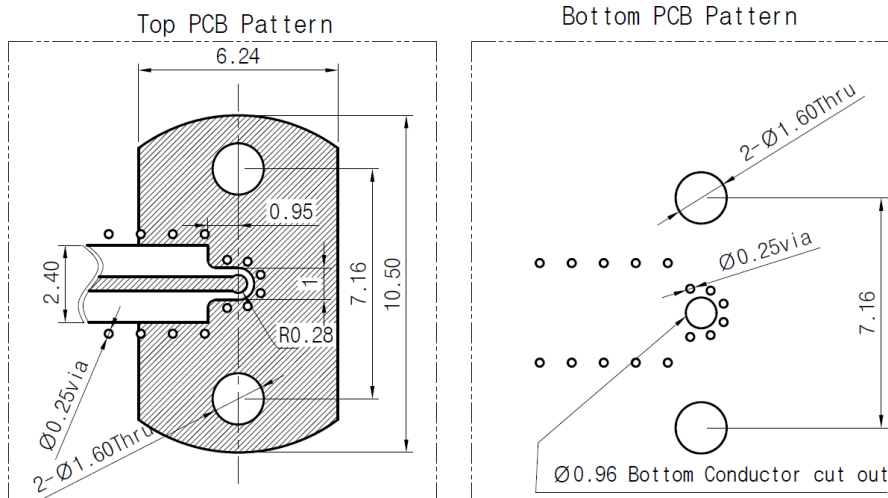
Female type



Male type



<Recommended PCB pattern>



* PCB : R04003C 8mil

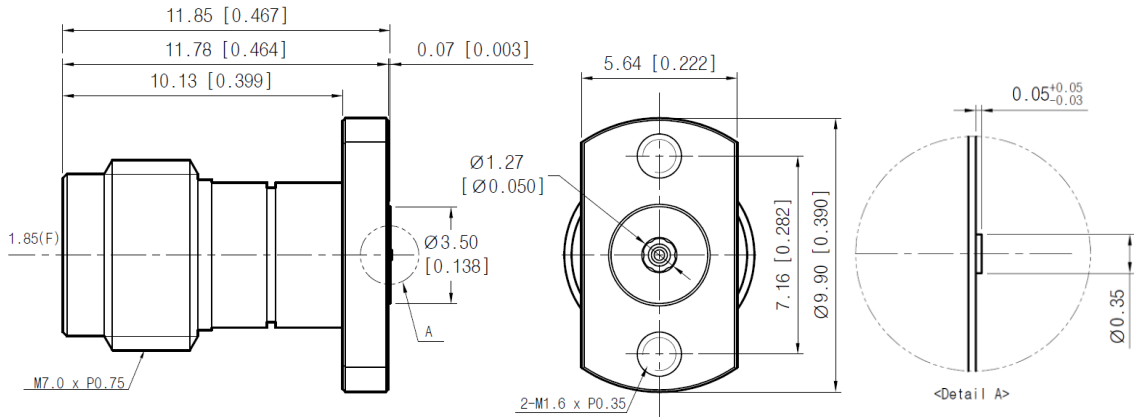
1.85 mm Connector

■ Drawing

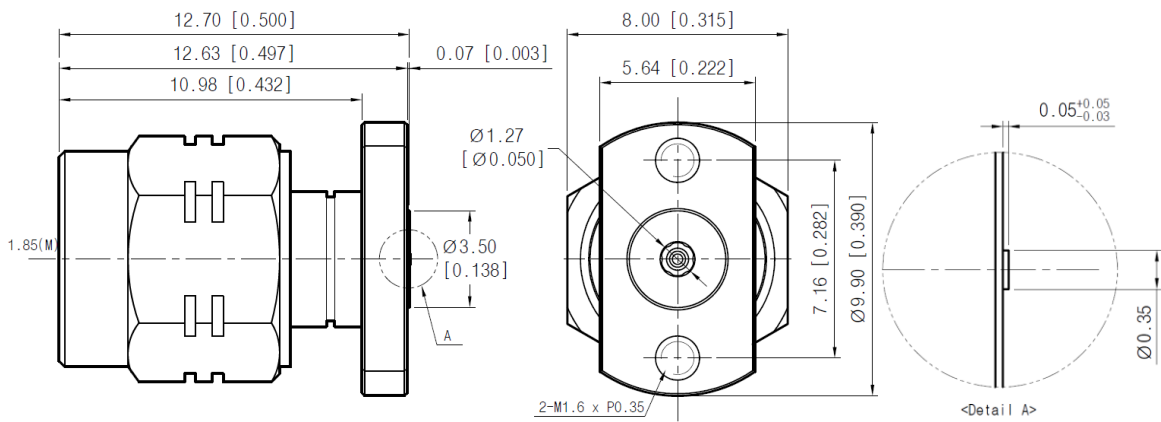
Stripline type

Unit : mm

Female type



Male type



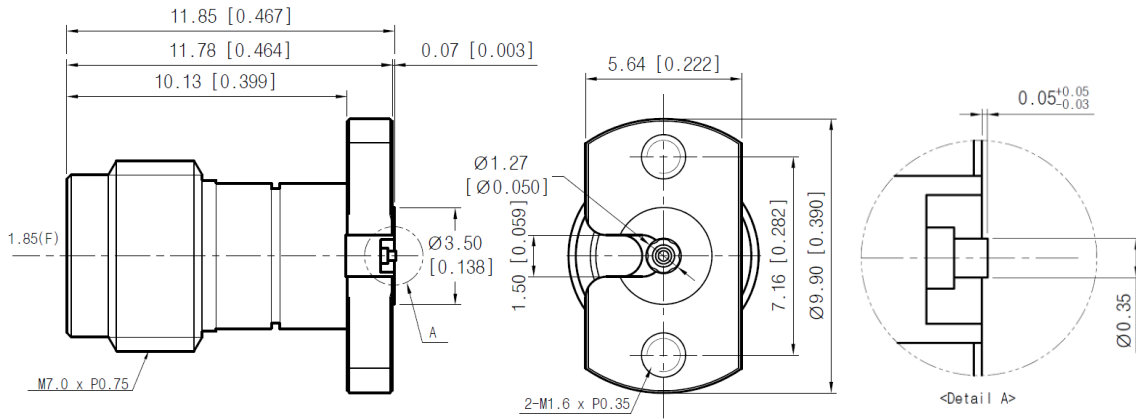
1.85 mm Connector

■ Drawing

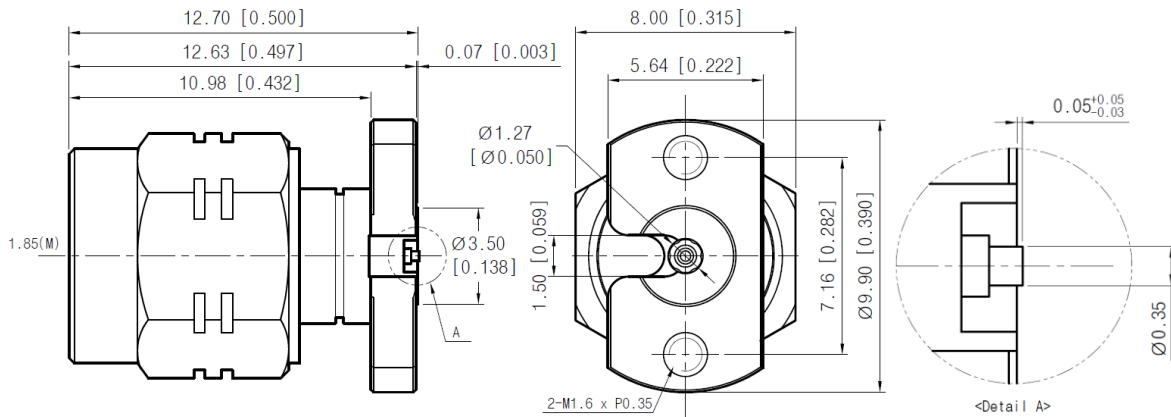
Microstrip type

Unit : mm

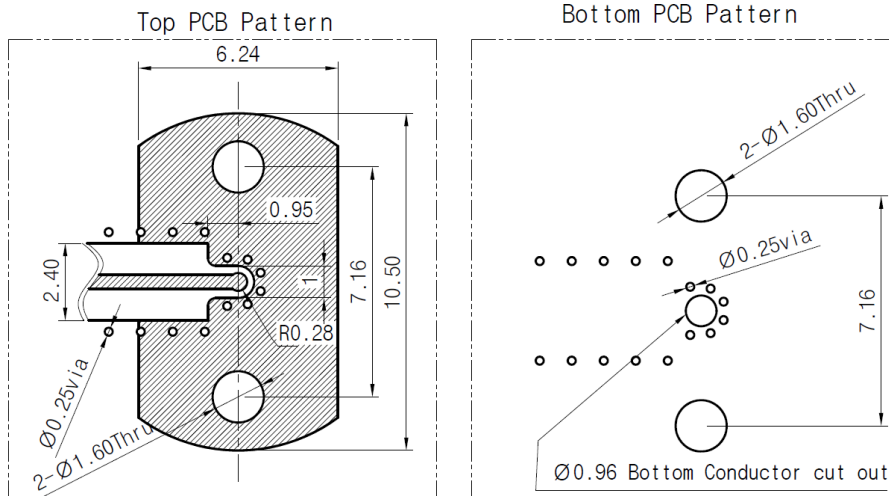
Female type



Male type



<Recommended PCB pattern>



* PCB : R04003C 8mil

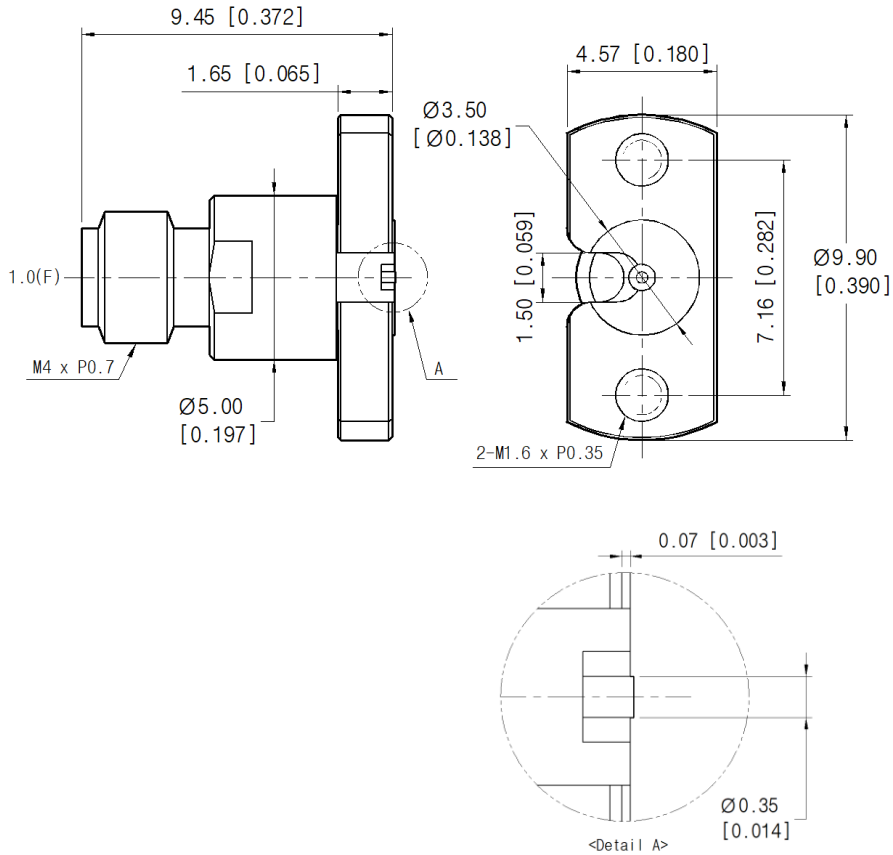
1.0 mm Connector

■ Drawing

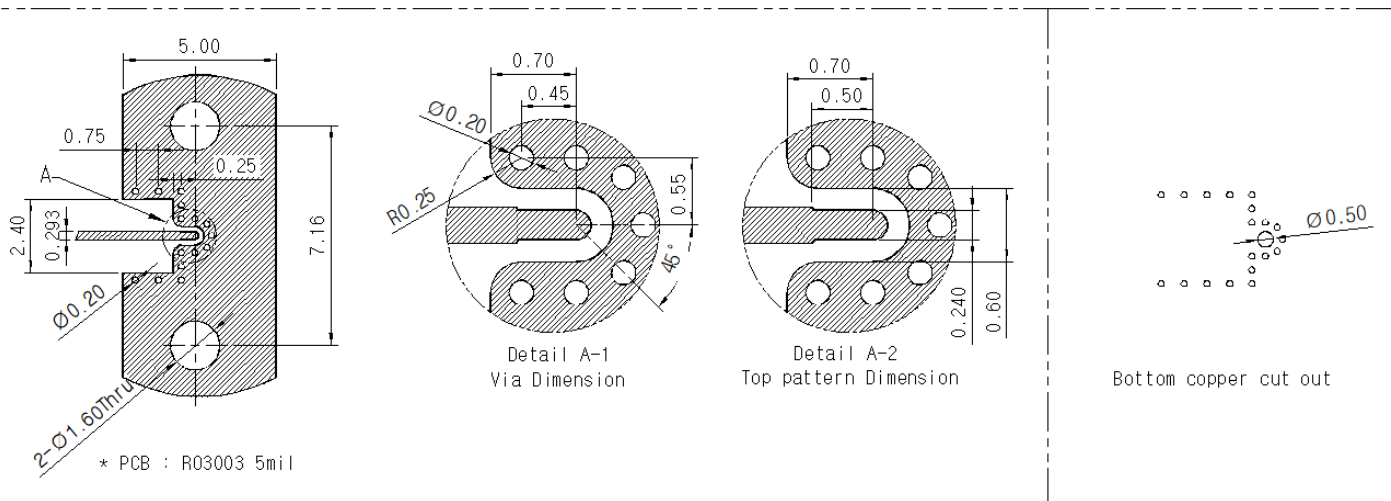
Microstrip type

Unit : mm

Female type



<Recommended PCB pattern>



Vertical Launch Connectors

SMA, 2.92 mm, 2.4 mm, 1.85 mm & 1.0 mm

withwave

Versatile RF & MW Test Solutions

■ Revision History

| Revision | Date | Changes |
|----------|------------|---|
| Ver 1.1 | 2017-06-30 | Changed Test result for Stripline type |
| Ver 2.0 | 2017-07-28 | Add Vertical Launch 2.92 mm Connectors |
| Ver 2.1 | 2017-10-12 | Updated Recommended PCB pattern |
| Ver 2.2 | 2018-01-02 | Updated Drawing |
| Ver 3.0 | 2018-02-27 | Add Vertical Launch SMA connectors |
| Ver 3.1 | 2018-05-24 | Add installation procedure for Stripline type |
| Ver.4.0 | 2019-02-14 | Add Vertical Launch 1.85 mm Connectors |
| Ver 5.0 | 2020-03-01 | Add Design Assistance for ANSYS HFSS 3D model |
| Ver 6.0 | 2020-10-26 | Add Vertical Launch 1.0 mm Connectors |
| Ver 6.1 | 2020-12-08 | Add test result |