

Vertical Launch Connectors

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 & 145 GHz** respectively as well as reduce installation time by eliminating soldering.



1.0 mm type
(110 GHz)

0.8 mm type
(145 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) 145 GHz(0.8 mm)
- SMA, 2.92 mm, 2.4 mm, 1.85 mm, 1.0 mm & 0.8 mm type (Female, Male)
- Excellent Vertical transition (VSWR)
SMA, 2.92 mm, 2.4 mm : < 1.3
1.85 & 1.0 mm : < 1.6
0.8 mm : < 2.0
- Easy & Solderless Installation on designed substrate

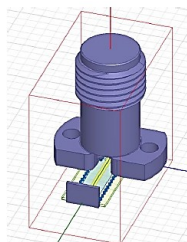
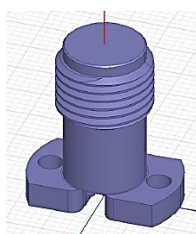
Application

- 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



Vertical Launch Connectors

■ 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)
	Connector type	SMA type (Female, Male)
Material	Body & Block	Stainless Steel
	PIN	BeCu with Gold Plated
	Operating Temperature	-40 to + 125 °C

* RoHS Compliant

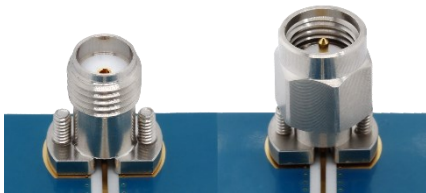
■ Ordering Information (SMA Connector)

Stripline type



Application	Type	Part No.
Stripline	Female	VC06FS001
	Male	VC06MS001

Microstrip type



Application	Type	Part No.
Microstrip	Female	VC06FS002
	Male	VC06MS002

Vertical Launch Connectors

■ 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

Vertical Launch Connectors

■ 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

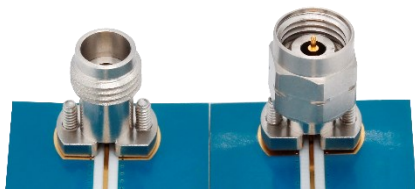
■ Ordering Information (2.4 mm Connector)

Stripline type



Application	Type	Part No.
Stripline	Female	VC02FS001
	Male	VC02MS001

Microstrip type



Application	Type	Part No.
Microstrip	Female	VC02FS002
	Male	VC02MS002

Vertical Launch Connectors

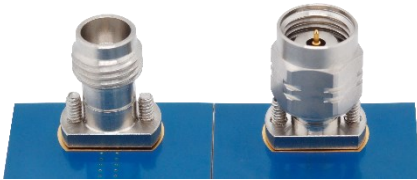
■ Specification (1.85 mm Connector)

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

Vertical Launch Connectors

■ 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)

Stripline type



Application	Type	Part No.
Stripline	Female	VC00FS001

Microstrip type



Application	Type	Part No.
Microstrip	Female	VC00FS002



Vertical Launch Connectors

■ Specification (0.8 mm Connector)

Scope	Items	Specification
Electrical	Freq. range	DC to 145 GHz
	Impedance	50 Ohm
	VSWR(Max)	2.0 : 1 (DC to 145 GHz)
Material	Connector type	0.8 mm type (Female)
	Body & Block	Stainless Steel
	PIN	BeCu with Gold Plated

* RoHS Compliant

■ Ordering Information (0.8 mm Connector)

Stripline type



Application	Type	Part No.
Stripline	Female	VC23FS001

Microstrip type



Application	Type	Part No.
Microstrip	Female	VC23FS002

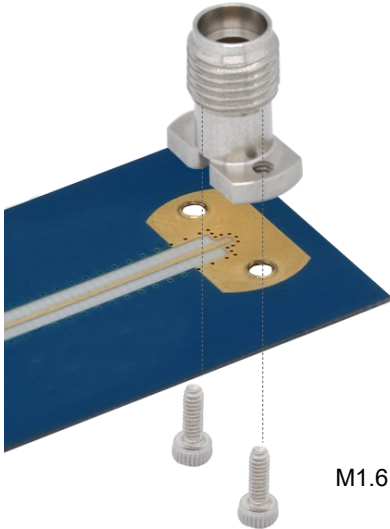
Vertical Launch Connectors

■ Installation Procedure

STEP 1 :

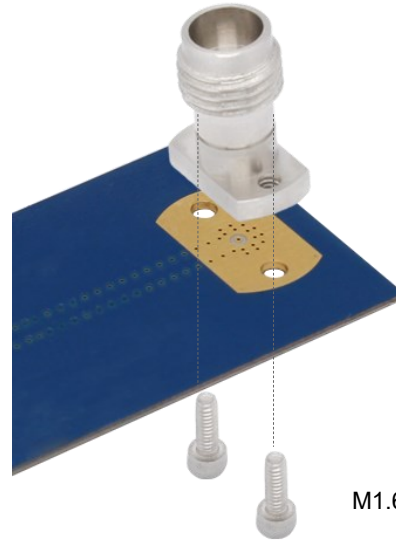
Launch vertical connector on the position of substrate.

Microstrip Line



M1.6 Screw Bolting

Stripline

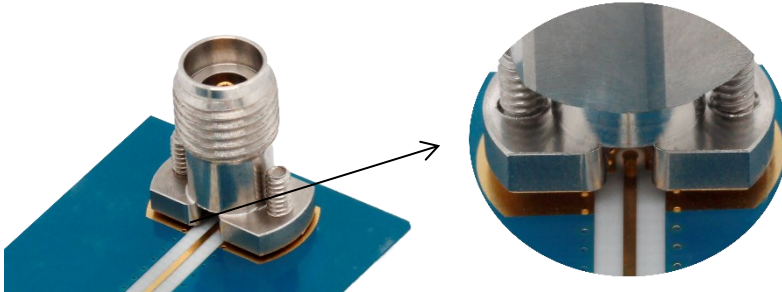


M1.6 Screw Bolting

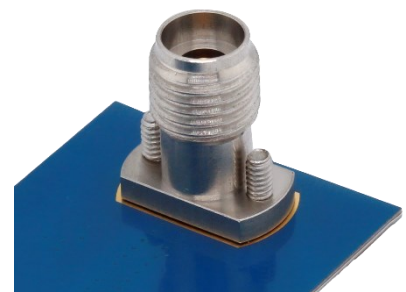
STEP 2:

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



Vertical Launch Connectors

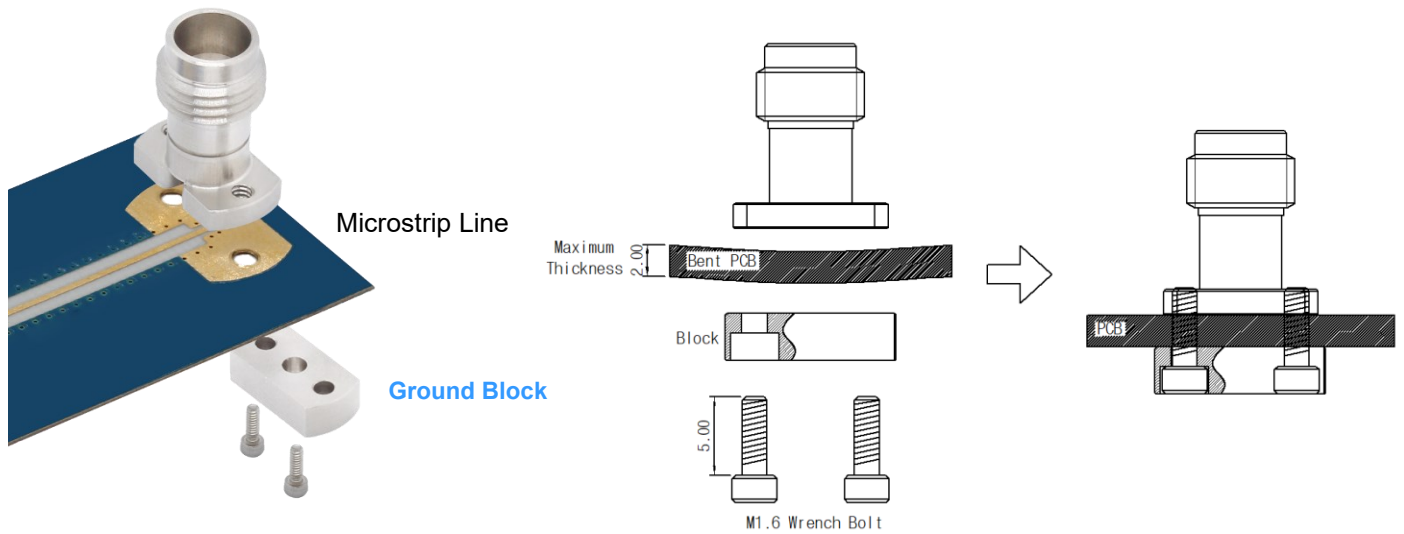
■ Accessories (Ground Block)

Ground block can be used on the backside of the *thin PCB* and It supports the stability of the thin PCB for mechanical stress(or distortion) and the solder point and components at the PCB against breaking. the contact issue is solved.



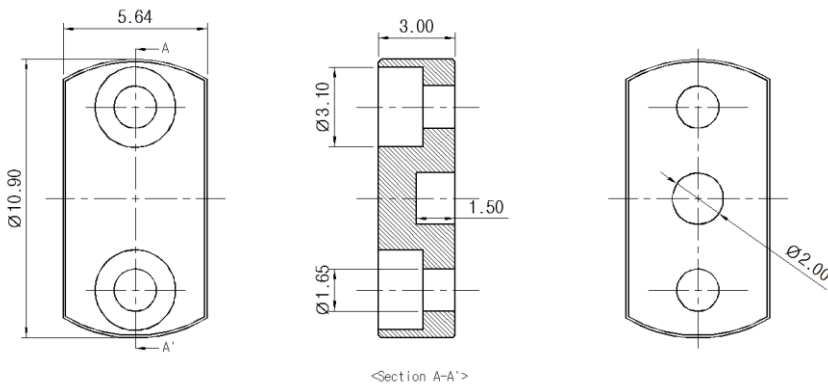
■ Advantage

- Better contacting the center Pin at the thin PCB (higher contact pressure)
- Mechanically stabilize the very thin PCB. No solder points get broken



■ Drawing (Part No: WB0642F03)

Unit : mm



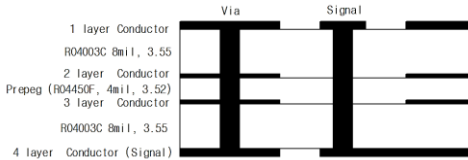
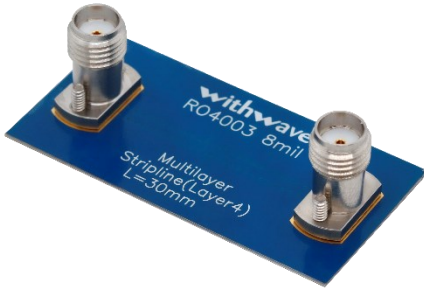
Vertical Launch Connectors

SMA Connector

Test Result (Stripline type)

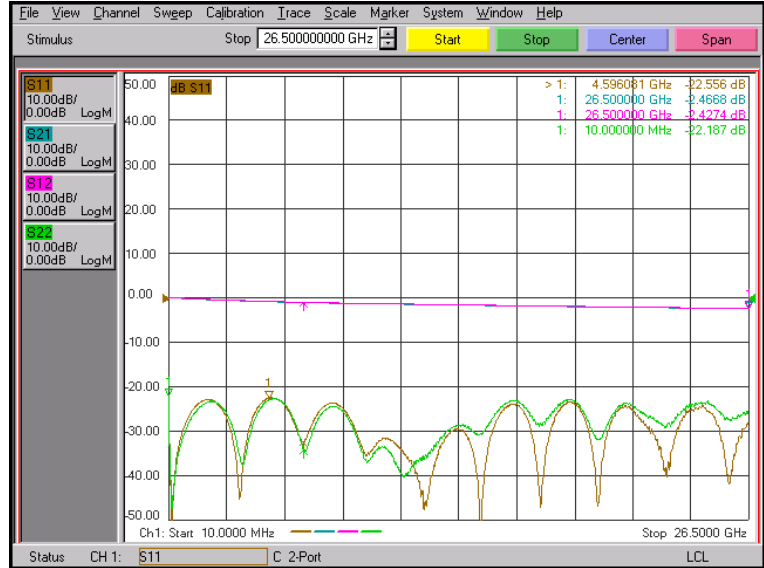
Female type

Part No. : VC06FS001



- Substrate : RO4003C(8 mil)
- Trace length : 30 mm (stripline)

Freq. : 10 MHz to 26.5 GHz



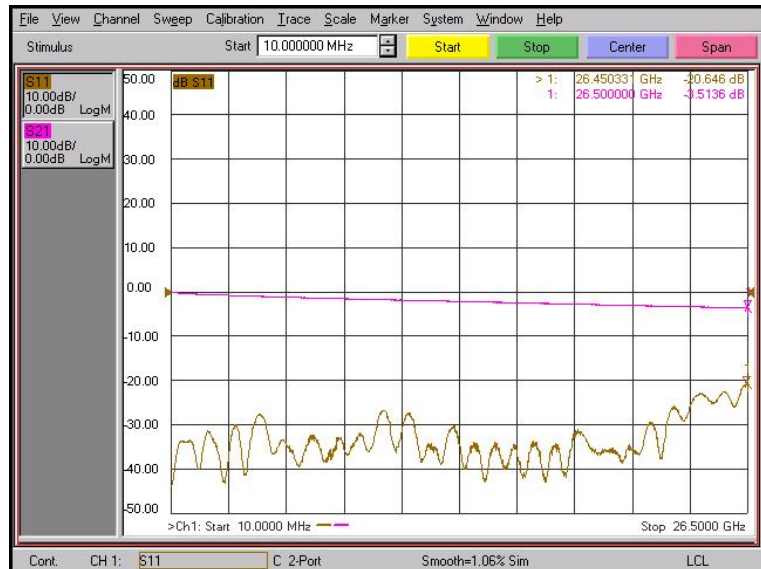
Male type

Part No. : VC06MS001



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

Freq. : 10 MHz to 26.5 GHz



Vertical Launch Connectors

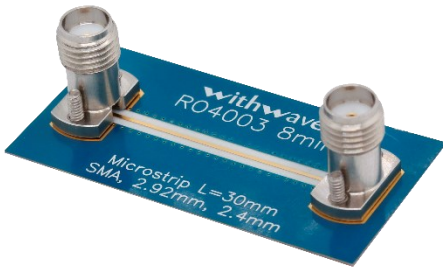
SMA, 2.92 mm, 2.4 mm, 1.85 mm, 1.0 mm & 0.8 mm Next Generation Connectivity

SMA Connector

Test Result (Microstrip type)

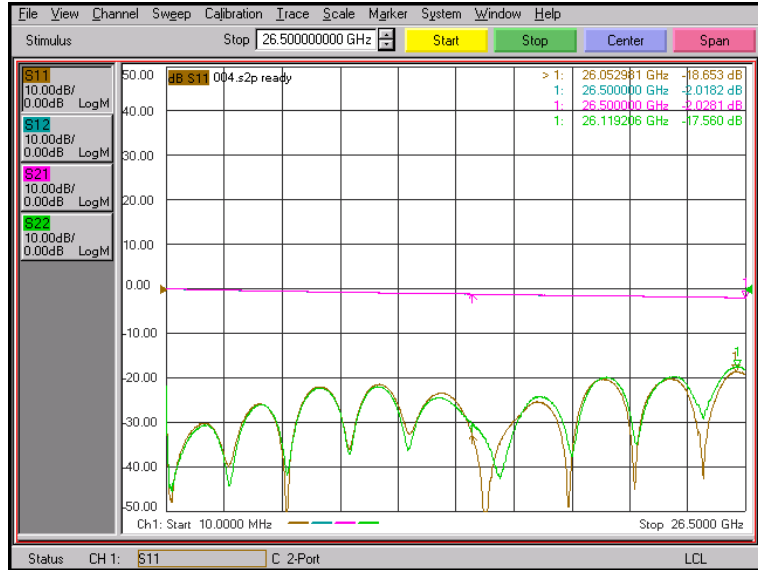
Female type

Part No. : VC06FS002



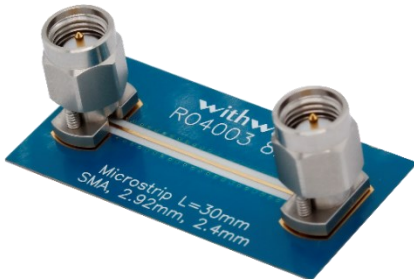
- Substrate : RO4003C(8 mil)
- Trace length : 60 mm (microstrip)

Freq. : 10 MHz to 26.5 GHz



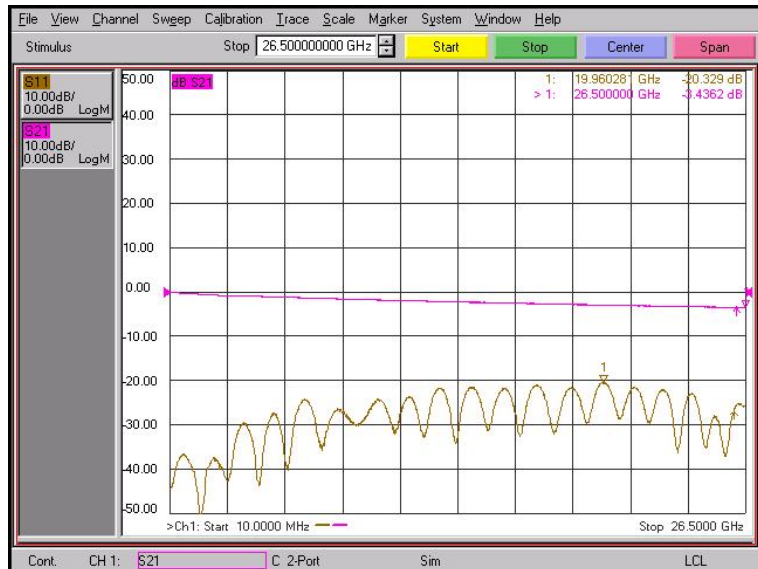
Male type

Part No. : VC06MS002



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

Freq. : 10 MHz to 26.5 GHz



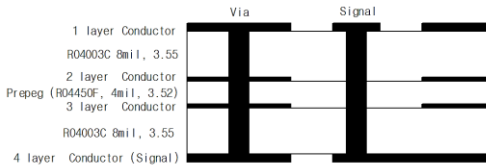
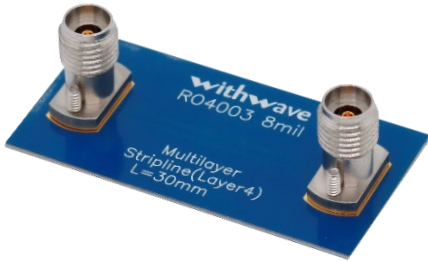
Vertical Launch Connectors

2.92 mm Connector

■ Test Result (Stripline type)

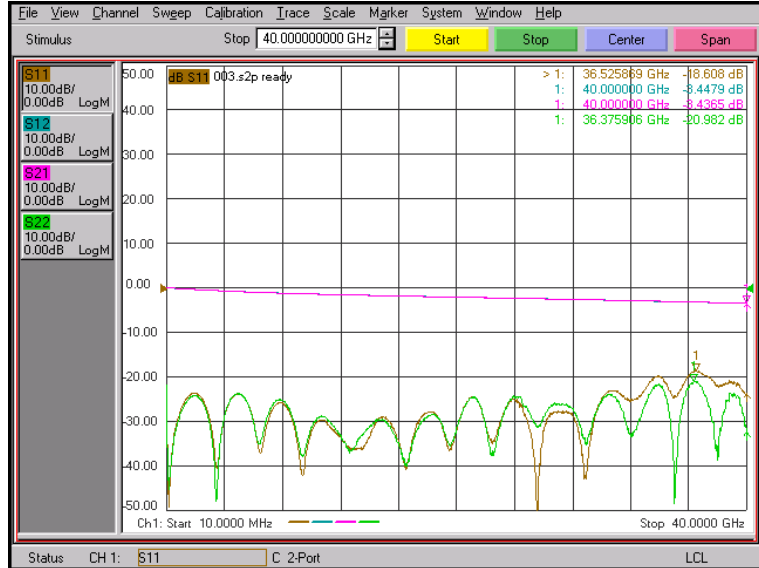
Female type

Part No. : VC03FS001



- Substrate : RO4003C(8 mil)
- Trace length : 30 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



Vertical Launch Connectors

SMA, 2.92 mm, 2.4 mm, 1.85 mm, 1.0 mm & 0.8 mm Next Generation Connectivity

2.92 mm Connector

■ Test Result (Microstrip type)

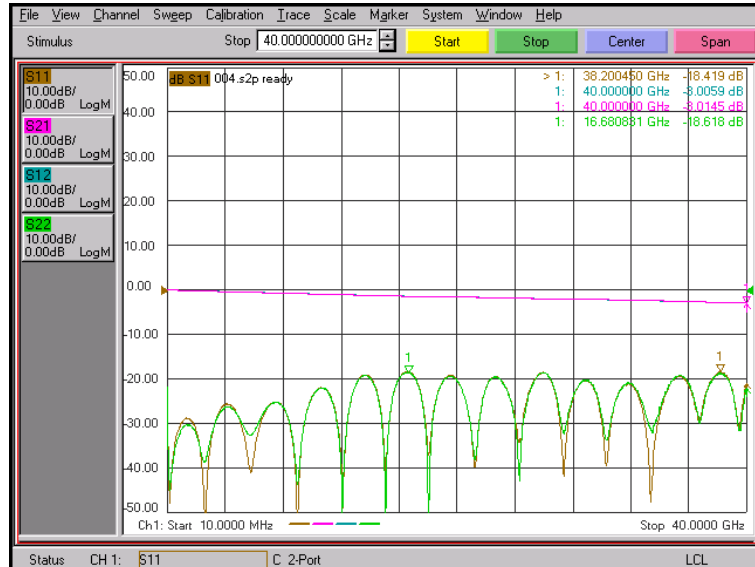
Female type

Part No. : VC03FS002



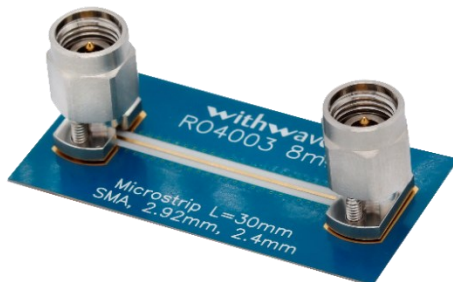
- Substrate : RO4003C(8 mil)
- Trace length : 30 mm (microstrip)

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



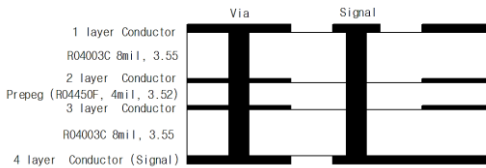
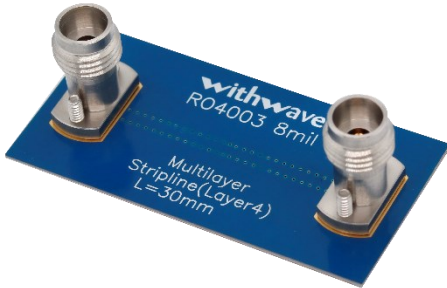
Vertical Launch Connectors

2.4 mm Connector

■ Test Result (Stripline)

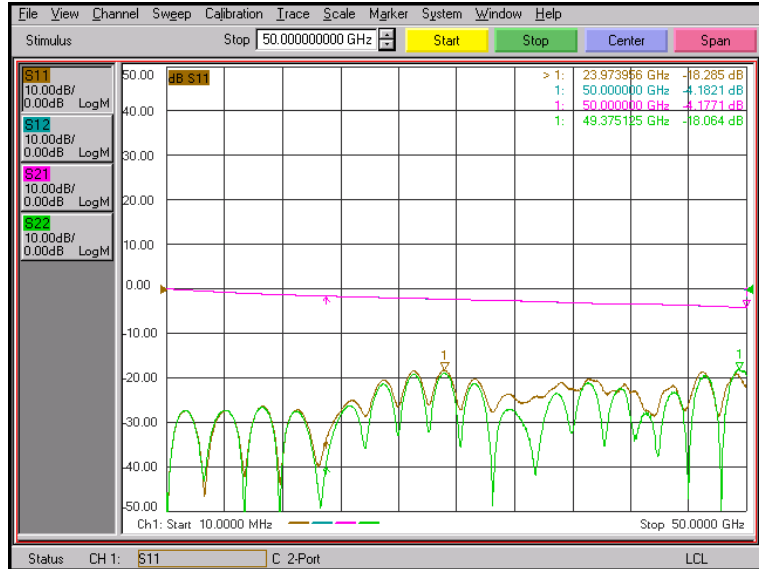
Female type

Part No. : VC02FS001



- Substrate : RO4003C(8 mil)
- Trace length : 30 mm (stripline)

Freq. : 10 MHz to 50 GHz



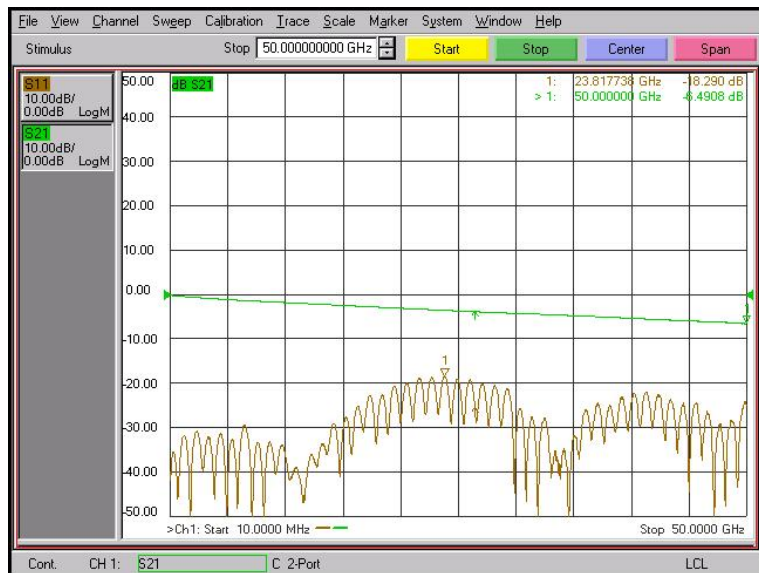
Male type

Part No. : VC02MS001



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

Freq. : 10 MHz to 50 GHz



Vertical Launch Connectors

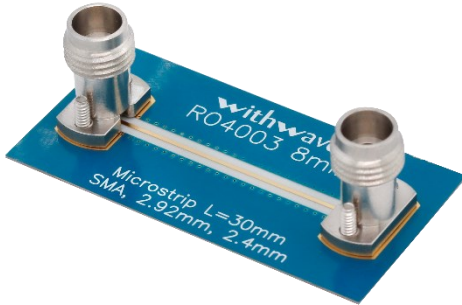
SMA, 2.92 mm, 2.4 mm, 1.85 mm, 1.0 mm & 0.8 mm Next Generation Connectivity

2.4 mm Connector

■ Test Result (Microstrip type)

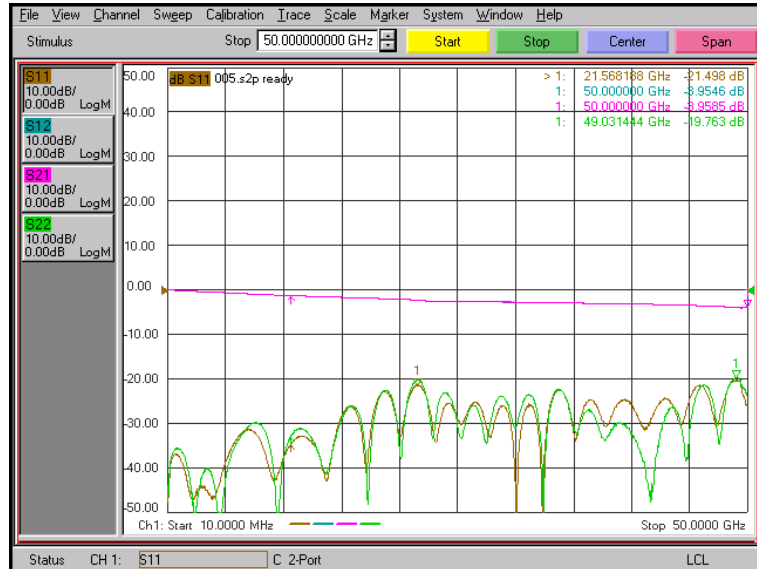
Female type

Part No. : VC02FS002



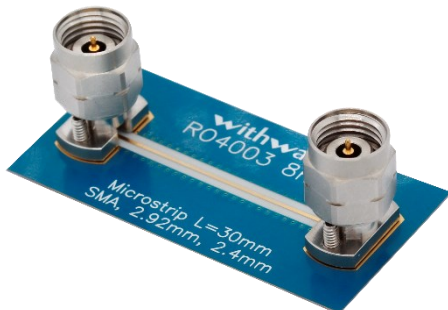
- Substrate : RO4003C(8 mil)
- Trace length : 30 mm (microstrip)

Freq. : 10 MHz to 50 GHz



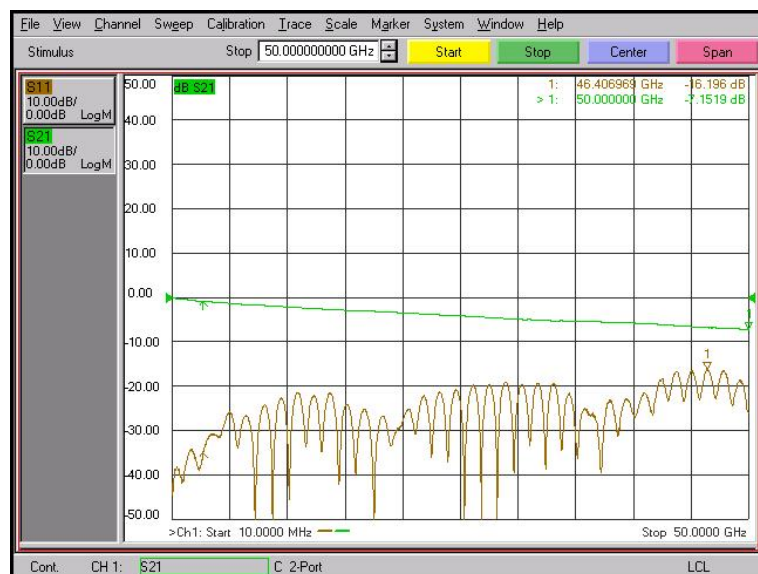
Male type

Part No. : VC02MS002



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

Freq. : 10 MHz to 50 GHz



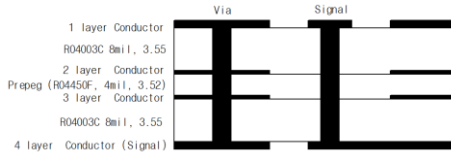
Vertical Launch Connectors

1.85 mm Connector

Test Result (Stripline)

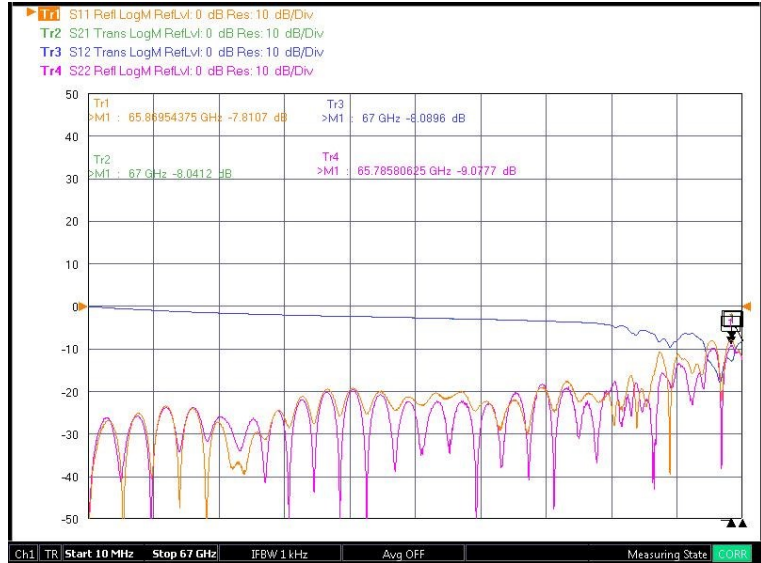
Female type

Part No. : VC01FS001



- Substrate : RO4003C(8 mil)
- Trace length : 30 mm (stripline)

Freq. : 10 MHz to 67 GHz



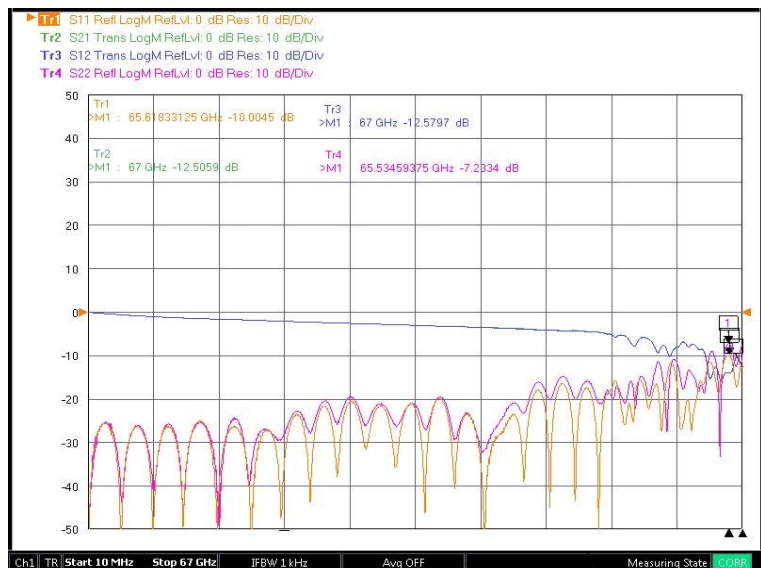
Male type

Part No. : VC01MS001



- Substrate : RO4003C(8 mil)
- Trace length : 30 mm (stripline)

Freq. : 10 MHz to 67 GHz



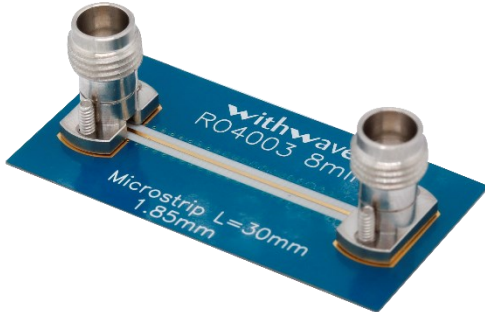
Vertical Launch Connectors

1.85 mm Connector

Test Result (Microstrip type)

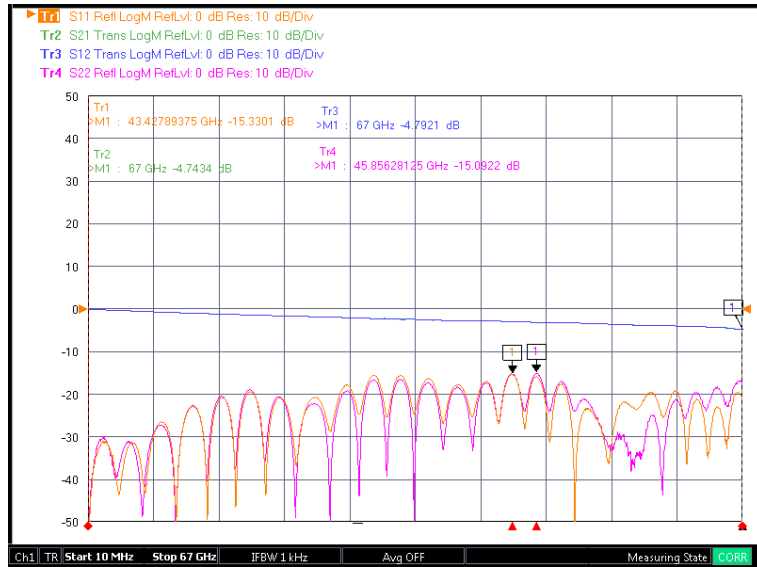
Female type

Part No. : VC01FS002



- Substrate : RO4003C(8 mil)
- Trace length : 30 mm (microstrip)

Freq. : 10 MHz to 67 GHz



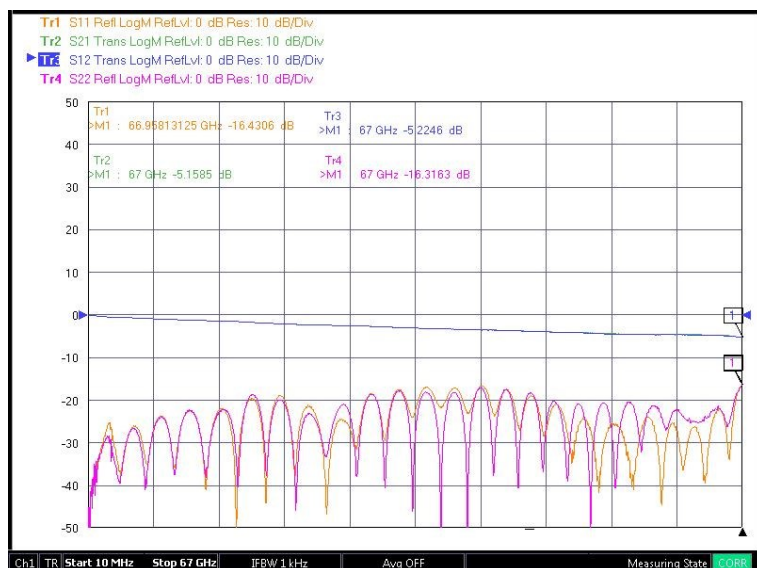
Male type

Part No. : VC01MS002



- Substrate : RO4003C(8 mil)
- Trace length : 30 mm (microstrip)

Freq. : 10 MHz to 67 GHz



1.0 mm Connector

■ Test Result (Stripline type)

Female type

Part No. : VC00FS001

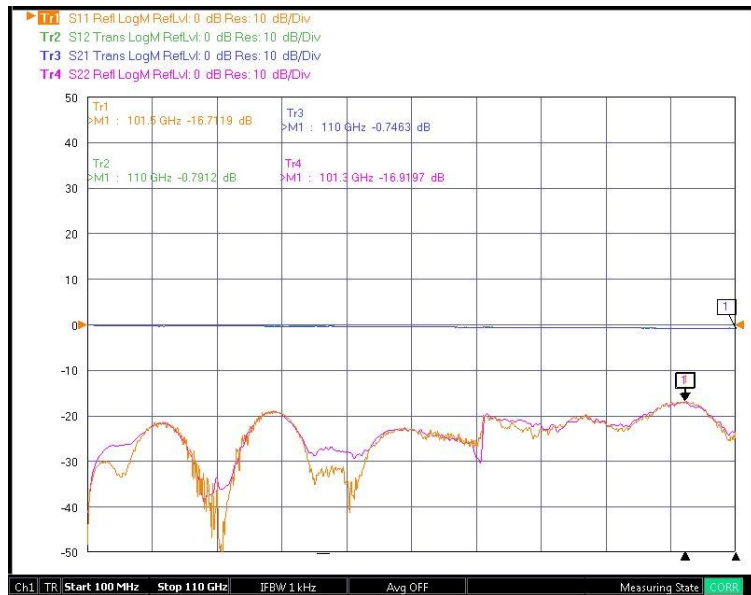
Back to Back Test

Vertical 1.0 mm

Vertical 1.0 mm



Freq. : 10 MHz to 110 GHz



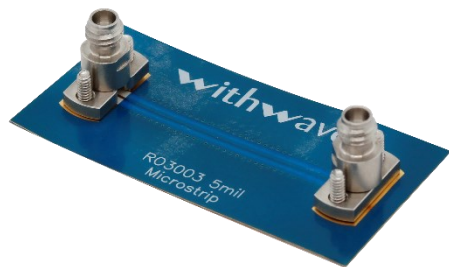
Vertical Launch Connectors

1.0 mm Connector

■ Test Result (Microstrip type)

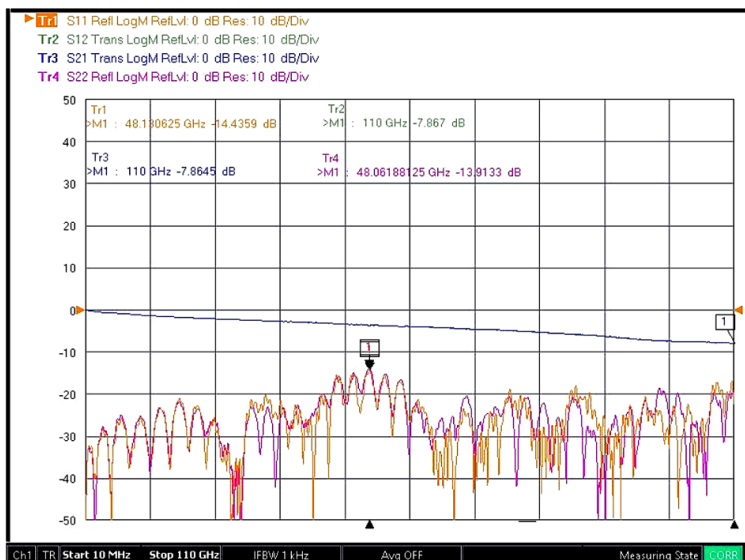
Female type

Part No. : VC00FS002



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

Freq. : 10 MHz to 110 GHz



0.8 mm Connector

■ Test Result (Stripline type)

Female type

Part No. : VC23FS001

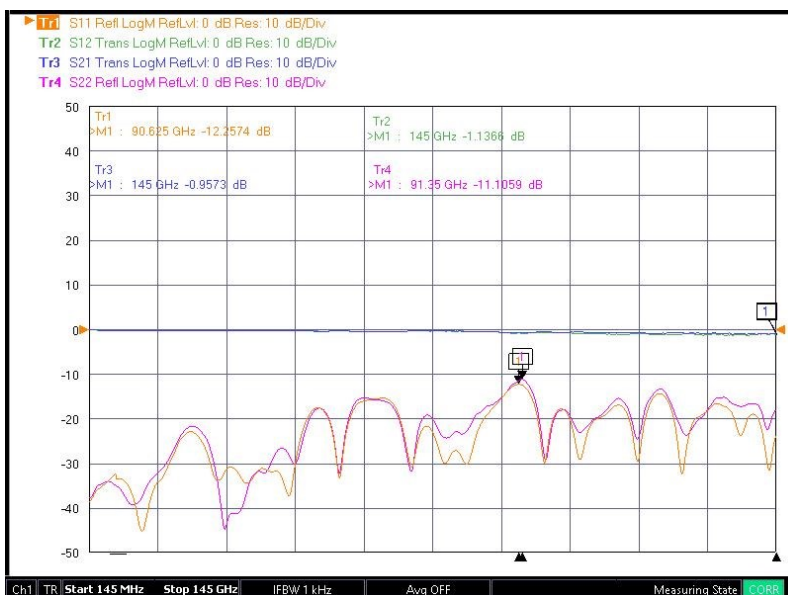
Back to Back Test

Vertical 0.8 mm

Vertical 0.8 mm



Freq. : 10 MHz to 145 GHz



0.8 mm Connector

■ Test Result (Microstrip type)

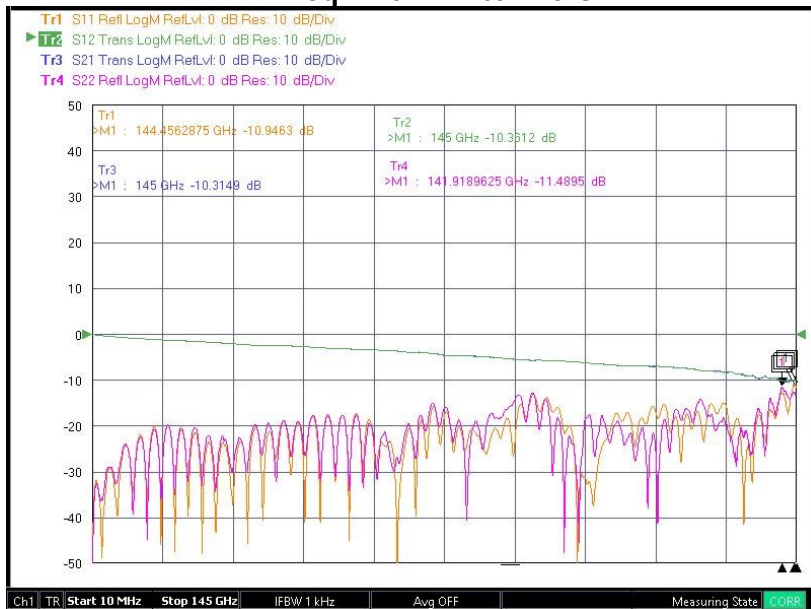
Female type

Part No. : VC23FS002



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

Freq. : 10 MHz to 145 GHz



Vertical Launch Connectors

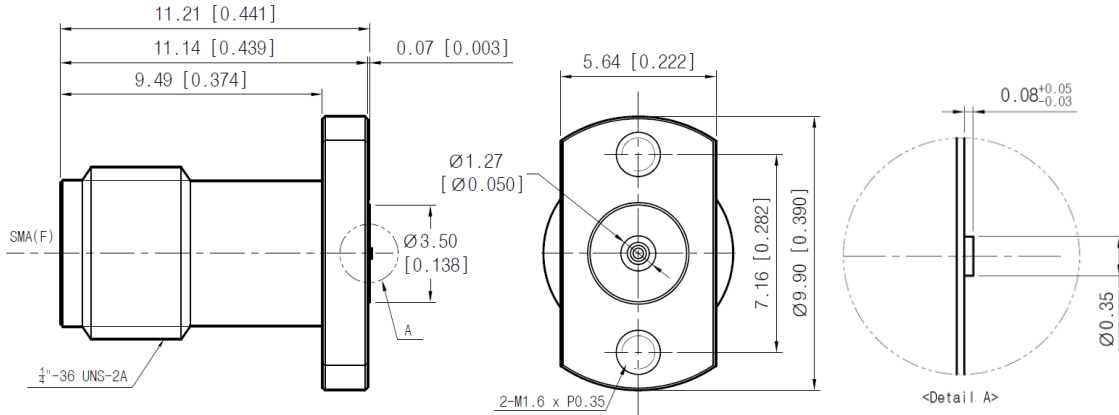
SMA Connector

■ Drawing

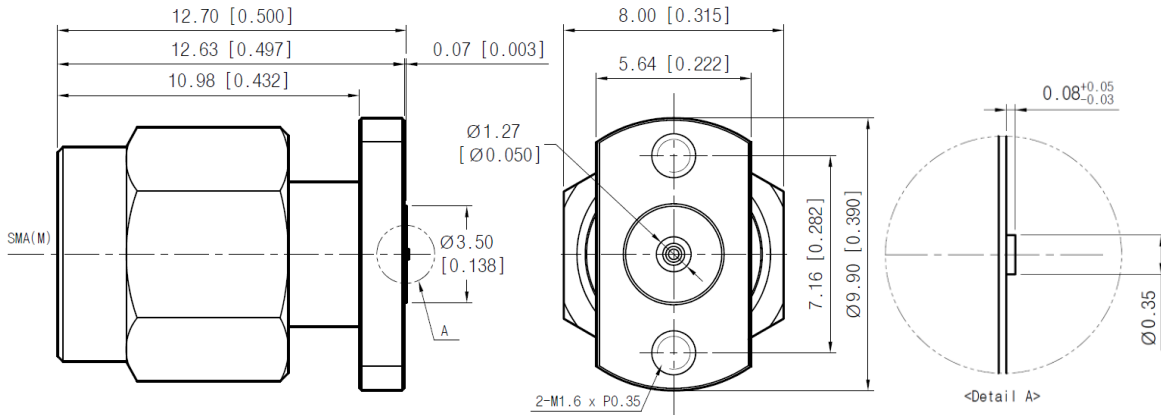
Stripline type

Unit : mm

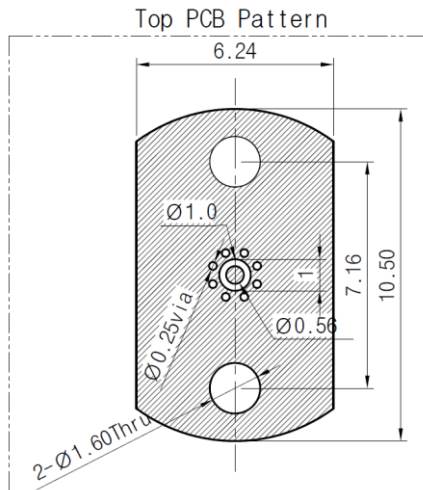
Female type



Male type



<Recommended PCB pattern>



* PCB : R04003C 8mil

Vertical Launch Connectors

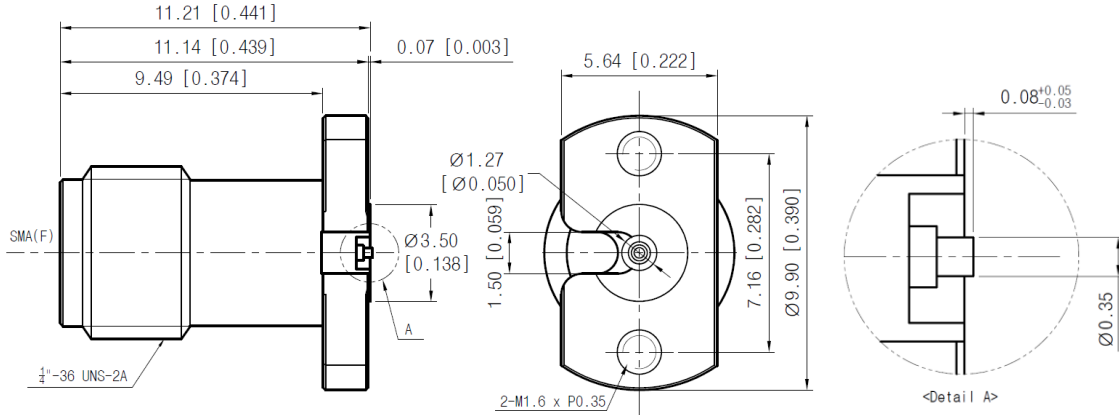
SMA Connector

■ Drawing

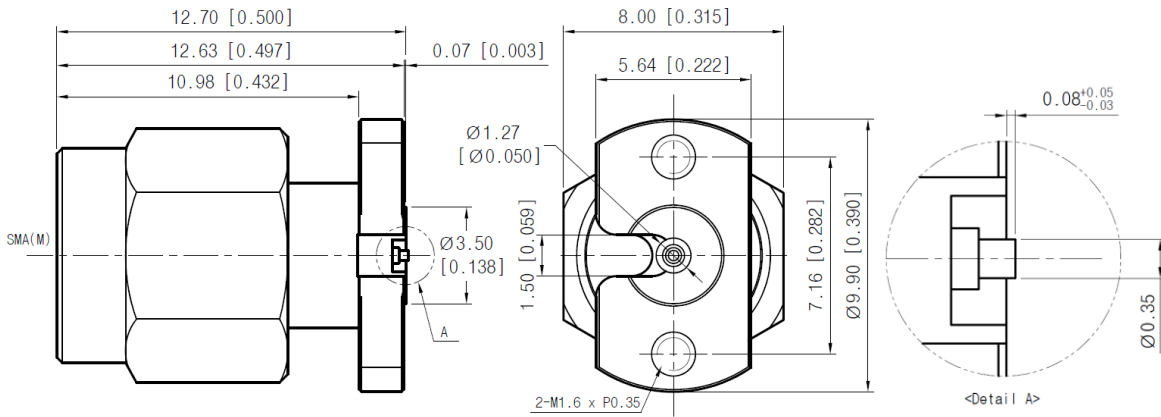
Microstrip type

Unit : mm

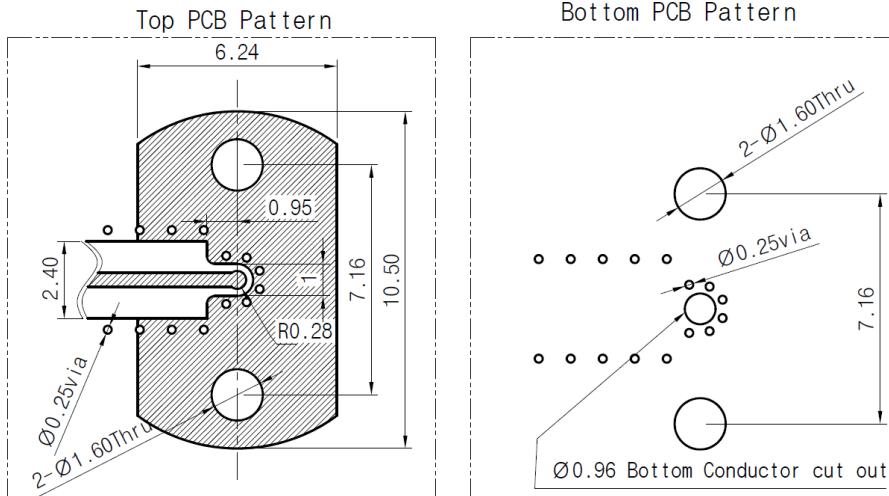
Female type



Male type



<Recommended PCB pattern>



* PCB : R04003C 8mil

Vertical Launch Connectors

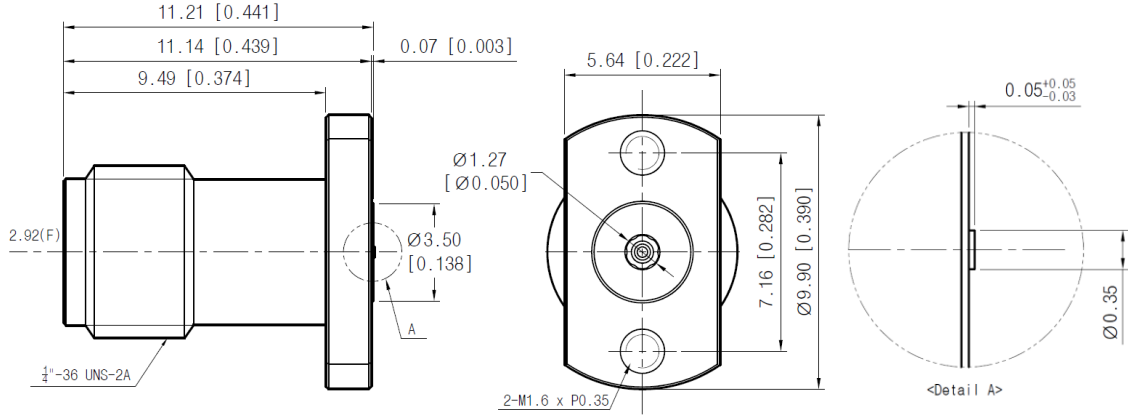
2.92 mm Connector

■ Drawing

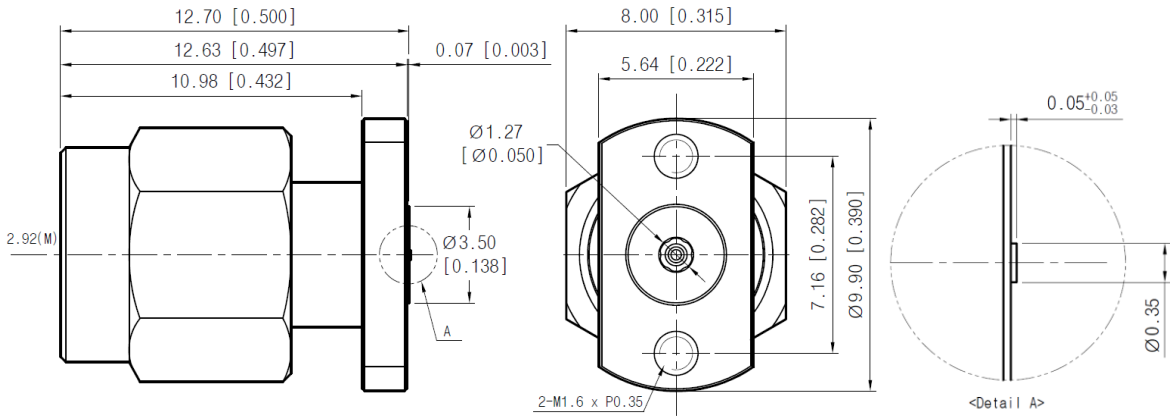
Stripline type

Unit : mm

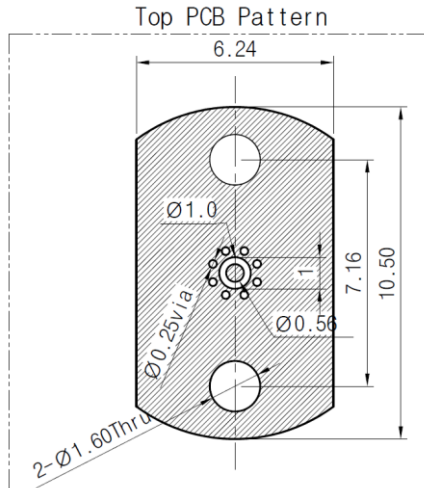
Female type



Male type



<Recommended PCB pattern>



* PCB : R04003C 8mil

Vertical Launch Connectors

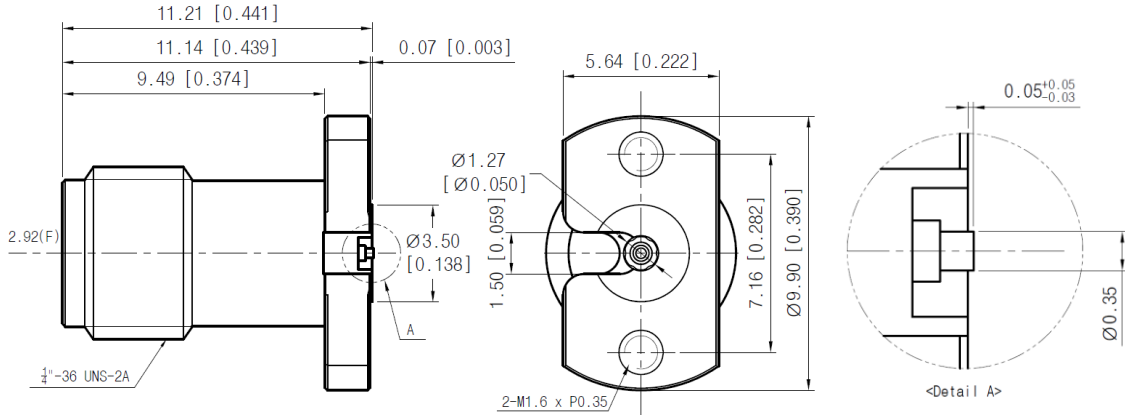
2.92 mm Connector

■ Drawing

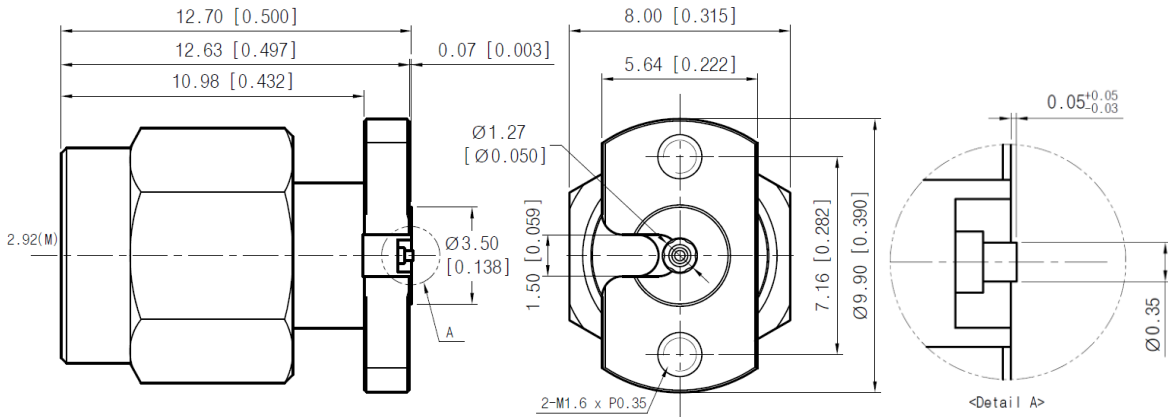
Microstrip type

Unit : mm

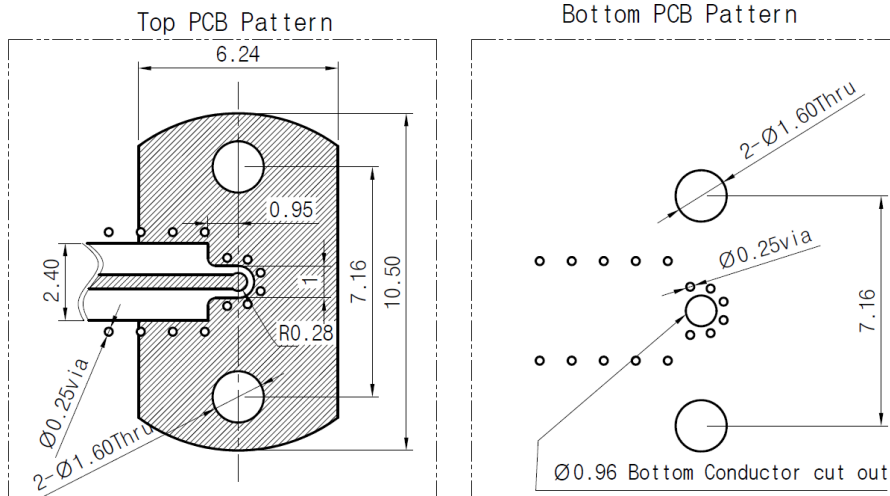
Female type



Male type



<Recommended PCB pattern>



* PCB : R04003C 8mil

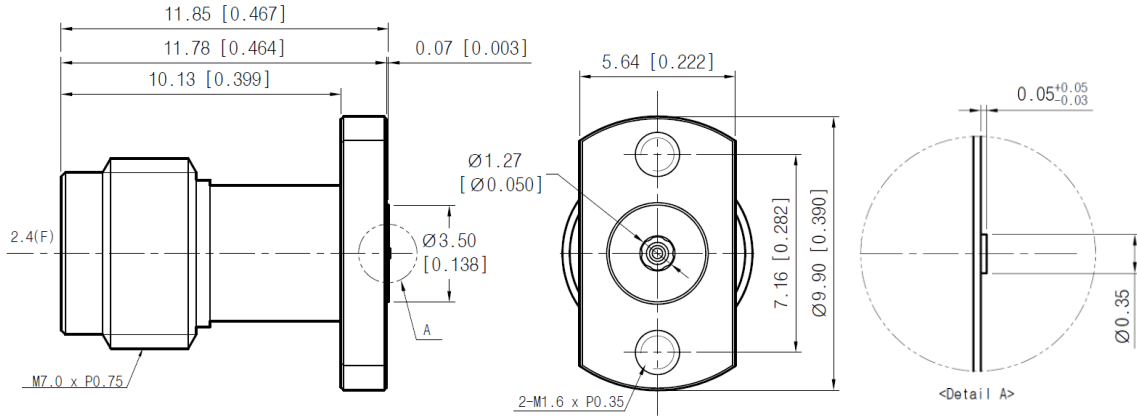
2.4 mm Connector

■ Drawing

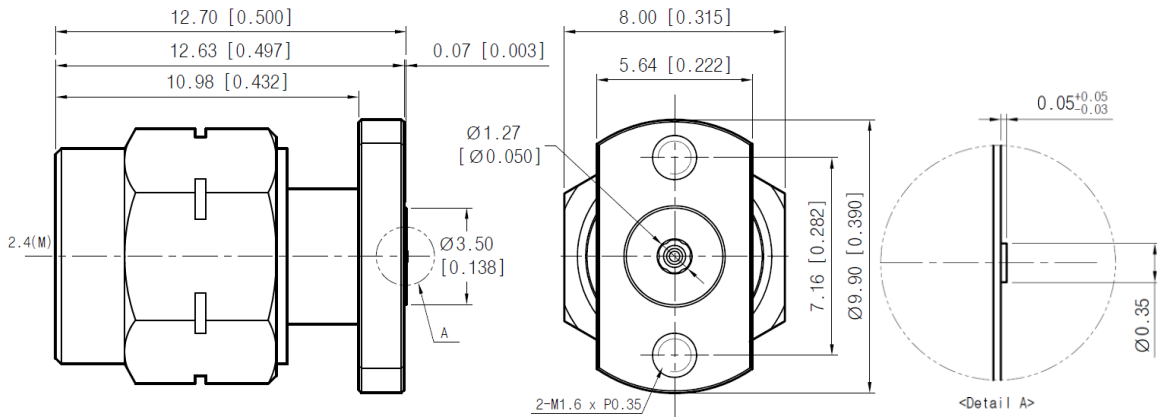
Stripline type

Unit : mm

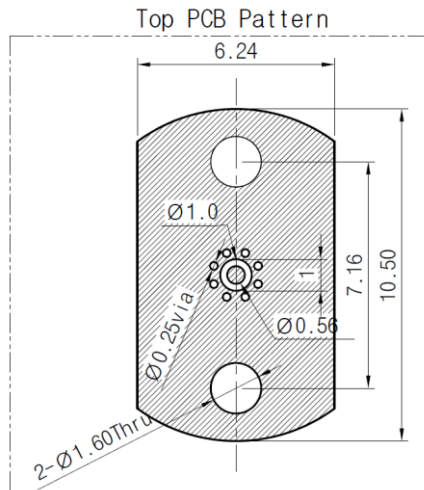
Female type



Male type



<Recommended PCB pattern>



* PCB : R04003C 8mil

Vertical Launch Connectors

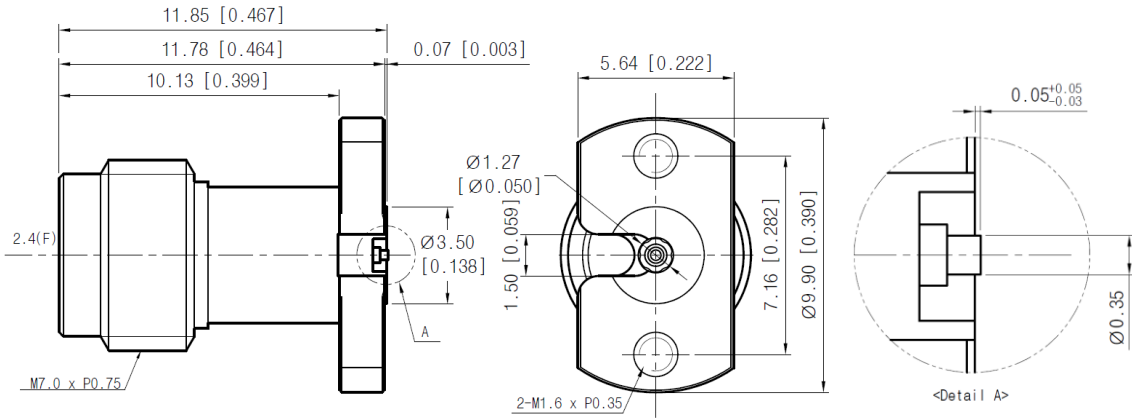
2.4 mm Connector

■ Drawing

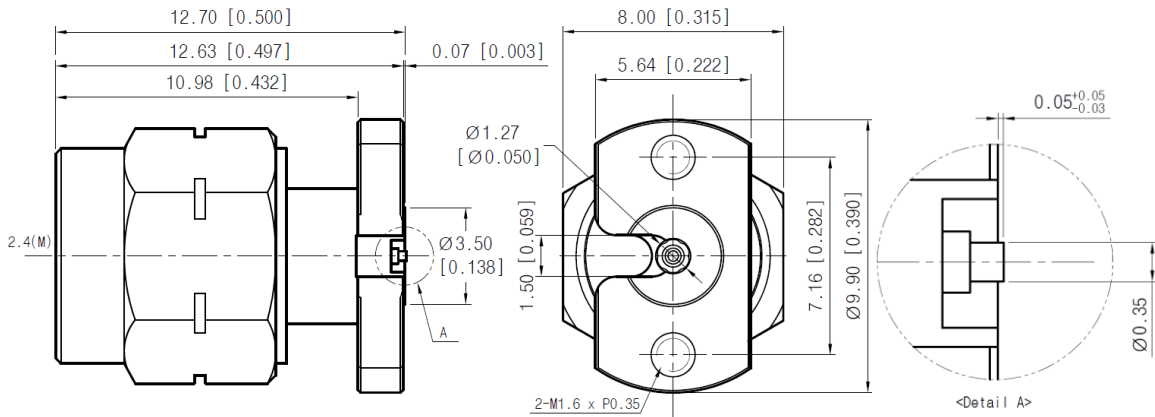
Microstrip type

Unit : mm

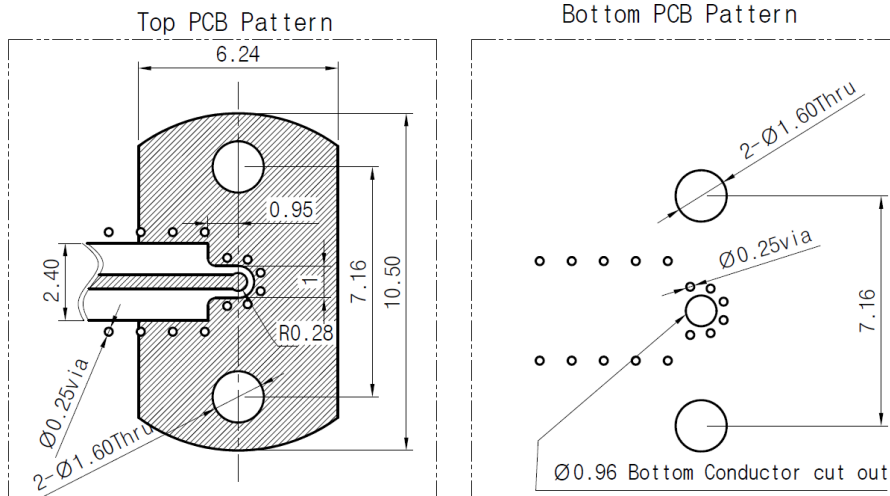
Female type



Male type



<Recommended PCB pattern>



* PCB : R04003C 8mil

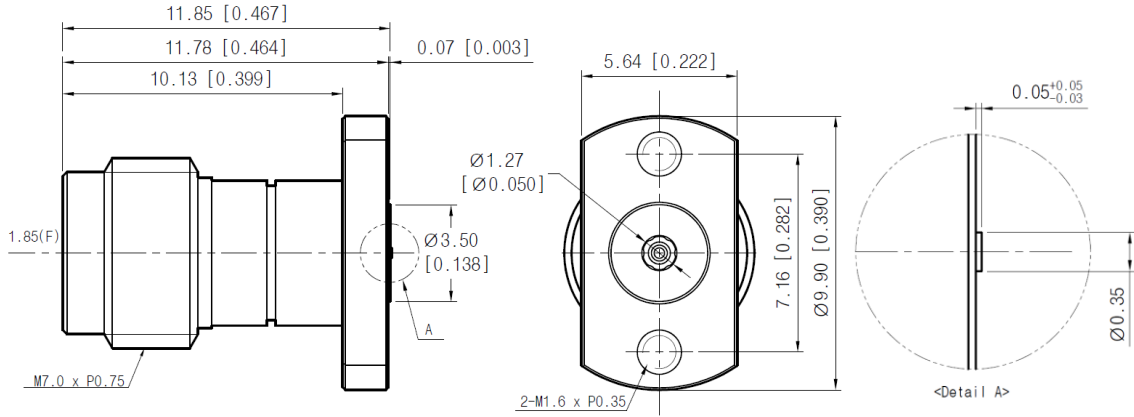
1.85 mm Connector

■ Drawing

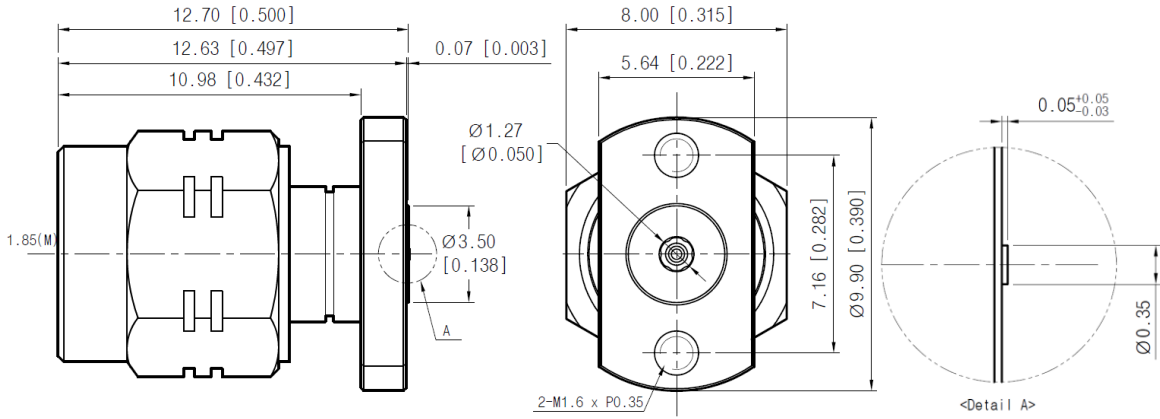
Stripline type

Unit : mm

Female type



Male type



Vertical Launch Connectors

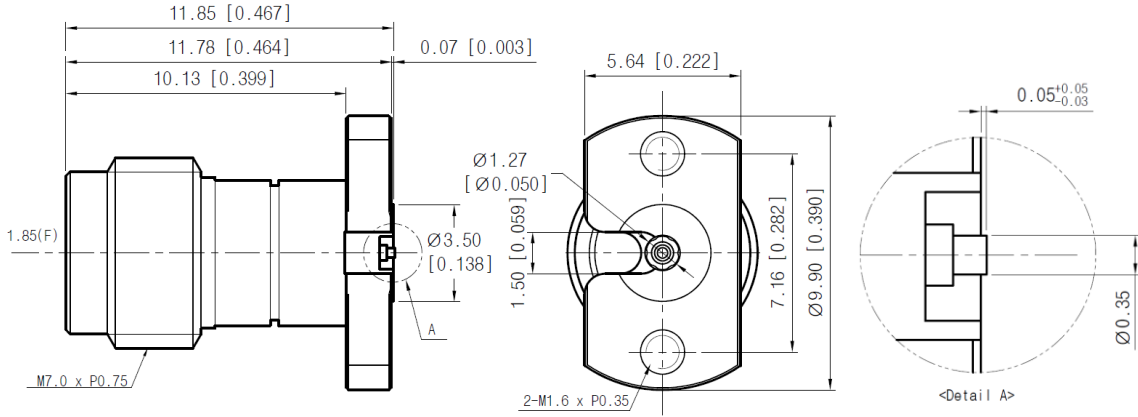
1.85 mm Connector

■ Drawing

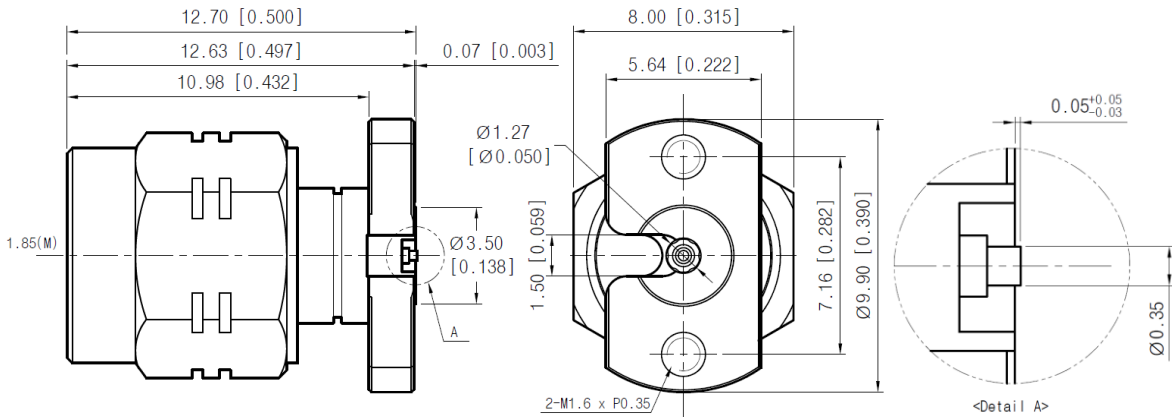
Microstrip type

Unit : mm

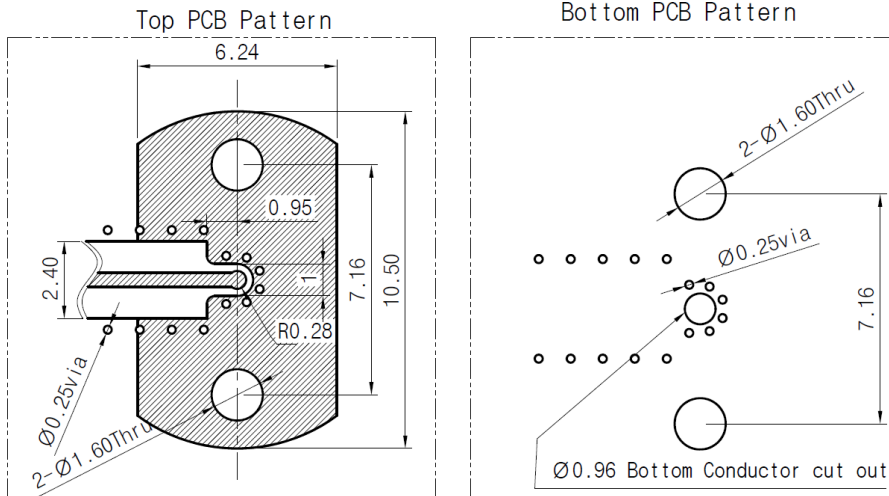
Female type



Male type



<Recommended PCB pattern>



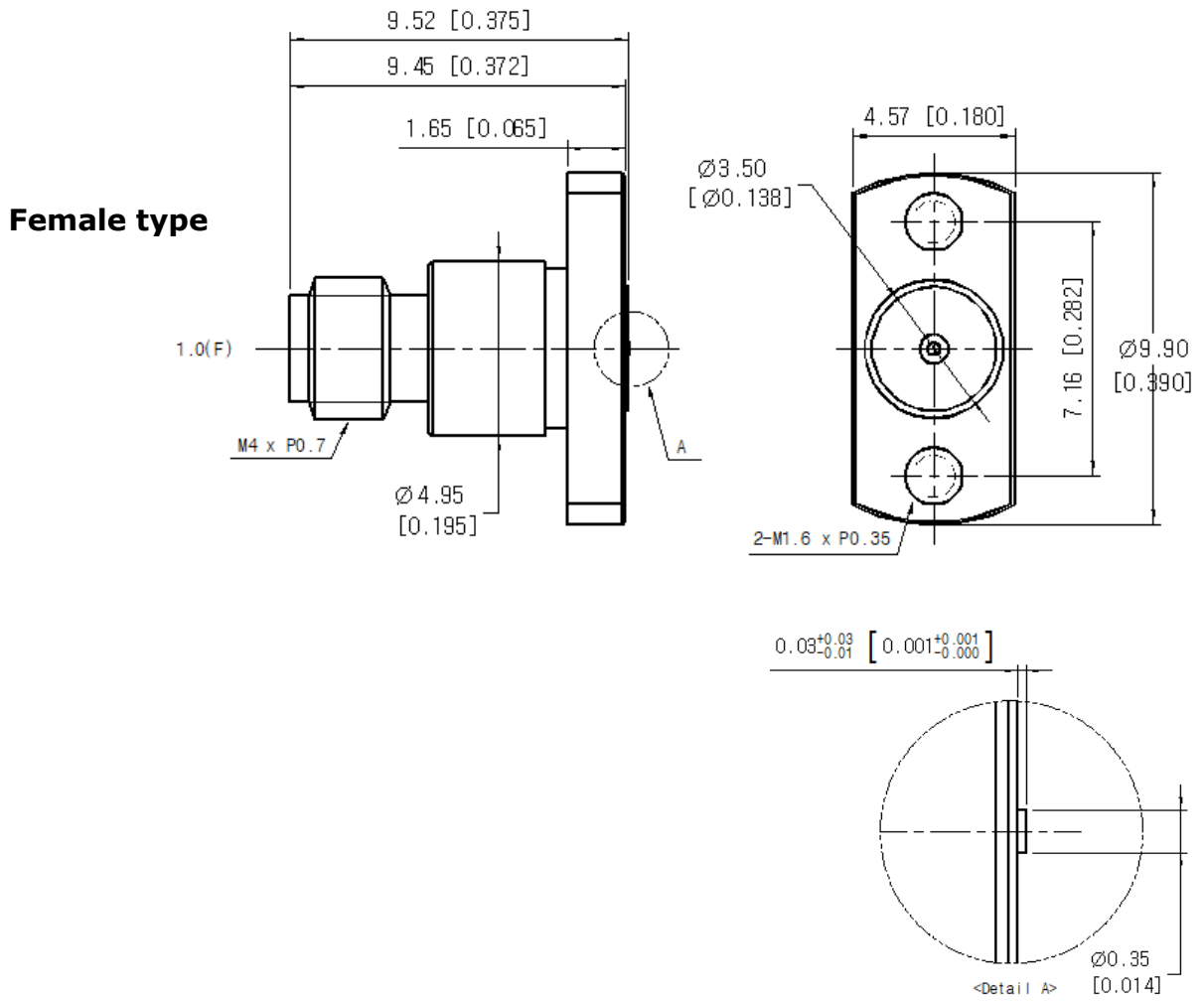
* PCB : R04003C 8mil

1.0 mm Connector

■ Drawing

Stripline type

Unit : mm



Vertical Launch Connectors

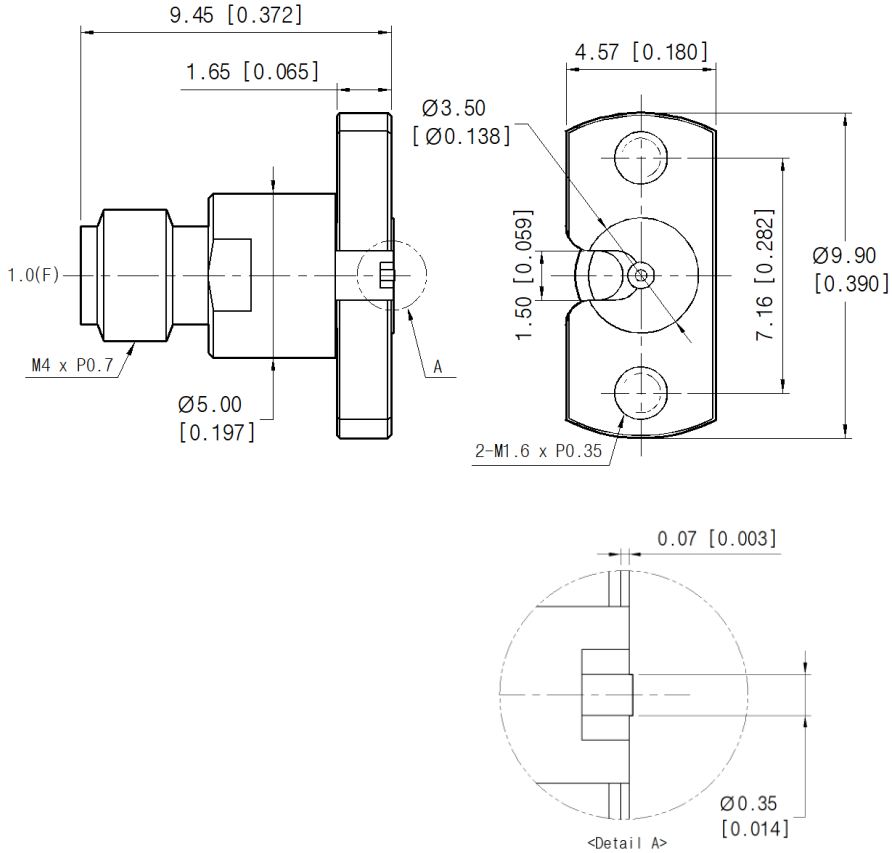
1.0 mm Connector

■ Drawing

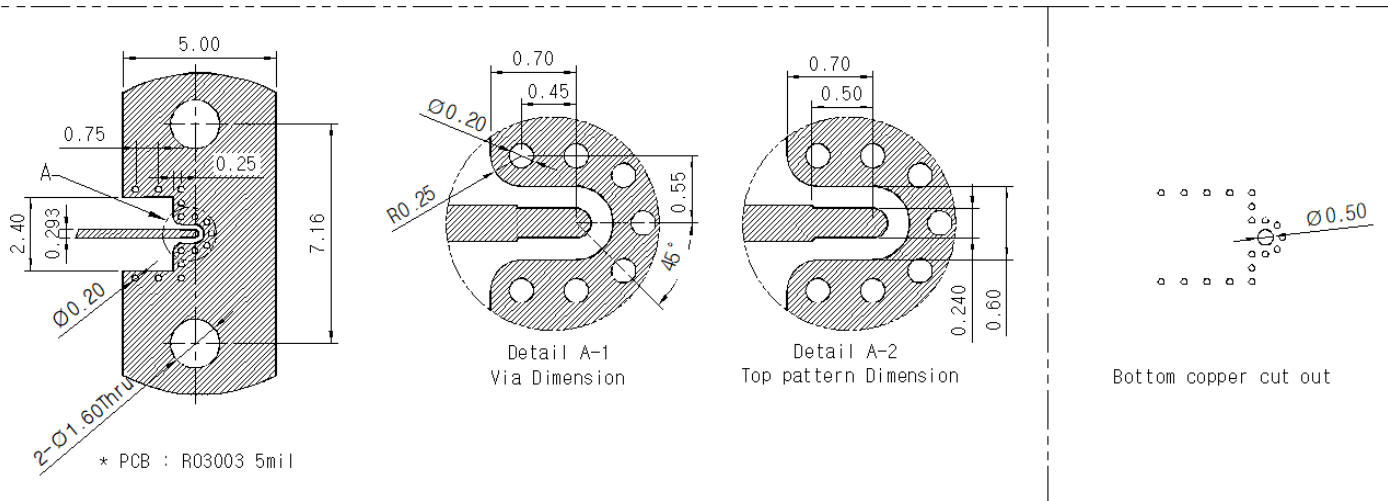
Microstrip type

Unit : mm

Female type



<Recommended PCB pattern>



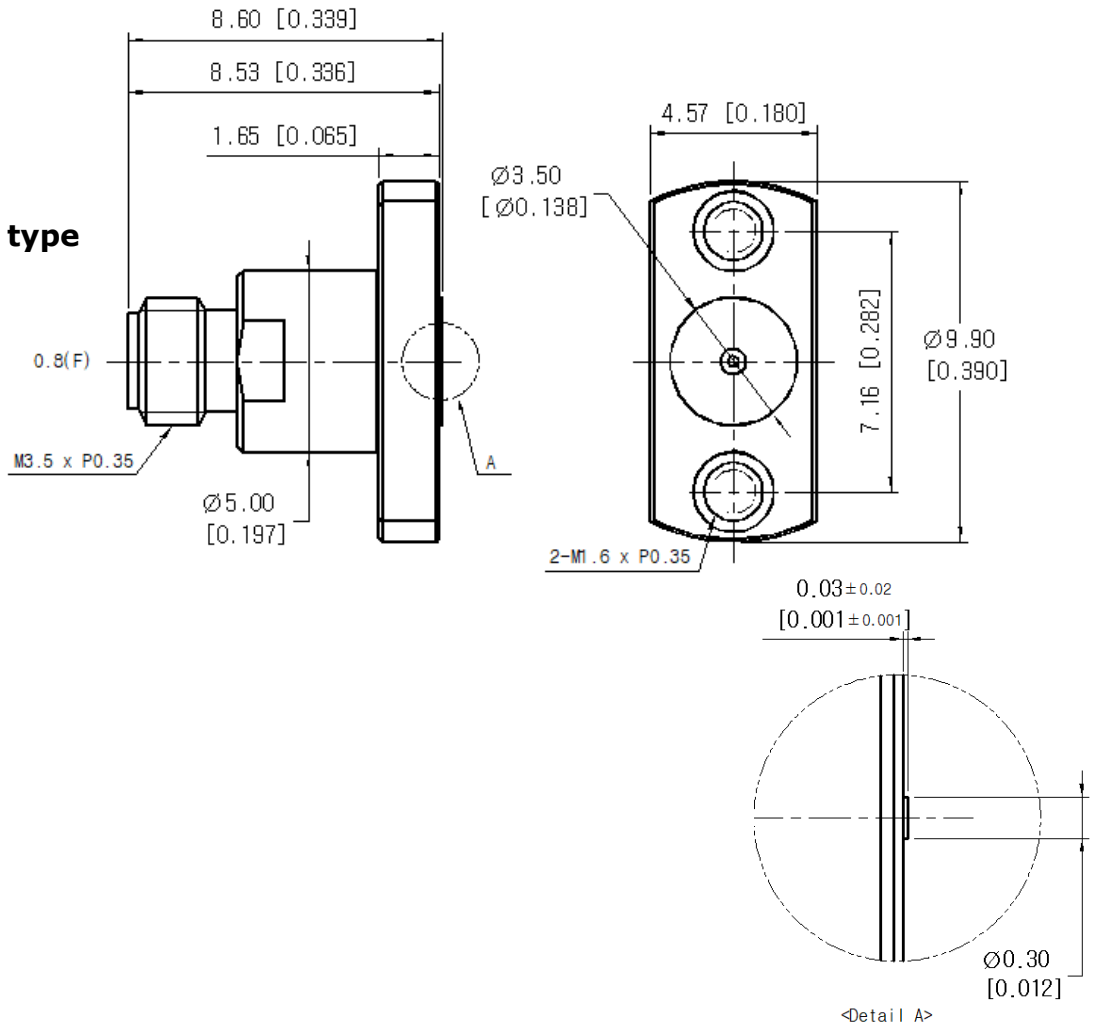
0.8 mm Connector

■ Drawing

Stripline type

Unit : mm

Female type



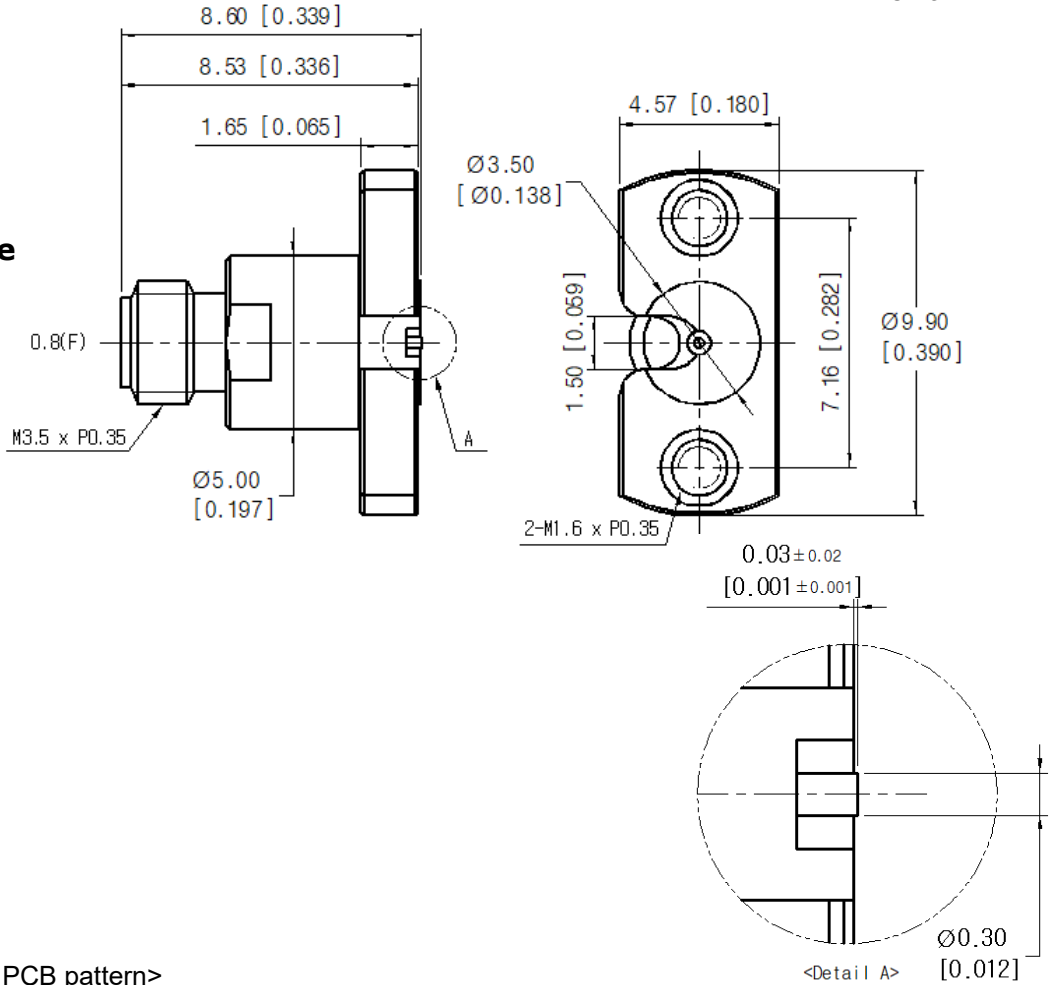
0.8 mm Connector

Drawing

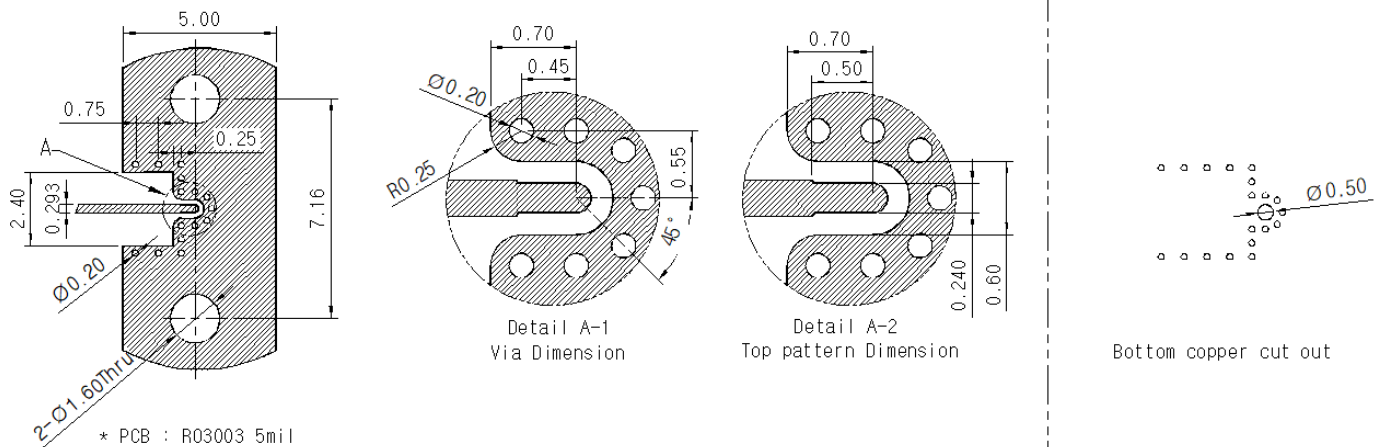
Microstrip type

Unit : mm

Female type



<Recommended PCB pattern>



Vertical Launch Connectors

■ 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
Ver 6.2	2021-02-01	Add Ground Block
Ver 7.0	2022-08-10	Updated Test Results
Ver 8.0	2023-04-20	Changed new photos and updated Test Results
Ver 9.0	2024-11-24	Add Vertical Launch 0.8 mm Connectors