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.



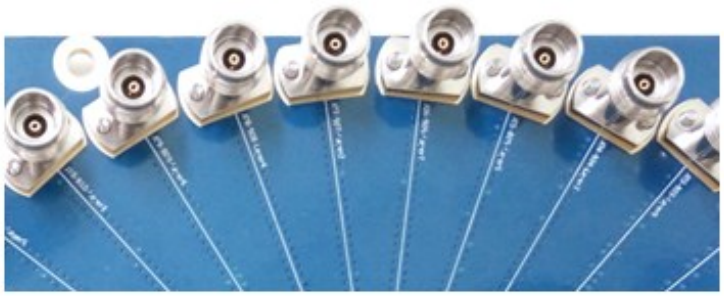
1.0 mm type (110 GHz)

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

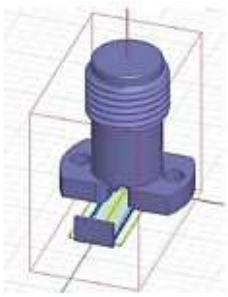
- Test and measurement
- High Speed Digital Test Boards
- Test and Characterization Boards



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)

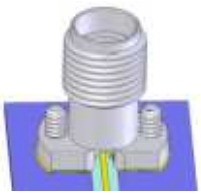
Stripline type

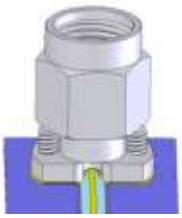




Application	Type	Part No.
Stripline	Female	VC06FS001
	Male	VC06MS001

Microstrip type





Application	Type	Part No.
Microstrip	Female	VC06FS002
	Male	VC06MS002

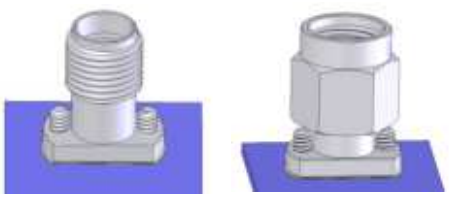
Specification (2.92 mm Connector)

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*

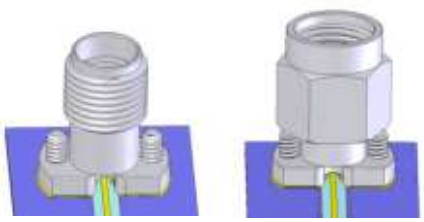
Ordering Information (2.92 mm Connector)

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)

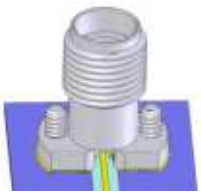
Stripline type

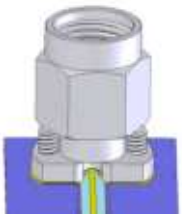




Application	Type	Part No.
Stripline	Female	VC02FS001
	Male	VC02MS001

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)

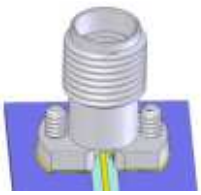
Stripline type

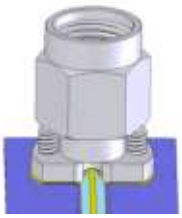




Application	Type	Part No.
Stripline	Female	VC01FS001
	Male	VC01MS001

Microstrip type





Application	Type	Part No.
Microstrip	Female	VC01FS002
	Male	VC01MS002

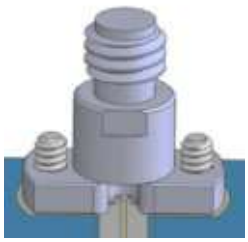
Specification (1.0 mm Connector)

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



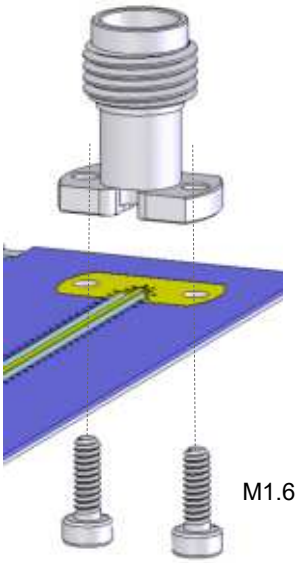
Application	Type	Part No.
Microstrip	Female	VC00FS002



Installation Procedure

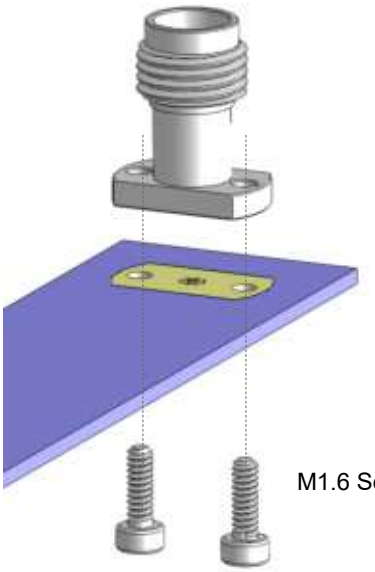
STEP 1 :
Launch vertical connector on the position of substrate.

Microstrip Line



M1.6 Screw Bolting

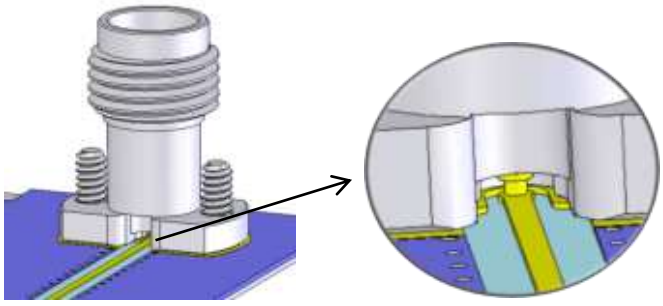
Stripline



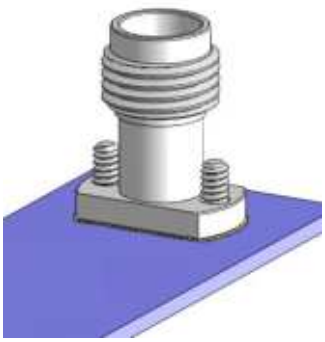
M1.6 Screw Bolting

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





■ Accessories (Ground Block)

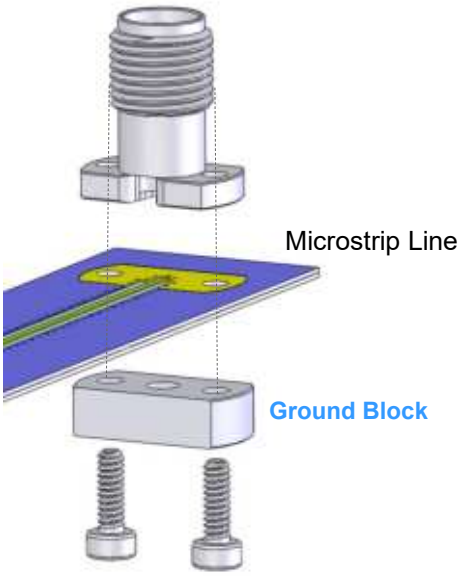
Ground block can be used on the backside of the *thin PCB* and It supports the stability of the thin PCB for mechanical stress(or distortion) and the solder point and components at the PCB against breaking. the contact issue is solved.

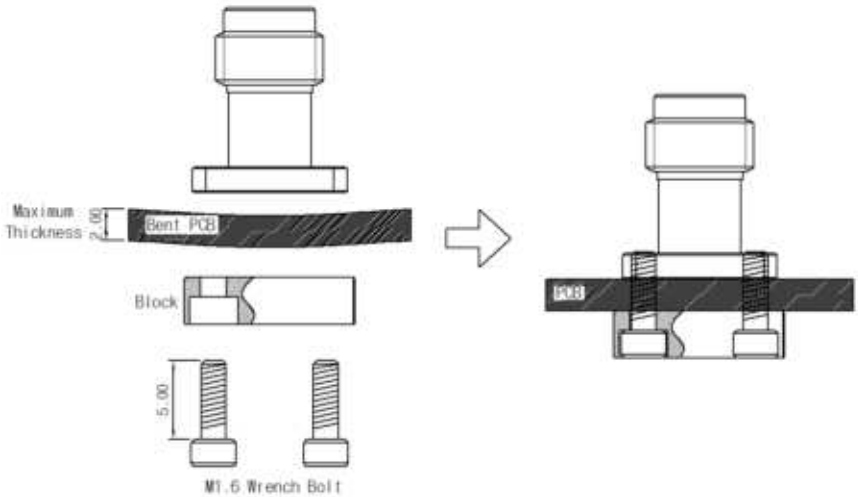


Ground Block

■ Advantage

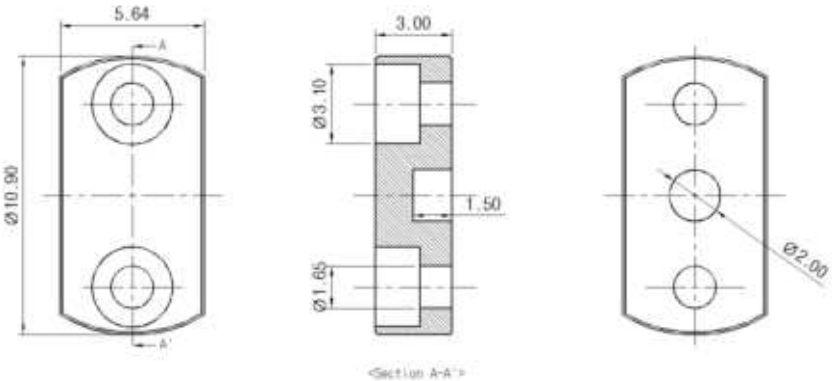
- Better contacting the center Pin at the thin PCB (higher contact pressure)
- Mechanically stabilize the very thin PCB. No solder points get broken





■ Drawing (Part No: WB0642F03)

Unit : mm

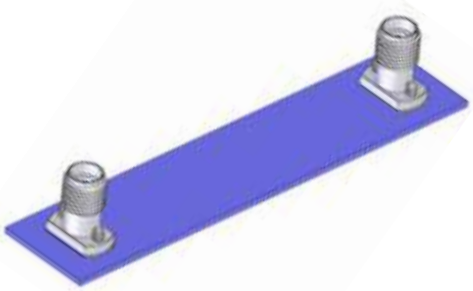


SMA Connector

■ *Test Result (Stripline type)*

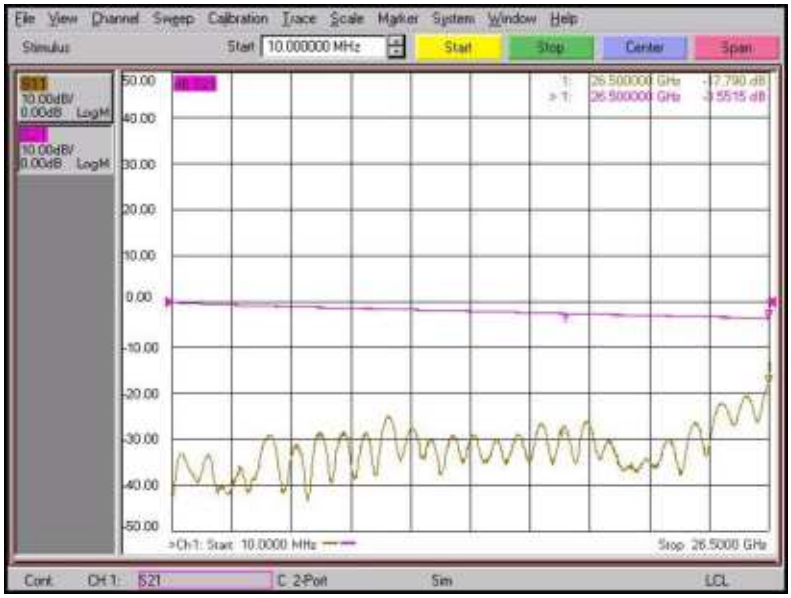
Female type

Part No. : VC06FS001



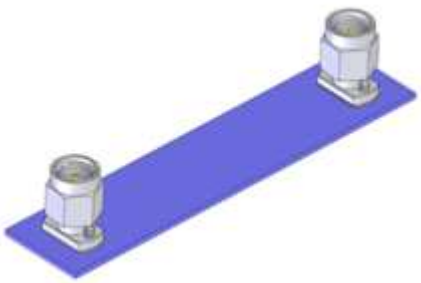
- Substrate : RO4003C(8 mil)
- Trace length : 70 mm (stripline)

Freq. : 10 MHz to 26.5 GHz



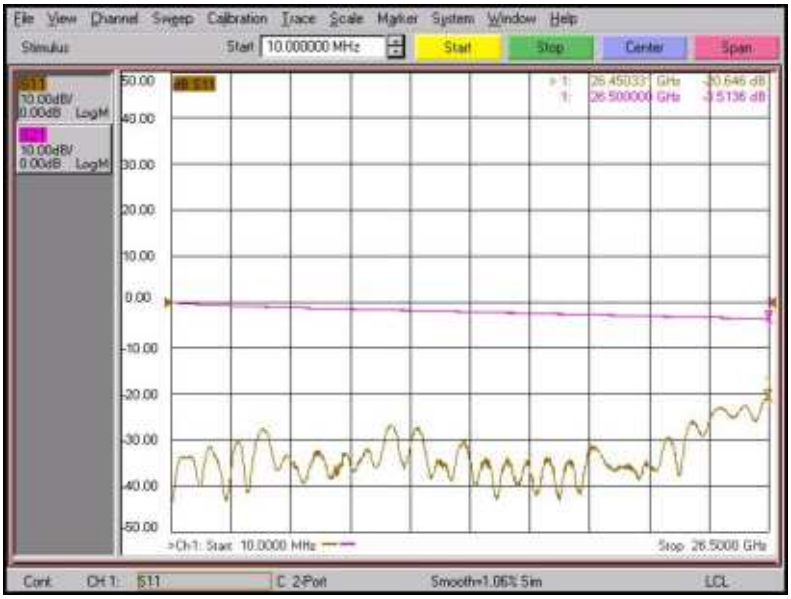
Male type

Part No. : VC06MS001



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

Freq. : 10 MHz to 26.5 GHz

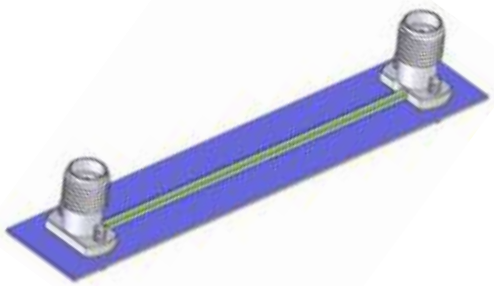


SMA Connector

■ *Test Result (Microstrip type)*

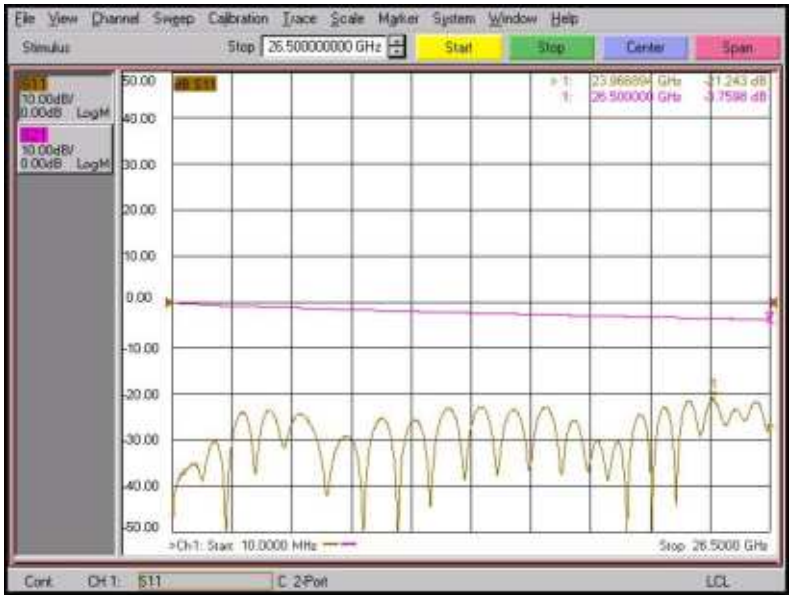
Female type

Part No. : VC06FS002



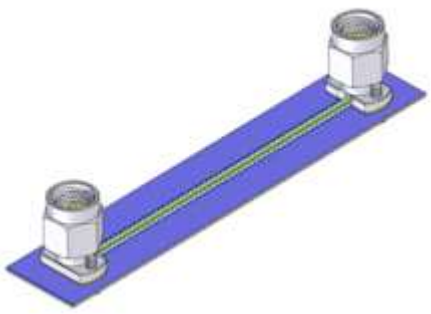
- Substrate : RO4003C(8 mil)
- Trace length : 60 mm (microstrip)

Freq. : 10 MHz to 26.5 GHz



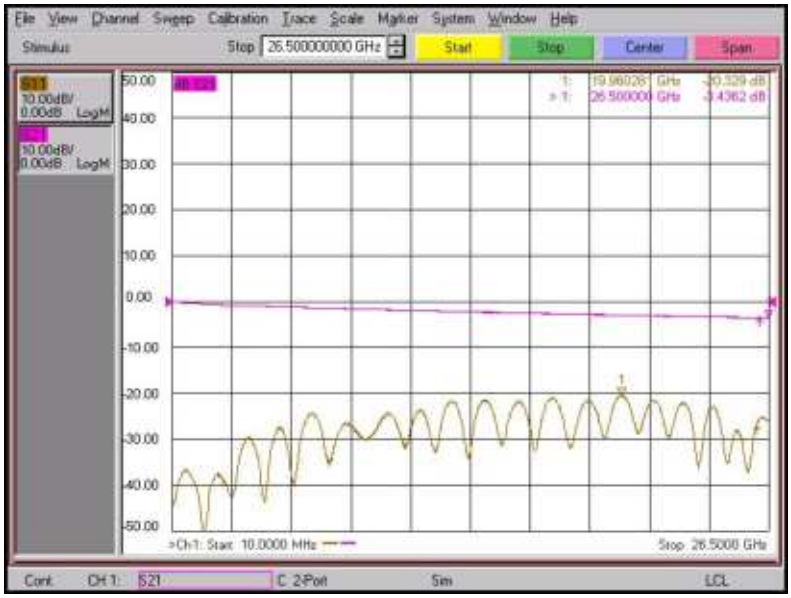
Male type

Part No. : VC06MS002



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

Freq. : 10 MHz to 26.5 GHz



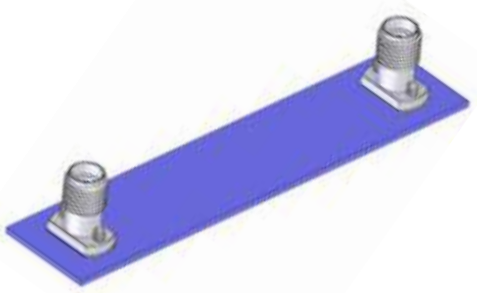
2.92 mm Connector

■ *Test Result (Stripline type)*

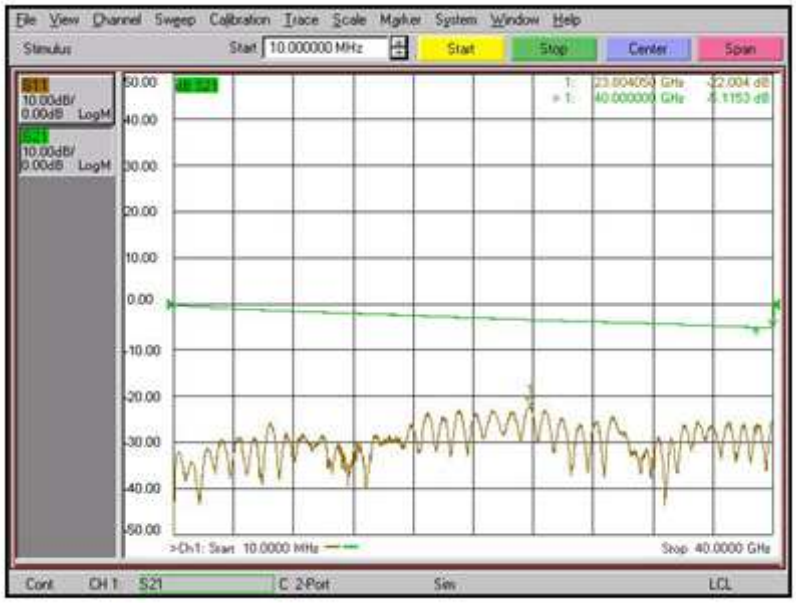
Female type

Part No. : VC03FS001

Freq. : 10 MHz to 40 GHz



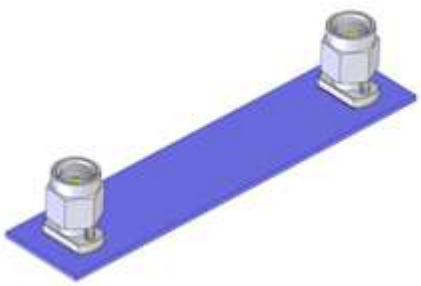
- Substrate : RO4003C(8 mil)
- Trace length : 70 mm (stripline)



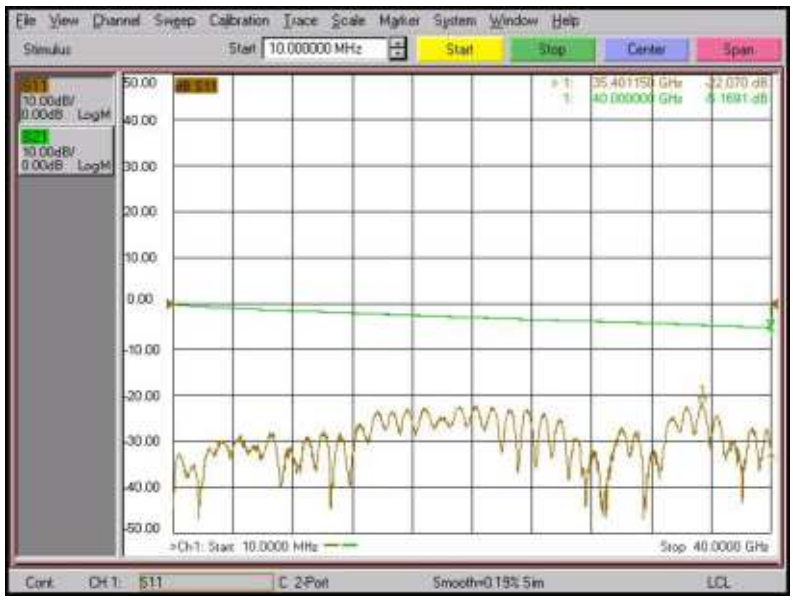
Male type

Part No. : VC03MS001

Freq. : 10 MHz to 40 GHz



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



2.92 mm Connector

■ *Test Result (Stripline type)*

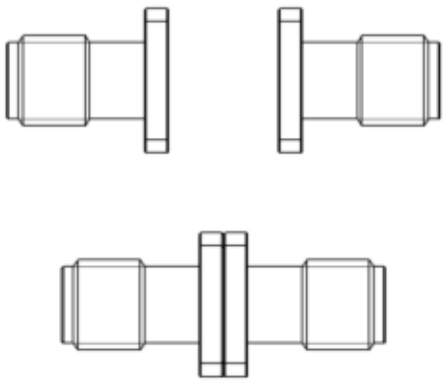
Female type

Part No. : VC03FS001

Freq. : 10 MHz to 40 GHz

Back to Back Test

Vertical 2.92 mm **Vertical 2.92 mm**





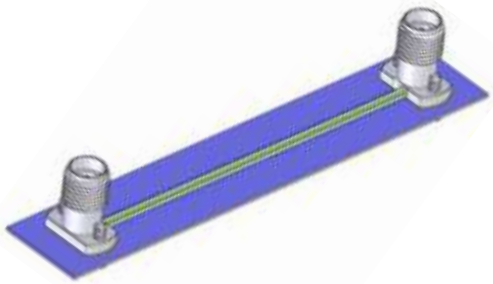
2.92 mm Connector

■ *Test Result (Microstrip type)*

Female type

Part No. : VC03FS002

Freq. : 10 MHz to 40 GHz



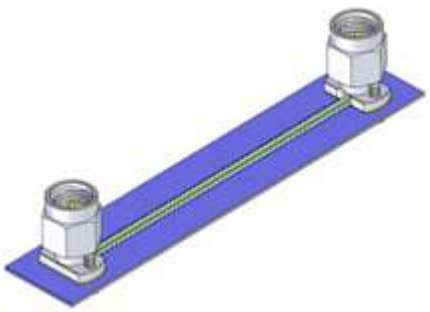
- Substrate : RO4003C(8 mil)
- Trace length : 60 mm (microstrip)



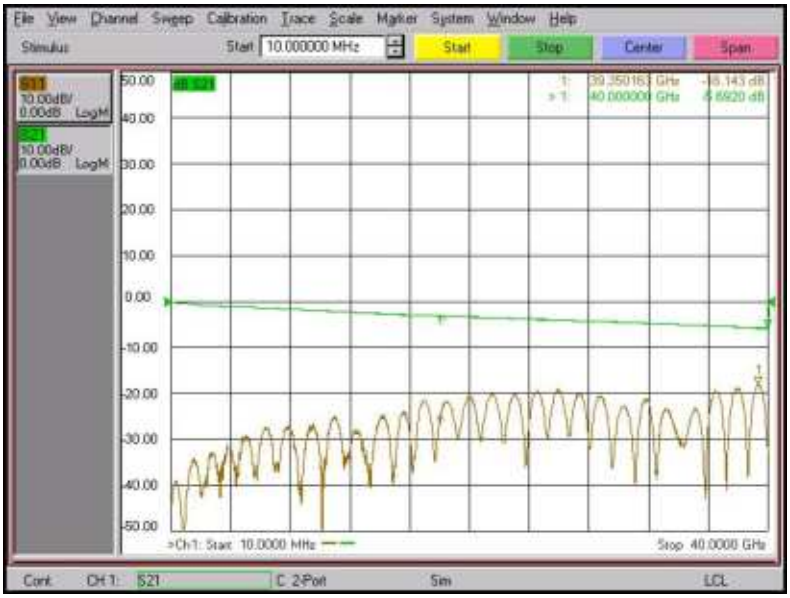
Male type

Part No. : VC03MS002

Freq. : 10 MHz to 40 GHz



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

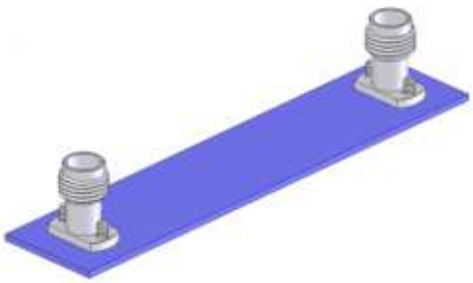


2.4 mm Connector

■ *Test Result (Stripline)*

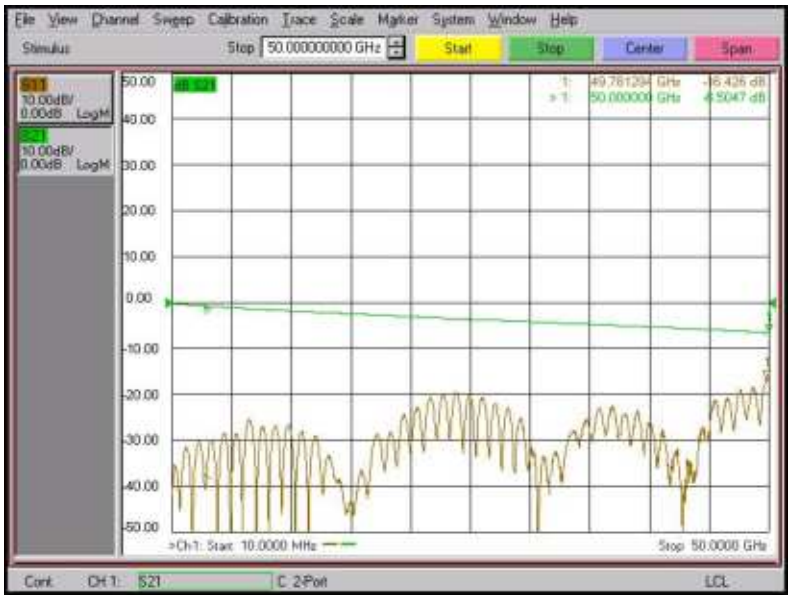
Female type

Part No. : VC02FS001



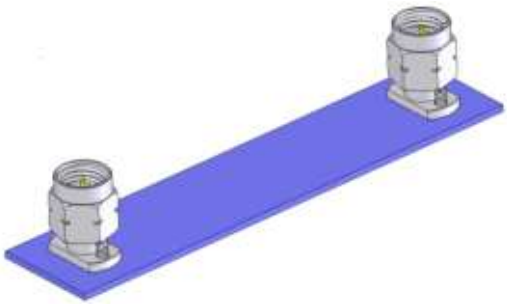
- Substrate : RO4003C(8 mil)
- Trace length : 70 mm (stripline)

Freq. : 10 MHz to 50 GHz



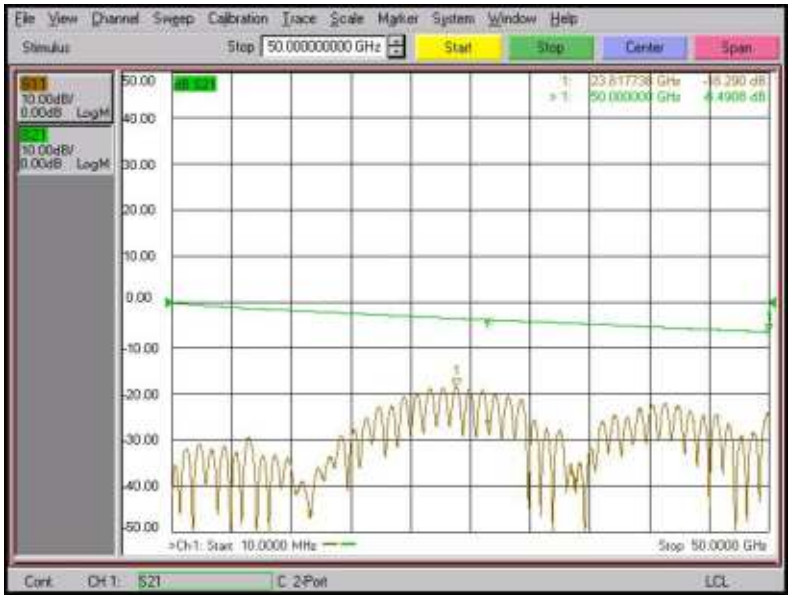
Male type

Part No. : VC02MS001



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

Freq. : 10 MHz to 50 GHz



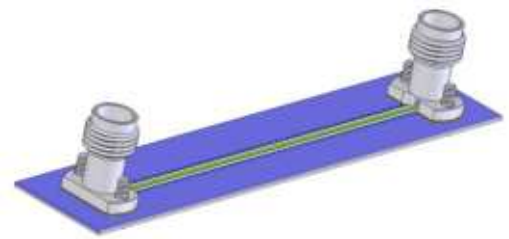
2.4 mm Connector

■ *Test Result (Microstrip type)*

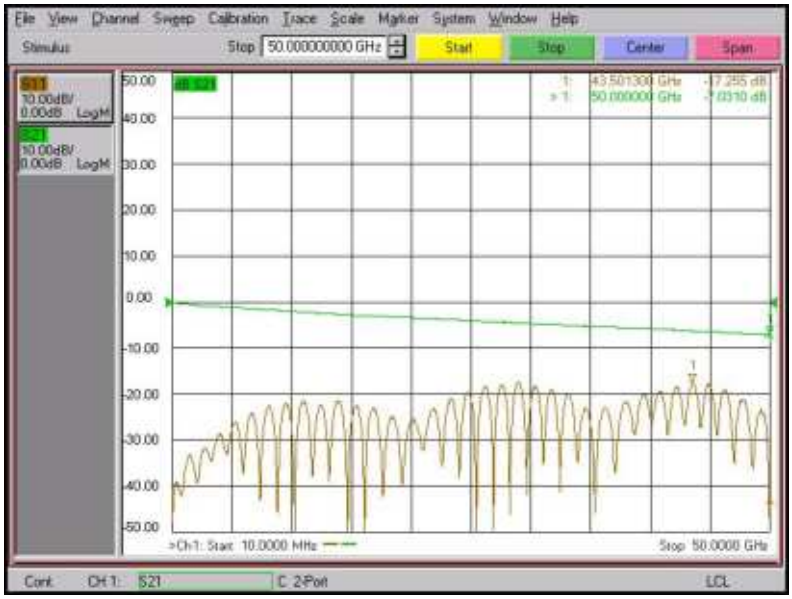
Female type

Part No. : VC02FS002

Freq. : 10 MHz to 50 GHz



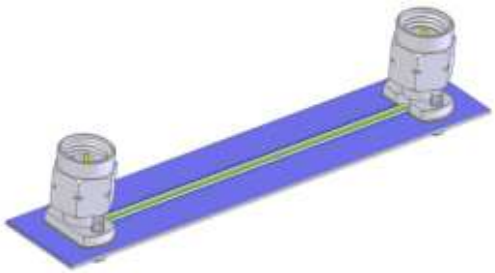
- Substrate : RO4003C(8 mil)
- Trace length : 60 mm (microstrip)



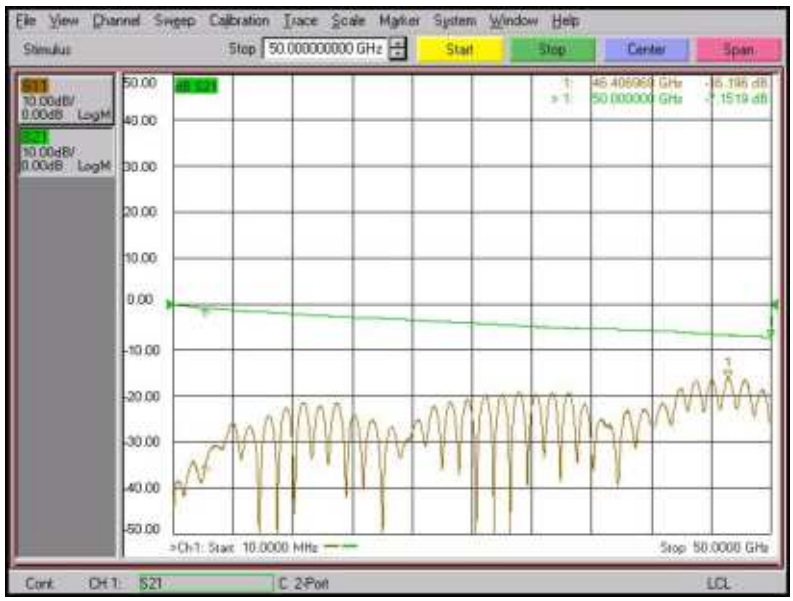
Male type

Part No. : VC02MS002

Freq. : 10 MHz to 50 GHz



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



1.85 mm Connector

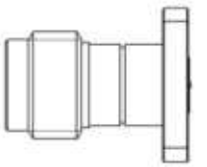
■ *Test Result (Stripline)*

Female type

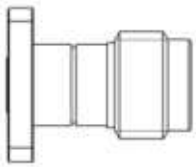
Part No. : VC01FS001

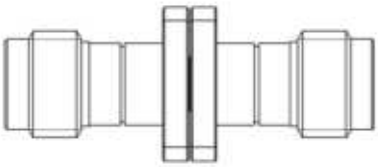
Back to Back Test

Vertical 1.85 mm

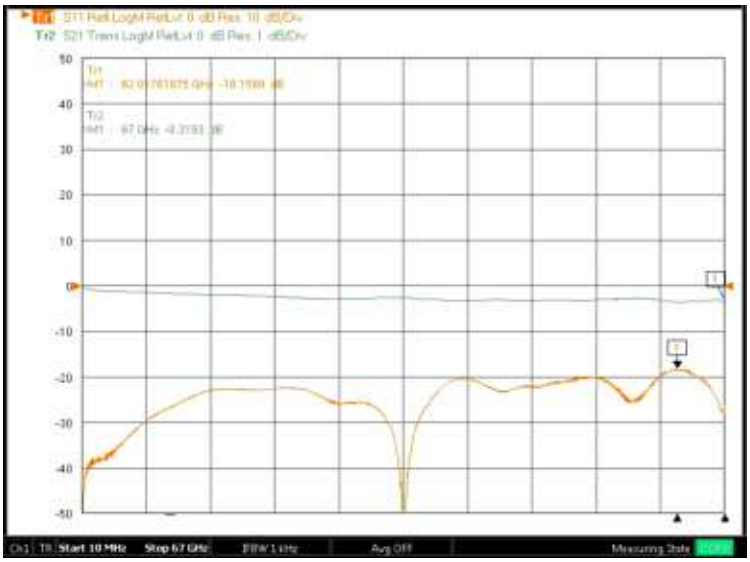


Vertical 1.85 mm





Freq. : 10 MHz to 67 GHz

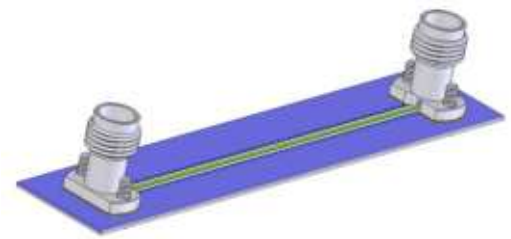


1.85 mm Connector

■ *Test Result (Microstrip type)*

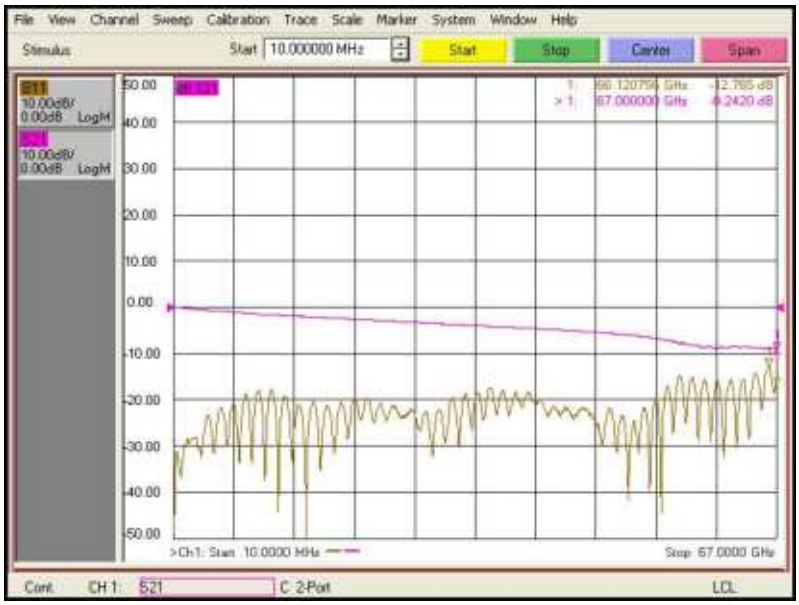
Female type

Part No. : VC01FS002



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

Freq. : 10 MHz to 67 GHz



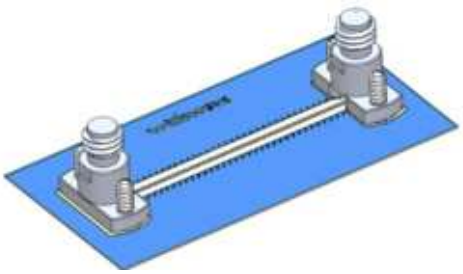
1.0 mm Connector

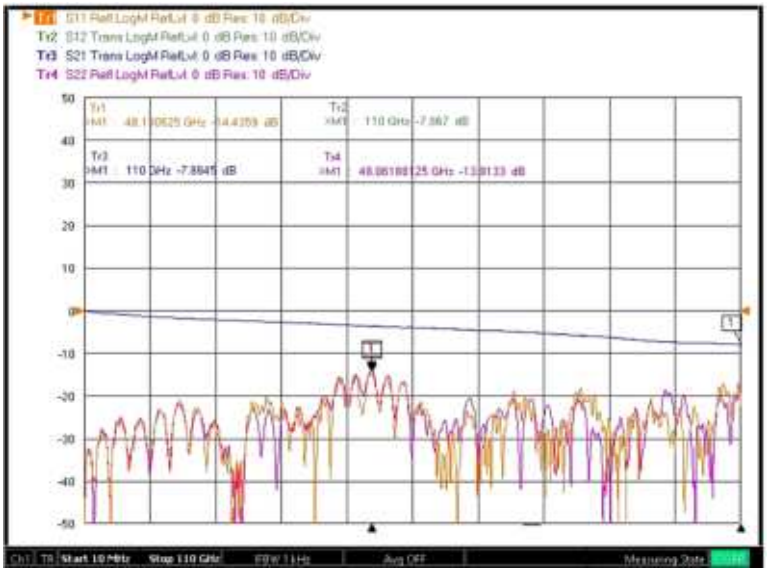
■ *Test Result (Microstrip type)*

Female type

Part No. : VC00FS002

Freq. : 10 MHz to 110 GHz





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



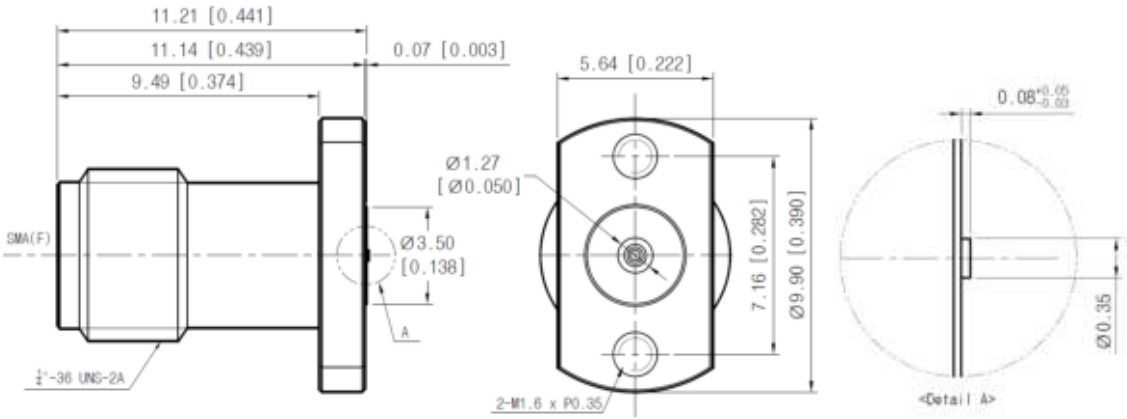
SMA Connector

■ *Drawing*

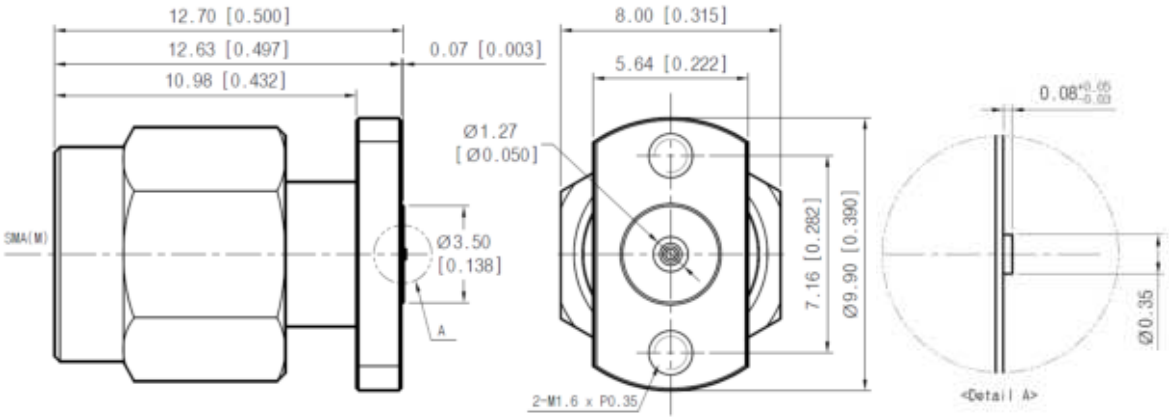
Stripline type

Unit : mm

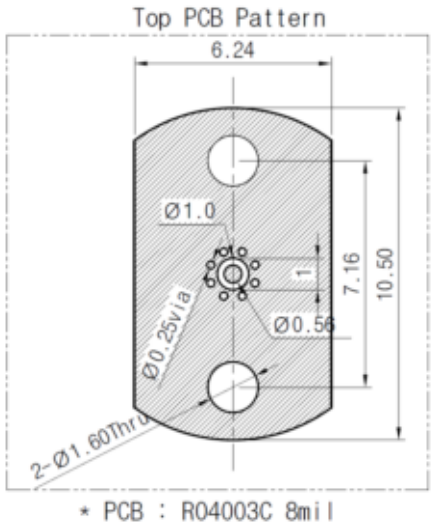
Female type



Male type



<Recommended PCB pattern>



* PCB : R04003C 8mil

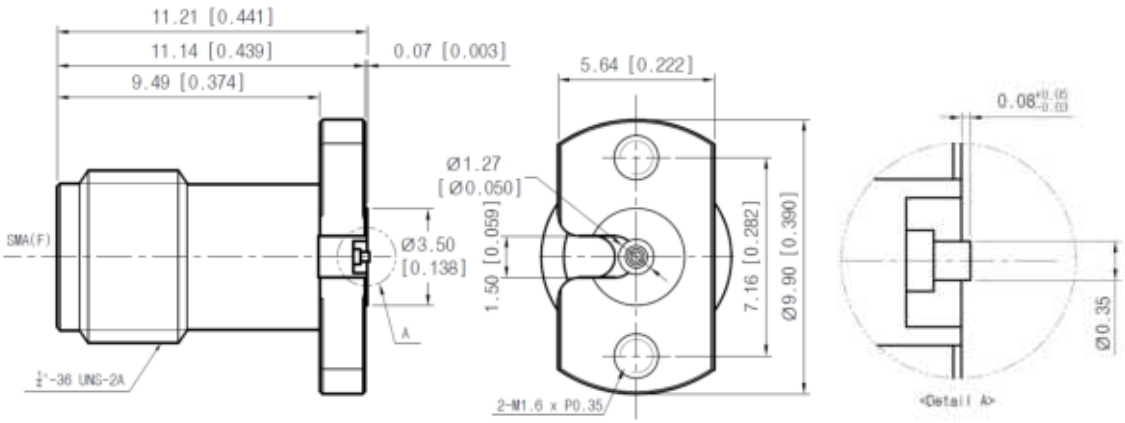
SMA Connector

■ *Drawing*

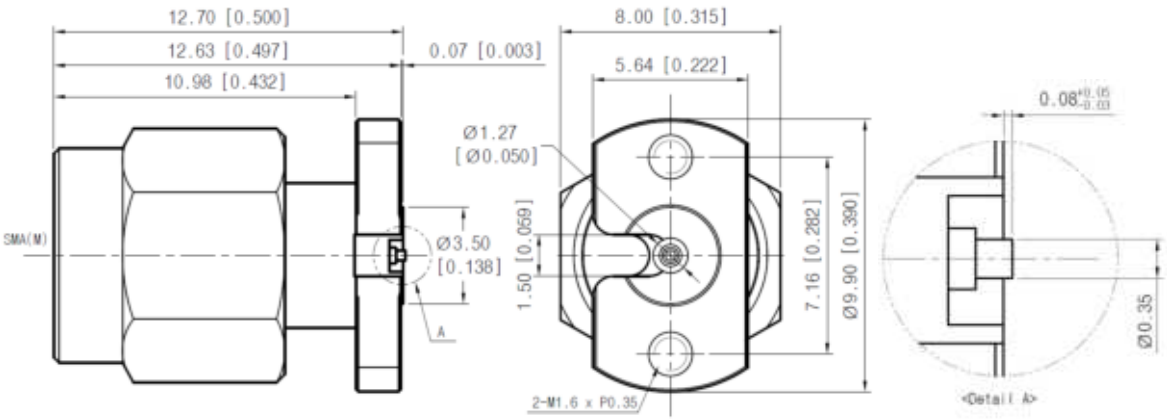
Microstrip type

Unit : mm

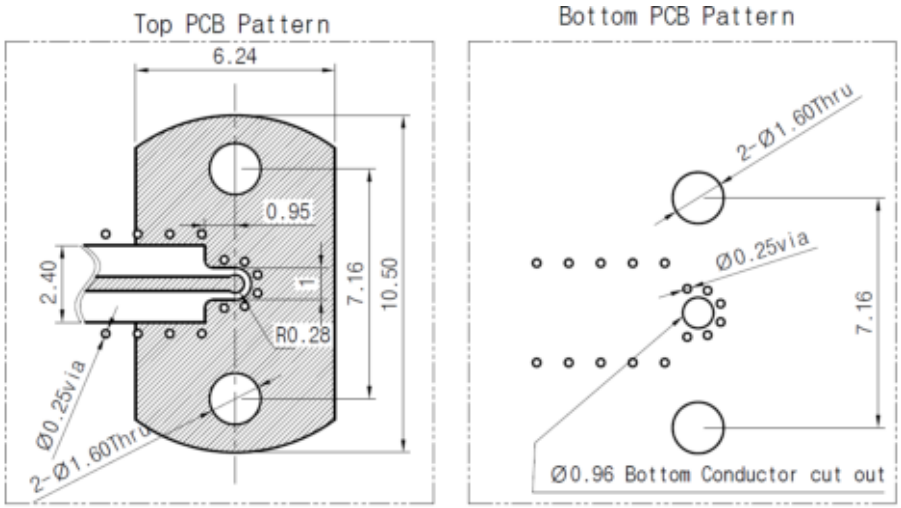
Female type



Male type



<Recommended PCB pattern>



* PCB : R04003C 8mil

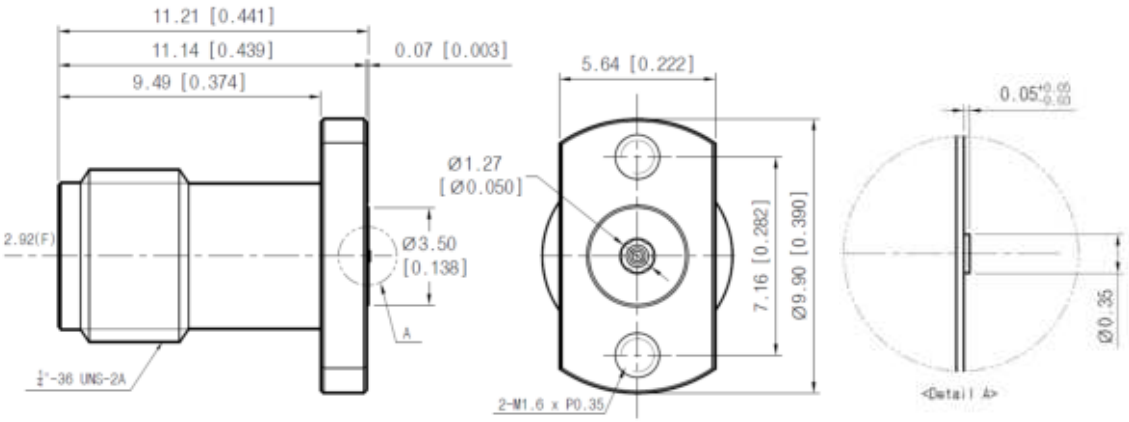
2.92 mm Connector

■ *Drawing*

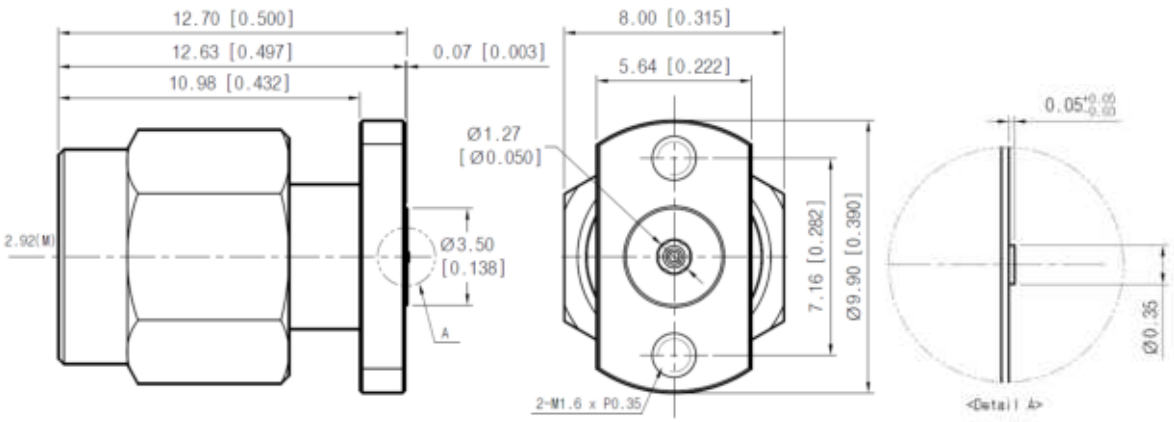
Stripline type

Unit : mm

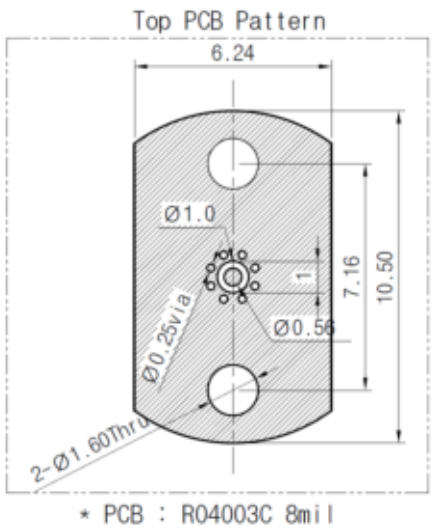
Female type



Male type



<Recommended PCB pattern>



* PCB : RO4003C 8mil

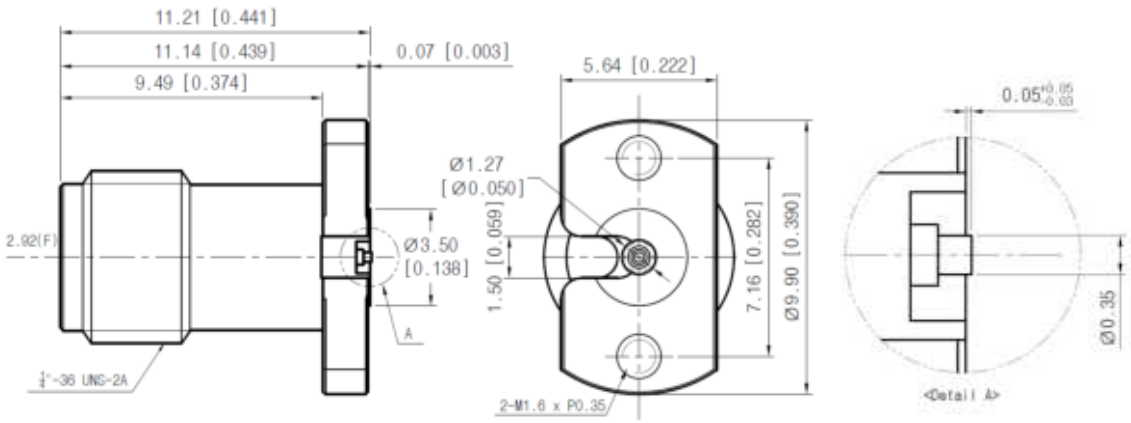
2.92 mm Connector

■ *Drawing*

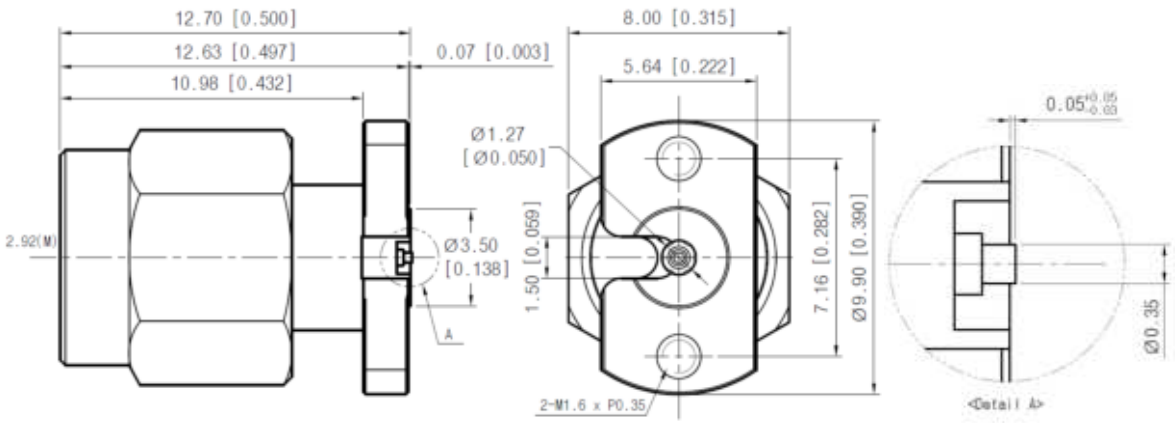
Microstrip type

Unit : mm

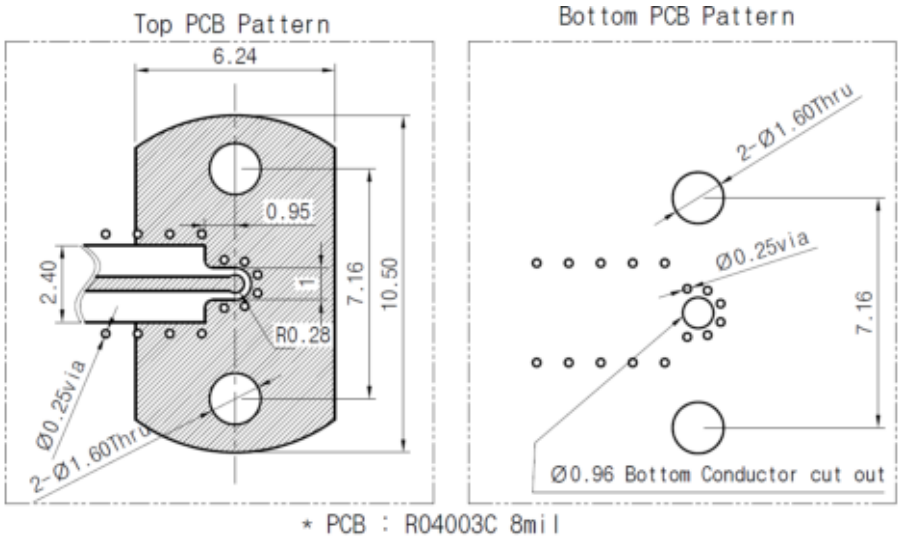
Female type



Male type



<Recommended PCB pattern>



* PCB : R04003C 8mil

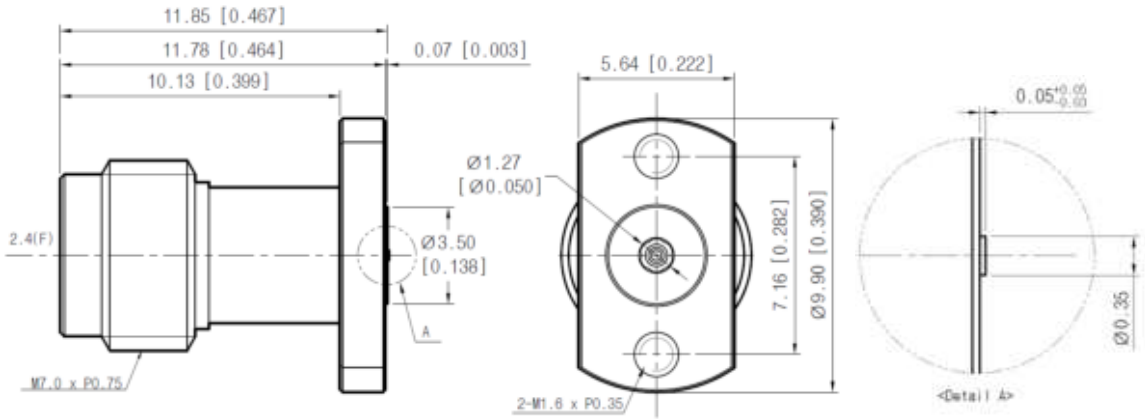
2.4 mm Connector

■ *Drawing*

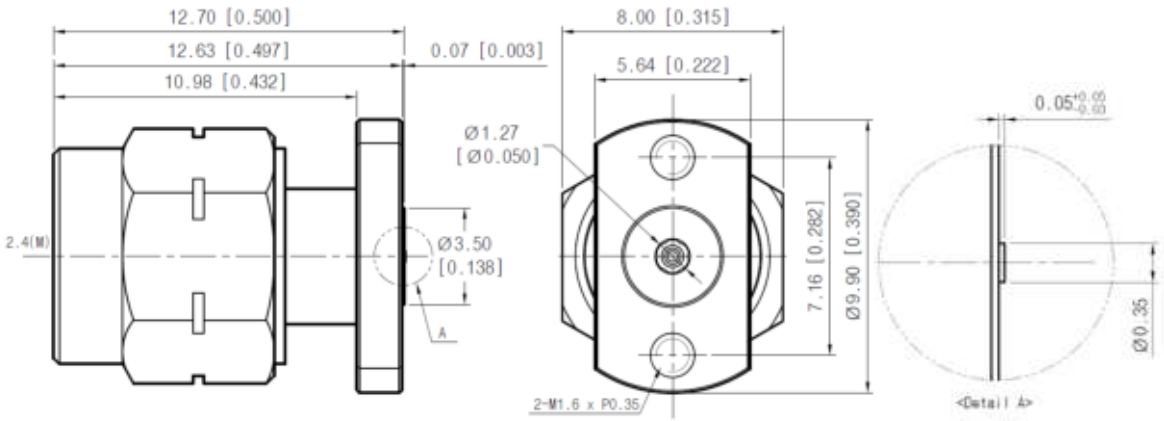
Stripline type

Unit : mm

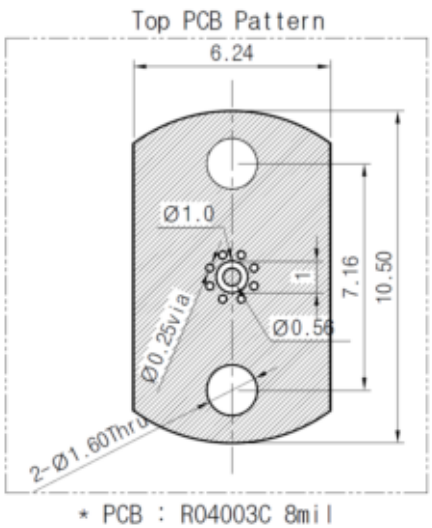
Female type



Male type



<Recommended PCB pattern>



* PCB : RO4003C 8mil

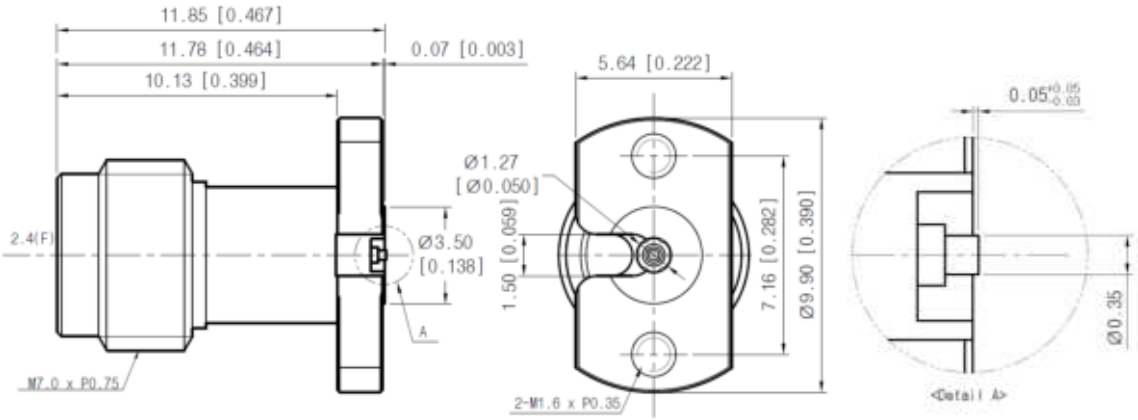
2.4 mm Connector

■ *Drawing*

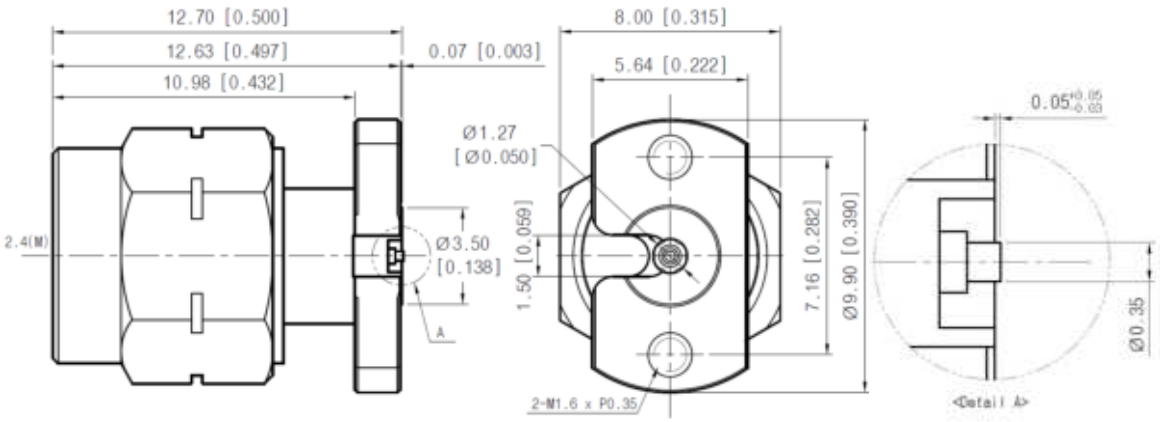
Microstrip type

Unit : mm

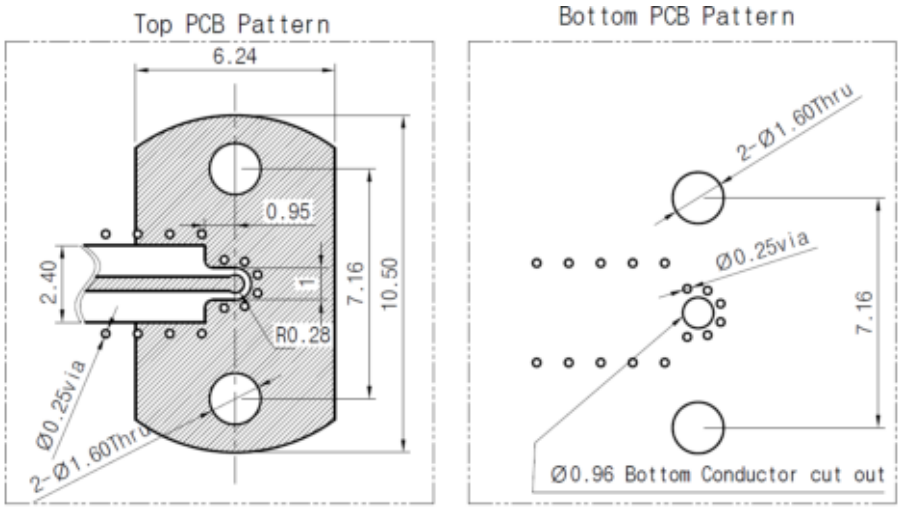
Female type



Male type



<Recommended PCB pattern>



* PCB : R04003C 8mil

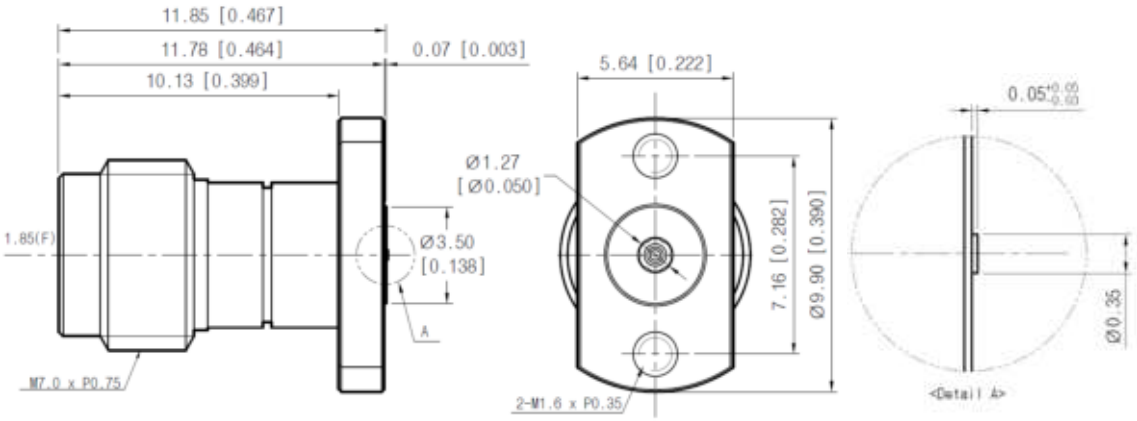
1.85 mm Connector

■ *Drawing*

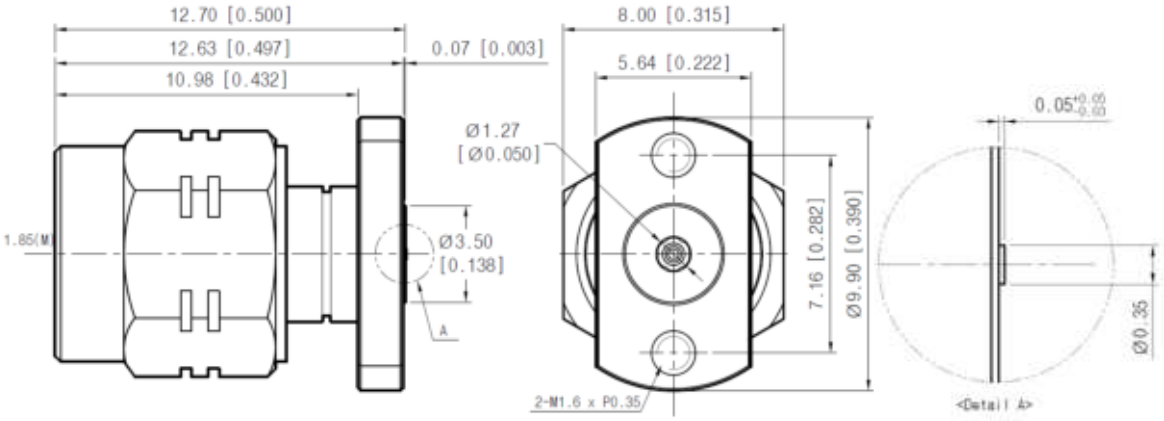
Stripline type

Unit : mm

Female type



Male type



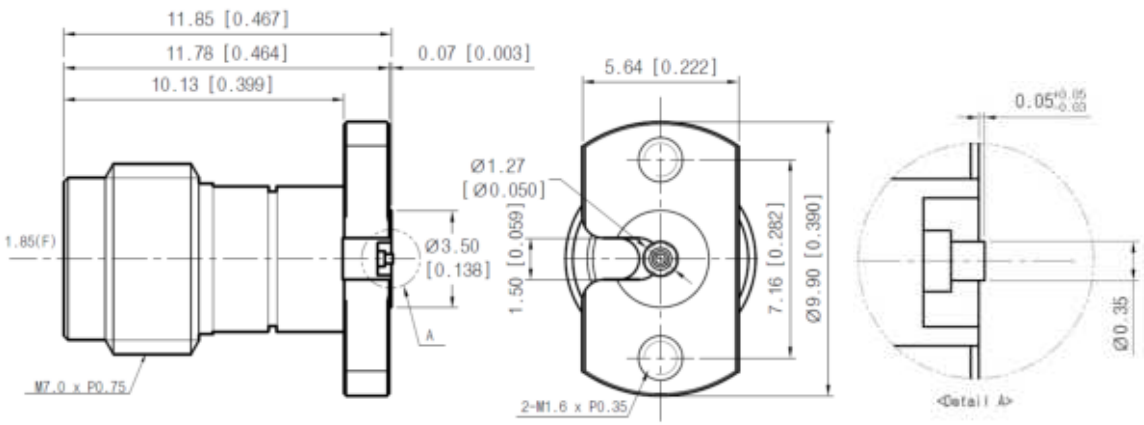
1.85 mm Connector

■ *Drawing*

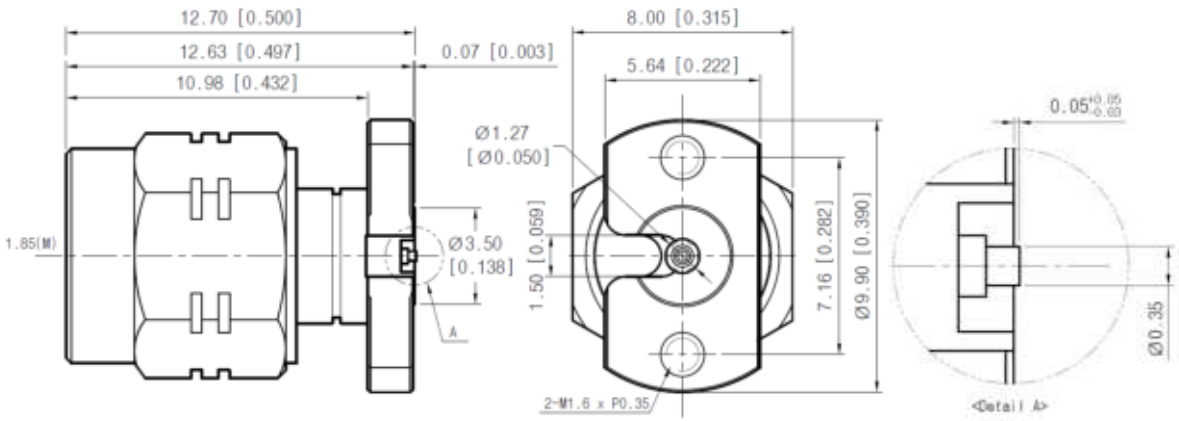
Microstrip type

Unit : mm

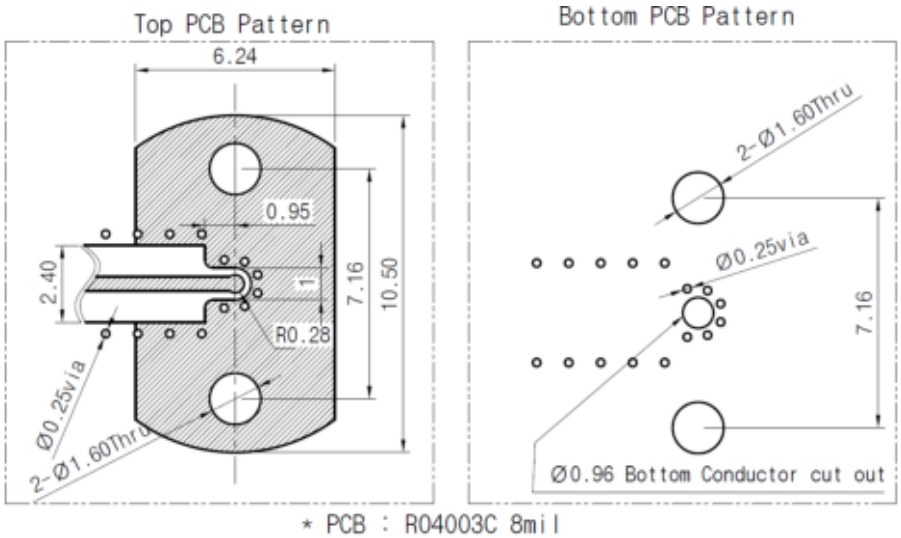
Female type



Male type



<Recommended PCB pattern>



* PCB : R04003C 8mil

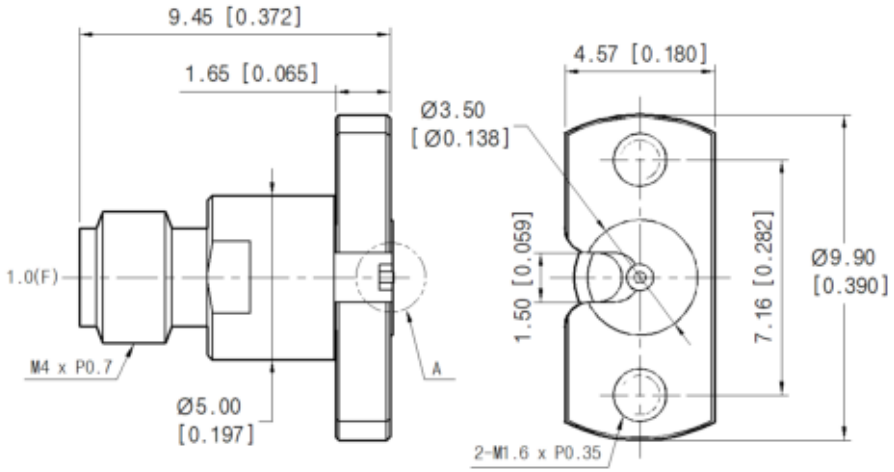
1.0 mm Connector

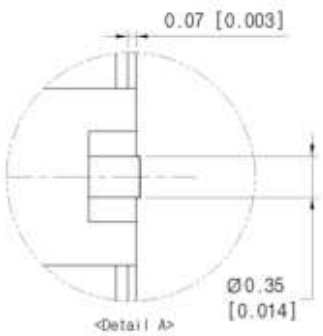
■ *Drawing*

Microstrip type

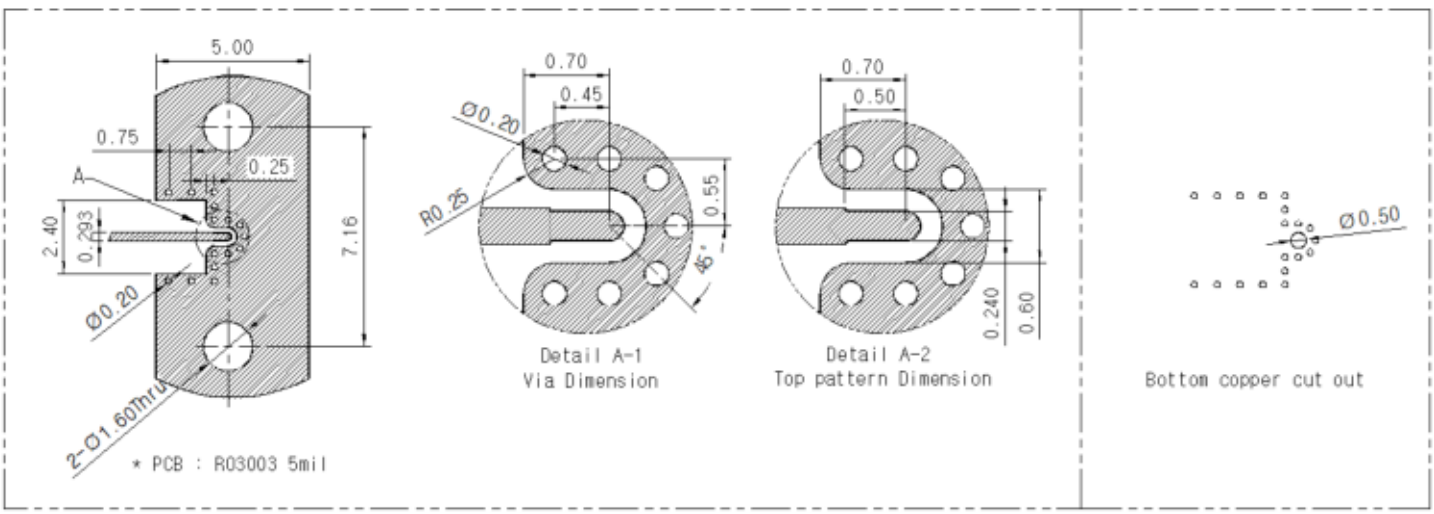
Unit : mm

Female type





<Recommended PCB pattern>



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 6.3	2021-09-13	Updated Test Result (Vertical Launch 1.85 mm)