

# 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

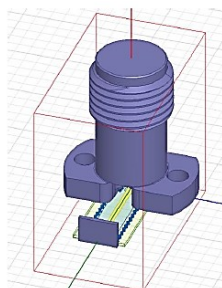
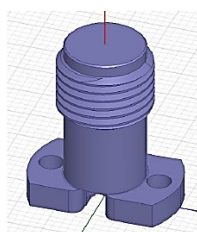
## ■ Application

- 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

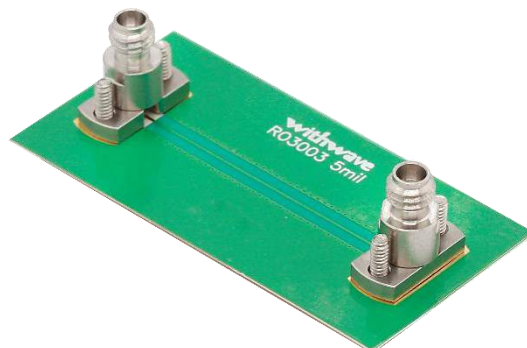
\* RoHS Compliant

### ■ Ordering Information (1.0 mm Connector)

#### Microstrip type



Application	Type	Part No.
Microstrip	Female	VC00FS002





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## ■ Accessories (Ground Block)

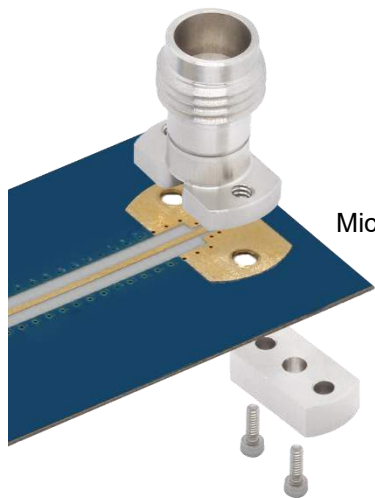
**Ground block** can be used on the backside of the *thin PCB* and It supports the stability of the thin PCB for mechanical stress(or distortion) and the solder point and components at the PCB against breaking. the contact issue is solved.



Ground Block

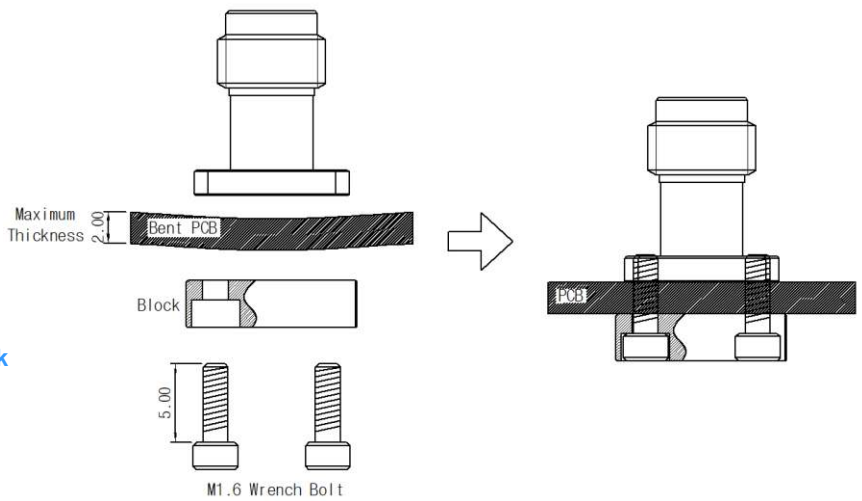
## ■ Advantage

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



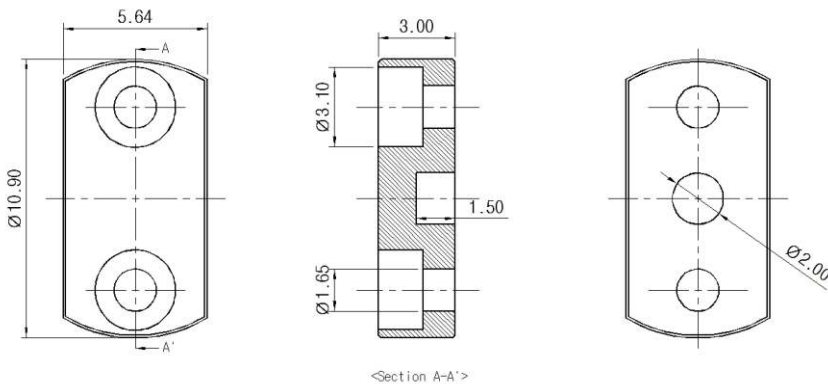
Microstrip Line

Ground Block



## ■ Drawing (Part No: WB0642F03)

Unit : mm





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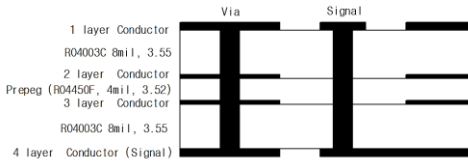
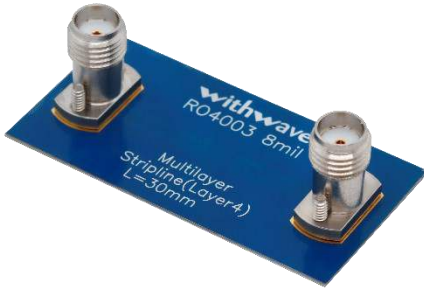
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## SMA Connector

### Test Result (Stripline type)

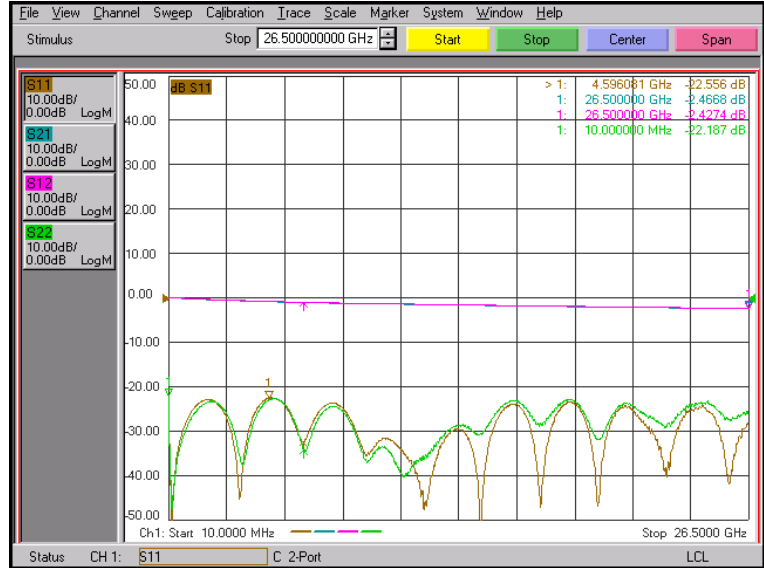
#### Female type

Part No. : VC06FS001



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

Freq. : 10 MHz to 26.5 GHz



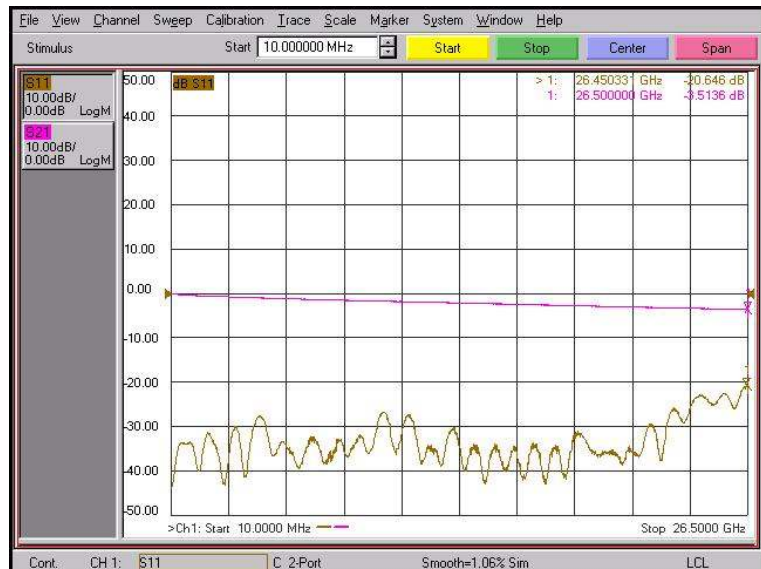
#### Male type

Part No. : VC06MS001



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

Freq. : 10 MHz to 26.5 GHz

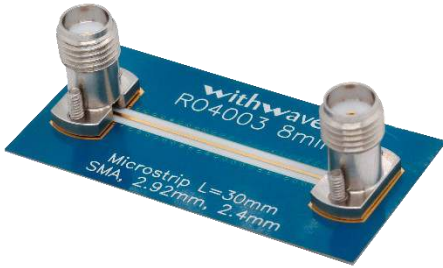


### SMA Connector

#### ■ Test Result (Microstrip type)

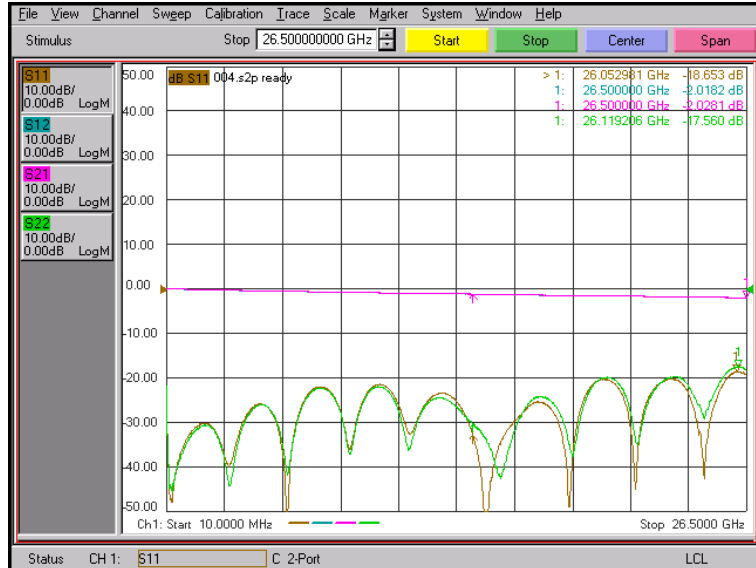
#### Female type

Part No. : VC06FS002



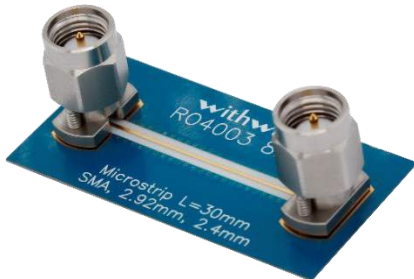
- Substrate : RO4003C(8 mil)
- Trace length : 60 mm (microstrip)

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

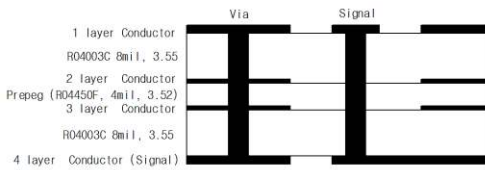


### 2.92 mm Connector

#### ■ Test Result (Stripline type)

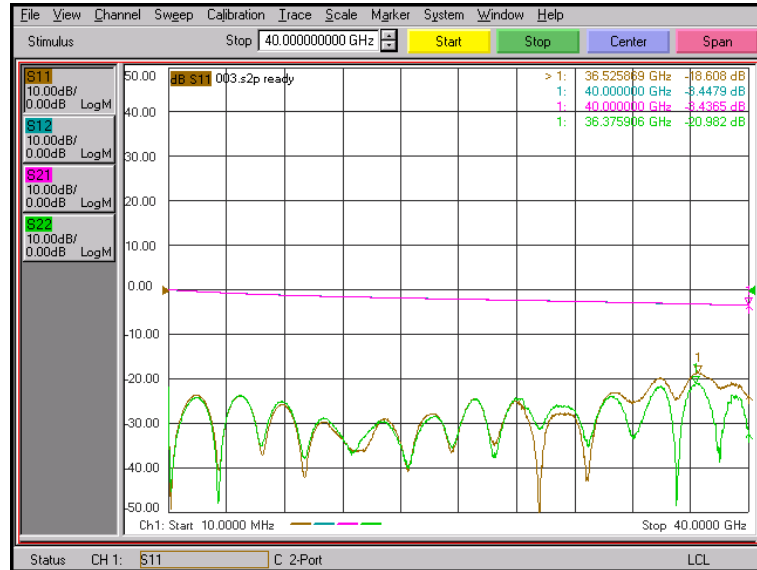
##### Female type

Part No. : VC03FS001



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

Freq. : 10 MHz to 40 GHz



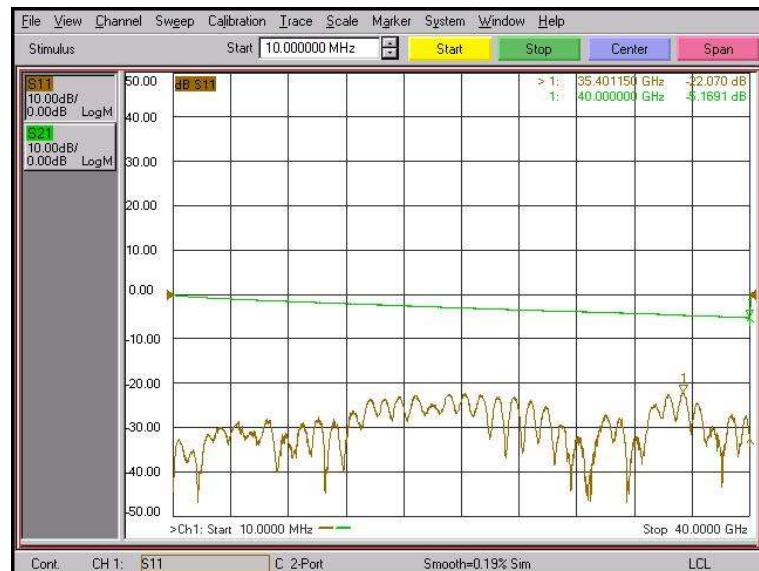
##### Male type

Part No. : VC03MS001



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

Freq. : 10 MHz to 40 GHz

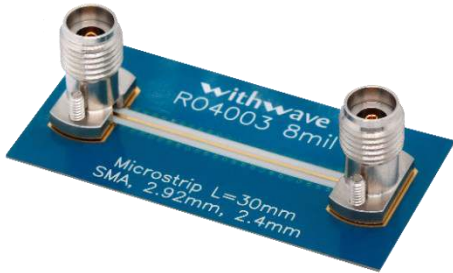


### 2.92 mm Connector

#### ■ Test Result (Microstrip type)

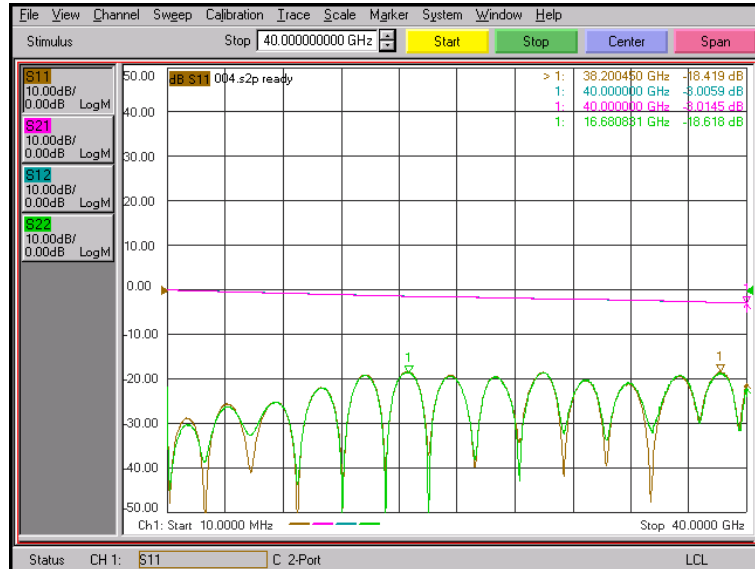
##### Female type

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



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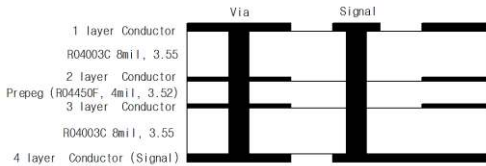
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## 2.4 mm Connector

### Test Result (Stripline)

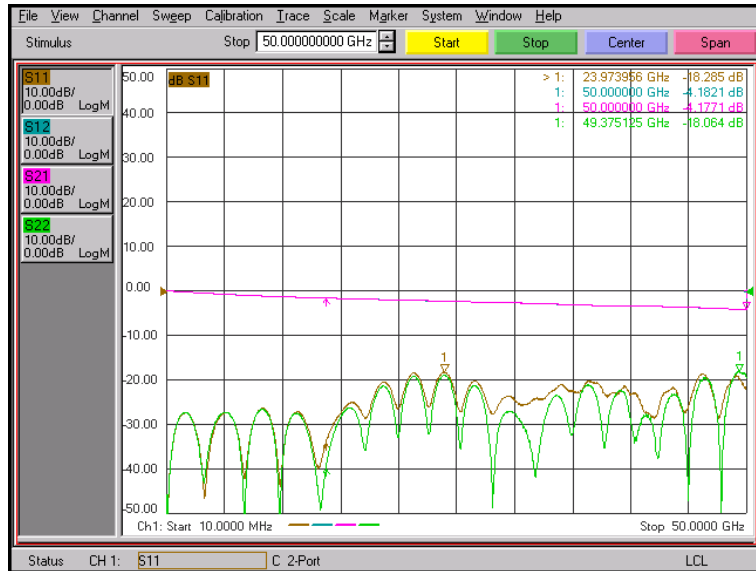
#### Female type

Part No. : VC02FS001



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

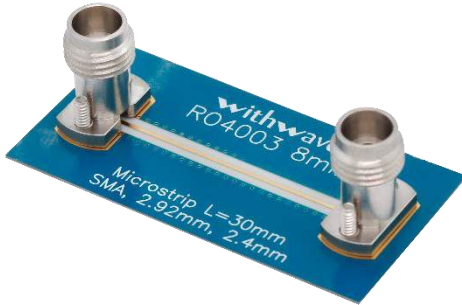


### 2.4 mm Connector

#### ■ Test Result (Microstrip type)

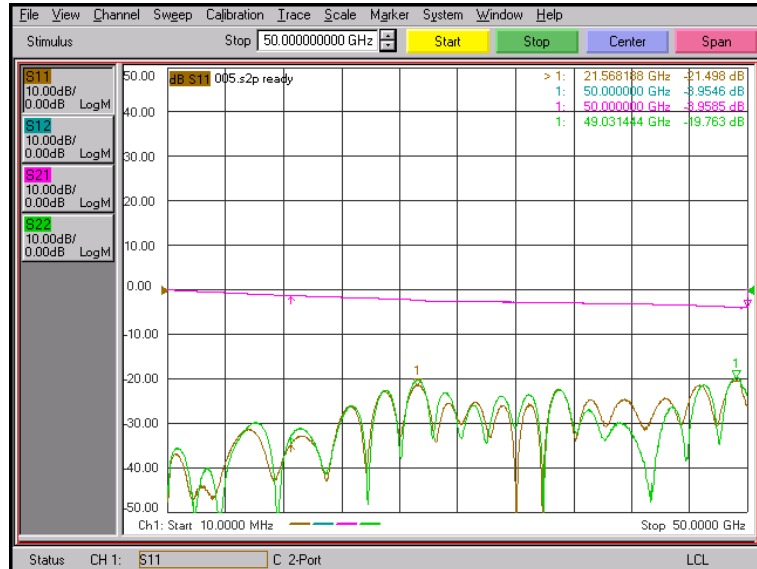
#### Female type

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

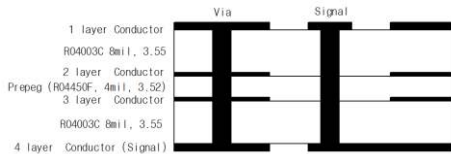
SMA, 2.92 mm, 2.4 mm, 1.85 mm & 1.0 mm

## 1.85 mm Connector

### Test Result (Stripline)

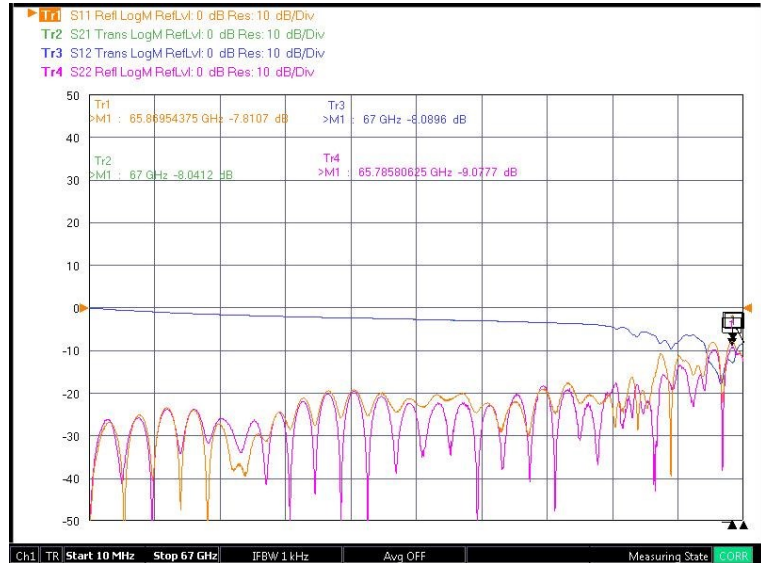
#### Female type

Part No. : VC01FS001



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

Freq. : 10 MHz to 67 GHz



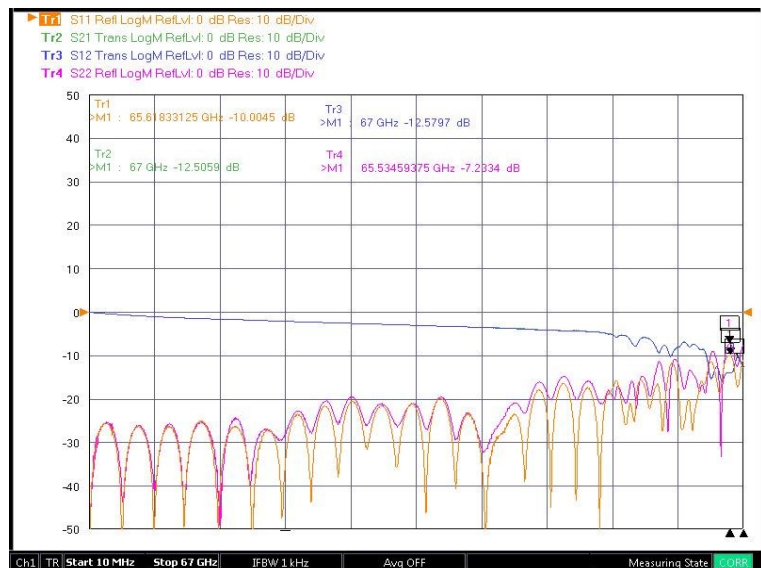
#### Male type

Part No. : VC01MS001



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

Freq. : 10 MHz to 67 GHz



# Vertical Launch Connectors

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

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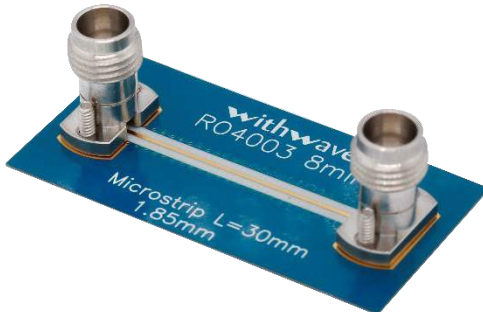
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## 1.85 mm Connector

### Test Result (Microstrip type)

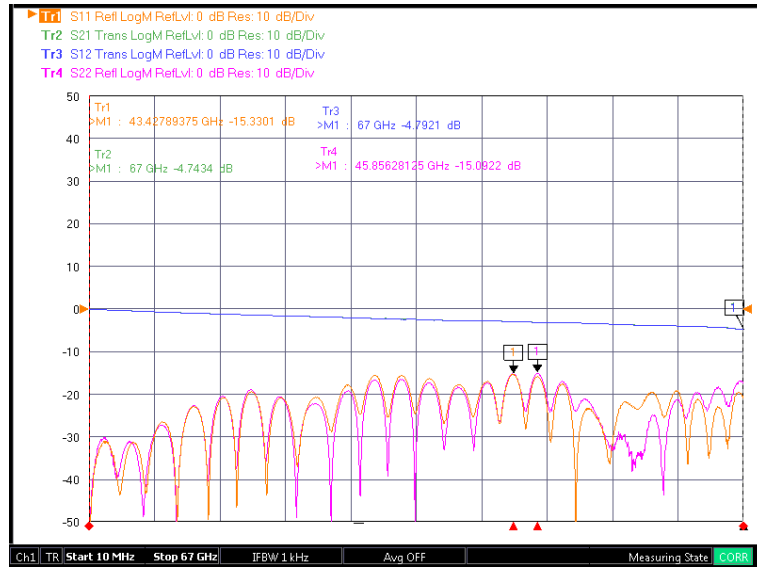
#### Female type

Part No. : VC01FS002



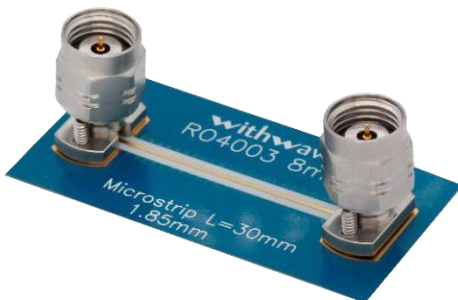
- Substrate : RO4003C(8 mil)
- Trace length : 30 mm (microstrip)

Freq. : 10 MHz to 67 GHz



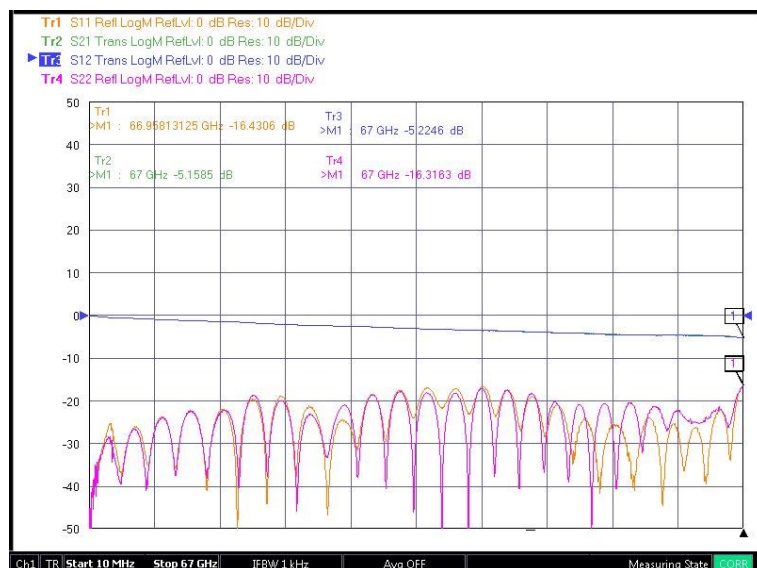
#### Male type

Part No. : VC01MS002



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

Freq. : 10 MHz to 67 GHz





### 1.0 mm Connector

#### ■ Test Result (Microstrip type)

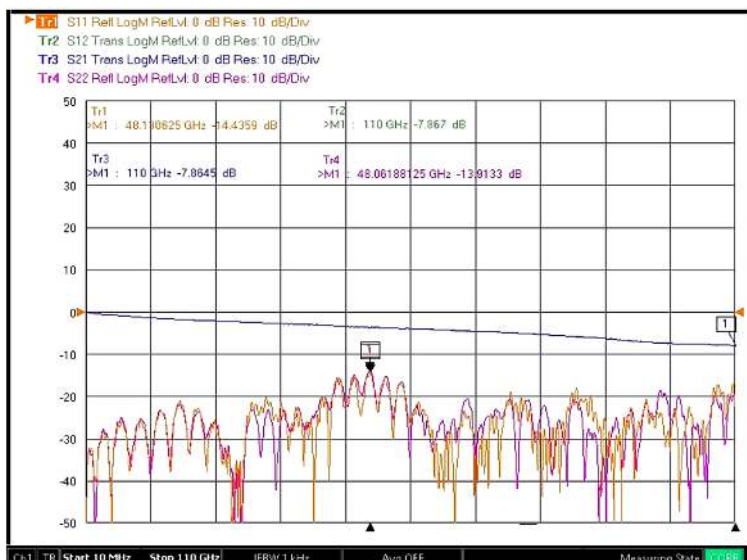
#### Female type

Part No. : VC00FS002



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

Freq. : 10 MHz to 110 GHz



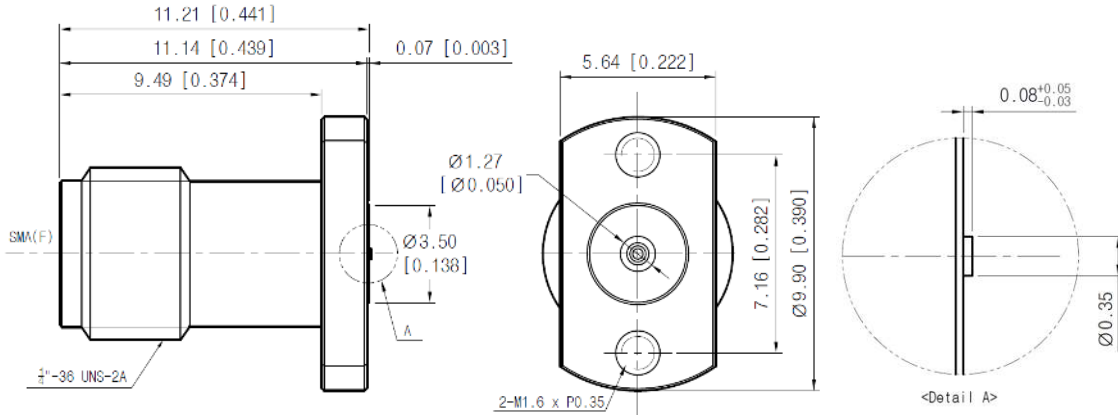
### SMA Connector

■ Drawing

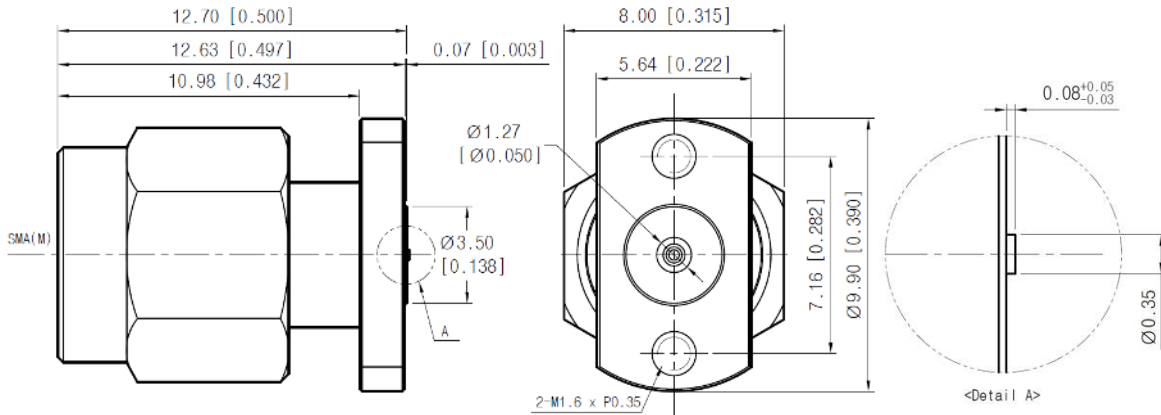
#### Stripline type

Unit : mm

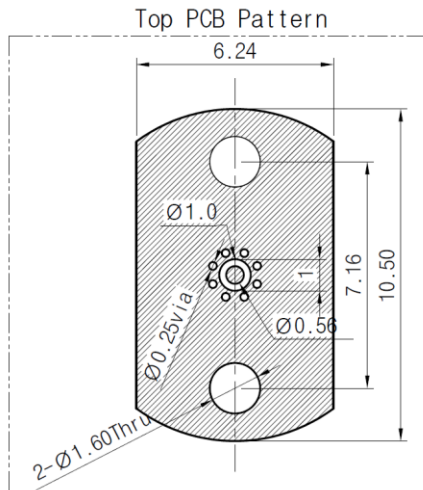
#### Female type



#### Male type



<Recommended PCB pattern>



\* PCB : R04003C 8mil

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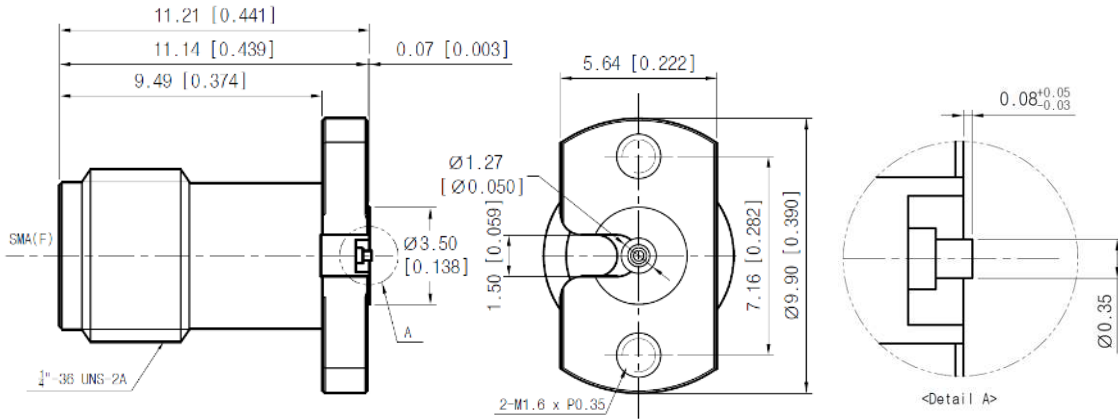
## SMA Connector

■ Drawing

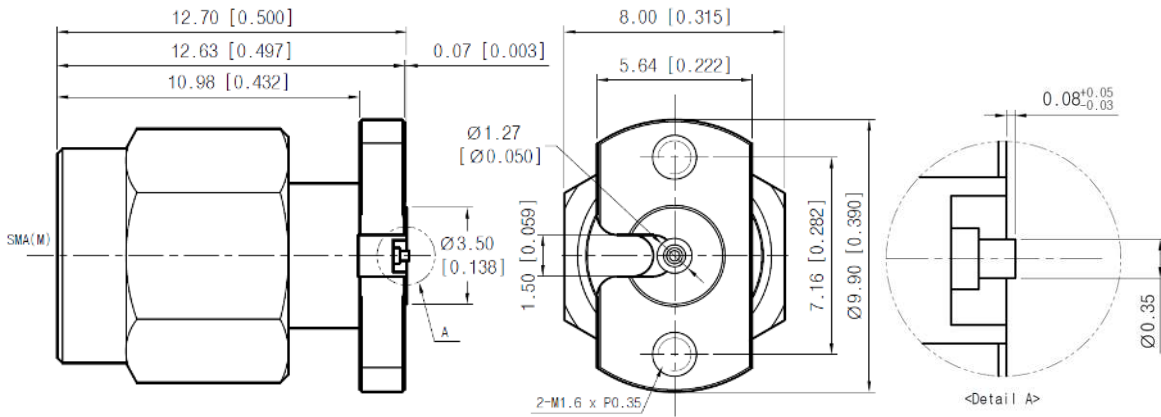
### Microstrip type

Unit : mm

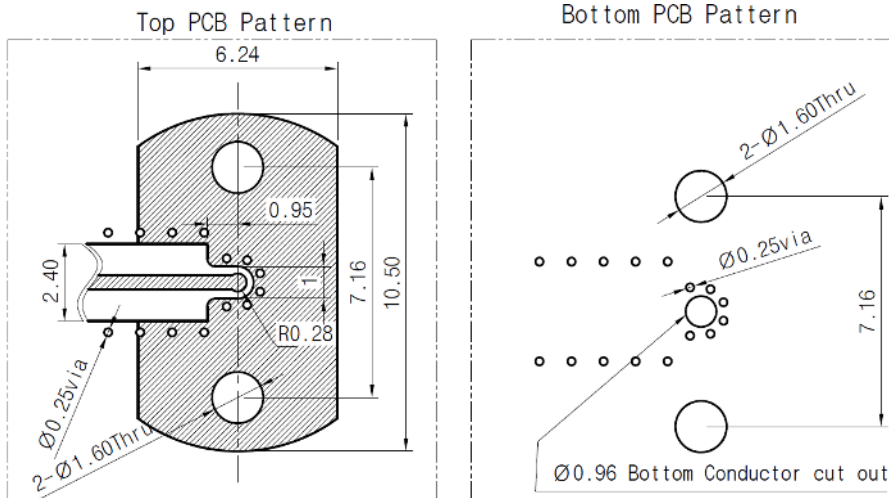
#### Female type



#### Male type



<Recommended PCB pattern>



\* PCB : R04003C 8mil

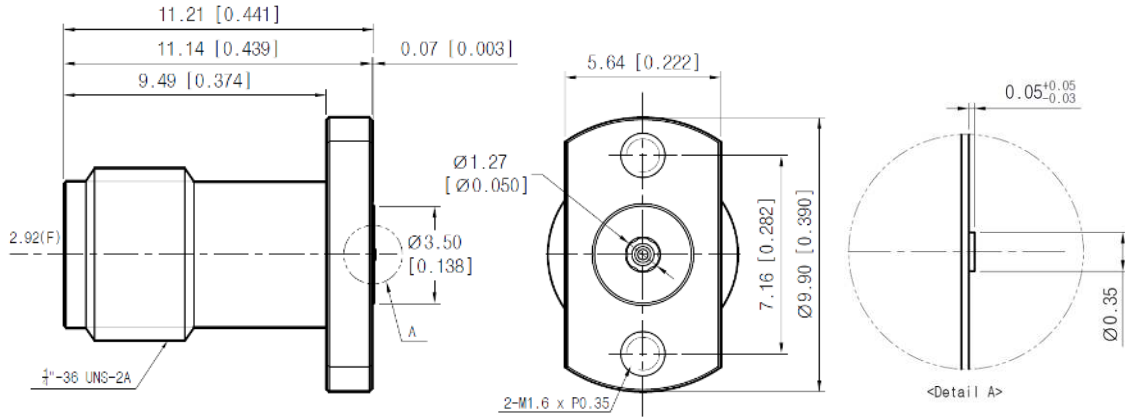
### 2.92 mm Connector

■ Drawing

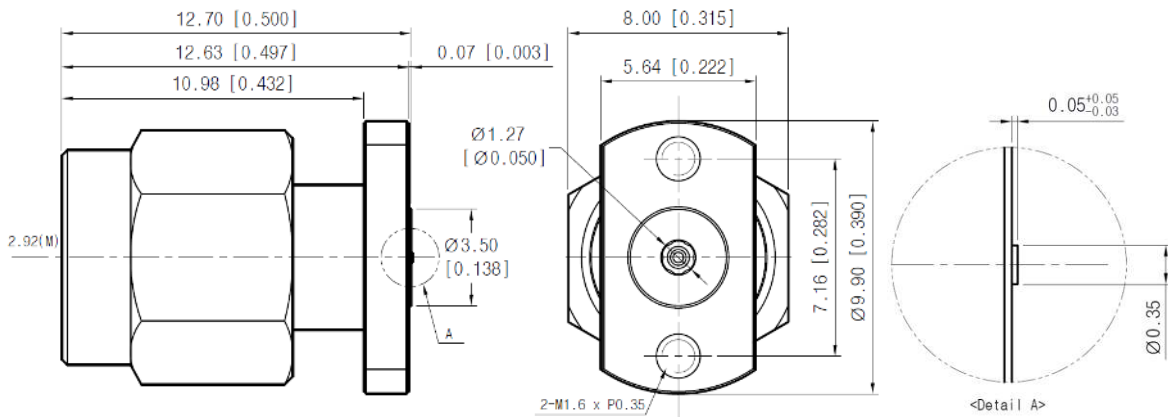
#### Stripline type

Unit : mm

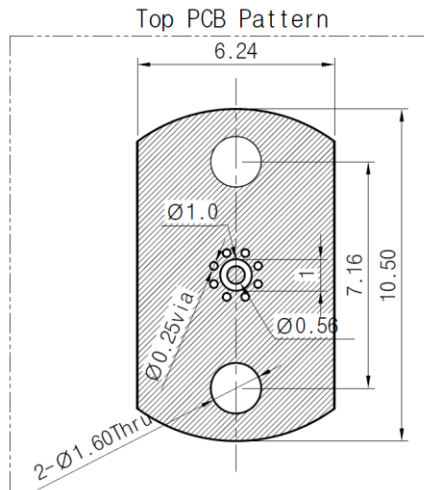
#### Female type



#### Male type



<Recommended PCB pattern>



\* PCB : R04003C 8mil

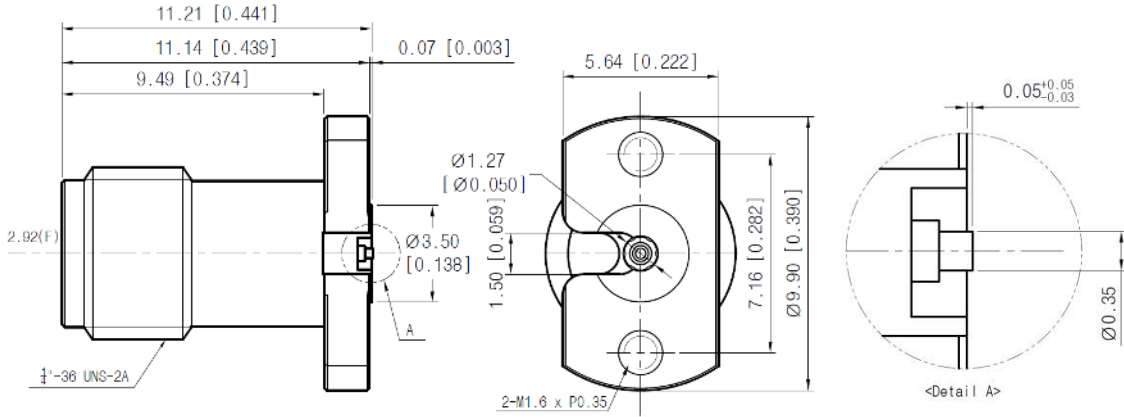
## 2.92 mm Connector

■ Drawing

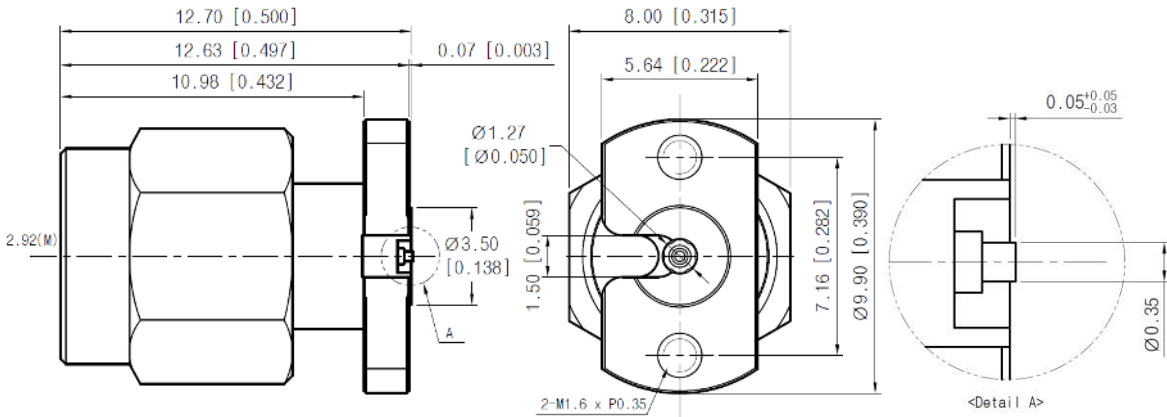
### Microstrip type

Unit : mm

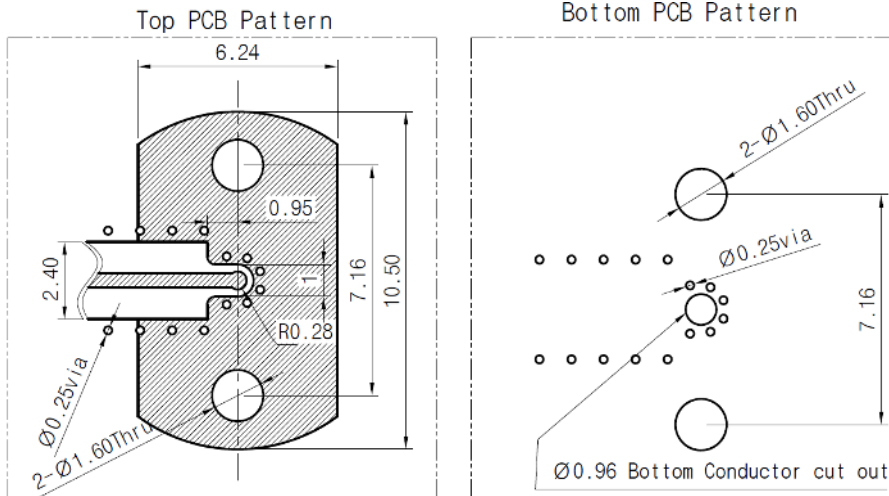
#### Female type



#### Male type



<Recommended PCB pattern>



\* PCB : R04003C 8mil

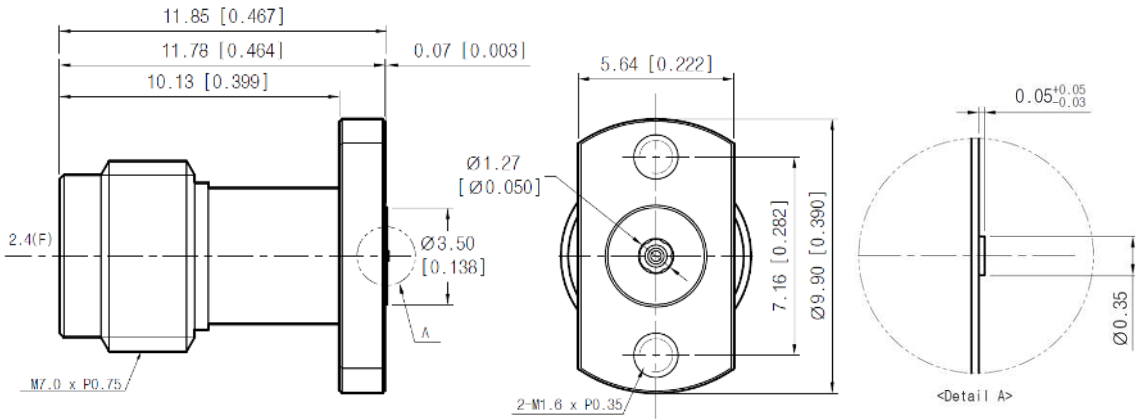
### 2.4 mm Connector

■ Drawing

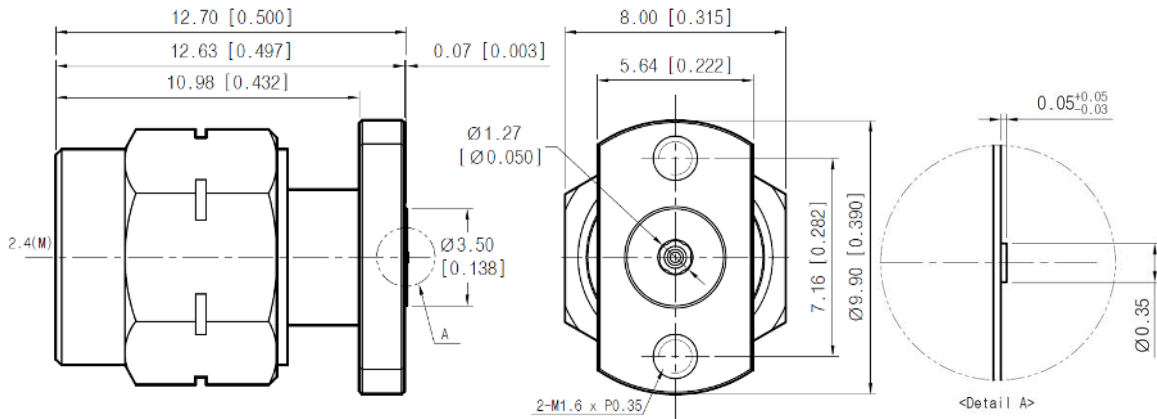
#### Stripline type

Unit : mm

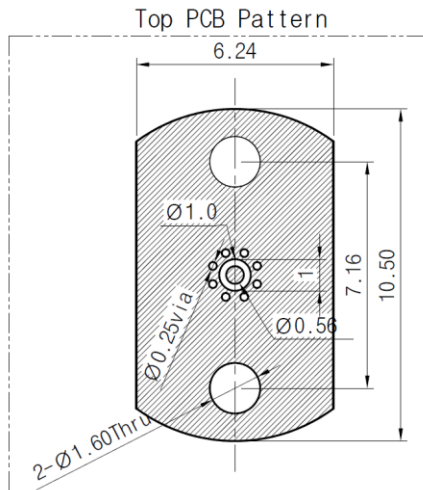
#### Female type



#### Male type



<Recommended PCB pattern>



\* PCB : R04003C 8mil



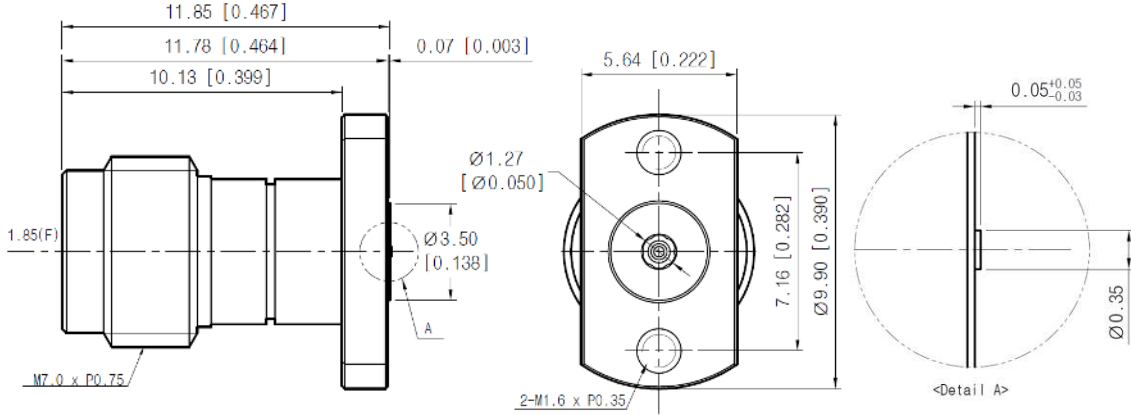
### 1.85 mm Connector

■ Drawing

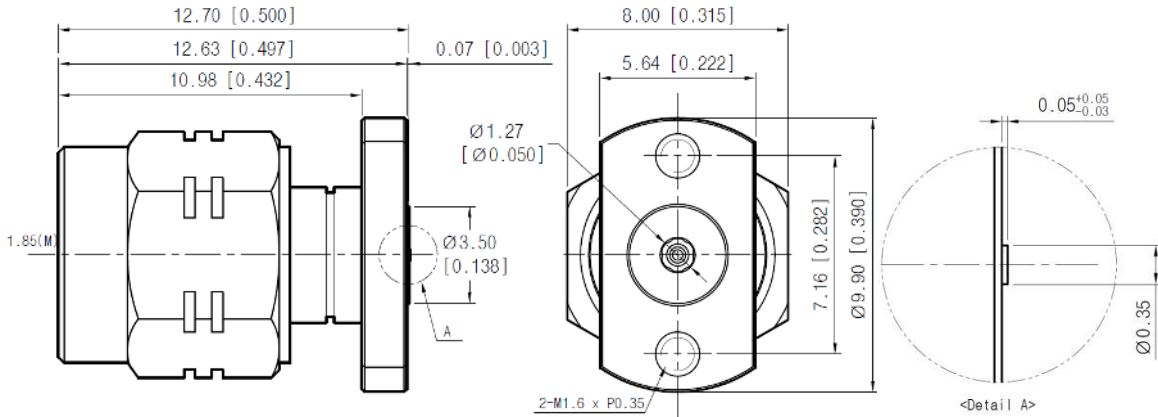
#### Stripline type

Unit : mm

#### Female type



#### Male type





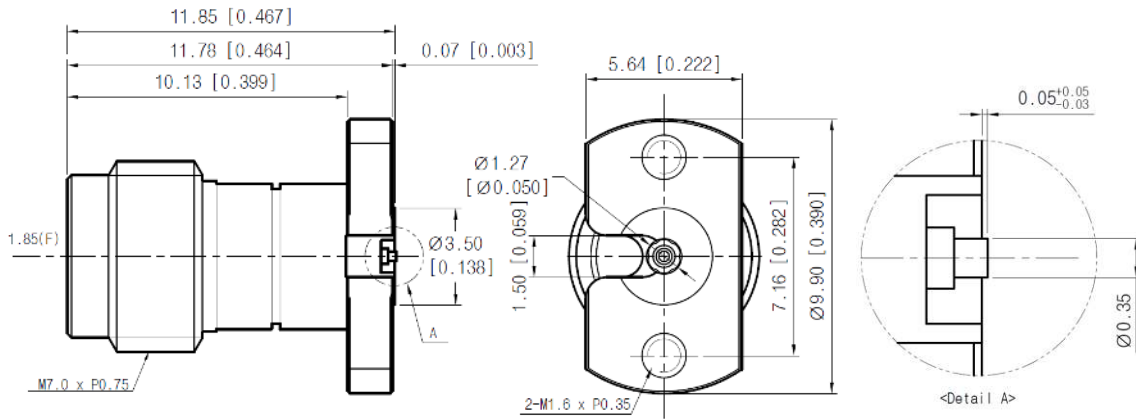
### 1.85 mm Connector

■ Drawing

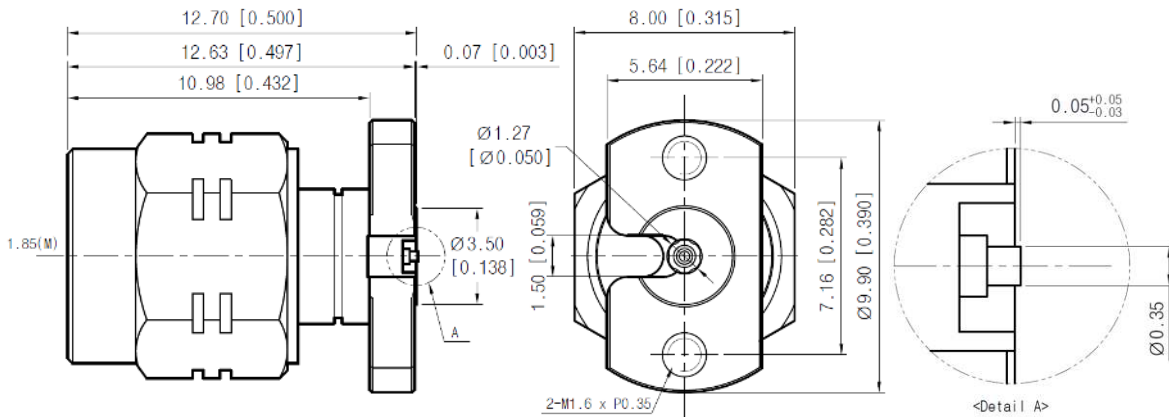
#### Microstrip type

Unit : mm

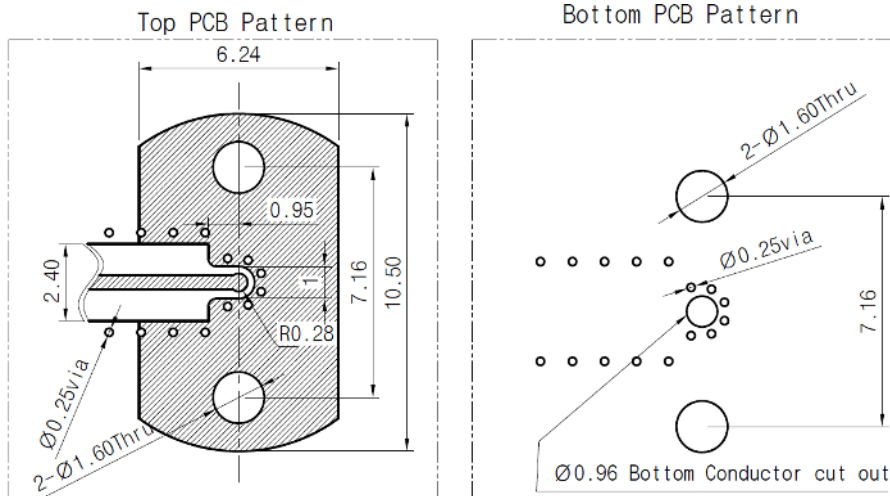
#### Female type



#### Male type



<Recommended PCB pattern>



\* PCB : R04003C 8mil

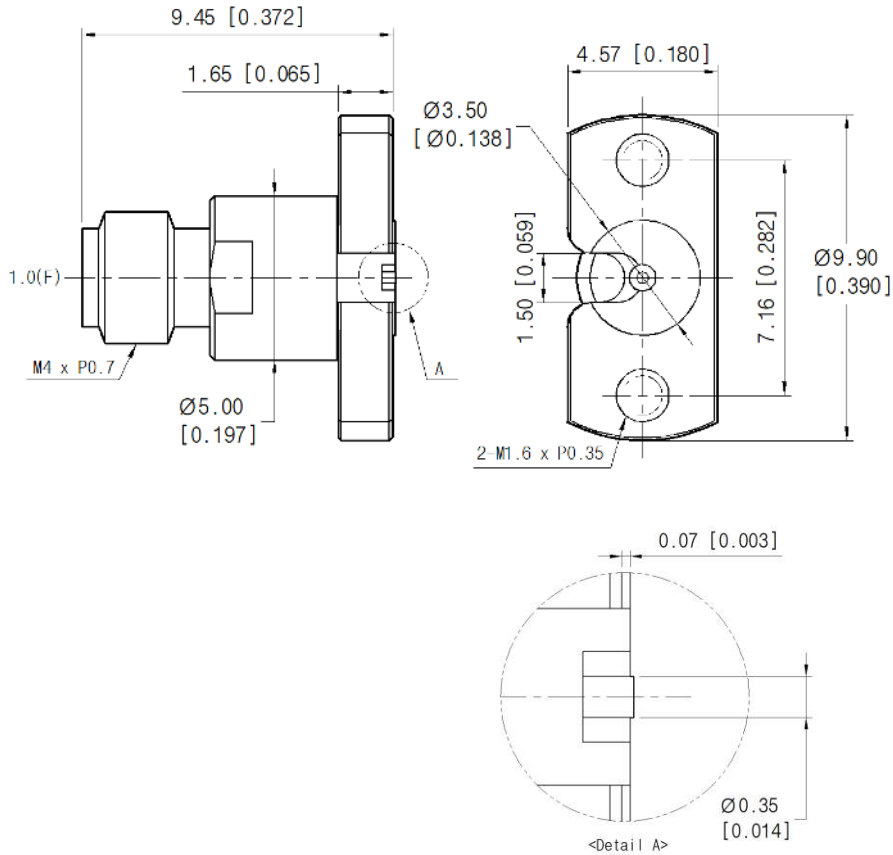
### 1.0 mm Connector

■ Drawing

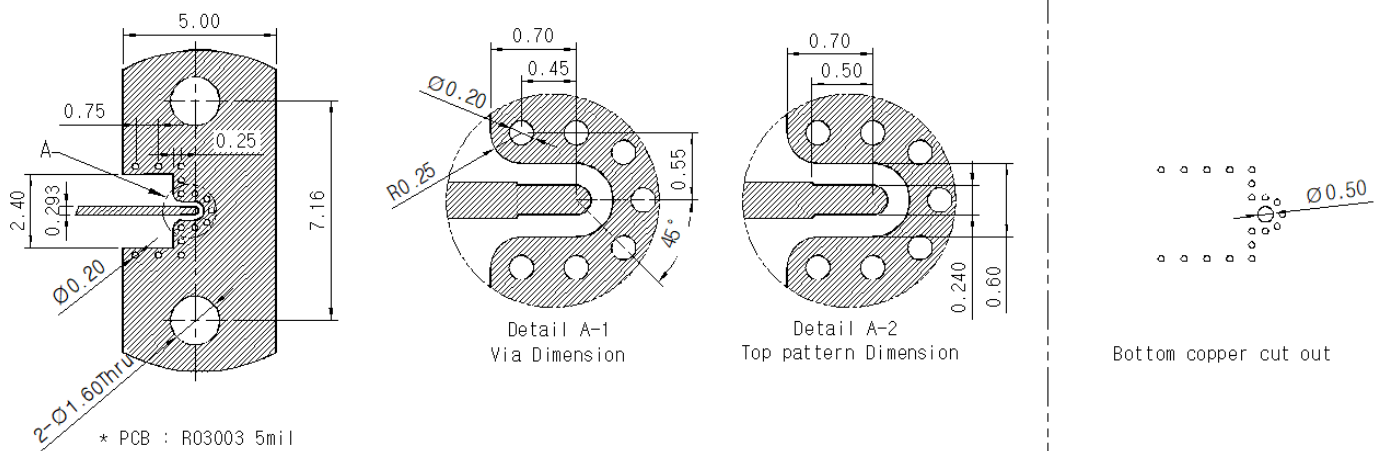
#### Microstrip type

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 7.0	2022-08-10	Updated Test Results
Ver 8.0	2023-04-20	Changed new photos and updated Test Results