## WS418NKU  18 GHz SP4T RF Switch module

**withwave**
*Versatile RF & MW Test Solutions*

*WS418NKU* is an absorptive **SP4T RF switch module** that supports a frequency range from 10 kHz to 18 GHz. It delivers high isolation, low insertion loss and fast switching time, making this device ideal for RF signal routing in wireless infrastructure and wireless applications up to 18 GHz.

External connectors include 2.92mm-vertical launch connector for all RF port.

*WS418NKU* is powered and controlled through *USB3.0 connector.*



### ■ Features

- CMOS SOI technology enhanced
  - Broadband 10 kHz~18 GHz
  - Fast settling time
- High power handling of 32 dBm THRU path
- Insertion loss
  - 5.5 dB @ 18 GHz
- High isolation
  - 28 dB up to 18 GHz

### ■ Applications

- Test & Measurement
- 5G Wireless Communication
- Commercial Communication
- RF signal routing

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220601_Ver1.0

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## ■ Electrical Specifications

| Parameter | Path | Condition | Min | Typ | Max | Unit |
|---|---|---|---|---|---|---|
| Operation Frequency | | | 10 kHz | | 18 GHz | |
| Insertion loss | All path | 10 kHz ~ 18 GHz | | 5.5 | | dB |
| Return loss (common port) | All path | 10 kHz ~ 18 GHz | 7.0 | 7.7 | | dB |
| Return loss (active port) | All path | 10 kHz ~ 18 GHz | 8.5 | 9.7 | | dB |
| Return loss (isolated port) | All path | 10 kHz ~ 18 GHz | 8.5 | 9.5 | | dB |
| Isolation | All path | 10 kHz ~ 18 GHz | 26.0 | 28.0 | | dB |
| RF Input Power | All path | | | 32.0 | | dBm |
| 0.1 dB Power Compression | All path | f = 26 MHz to 18 GHz | | 33.0 | | dBm |
| Input IP3 | All path | 10 MHz ~ 18 GHz | | 59.0 | | dBm |
| Current consumption | | USB3.0 | | 14.0 | | mA |
| Power Supply | | USB3.0 | | 5.0 | | V |
| Baud Rate | | USB COM port | | 115200 | | bps |
| RF Connectors | | 2.92mm-female | | | | |
| ESD HBM | | RF port USB port | | 2.5k 16k | | V |
| Operating Temperature | | | -40 | | 85 | ℃ |

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ISO 9001

RoHS Compliant

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■ **Typical Performance Data**

## < Insertion Loss >



- dB(IL_PathRF01)
- dB(IL_PathRF02)
- dB(IL_PathRF03)
- dB(IL_PathRF04)

## < Common Port Return Loss >



- dB(RL_CommonPort_PathRF01)
- dB(RL_CommonPort_PathRF02)
- dB(RL_CommonPort_PathRF03)
- dB(RL_CommonPort_PathRF04)

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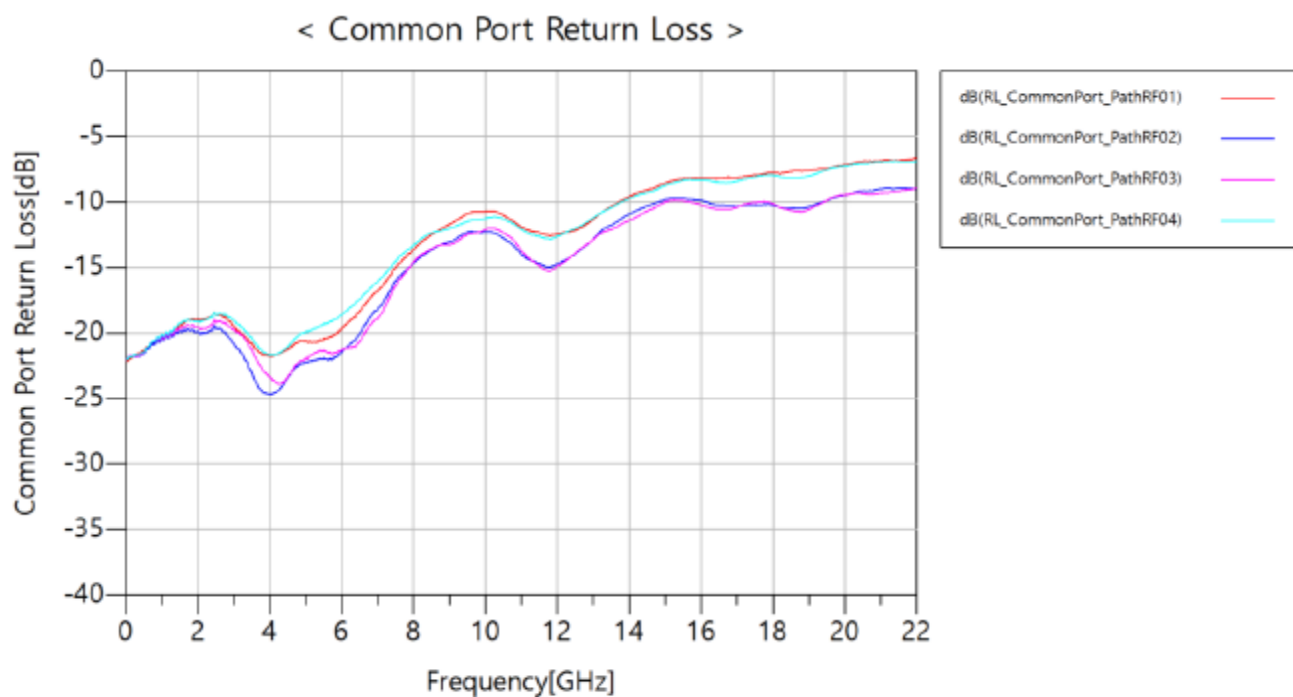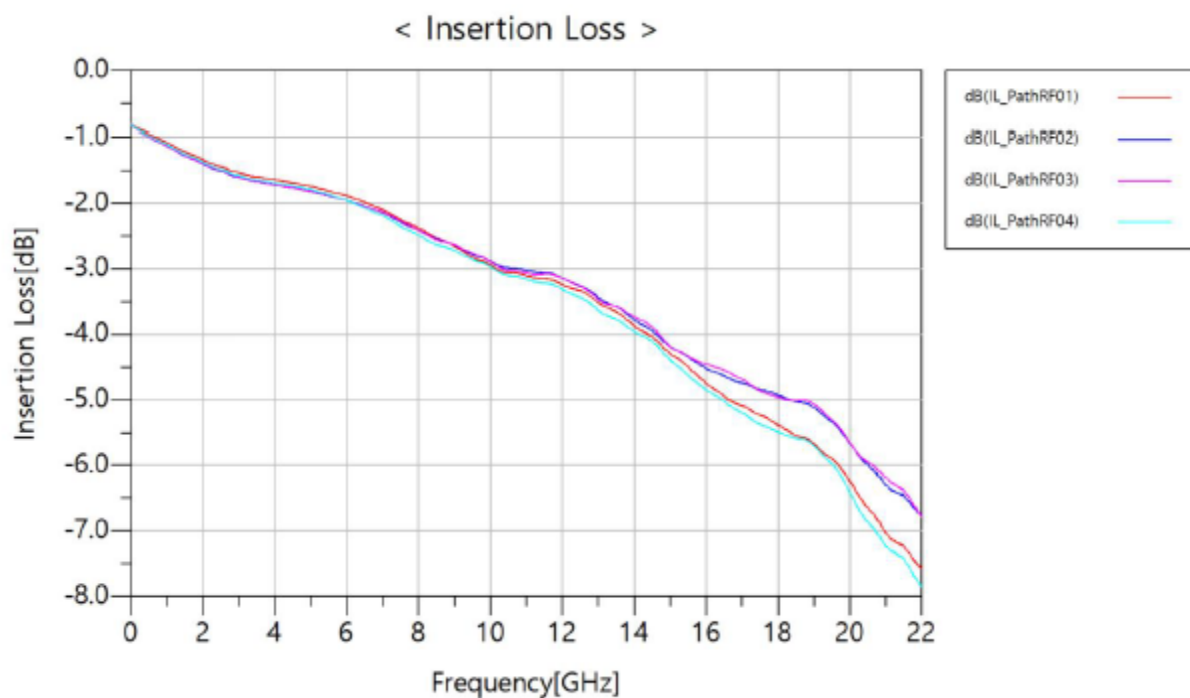
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■ *Typical Performance Data*

< Active Port Return Loss >



dB(RL_ActivePort_PathRF01)
dB(RL_ActivePort_PathRF02)
dB(RL_ActivePort_PathRF03)
dB(RL_ActivePort_PathRF04)
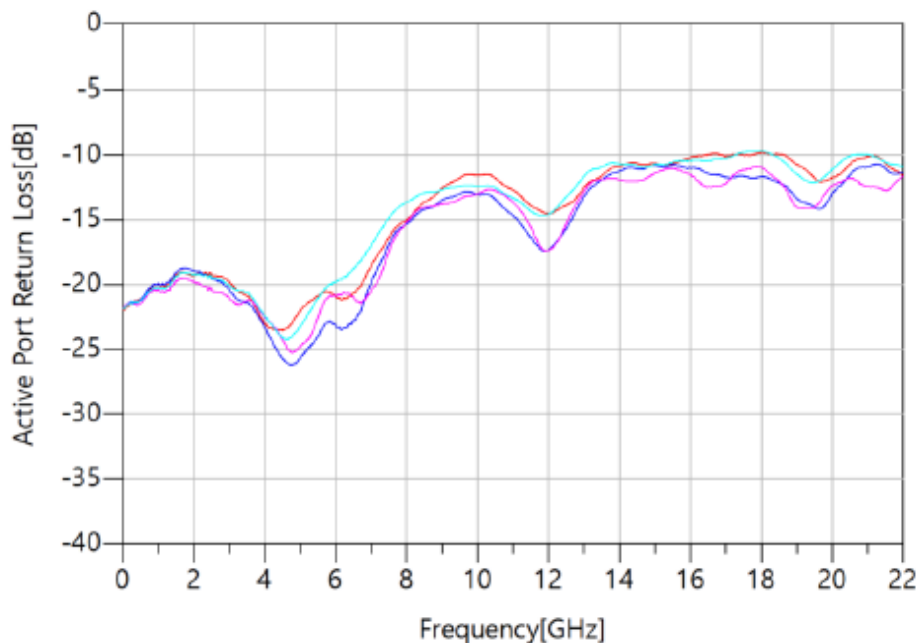
< Isolated Port Return Loss >
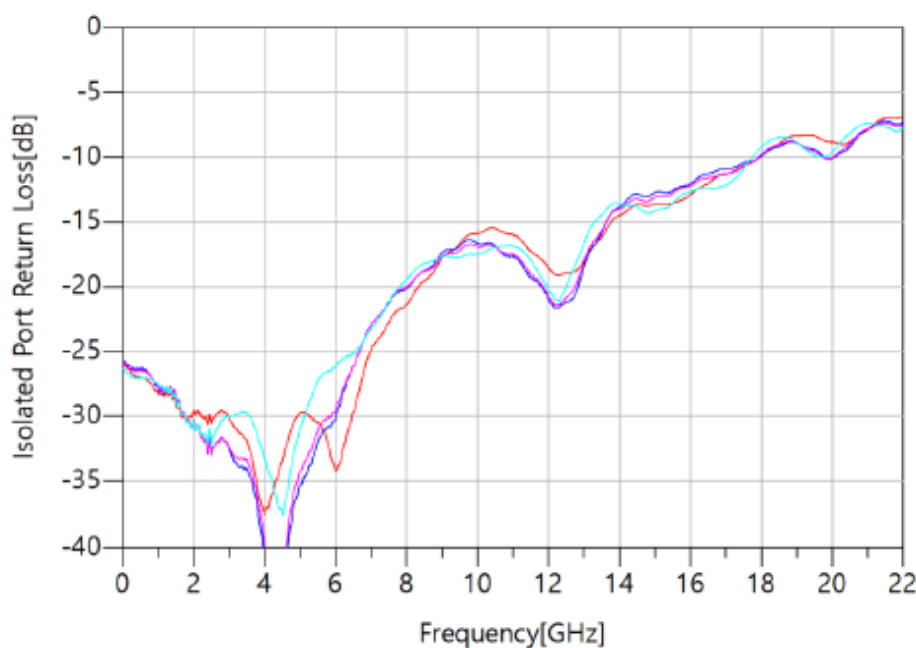


dB(RL_Isolated_Port01)
dB(RL_Isolated_Port02)
dB(RL_Isolated_Port03)
dB(RL_Isolated_Port04)

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■ *Typical Performance Data*



< RFC to RFx Isolation @ PathRF01 >

dB(Isolation_RFC_RF02_PathRF01)
dB(Isolation_RFC_RF03_PathRF01)
dB(Isolation_RFC_RF04_PathRF01)
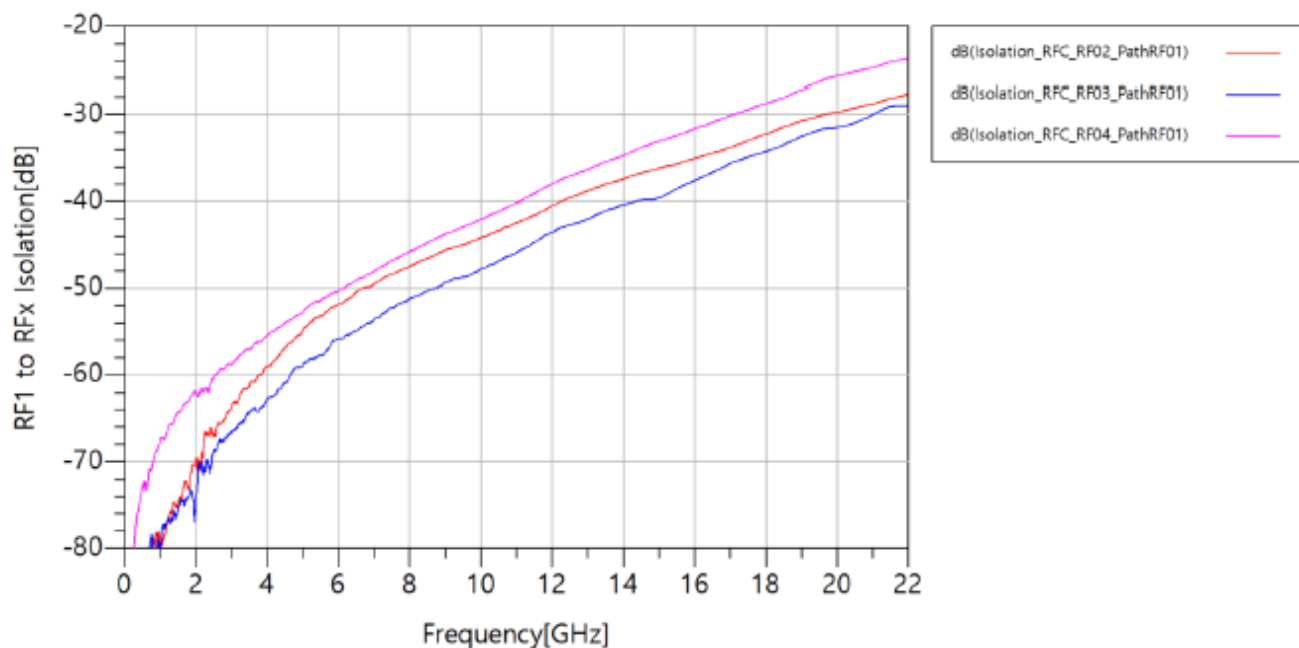


< RFC to RF01 Isolation @ PathRFx>

dB(Isolation_RFC_RF01_PathRF02)
dB(Isolation_RFC_RF01_PathRF03)
dB(Isolation_RFC_RF01_PathRF04)

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### ■ Dimension

Unit : mm
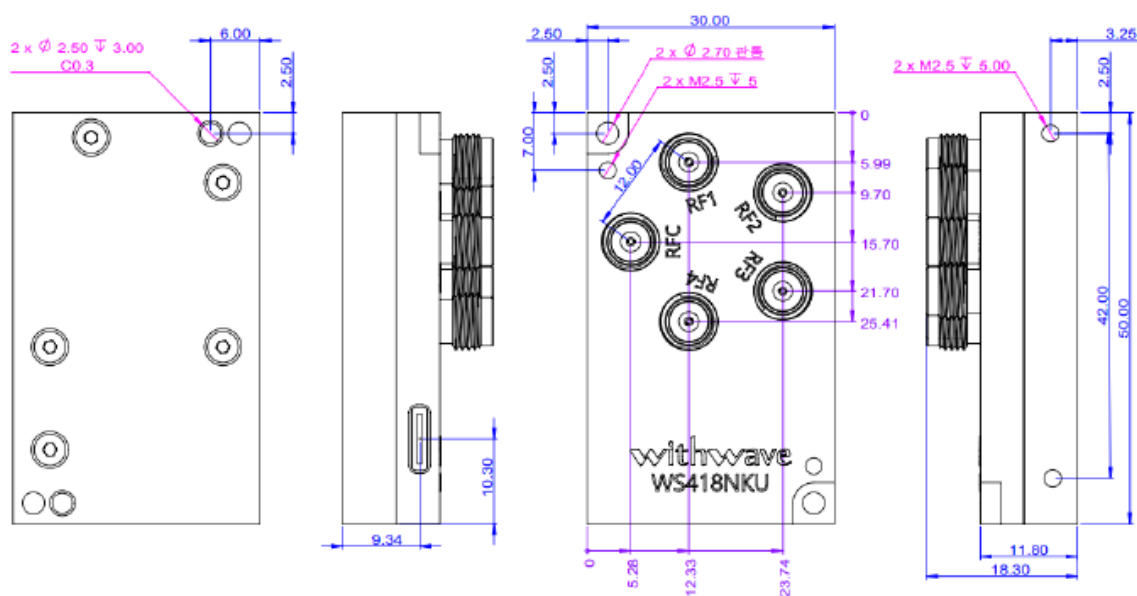


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## ■ Control Description

| Command Format | COM port configuration |
|---|---|
| All commands must end with a semicolon. All commands are capitalized only. Port number should be 2-digit decimal. | Baud Rate :115200<br>Data bits : 8<br>Parity : None<br>Stop bits : 1<br>Flow Type :None |

## ■ Command Specification

| Index | Command | Description | Return | Example |
|---|---|---|---|---|
| 1 | *IDN?; | Query product information | Product PN ,Manufacturer , SW version | WS418NKU, Withwave co, ltd., V1.0 |
| 2 | RESET; | Reset the product | RESET; | RESET; |
| 3 | Pxx; | Switching to RFC to RFxx Port number should be 2-digit decimal | Pxx; | P02; |
| 4 | OFF; | All off state | OFF; | OFF; |

## ■ Error Code

| Index | Return | Description |
|---|---|---|
| 1 | E1; | Semicolon missing |
| 2 | E2; | Incorrect commands |

■ *Revision History*

| Revision | Date | Changes |
|----------|------|---------|
| Ver 1.0 | 2022-06-02 | Initial work |