

WS1244NKUD is an absorptive SP12T RF switch module that supports a frequency range from 10 MHz to 44 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 44 GHz. External connectors include 2.4mm-wave launch connector for RFC port and SMPM connectors for RFx port. **WS1244NKUD** is powered and controlled by using USB type-C connector.



■ Features

- CMOS SOI technology enhanced
 - Broadband 10MHz~44GHz
 - Fast settling time
- High power handling of 24 dBm THRU path
- Insertion loss
 - 8.0dB @ 28GHz
 - 10.8 dB @ 44GHz
- High isolation
 - 40 dB up to 44GHz

■ Applications

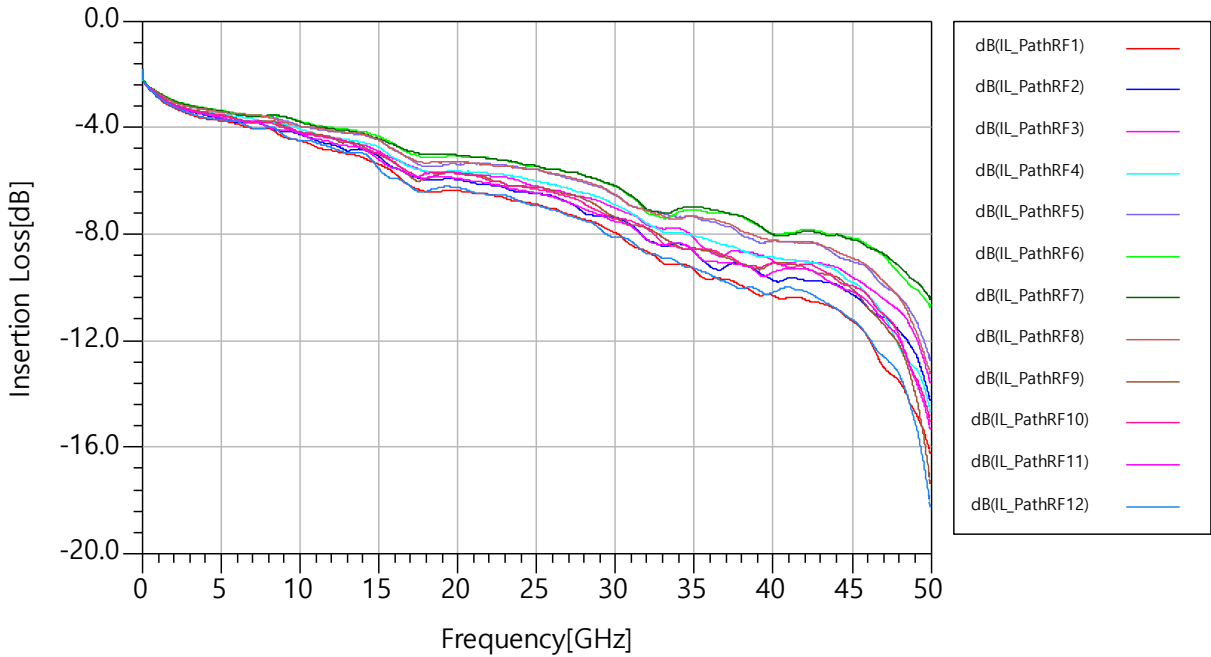
- Test & Measurement
- 5G Wireless Communication
- Commercial Communication
- RF signal routing

Electrical Specifications

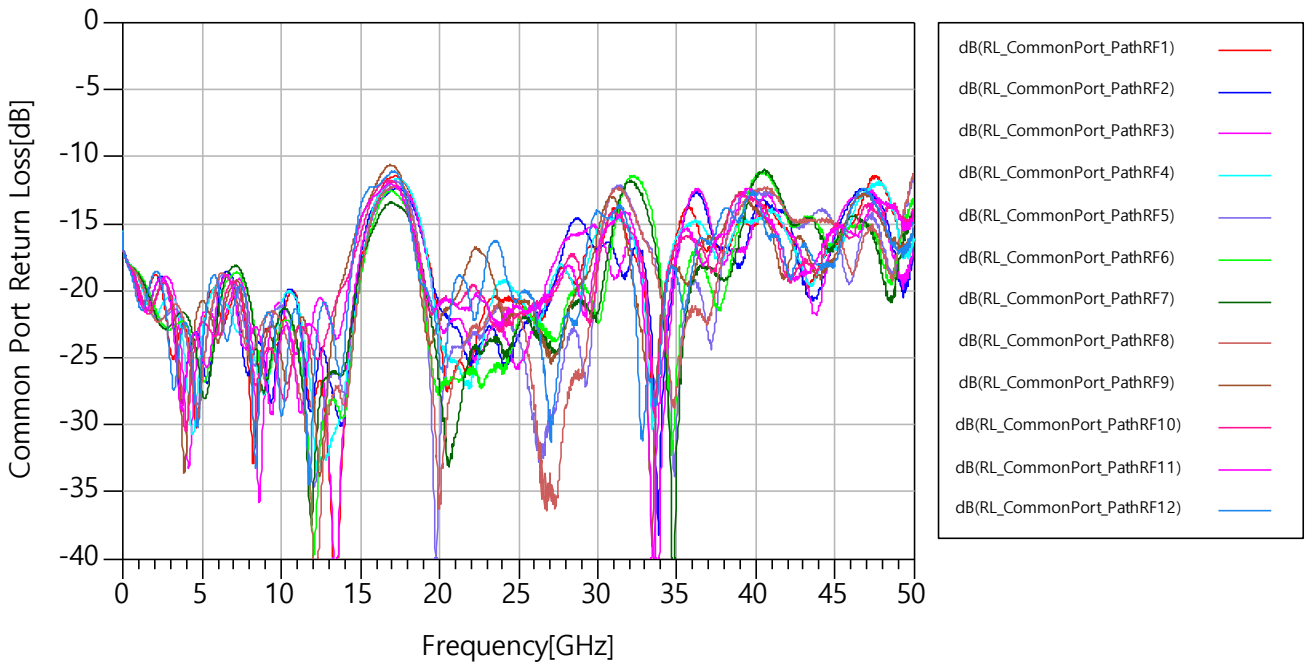
Parameter	Path	Condition	Min	Typ	Max	Unit
Operation Frequency			10 MHz		44 GHz	
Insertion loss	RFC-RFx	10 MHz ~ 28 GHz 28 GHz ~ 44 GHz		8.0 10.8		dB
Return loss (common port)	RFC-RFx	10 MHz ~ 44 GHz		10		dB
Return loss (active port)	RFC-RFx	10 MHz ~ 44 GHz		10		dB
Return loss (isolated port)	RFx	10 MHz ~ 44 GHz		13		dB
Isolation	RFC-RFx	10 MHz ~ 28 GHz 28 GHz ~ 44 GHz		45 40		dB
RF Input Power	RFC-RFx			24		dBm
0.1 dB Power Compression	RFC-RFx	f = 500 MHz to 40 GHz		26		dBm
Input IP3	RFC	Two-tone input power = 15 dBm f = 500 MHz to 40 GHz, $\Delta f = 1$ MHz		47		dBm
Switching Time		COM port control time @Window10		200		us
Current consumption		USB type-C		19		mA
Power Supply		USB type-C		5.0		V
Baud Rate		USB COM port		115200		bps
RF Connectors		RFC: 2.4mm-female RFx: SMPM male				
ESD HBM		RF port USB port		375 16k		V
Operating Temperature			-40		105	°C

■ **Typical Performance Data**

< Insertion Loss >

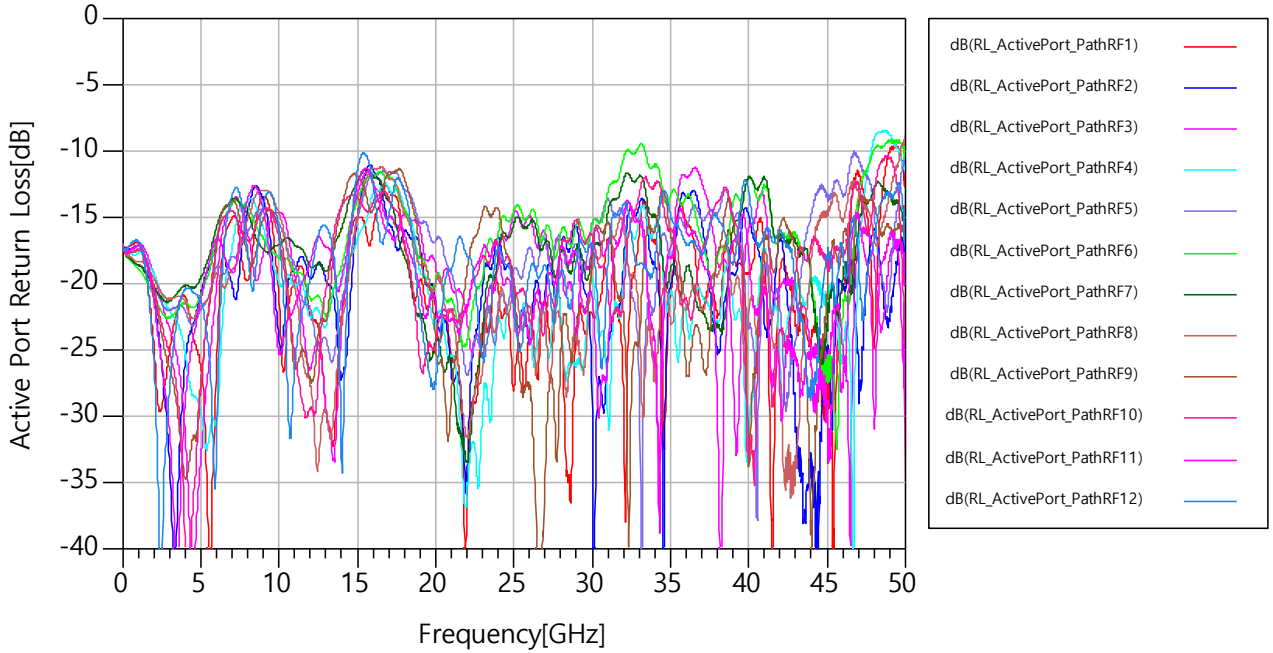


< Common Port Return Loss >

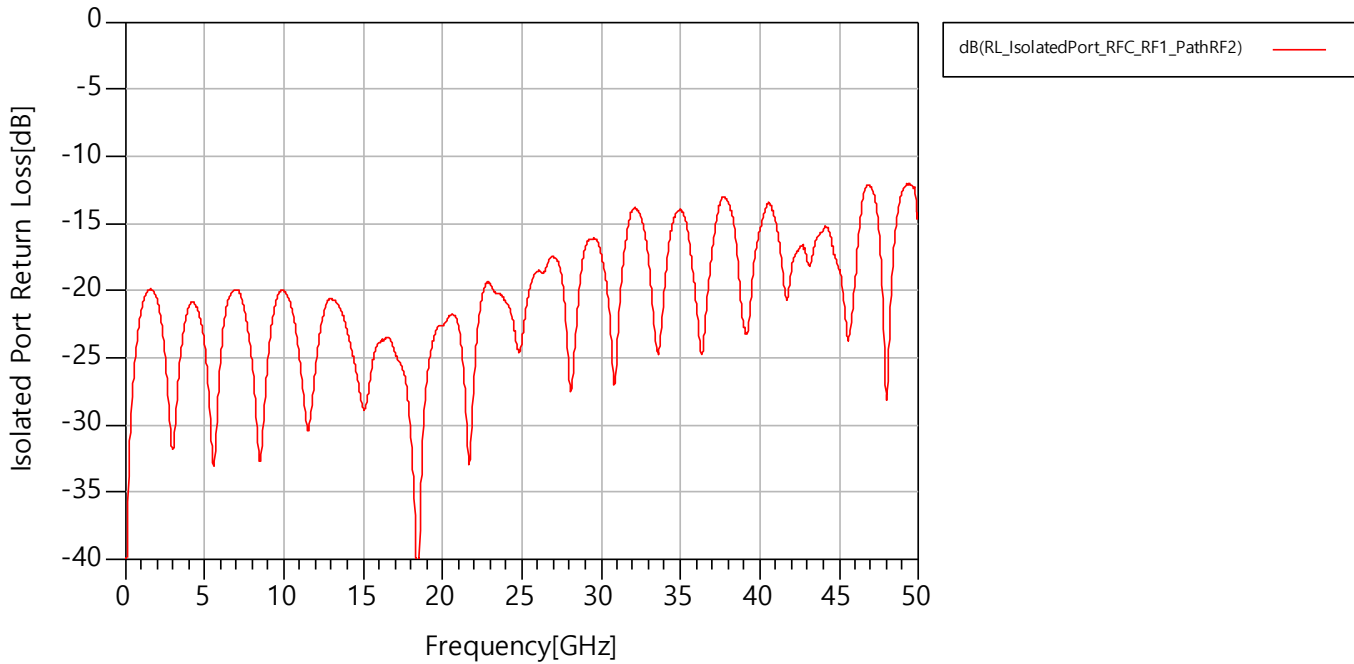


■ Typical Performance Data

< Active Port Return Loss >

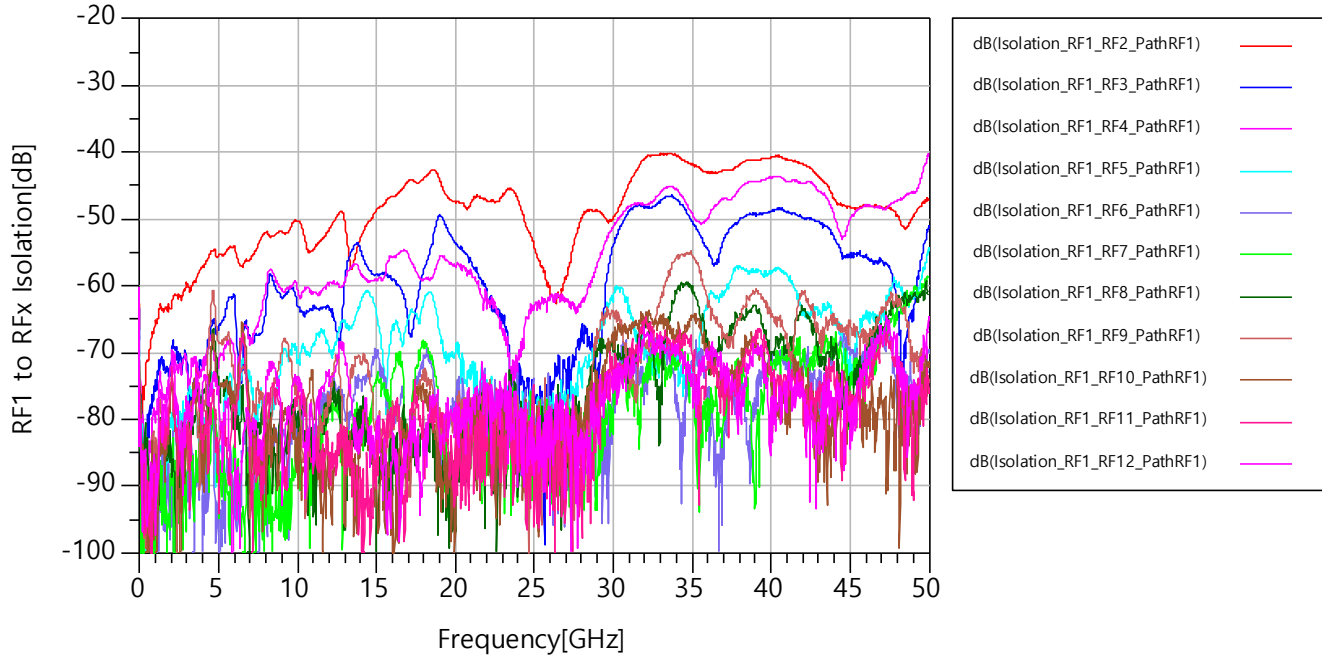


< Isolated Port Return Loss >

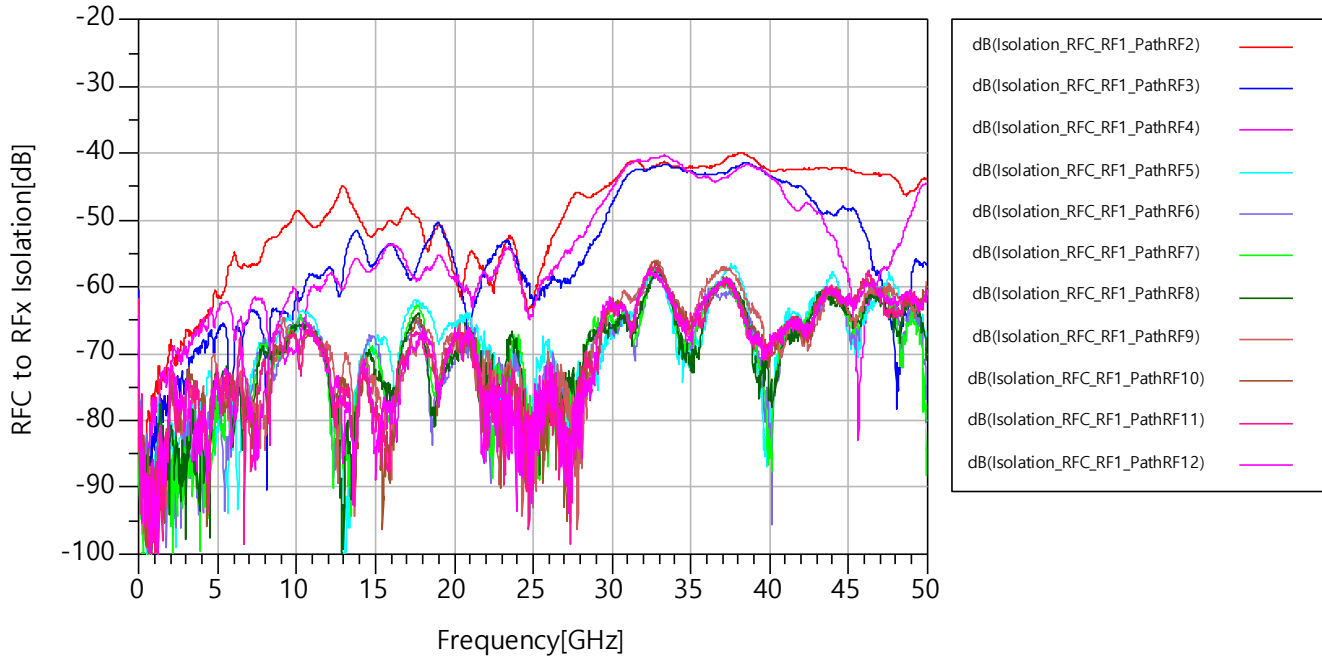


■ Typical Performance Data

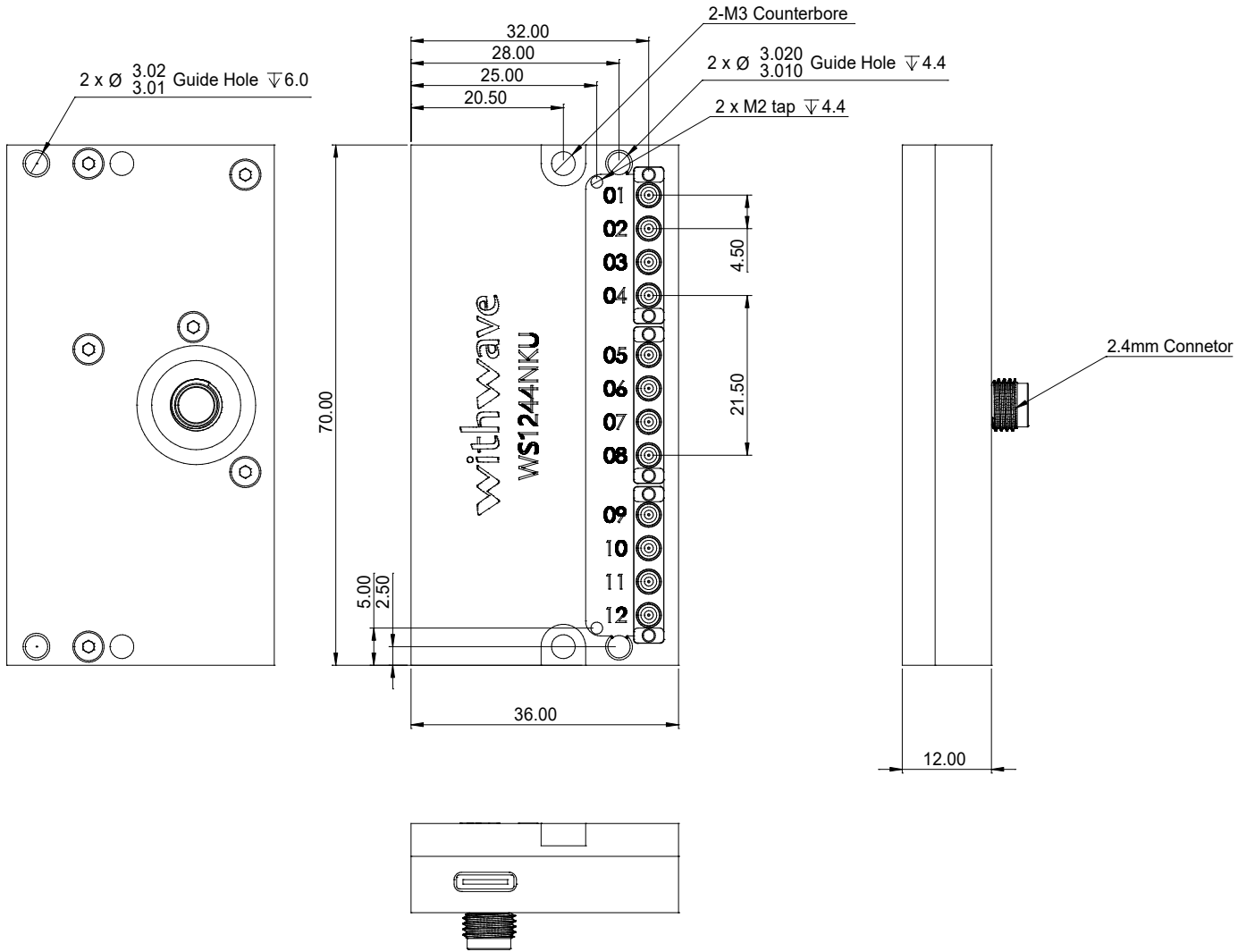
< RF1 to RFx Isolation @ PathRF1 >



< RFC to RF1 Isolation @ PathRFx >



■ Outline Drawing



■ **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 Data bits : 8 Parity : None Stop bits : 1 Flow Type :None

■ **Command Specification**

Index	Command	Description	Return	Example
1	*IDN?;	Query product information	Product PN, Manufacturer , SW version, Serial number	WS1244NKU, Withwave co, Ltd., V1.0, SN0001
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	2021-12-15	Initial work
Ver 1.1	2022-01-11	Update measurement results
Ver 1.2	2022-03-30	Update data up to 50GHz, Add ESD, Operating Temperature
Ver 1.2	2023-05-31	Add switching time