W4MS-NKU is an reflective 4-Port Matrix Switch module Powered by Ideal Switch® technology from Menlo Microsystems.

W4MS-NKU provides 25W power handling, low insertion loss and high linearity from DC to 20 GHz and is powered and controlled through USB type-C connector and external connectors include 2.92mm-vertical launch connector for all RF port.

W4MS-NKU is ideal solution for RF signal routing in wireless infrastructure and wireless applications.

Features

- DC to 20GHz frequency range
- 25 W(CW), 150 W(Pulsed) power handling
- Low insertion loss : 2.9 dB @ 20 GHz
- High linearity, IIP3 > 95 dBm
- High Reliability > 3 billion Switching Operations
- ESD rating : 2kV HBM on all RF port

Applications

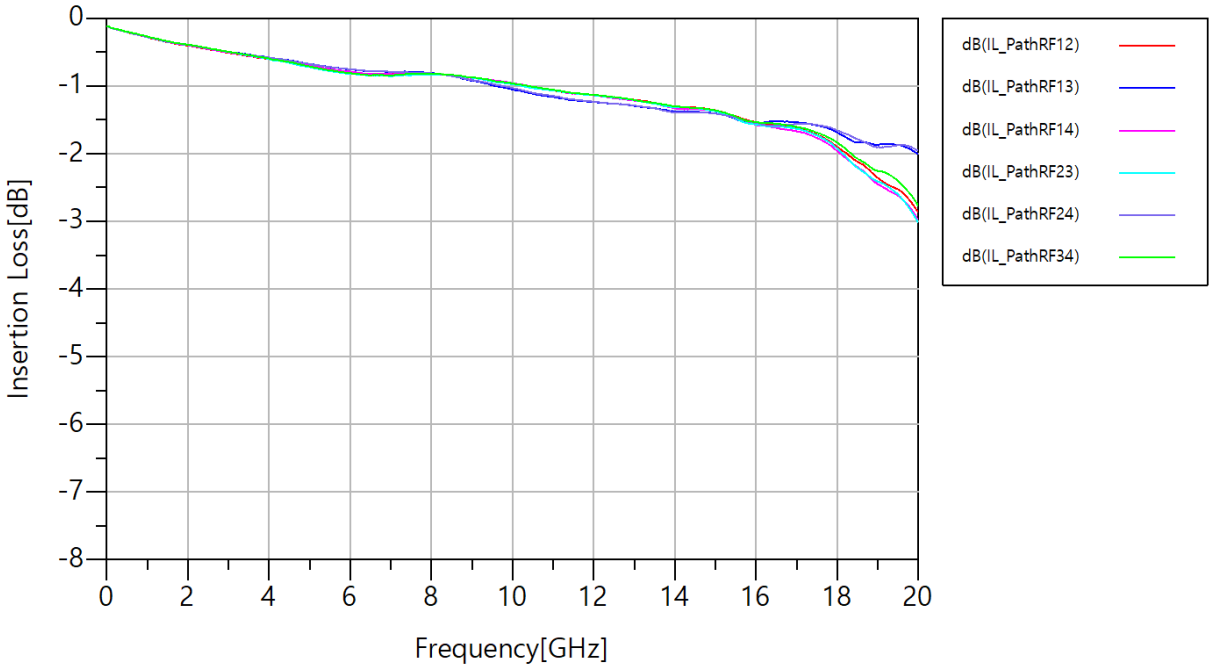
- Test & Measurement
- High Power RF Front-ends
- Antenna Tuning and Beam Steering
- 5G Wireless Communication
- RF signal routing

Electrical Specifications

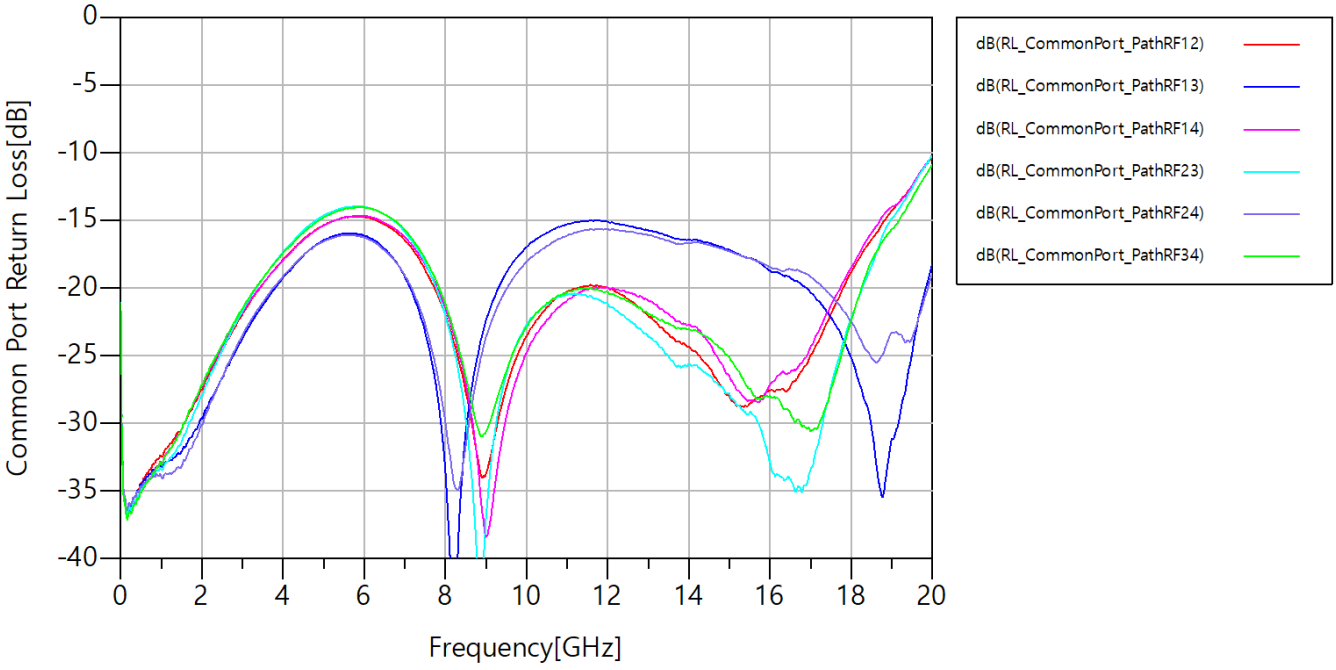
Parameter	Condition	Min	Typ	Max	Unit
Operation Frequency		DC		20	GHz
Insertion loss	@ 10 GHz, All RF port terminated @ 20 GHz, All RF port terminated		1.0 2.9		dB
Return loss (common port)	@ 10 GHz, All RF port terminated @ 20 GHz, All RF port terminated		14 10		dB
Return loss (active port)	@ 10 GHz, All RF port terminated @ 20 GHz, All RF port terminated		14 10		dB
Isolation	@ 10 GHz, All RF port terminated @ 20 GHz, All RF port terminated		27 17		dB
CW Input Power @ 6 GHz	Measured at +85ºC			25	W
Peak Input Power @ 6 GHz	For 10 % Duty Cycle and 100 µs pulse width, measured at +85ºC			150	W
Input IP3	Measured at +25ºC		95		dBm
Switching Time	COM port control time @Window10		200		us
On/Off Operations	Measured at 5 kHz cycling rate, measured at +25ºC	$3x10^9$	$30x10^9$		Cycle
Current consumption	USB type-C		85		mA
Power Supply	USB type-C		5		V
Baud Rate	USB COM port		115200		bps
RF Connectors	2.92mm-female				
ESD HBM	RF port USB port		2 16		kV
Operating Temperature		-40		85	ºC

Typical Performance Data

< Insertion Loss >

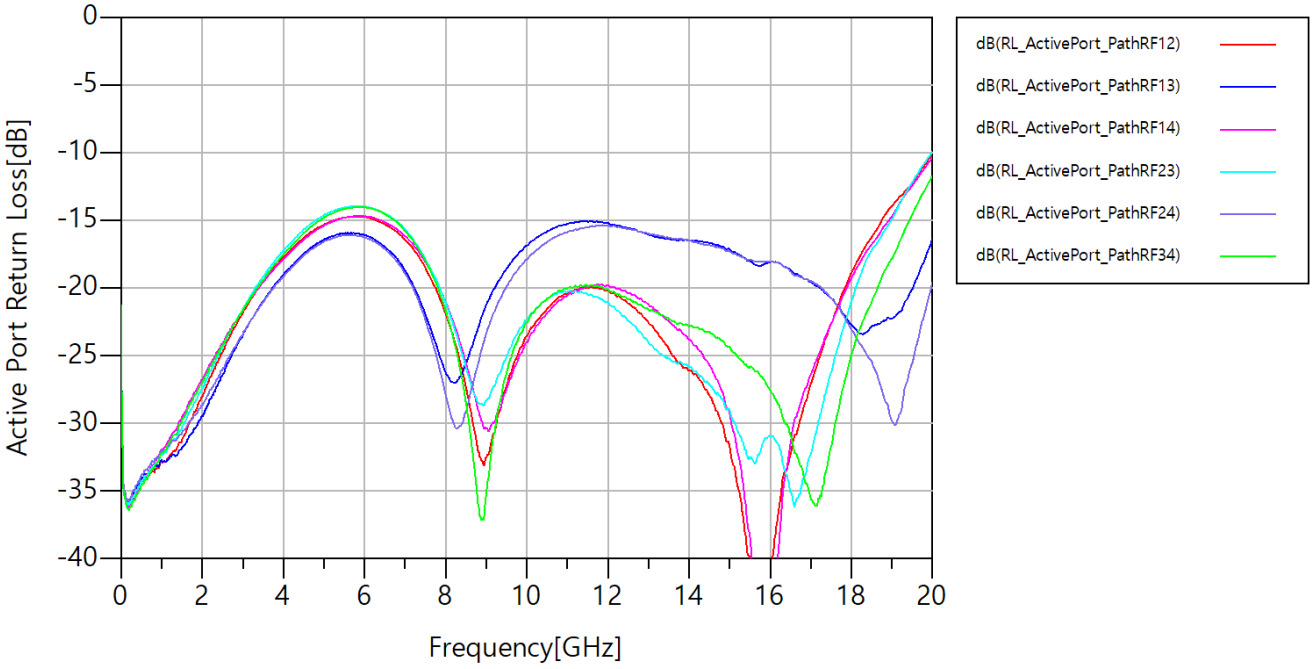


< Common Port Return Loss >

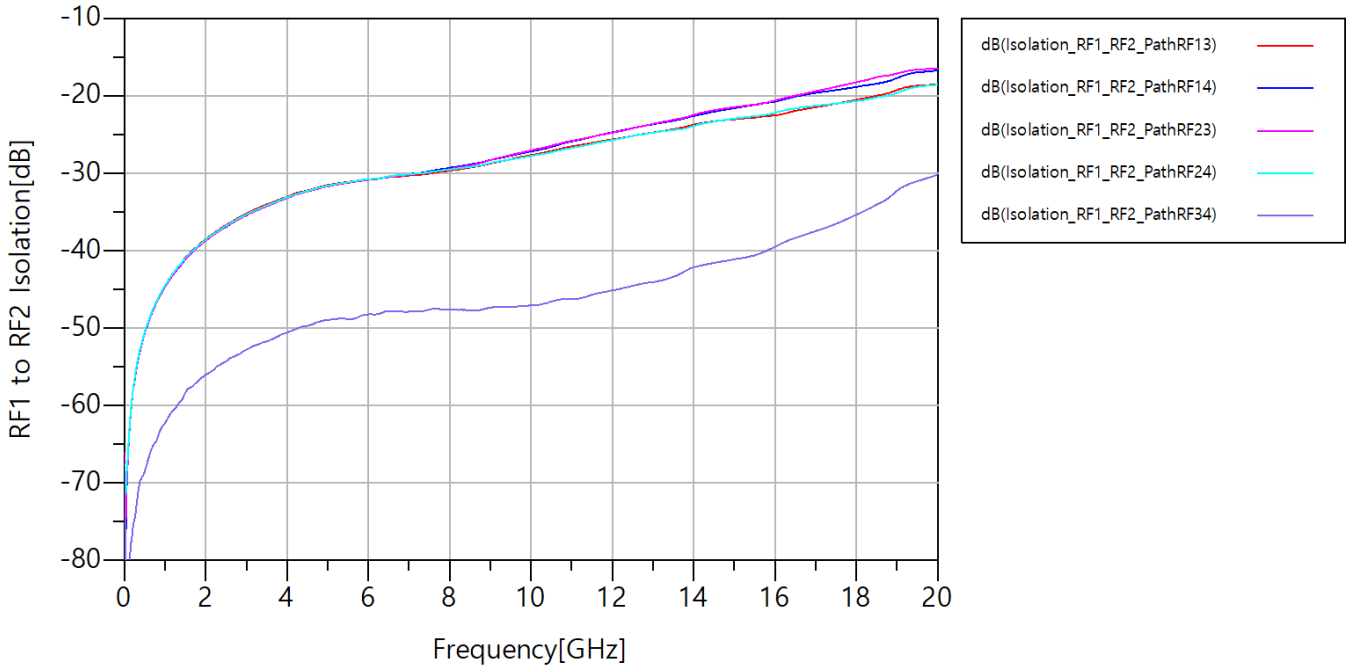


Typical Performance Data

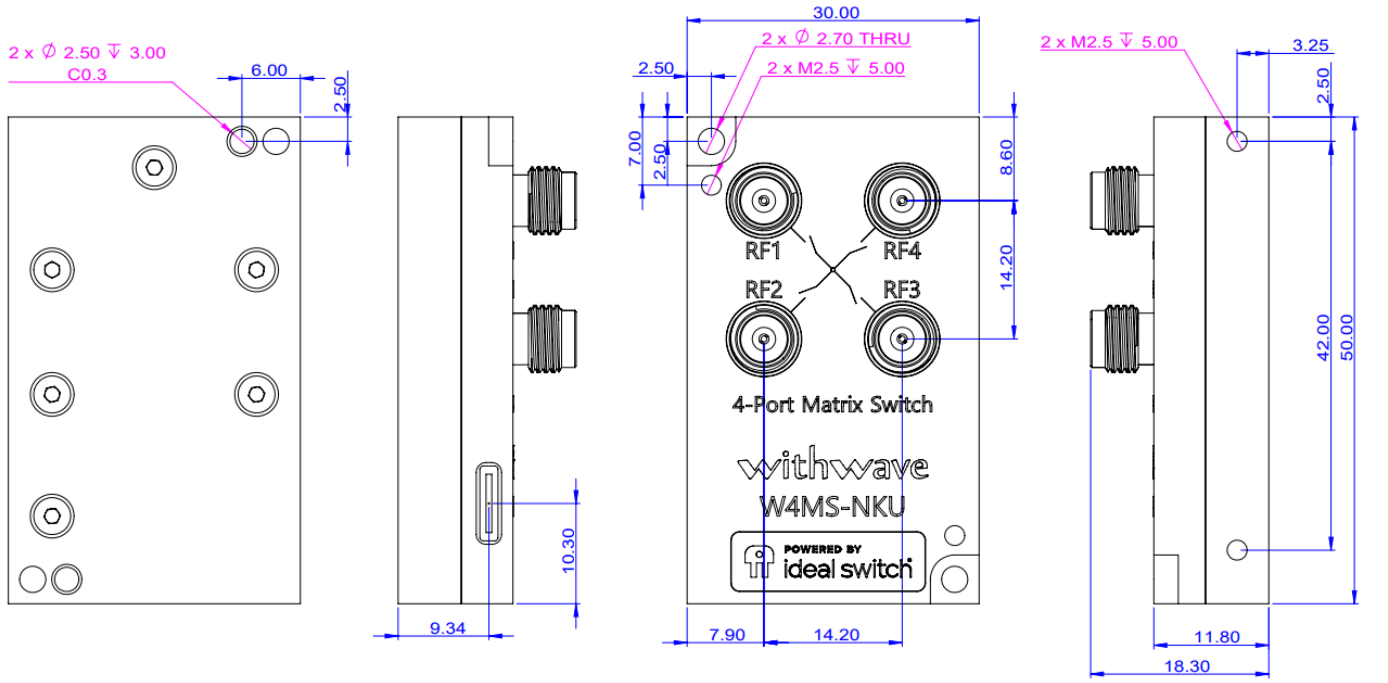
< Active Port Return Loss >



< RF1 to RF2 Isolation @ PathRFx>



Dimension


2 x ∅ 2.50 ↧ 3.00
C0.3
6.00
2.50
10.30
9.34
30.00
2 x ∅ 2.70 THRU
2 x M2.5 ↧ 5.00
2.50
7.00
2.50
8.60
14.20
RF1
RF4
RF2
RF3
4-Port Matrix Switch
withwave
W4MS-NKU
POWERED BY
ideal switch
7.90
14.20
2 x M2.5 ↧ 5.00
3.25
2.50
42.00
50.00
11.80
18.30

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	W4MS-NKU, Withwave co, ltd., V1.0, SN0001
2	RESET;	Reset the product	RESET;	RESET;
3	Pxy;	Switching to RFx to RFy Port number(xy) should be 2-digit decimal	Pxy;	P12;
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	2023-05-31	Initial work