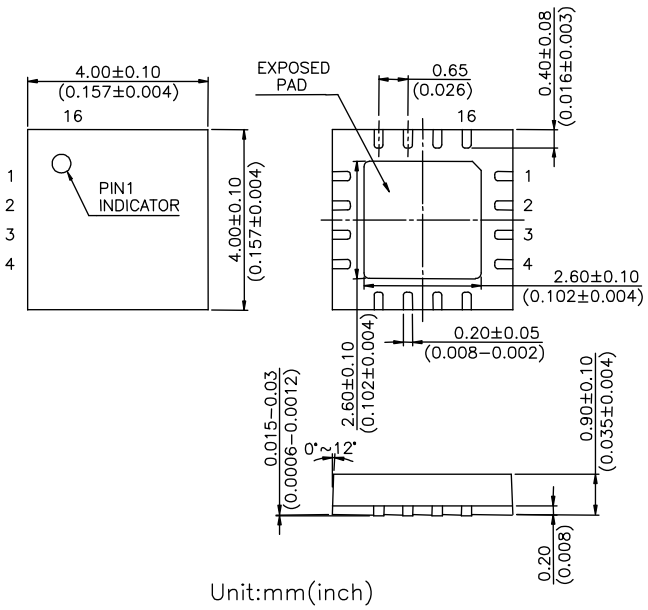
Features

- **Combination of 1 DPDT and 2 SPDT switches**
- **Low Insertion Loss :** 1.30dB @ 2.50GHz
  1.55dB @ 5.85GHz
- **Isolation:** 26dB @ 2.50GHz
  19dB @ 5.85GHz
- **Flexible selection of 2.5/5.8GHz Tx/Rx ports**
- **Low DC Power Consumption**
- **Miniature QFN16L (4x4 mm) Plastic Package**
- **PHEMT Process**
- **Different Logic Version of HWS379**

QFN16L (4 x 4 mm)



Unit:mm(inch)

Description

The HWS419 is a GaAs PHEMT MMIC DP4T switch operating at DC-6GHz in a low cost miniature QFN16L (4 x 4 mm) plastic package. The HWS419 combines one DPDT switch and two SPDT switches in a single IC and features low insertion loss and high isolation with very low DC power consumption. This switch can be used in IEEE 802.11a/b/g WLAN systems for combination of transmit/receive and antenna diversity functions. Two antenna ports can be selected for antenna diversity function and four RF ports can be arbitrary chosen for 2.5GHz band or 5.85GHz band as transmit/receive functions.

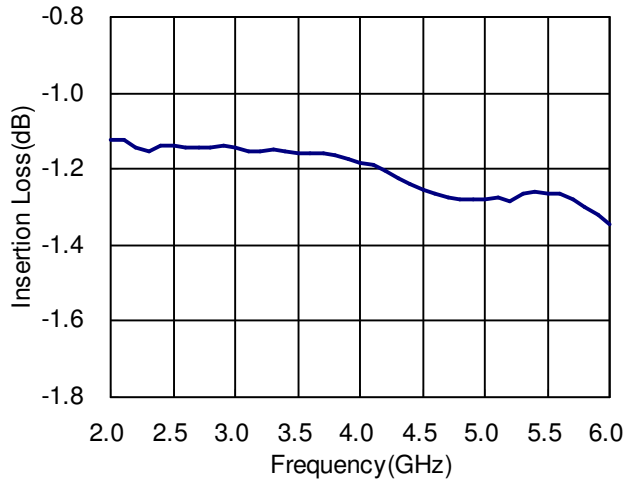
Electrical Specifications at 25℃ with 0, +3V Control Voltages

Parameter	Test Conditions	Min.	Typ.	Max.	Unit
Insertion Loss ANT ports to RF ports	0.01-6.00 GHz 2.40-2.50GHz 5.15-5.85GHz		1.60 1.30 1.55	 1.50 1.85	dB dB dB
Isolation (SPDT part) Ex: ANT1 to RF2 when ANT1 to RF1 on	0.01-6.00 GHz 2.40-2.50GHz 5.15-5.85GHz	 24	25 26 27		dB dB dB
Isolation (DPDT part) Ex: ANT2 to RF1 when ANT1 to RF1 on	0.01-6.00 GHz 2.40-2.50GHz 5.15-5.85GHz	 17	19 27 19		dB dB dB
Return Loss	0.01-6.00 GHz 2.40-2.50GHz 5.15-5.85GHz		12 20 15		dB dB dB
Input Power for One dB Compression	2.00-6.00GHz @0/+3.0V		30		dBm
Control Current			30	300	μA

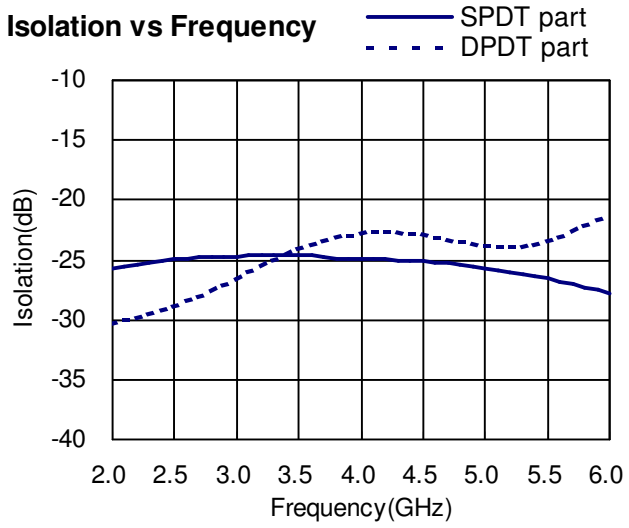
Note: All measurements made in a 50 ohm system with 0/+3.0V control voltages, unless otherwise specified.

Typical Performance Data with 8pF Capacitors @ +25℃

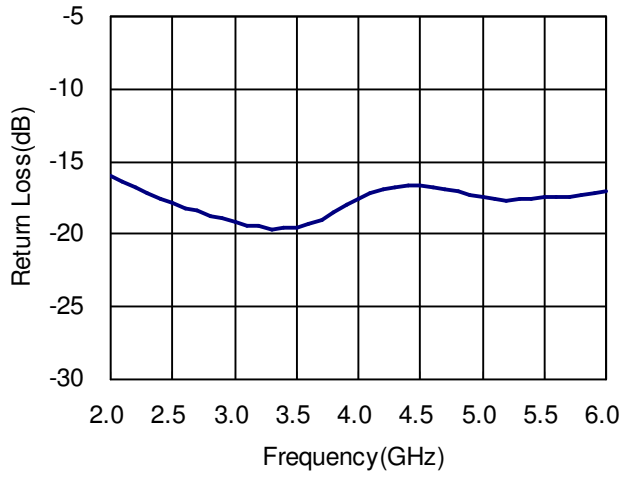
Insertion Loss vs Frequency



Isolation vs Frequency



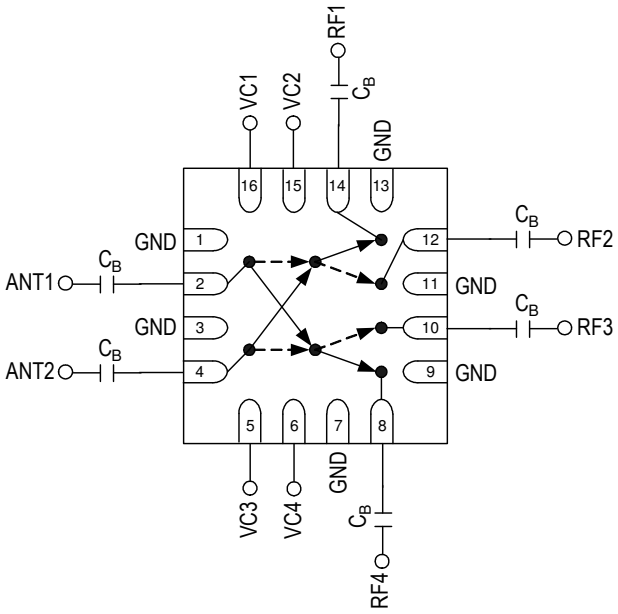
Return Loss vs Frequency



Absolute Maximum Ratings

Parameter	Absolute Maximum
RF Input Power	+32dBm @ +3V
Control Voltage	+6V
Operating Temperature	-40℃ to +85℃
Storage Temperature	-65℃ to +150℃

Pin Out (Top View)



Note:
1. DC blocking capacitors CB=8pF are required on all RF ports.
2. Exposed pad in the bottom must be connected to ground by via holes.

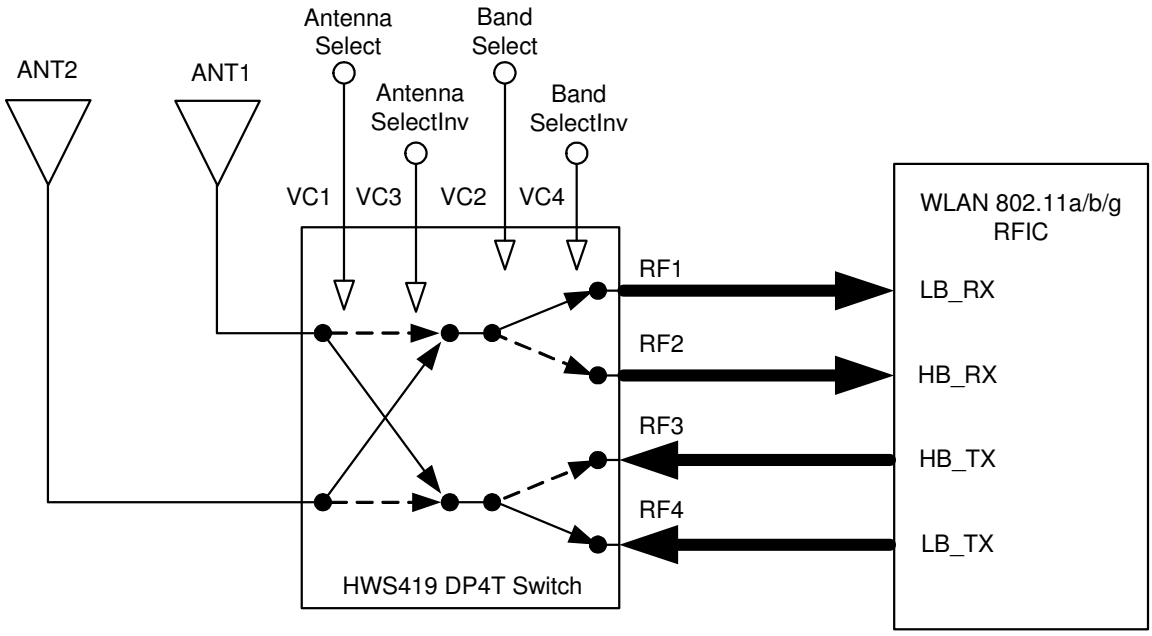
Logic Table for Switch On-Path

VC1	VC3	VC2	VC4	ANT1	ANT2
0	1	1	0	RF1	RF4
1	0	1	0	RF4	RF1
0	1	0	1	RF2	RF3
1	0	0	1	RF3	RF2

'1' = +3V to +5V
'0' = 0V to +0.2V

Application Information

Simplified Application Block Diagram Between HWS419 and WLAN 802.11 a/b/g RFIC



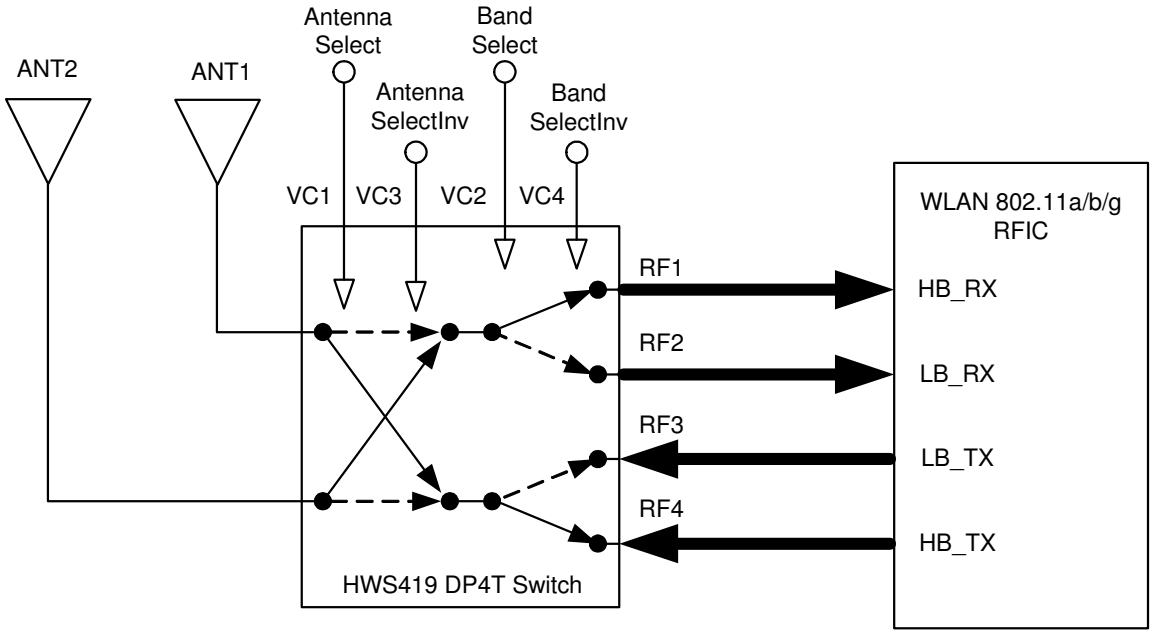
Note:
1. VC1 and VC3 are used for antenna selection, while VC2 and VC4 are used for band selection.
2. LB_RX stands for low-band(2.5GHz band) receiving port and HB_TX stands for high-band(5.85GHz band) transmitting port.
3. RF paths between switch and RFIC may include amplifiers, filters, and baluns.

Logic Table for Switch On-Path

VC1 (AntennaSelect)	VC3 (AntennaSelectInv)	VC2 (BandSelect)	VC4 (BandSelectInv)	ANT1	ANT2
0	1	1	0	RF1(LB_RX)	RF4(LB_TX)
1	0	1	0	RF4(LB_TX)	RF1(LB_RX)
0	1	0	1	RF2(HB_RX)	RF3(HB_TX)
1	0	0	1	RF3(HB_TX)	RF2(HB_RX)

Application Information (Continued)

Simplified Application Block Diagram Between HWS419 and WLAN 802.11 a/b/g RFIC



Note:
1. VC1 and VC3 are used for antenna selection, while VC2 and VC4 are used for band selection.
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Logic Table for Switch On-Path

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0	1	1	0	RF1(HB_RX)	RF4(HB_TX)
1	0	1	0	RF4(HB_TX)	RF1(HB_RX)
0	1	0	1	RF2(LB_RX)	RF3(LB_TX)
1	0	0	1	RF3(LB_TX)	RF2(LB_RX)