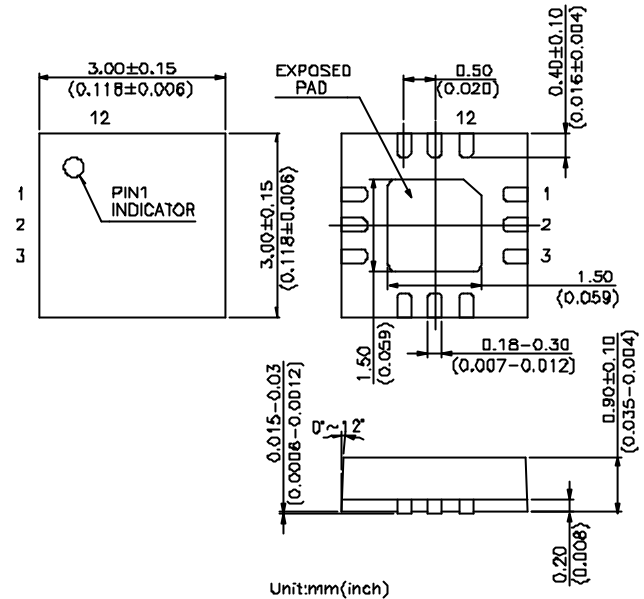


Features

- **Low Insertion Loss:** 0.8 dB @ 2.5 GHz
1.0 dB @ 4.9 to 6.0 GHz
- **High Isolation:** 43 dB @ 2.5 GHz
36 dB @ 4.9 to 6.0 GHz
- **Low DC Power Consumption**
- **Miniature QFN12L (3x3 mm) Using Lead (Pb) free materials with RoHS compliant**
- **PHEMT process**

QFN12L (3 x 3 mm)

Description

The HWS415 is a GaAs PHEMT MMIC DPDT switch operating at DC-6 GHz in a low cost miniature QFN12L (3 x 3 mm) plastic lead (Pb) free package. The HWS415 features low insertion loss and high isolation up to 6 GHz 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.

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

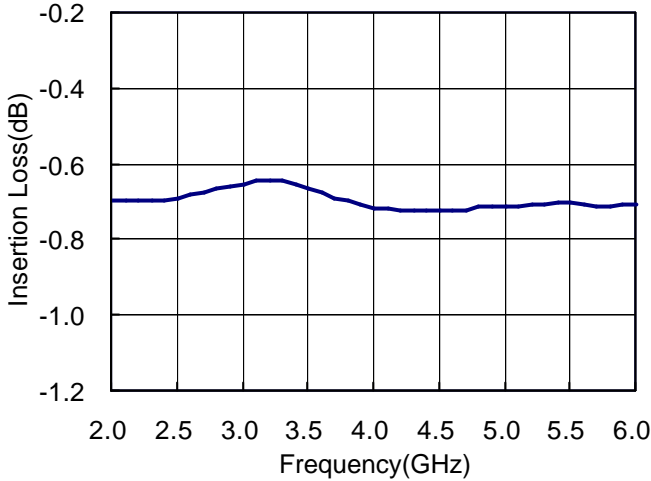
Parameter	Test Conditions	Min.	Typ.	Max.	Unit
Insertion Loss	0.1-6.0 GHz		1.0		dB
	2.4-2.5 GHz		0.8		dB
	4.9-6.0 GHz		1.0	1.3	dB
Isolation (on/off or off/on)	0.1-6.0 GHz		36		dB
	2.4-2.5 GHz		43		dB
	4.9-6.0 GHz	26	36		dB
Isolation (off/off)	2.4-2.5 GHz		10		dB
	4.9-6.0 GHz		17		dB
Return Loss	0.1-6.0 GHz		15		dB
	2.4-2.5 GHz		20		dB
	4.9-6.0 GHz		18		dB
Input Power for One dB Compression	2.0-6.0 GHz		30		dBm
Second Harmonic	Pin=20 dBm		-75		dBc
Third Harmonic	Pin=20 dBm		-75		dBc
Input Third Order Intermodulation Intercept Point	20 dBm Per Tone @ 5.85 GHz		45		dBm
Switching Time			50		ns
Control Current			5	100	uA

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

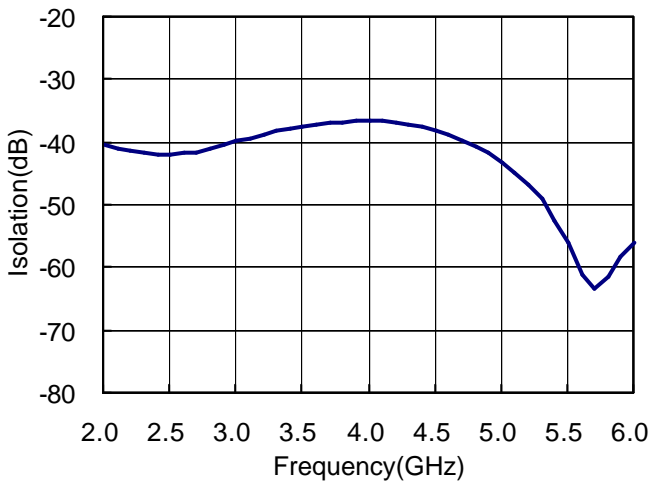


Typical Performance Data with 8pF Capacitors @ +25°C

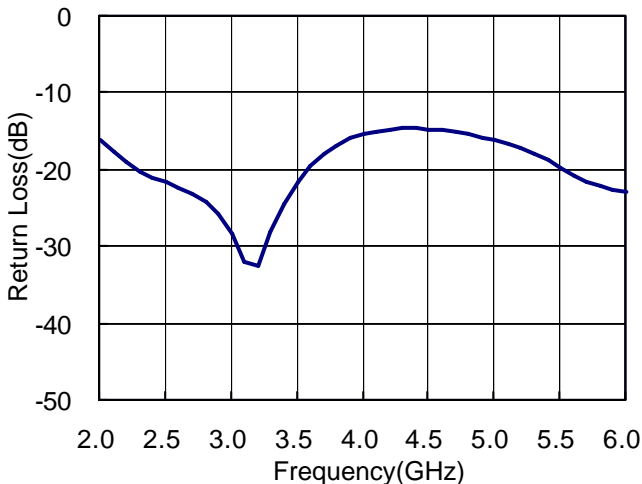
Insertion Loss vs Frequency



Isolation vs Frequency



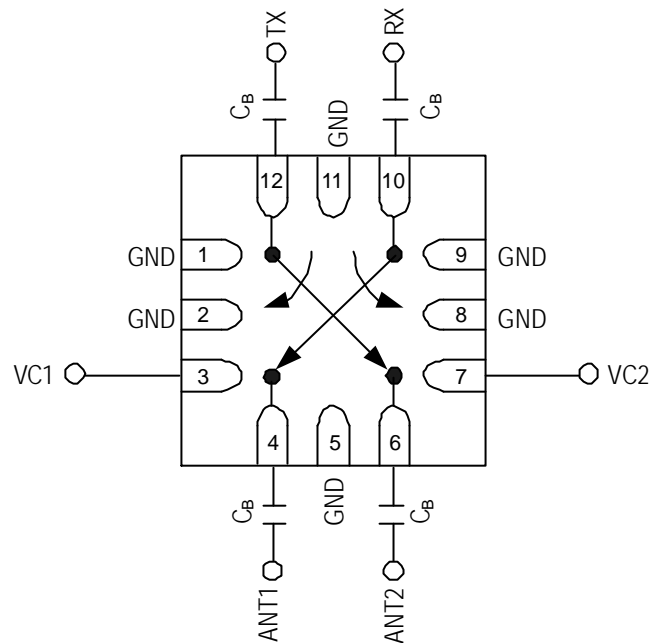
Return Loss vs Frequency



Absolute Maximum Ratings

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

Pin Out (Top View)



Note:

1. DC blocking capacitors $C_B=8pF$ are required on all RF ports.
2. Exposed pad in the bottom must be connected to ground by via holes.
3. TX and RX ports can be used interchangeably.

Logic Table for Switch On-Path

VC1	VC2	ANT1-RX	ANT1-TX	ANT2-TX	ANT2-RX
1	0	On	Off	On	Off
0	1	Off	On	Off	On
1	1	Off	Off	Off	Off
0	0	Off	Off	Off	Off

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