## **HWS415**

GaAs DC-6 GHz DPDT Switch



September 2006 V4

### **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) Plastic Lead (Pb) **Free Package**
- PHEMT process
- Lead Free and RoHS Compliant Version of **HWS411**

## Description

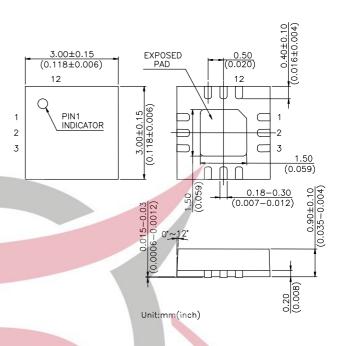
published by WWV

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.	Тур.	Max.	Unit
Insertion Loss	0.1-6.0 GHz 2.4-2.5 GHz 4.9-6.0 GHz		1.0 0.8 1.0	1.3	dB dB dB
Isolation (on/off or off/on)	0.1-6.0 GHz 2.4-2.5 GHz 4.9-6.0 GHz	26	36 43 36		dB dB dB
Isolation (off/off)	2.4-2.5 GHz 4.9-6.0 GHz		10 17		dB dB
Return Loss	0.1-6.0 GHz 2.4-2.5 GHz 4.9-6.0 GHz	R	15 20 18	IC	dB dB 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			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.



QFN12L (3 x 3 mm)

Hexawave Inc. 2 Prosperity Road II, Science-Based Industrial Park, Hsinchu, Taiwan. TEL 886-3-578-5100 FAX 886-3-577-0512 to change without notice. EC

<u>|</u>

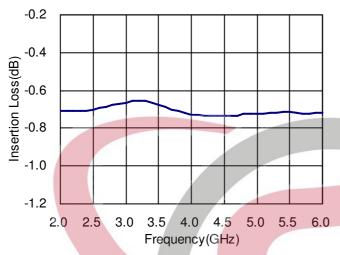
GaAs DC-6 GHz DPDT Switch

September 2006 V4

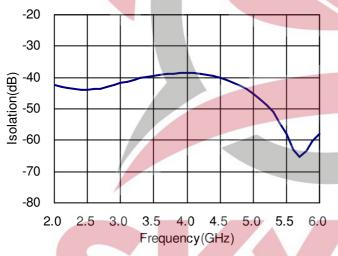


#### Typical Performance Data with 8pF Capacitors @ +25 ℃

#### **Insertion Loss vs Frequency**

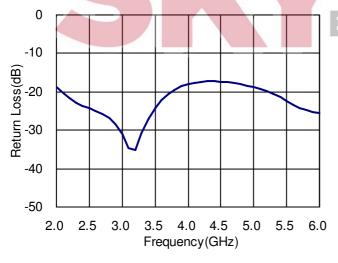


#### Isolation vs Frequency



#### **Return Loss vs Frequency**

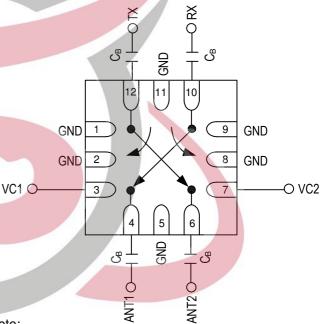
published by



## **Absolute Maximum Ratings**

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

## 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

Hexawave Inc. 2 Prosperity Road II, Science-Based Industrial Park, Hsinchu, Taiwan. TEL 886-3-578-5100 FAX 886-3-577-0512