## Features

QFN12L (3 x 3 mm )

- Low Insertion Loss: $0.8 \mathrm{~dB} @ 2.50 \mathrm{GHz}$
1.0 dB @ 5.85 GHz
- Isolation: $29.5 \mathrm{~dB} @ 2.50 \mathrm{GHz}$ $20.5 \mathrm{~dB} @ 5.85 \mathrm{GHz}$


## - Low DC Power Consumption

- Miniature QFN12L (3x3 mm) Using Lead (Pb) free materials with RoHS compliant
- PHEMT process


## Description

The HWS410 is a GaAs PHEMT MMIC DPDT switch operating at DC-6 GHz in a low cost miniature QFN12L ( $3 \times 3 \mathrm{~mm}$ ) plastic lead ( Pb ) free package. The HWS410 features low insertion loss and high isolation with very low DC power consumption. This switch can be used in IEEE $802.11 \mathrm{a} / \mathrm{b} / \mathrm{g}$ WLAN systems for combination of transmit/receive and antenna diversity functions.

Electrical Specifications at $25^{\circ} \mathrm{C}$ with $\mathbf{0 , + 3 V}$ Control Voltages

| Parameter | Test Conditions | Min. | Typ. | Max. | Unit |
| :--- | :---: | :---: | :---: | :---: | :---: |
| Insertion Loss | $0.10-6.00 \mathrm{GHz}$ |  | 1.0 |  | dB |
|  | $2.40-2.50 \mathrm{GHz}$ |  | 0.8 | 1.0 | dB |
|  | $5.15-5.85 \mathrm{GHz}$ | 1.0 | 1.3 | dB |  |
|  | $0.10-6.00 \mathrm{GHz}$ | 27.0 | 29.5 |  | dB |
| dB |  |  |  |  |  |
| Return Loss | $2.40-2.50 \mathrm{GHz}$ |  |  |  |  |
| $5.15-5.85 \mathrm{GHz}$ | 18.0 | 20.5 |  | dB |  |
| Input Power for One dB | $0.10-6.00 \mathrm{GHz}$ |  | 15 |  | dB |
| Compression | $2.40-2.50 \mathrm{GHz}$ |  |  |  |  |
| $5.15-5.85 \mathrm{GHz}$ |  | 18 |  | dB |  |
| Input Third Order Intermodulation | 20 dBm Per Tone @ 2.50 GHz |  | 52 |  | dBm |
| Intercept Point | 22 dBm Per Tone @ 5.85 GHz |  | 52 |  | dBm |
| Control Current | $2.00-6.00 \mathrm{GHz}$ |  | 5 | 200 | uA |

Note: All measurements made in a 50 ohm system with $0 /+3.0 \mathrm{~V}$ control voltages, unless otherwise specified.

## Typical Performance Data with 8pF Capacitors @ $+25^{\circ} \mathrm{C}$

## Insertion Loss vs Frequency



## Isolation vs Frequency



Return Loss vs Frequency


Absolute Maximum Ratings

| Parameter | Absolute Maximum |
| :--- | :---: |
| RF Input Power | $+34 \mathrm{dBm} @+3 \mathrm{~V}$ |
| Control Voltage | +6 V |
| Operating Temperature | $-40^{\circ} \mathrm{C}$ to $+85^{\circ} \mathrm{C}$ |
| Storage Temperature | $-65^{\circ} \mathrm{C}$ to $+150^{\circ} \mathrm{C}$ |

Pin Out (Top View)


Note:

1. DC blocking capacitors $\mathrm{C}_{\mathrm{B}}=8 \mathrm{pF}$ 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

| State | VC1 | VC2 | ANT1 | ANT2 |
| :---: | :---: | :---: | :---: | :---: |
| 1 | 0 | 1 | TX | $R X$ |
| 2 | 1 | 0 | $R X$ | TX |

[^0]
[^0]:    ' 1 ' $=+3 \mathrm{~V}$ to +5 V
    ' 0 ' $=0 \mathrm{~V}$ to +0.2 V

