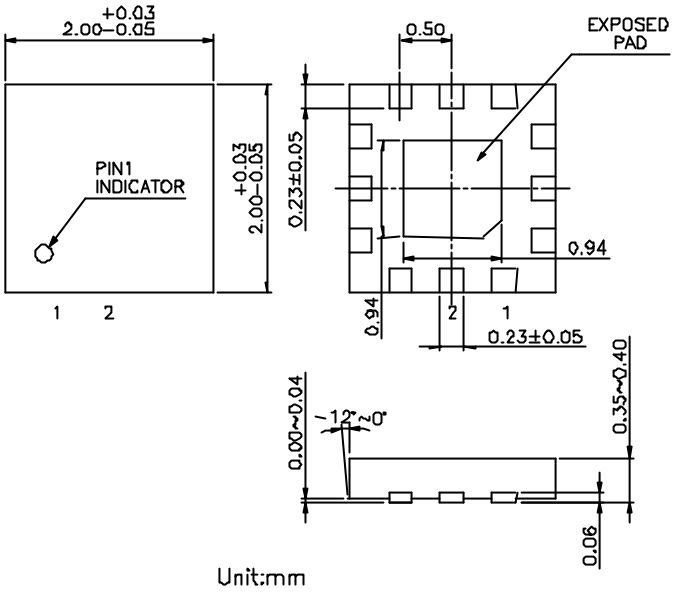
## Features

- **Low Insertion Loss:** 0.7 dB @ 2.5 GHz
  1.0 dB @ 5.0 to 6.0 GHz
- **Isolation:** 22 dB @ 2.5 GHz
  15 dB @ 5.0 to 6.0 GHz
- **Low DC Power Consumption**
- **Miniature UQFN12L (2.0x2.0x0.4 mm)**
- **Using Lead (Pb) free materials with RoHS compliant**
- **PHEMT process**

## UQFN12L (2.0X2.0X0.4 mm)




## Description

The HWS512 is a GaAs PHEMT MMIC DPDT switch operating at 0.5-6 GHz in a low cost miniature UQFN12L (2x2x0.4 mm) plastic lead (Pb) free package. The HWS512 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.

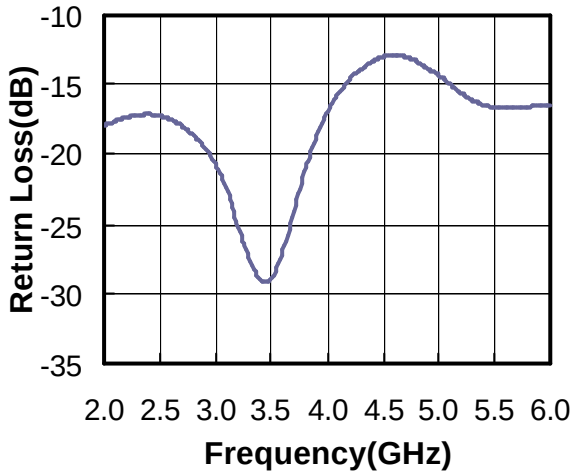
## Electrical Specifications at 25°C with 0, +3V Control Voltages

| Parameter | Test Conditions | Min. | Typ. | Max. | Unit |
|---|---|---|---|---|---|
| Insertion Loss | 0.5-2.0 GHz<br>2.0-3.0 GHz<br>3.0-5.0 GHz<br>5.0-6.0 GHz | | 0.6<br>0.7<br>0.9<br>1.0 | <br><br><br>1.3 | dB<br>dB<br>dB<br>dB |
| Isolation<br>(ANT1-ANT2, TX-RX) | 0.5-2.0 GHz<br>2.0-3.0 GHz<br>3.0-5.0 GHz<br>5.0-6.0 GHz | <br><br><br>13 | 25<br>22<br>17<br>15 | | dB<br>dB<br>dB<br>dB |
| Isolation<br>(ANT1-TX, ANT1-RX, ANT2-TX, ANT2-RX) | 0.5-2.0 GHz<br>2.0-3.0 GHz<br>3.0-5.0 GHz<br>5.0-6.0 GHz | <br><br><br>13 | 25<br>22<br>17<br>15 | | dB<br>dB<br>dB<br>dB |
| Return Loss | 0.5-6.0 GHz | | 15 | | dB |
| Input Power for One dB Compression | 2.0-6.0 GHz | | 33 | | dBm |
| Control Current | | | 20 | | uA |

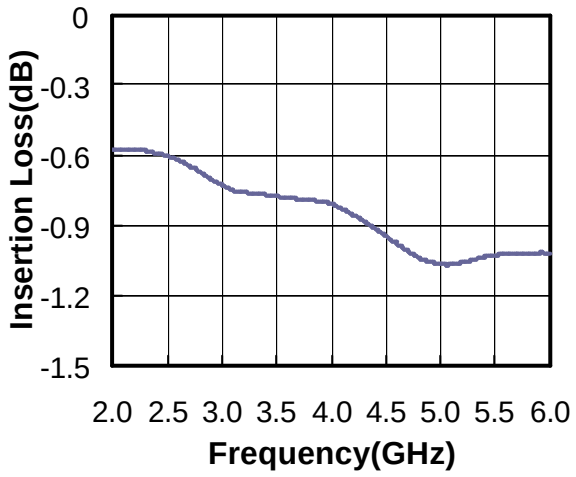
Note: All measurements made in a 50 ohm system with 0/+3.0V control voltages, unless otherwise specified.

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

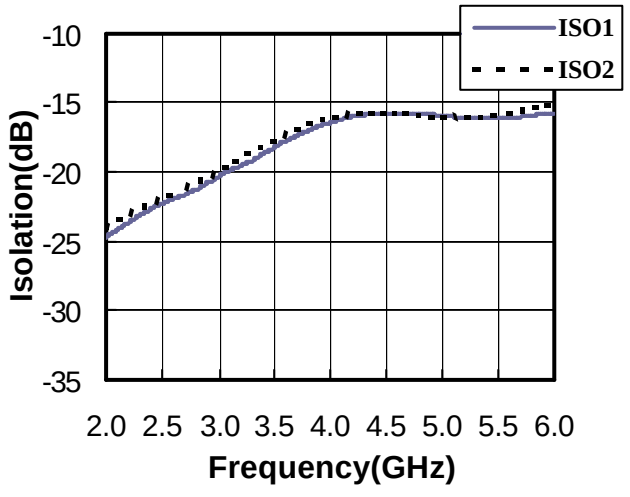
### Return Loss vs. Frequency




### Insertion Loss vs. Frequency




### Isolation vs. Frequency

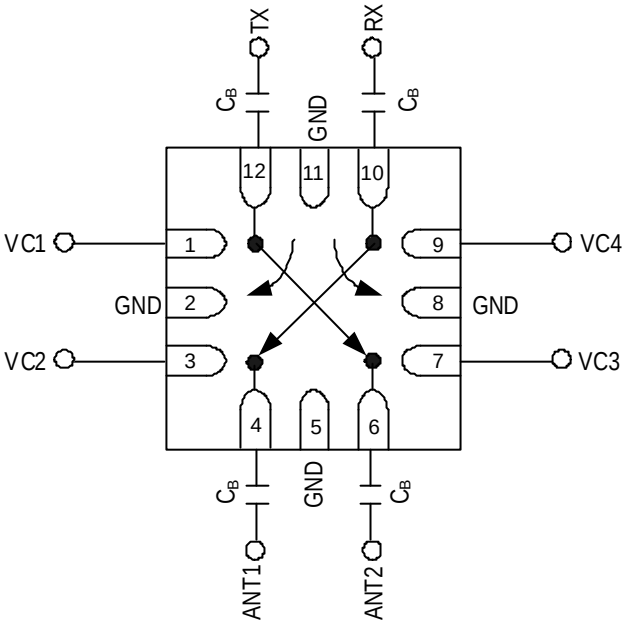



Note: ISO1 for ANT1-TX, ANT1-RX, ANT2-TX, and ANT2-RX
ISO2 for ANT1-ANT2 and TX-RX

## Absolute Maximum Ratings

| Parameter | Absolute Maximum |
|---|---|
| RF Input Power | +34 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 | VC3 | VC4 | On-Path |
|---|---|---|---|---|
| 1 | 0 | 0 | 0 | ANT2-RX |
| 0 | 1 | 0 | 0 | ANT1-TX |
| 0 | 0 | 1 | 0 | ANT1-RX |
| 0 | 0 | 0 | 1 | ANT2-TX |

‘1’ = +3V to +5V
‘0’ = 0V to +0.2V