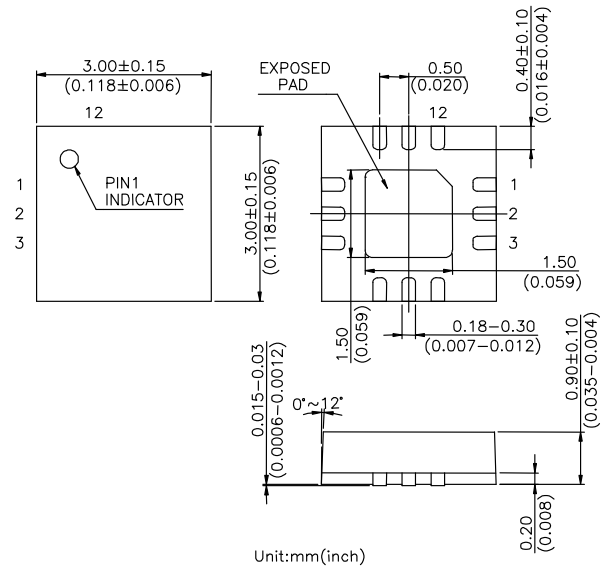


Features

- **Low Insertion Loss** : 0.95 dB @ 2.5 GHz
1.25 dB @ 5.8 GHz
- **Isolation**: 26 dB @ 2.5 GHz
18 dB @ 5.8 GHz
- **Low DC Power Consumption**
- **Miniature QFN12L (3x3 mm) Plastic Lead (Pb) Free Package**
- **PHEMT process**

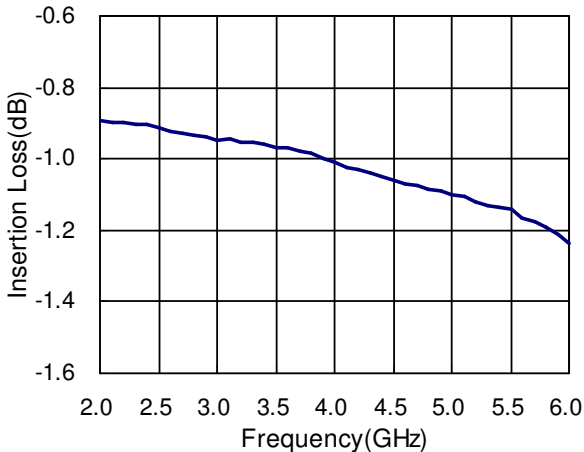
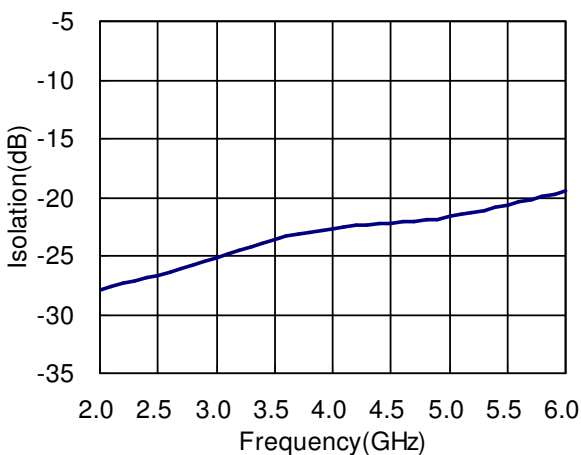
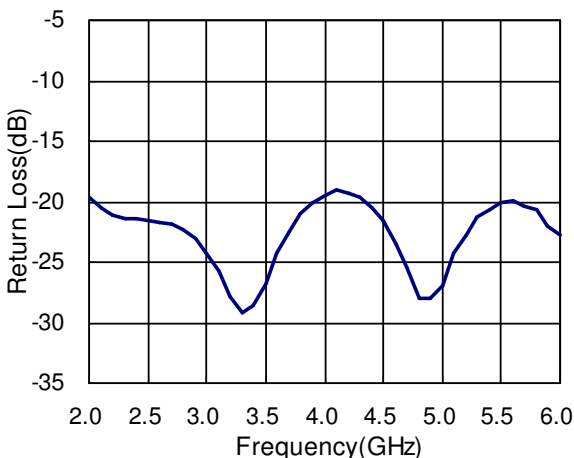
QFN12L (3 x 3 mm)

Description

The HWS451 is a GaAs PHEMT MMIC SP4T switch operating at DC-6 GHz in a low cost miniature QFN12L (3 x 3 mm) plastic lead (Pb) free package. The HWS451 features low insertion loss and high isolation with very low DC power consumption. This switch can be used in WiMAX or IEEE 802.11a/b/g WLAN PC card and access point applications.

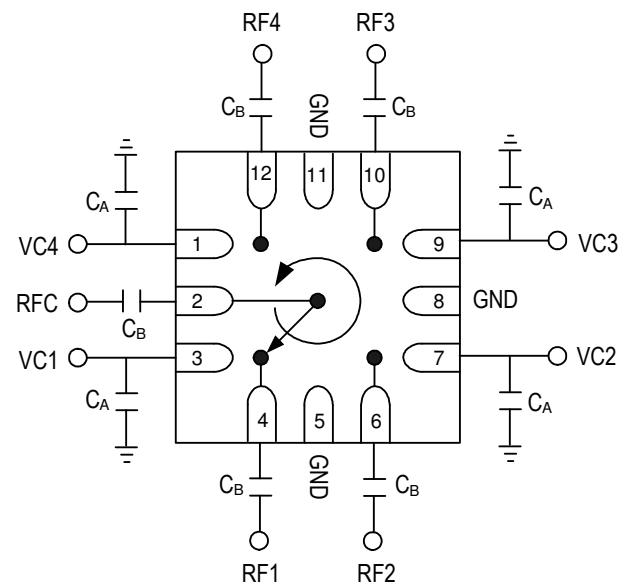
Electrical Specifications at 25 °C with 0, +3V Control Voltages

| Parameter | Test Conditions | Min. | Typ. | Max. | Unit |
|------------------------------------|-----------------|------|------|------|------|
| Insertion Loss | 0.10-6.00 GHz | | 1.30 | 1.20 | dB |
| | 2.40-2.50 GHz | | 0.95 | | dB |
| | 3.30-3.90 GHz | | 1.00 | | dB |
| | 4.90-5.85 GHz | | 1.25 | | dB |
| Isolation | 0.10-6.00 GHz | 21 | 18 | | dB |
| | 2.40-2.50 GHz | | 26 | | dB |
| | 3.30-3.90 GHz | | 22 | | dB |
| | 4.90-5.85 GHz | | 18 | | dB |
| Return Loss | 0.10-6.00 GHz | | 15 | | dB |
| | 2.40-2.50 GHz | | 20 | | dB |
| | 3.30-3.90 GHz | | 18 | | dB |
| | 4.90-5.85 GHz | | 15 | | dB |
| Input Power for One dB Compression | 2.00-6.00 GHz | | 36 | | dBm |
| Control Current | | | 10 | 200 | 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 | +36 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 $C_B=8\text{pF}$ are required on all RF ports.
2. RF by-pass capacitors $C_A=8\text{pF}$.
3. Exposed pad in the bottom must be connected to ground by via holes.

Logic Table for Switch On-Path

| VC1 | VC2 | VC3 | VC4 | RFC |
|-----|-----|-----|-----|-----|
| 1 | 0 | 0 | 0 | RF1 |
| 0 | 1 | 0 | 0 | RF2 |
| 0 | 0 | 1 | 0 | RF3 |
| 0 | 0 | 0 | 1 | RF4 |

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