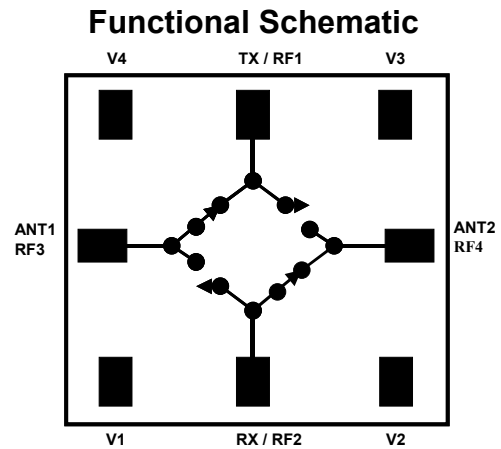


## 2.4GHz DPDT GaAs Single-Band WLAN Switch

### Features:

- ◆ 3x3x0.9mm Packaged pHEMT Switch
- ◆ Suitable for Single-band WLAN 802.11b/g Applications
- ◆ Excellent low control voltage performance
- ◆ Very low Insertion loss typ. 0.6dB at 2.5GHz
- ◆ High isolation typ. 23dB at 2.5GHz
- ◆ Filtronic Advanced GaAs pHEMT Technology



### Description and Applications:

The FMS2017QFN is a low loss, single band Gallium Arsenide antenna diversity switch designed for use in Wireless LAN applications. The die is fabricated using the Filtronic FL05 0.5 $\mu$ m switch process technology that offers leading edge performance, optimised for switch applications. The FMS2017QFN is designed for use in 802.11b/g WLAN modules.

**Electrical Specifications:** ( $T_{\text{AMBIENT}} = 25^{\circ}\text{C}$ ,  $V_{\text{ctrl}} = 0\text{V}/(2.4\text{V}, +3.3\text{V})$ ,  $Z_{\text{IN}} = Z_{\text{OUT}} = 50\Omega$ )

Parameter	Conditions	Min	Typ	Max	Units
Insertion Loss (All Paths)	2.5GHz, Small Signal		0.6		dB
Isolation (All Paths)	2.5GHz, Small Signal		23		dB
Return Loss	2.5GHz, Small Signal		20		dB
P0.1dB	2.5GHz Control Voltage 3.0V		>33		dBm
2nd Harmonic Level	2.4GHz, Pin = 32dBm, Vctrl = 2.4V		-65		dBc
3rd Harmonic Level	2.4GHz, Pin = 32dBm, Vctrl = 2.4V		-65		dBc
Switching speed	Vctrl=2.4V, Pin=20dBm		20		nS

**Note:** External DC blocking capacitors are required on all RF ports (typ: 47pF)  
All unused ports terminated in 50 $\Omega$ .

**Absolute Maximum Ratings:**

Parameter	Symbol	Absolute Maximum
Max Input Power	Pin	+38dBm
Control Voltage	Vctrl	+5V
Operating Temperature	Toper	-40°C to +100°C
Storage Temperature	Tstor	-55°C to +150°C

**Note:** Exceeding any one of these absolute maximum ratings may cause permanent damage to the device.

**Truth Table:**

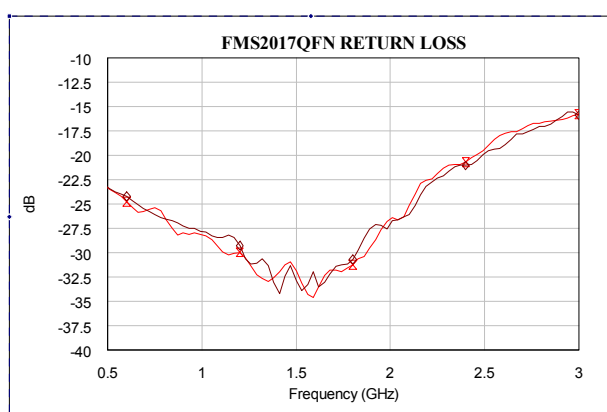
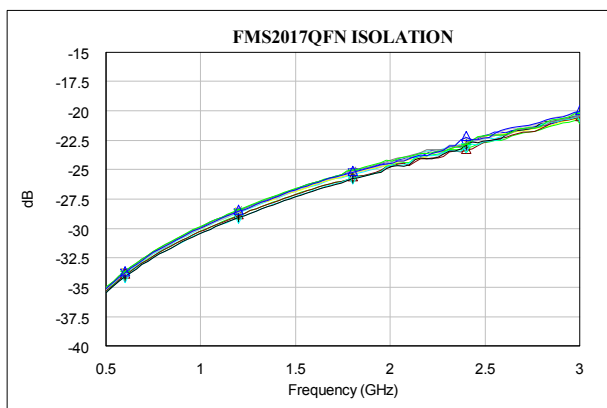
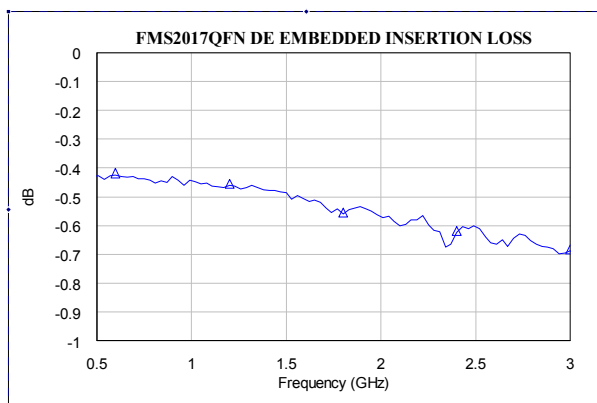
Switch State	V1	V2	V3	V4	RX ANT1	RX ANT2	TX ANT2	TX ANT1
1	High	Low	Low	Low	Insertion Loss	Isolation	Isolation	Isolation
2	Low	High	Low	Low	Isolation	Insertion Loss	Isolation	Isolation
3	Low	Low	High	Low	Isolation	Isolation	Insertion Loss	Isolation
4	Low	Low	Low	High	Isolation	Isolation	Isolation	Insertion Loss
5	Low	High	Low	High	Isolation	Insertion Loss	Isolation	Insertion Loss
6	High	Low	High	Low	Insertion Loss	Isolation	Insertion Loss	Isolation

**General Test Conditions:**

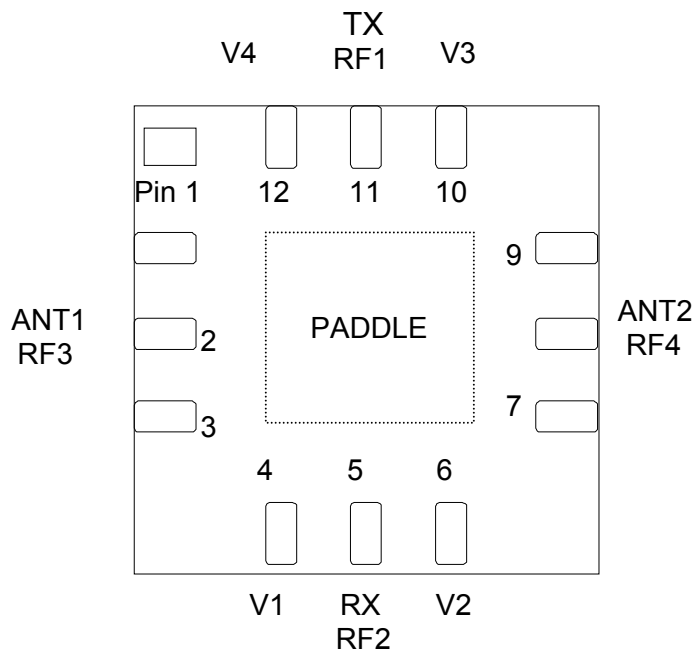
Bias Voltages	LOW = 0V to 0.2V HIGH +2.4V to +3.3V
Port Impedances	50Ω
Off arm termination	50Ω

**Typical Measured Performance on Evaluation Board (De-Embedded):**

(Measurement Conditions  $V_{CTRL}=3V$ ,  $T_{AMBIENT} = 25^{\circ}C$  unless otherwise stated)



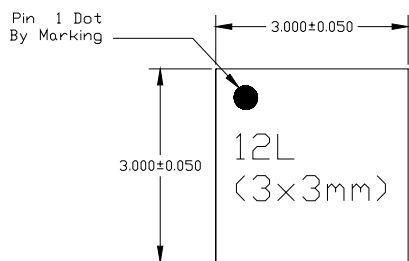
**Pad Layout:**



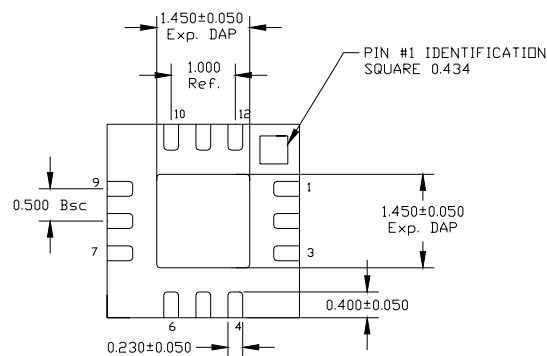
Pin Number	Description
1	N/C
2	ANT1 / RF3
3	N/C
4	V1
5	RX / RF2
6	V2
7	N/C
8	ANT2 / RF4
9	N/C
10	V3
11	Tx / RF1
12	V4
PADDLE	GND

\*View from the top of the package

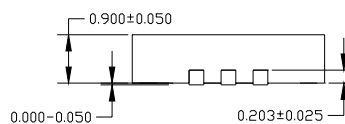
**QFN 12 Lead 3\*3 Package Outline:**



TOP VIEW

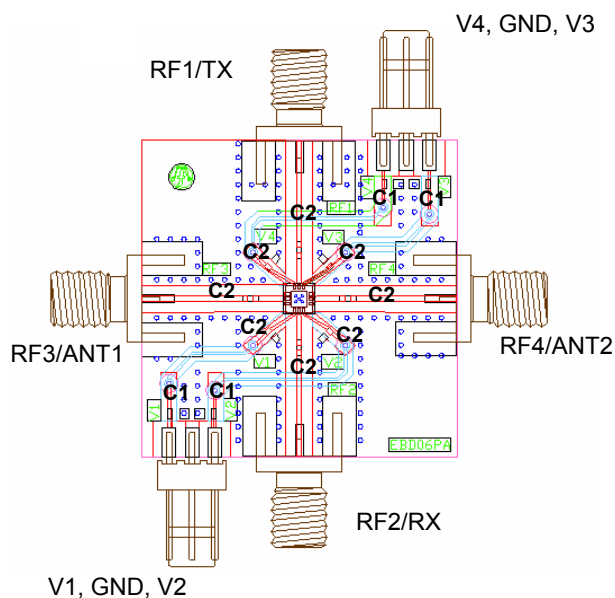


BOTTOM VIEW



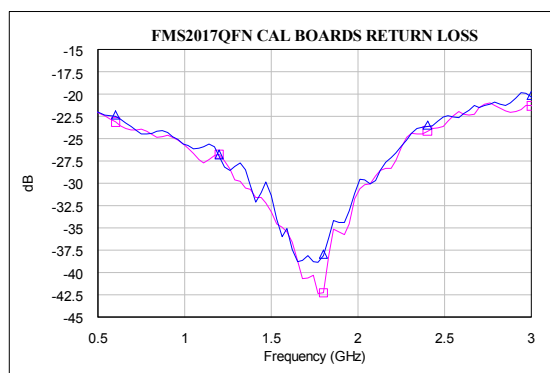
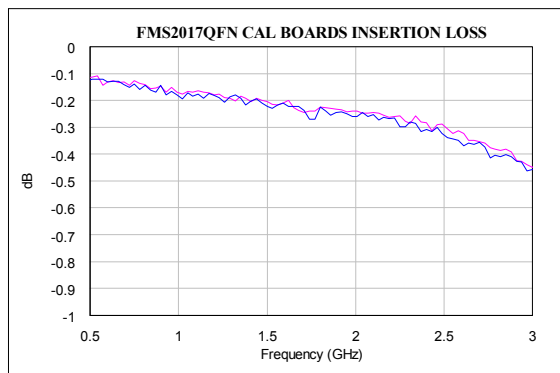
SIDE VIEW

**Evaluation Board:**



BOM	
Label	Component
C1	Capacitor, 100pF, 0603
C2	Capacitor, 47pF, 0402
BOARD	Preferred evaluation board material is 0.25 mm thick ROGERS RT4350. All RF tracks should be 50 ohm characteristic impedance. Absolute placement of surface mount de-coupling capacitors is not critical.

**Evaluation Board De-Embedding Data (Measured):**



**Ordering Information:**

Part Number	Description
FMS2017-001	Packaged Die
FMS2017-001-EB	Packaged die mounted on evaluation board

**Handling Precautions:**

To avoid damage to the devices care should be exercised during handling. Proper Electrostatic Discharge (ESD) precautions should be observed at all stages of storage, handling, assembly, and testing. These devices should be treated as Class 1A (0-500V). Further information on ESD control measures can be found in MIL-STD-1686 and MIL-HDBK-263.

**Preferred Assembly Instructions:**

Please refer to FCSL applications note: FAN 003 (handling and assembly of Filtronic QFN devices)

**Disclaimers:**

This product is not designed for use in any space based or life sustaining/supporting equipment.