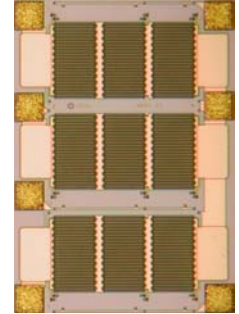


## SP3T Reflective pHEMT MMIC Switch

### Description

The FMS2002 is a linear high power Single-Pole Three-Throw MMIC Antenna Switch designed for use in Dual-band handsets GSM900 and GSM1800/1900 combinations. The switch is designed with one antenna port that can be routed to any one of the three RF ports.



### Features

- Low insertion loss (0.5dB @ 900 MHz)
- Operation down to 2V control
- 3 control lines. Single positive voltage supply
- Low harmonics (Typical -73dBc at Pin=+34.5dBm)
- High Isolation (30 dB @ 900 MHz)
- Filtronic Advanced GaAs pHEMT Technology

### Electrical Characteristics (at 25°C, [V<sub>ctrl</sub> 0,+2.7V], 50 Ohm system, under CW )

Parameter	Symbol	Condition	Min.	Typ.	Max.	Unit
Insertion Loss	IL	1		0.45		dB
		2		0.55		dB
		3		0.5		dB
Isolation – RF – Ant on.	ISO	1		35		dB
		2		26		dB
S11	S11	1		-25		dB
S11	S11	2		-18		dB
Harmonics	2fo	3		-74		dBc
	3fo	3		-73		dBc
Leakage Current - Tx	I <sub>lKTx</sub>	3		2.9		μA
Leakage Current – Rx	I <sub>lKRx</sub>	3		3.2		μA

#### Condition

- 1 Small signal, DC – 1GHz, V<sub>ctrl</sub> = 2.7V/0V
- 2 Small signal, 1-2 GHz, V<sub>ctrl</sub> = 2.7V/0V
- 3 Input power=34.5dBm, EGSM Tx 880-915MHz, V<sub>ctrl</sub>=2.7V/0V

GaAs MMIC's are ESD sensitive devices. Special handling precautions are required.

### Truth Table

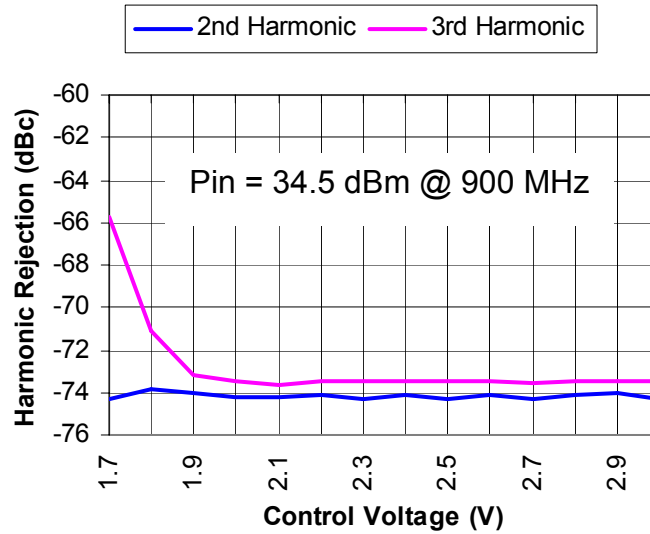
Operation	Control Voltage		
	V <sub>ctrl</sub> 1	V <sub>ctrl</sub> 2	V <sub>ctrl</sub> 3
RF1-Ant	HIGH	0	0
RF2-Ant	0	HIGH	0
RF3-Ant	0	0	HIGH

### Control values

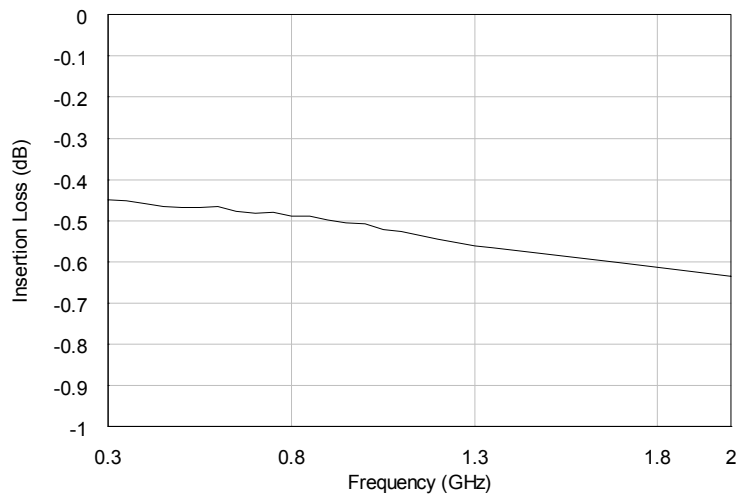
Control	Min	Typ.	Max	Unit
High	-	2.7	-	V
Low	-	0.0	-	V

### Typical Jig Measurements

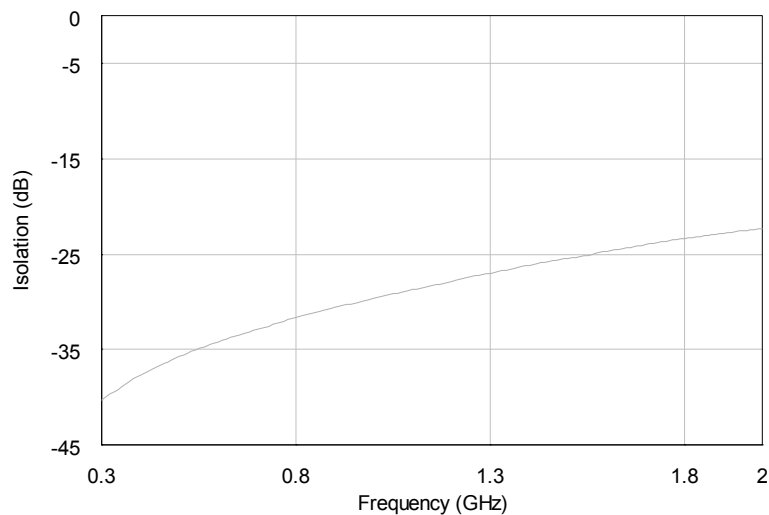
#### Harmonic Rejection vs. Control Voltage



#### Insertion Loss vs. Frequency



#### Isolation vs. Frequency

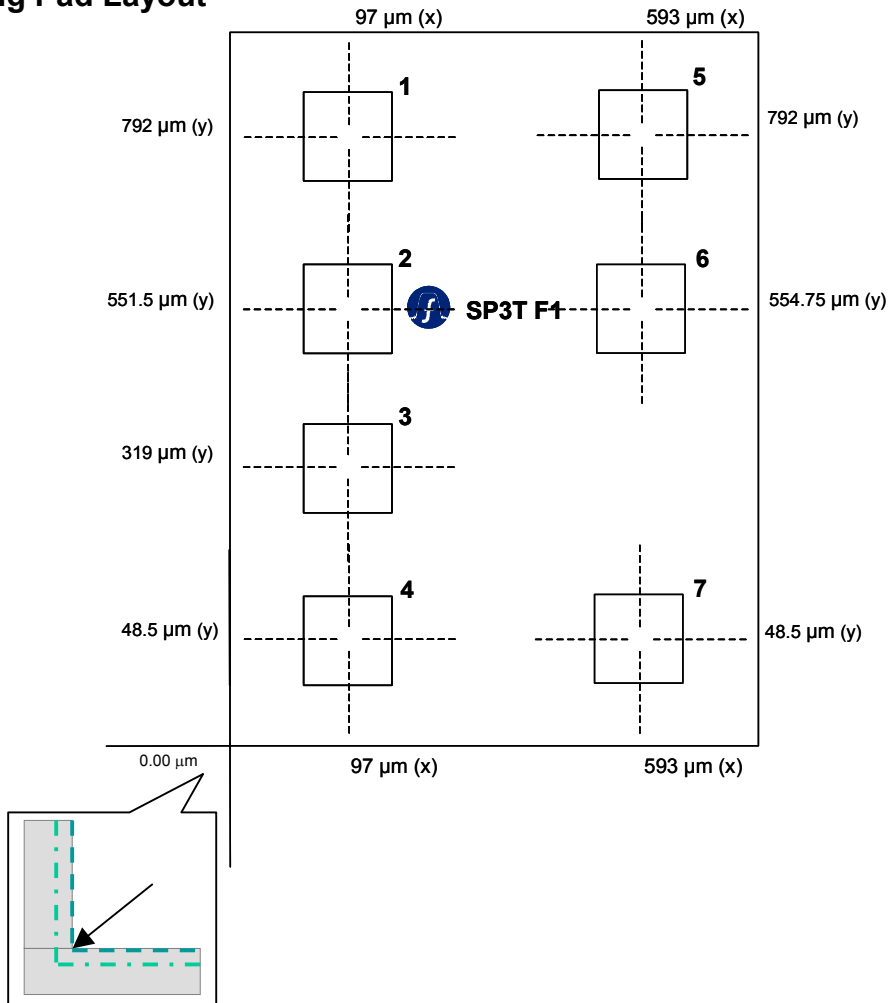


### SP3T Bonding Configuration

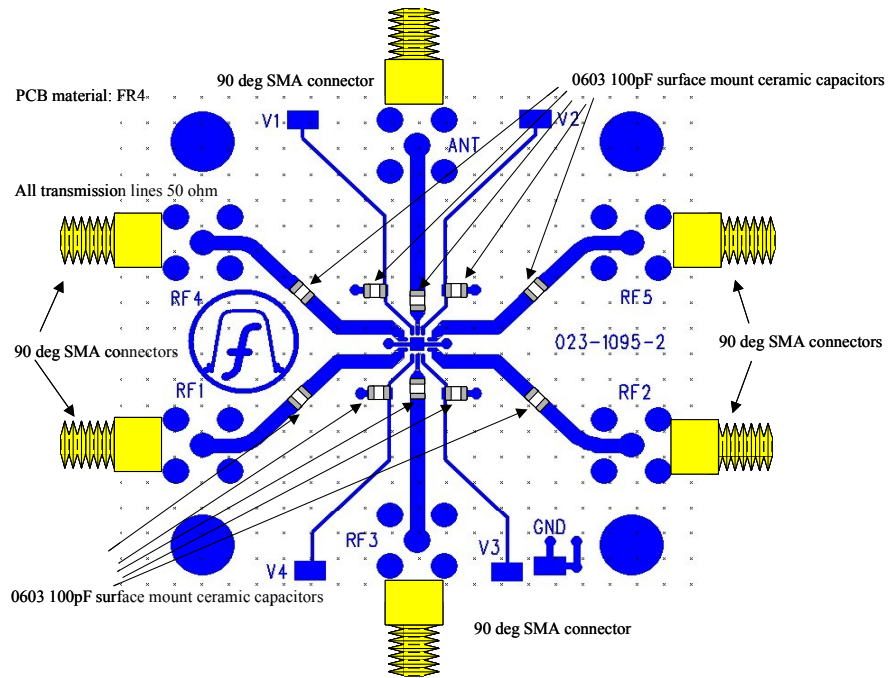
Pad Number	Port	Symbol	Connection on Board*
1	RF input port 1	RF 1	RF1
2	RF input port 2	RF 2	RF3
3	DC Control line 2	Vctrl 2	V3
4	RF input port 3	RF 3	RF2
5	DC Control line 1	Vctrl 1	V1
6	Antenna	ANT	ANT
7	DC Control line 3	Vctrl 3	V2

\* RF4, RF 5, V4 and V5 lines are unused.

### Bonding Pad Layout



Suggested Application Board Layout



Generic SPDT, 3T and 4T Evaluation Board Layout