

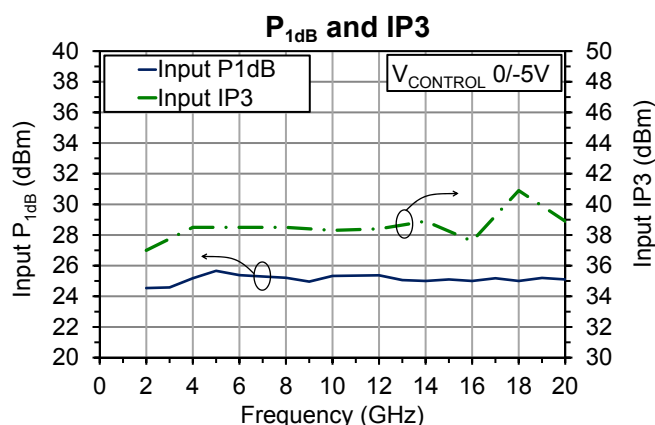
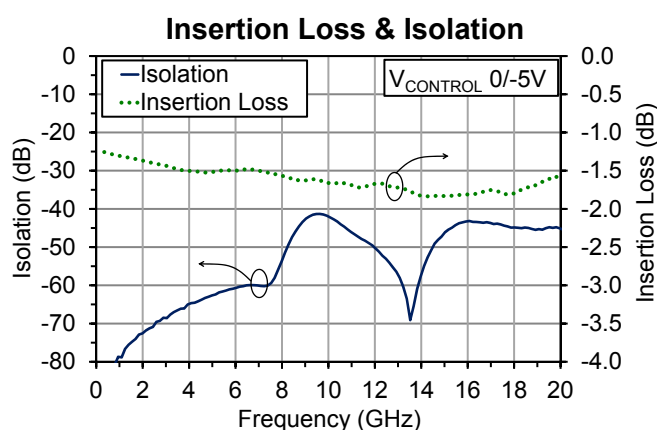
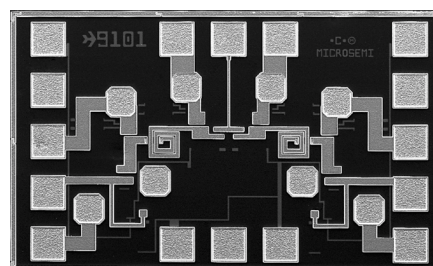
DC-20GHz, 1.5dB Insertion Loss Absorptive SPDT

Features

- Low insertion loss, 1.0dB to 1.8dB typical from DC to 12GHz
- High Isolation, 45dB to 60dB typical from DC to 12GHz
- 1.35mm x 0.85mm x 0.1mm die size

Applications

- Instrumentation
- Electronic warfare
- Microwave communications



Typical Performance (CW, Typical Device, RF Probe): $T_A = 25^\circ\text{C}$, $V_{A,B} = 0/-5\text{V}$

Parameter	Min	Typ	Max	Units
Frequency	DC	-	20	GHz
Insertion Loss	1.2	1.5	1.8	dB
Isolation	41	-	-	dB
Return Loss, On State	16	-	-	dB
Return Loss, Off State	16	-	-	dB
Input Power, P _{1dB}	22	22.5	23	dBm
Input IP3, +7dBm/Tone	37	38	40	dBm
T _{RISE} , T _{FALL} , 10%/90% RF Power	-	3.9	-	ns
T _{ON} , T _{OFF} , 50% V _{CTL} to 10%/90% RF Power	-	5.9	-	ns

Table 1: Absolute Maximum Ratings, Not Simultaneous

Parameter	Rating	Units
DC Control Voltage (V_A , V_B)	-7.5V to +0.5V	V
Input Power (P_{IN})	TBD (27 est)	dBm
Channel Temperature (T_C)	150 ¹	°C
Operating Ambient Temperature (T_A)	-55 to +85	°C
Storage Temperature	-65 to +150	°C
Thermal Resistance, Channel to Die Backside (R_{TH})	TBD (450 est)	°C/W

¹ MTTF > 10⁷ hours at T_C = 150°C

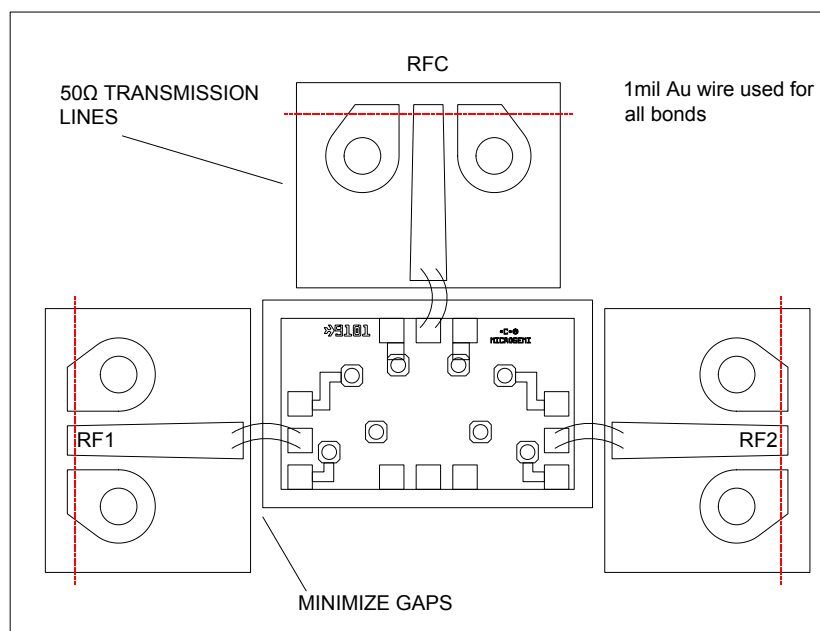


Caution, ESD
Sensitive Device

Table 2: Specifications (CW, 100% Test): T_A = 25°C, $V_{A,B}$ = -5/0V

Parameter	Frequency	Min	v	Units
Insertion Loss, On-State	20GHz	-	TBD	dB
Isolation, Off-State	20GHz	TBD	-	dB

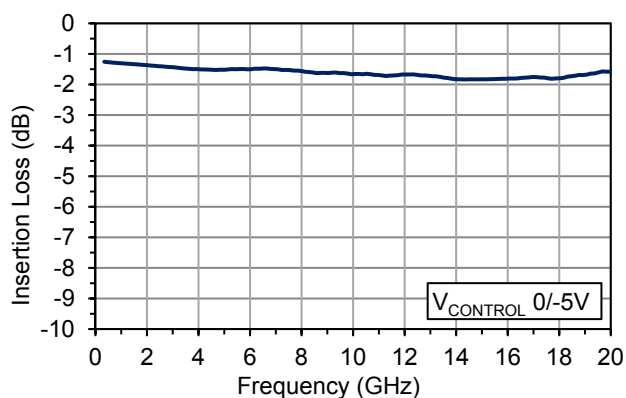
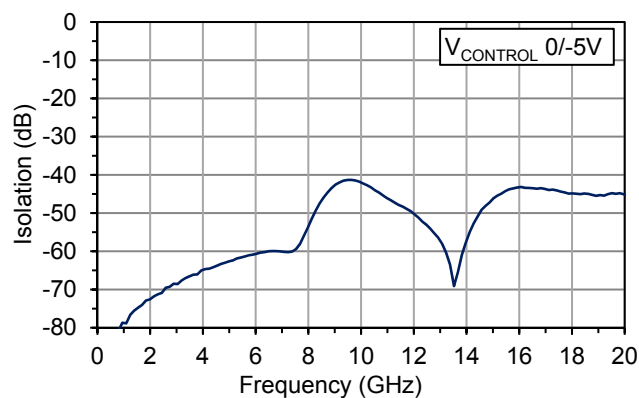
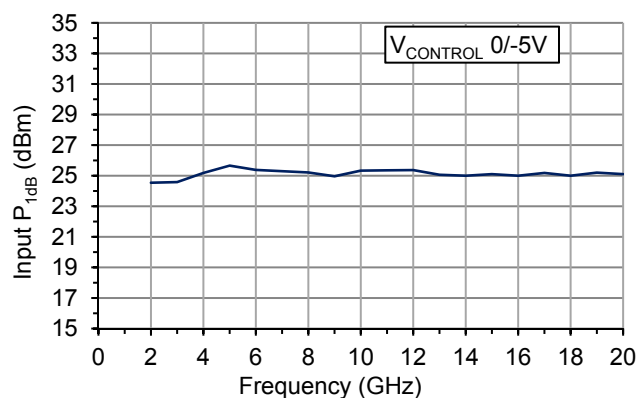
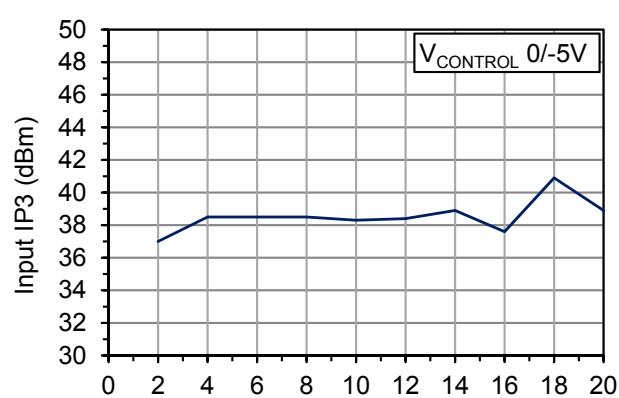
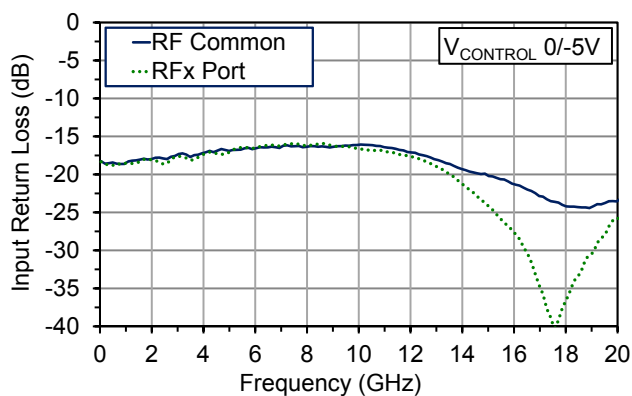
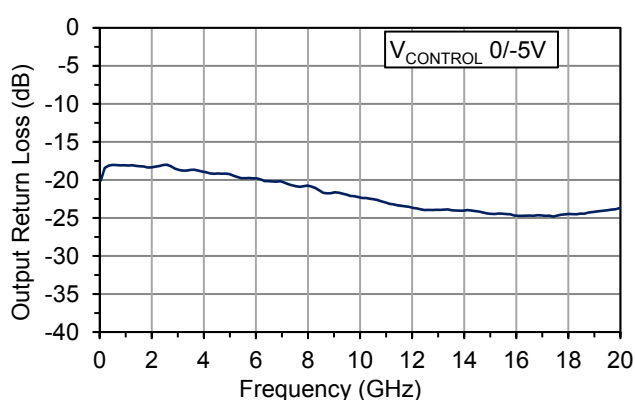
RF Probe Measurement Setup with Reference Planes²



² Reference planes are the same for S-parameter files downloadable on www.microsemi.com/mmics

Typical Performance, RF Probe

$V_{A,B} = 0V/-5V$, $T_A = 25^\circ C$ unless otherwise noted

Insertion Loss

Isolation

Input P_{1dB}

Input IP3

On State Return Losses

Off State Return Loss


Chip layout showing pad locations.

All dimensions are in microns. Die thickness is 100 microns. Backside metal is gold, bond pad metal is gold. Refer to Die Handling Application Note MM-APP-0001 (visit www.microsemi.com/mmics).

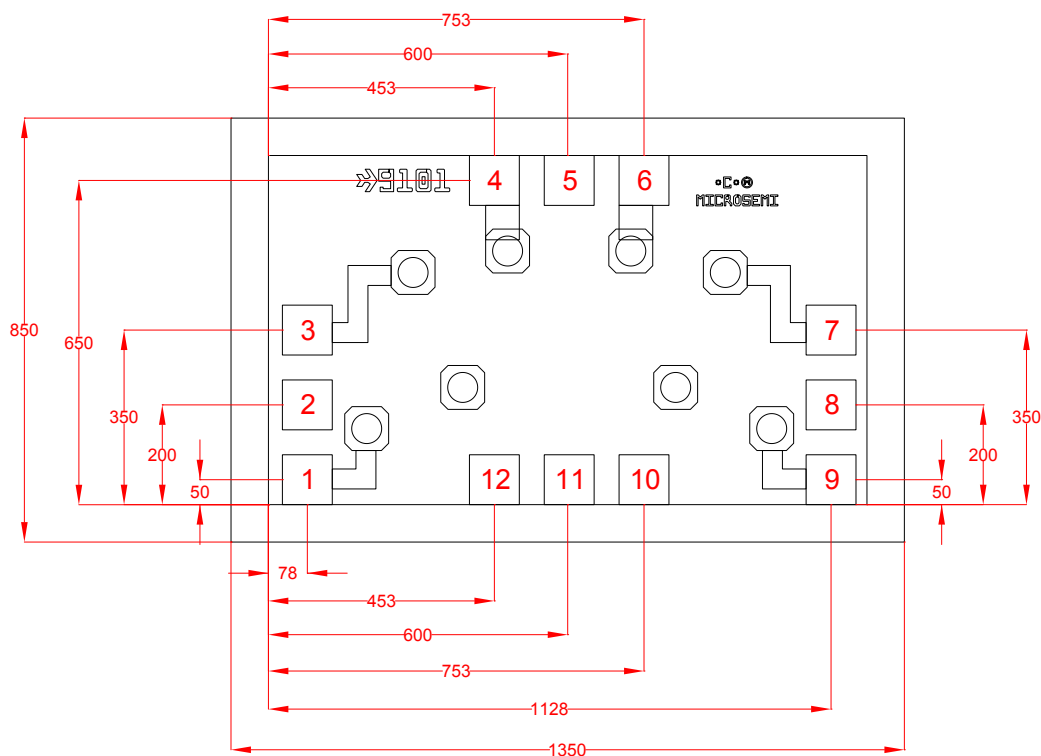


Table 3: Pad Descriptions

Pad #	Description	Pad Dimensions (μm)
1, 3, 4, 6, 7, 9	GND	100 x 100
2	RF1	100 x 100
5	RF Common	100 x 100
8	RF2	100 x 100
10	Unused	100 x 100
11	B	100 x 100
12	A	100 x 100

Table 4: Truth Table:

A	B	RF1 to Common	RF2 to Common
-5V	0V	Low loss	High loss
0V	-5V	High loss	Low loss

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Microsemi Corporate Headquarters

One Enterprise, Aliso Viejo CA 92656 USA
Within the USA: +1 (949) 380-6100
Sales: +1 (949) 380-6136
Fax: +1 (949) 215-4996

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