Product Features

Frequency Range: DC ~ 4GHz

Input Power for P0.1dB Compression: 47dBm

Insertion Loss: 0.3dB

Isolation: 40dB

Switching Speed: 50ns

Control Voltage: 0V/-40V

Package: QFN24 (plastic seal)

Application

Radar

Land mobile Radio

Communications Radio

Test Instrumentation

General Purpose

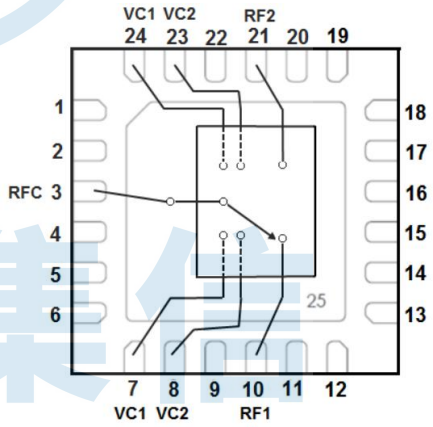
Ordering Information

Part Number	Package	Description
BR9148FP	QFN24	DC ~ 4GHz Switch

General Description

The BR9148FP is a SPDT switch. frequency from DC to 4GHz,the BR9148FP typically supports 50W input power handling at control voltages of 0/−40 V for both CW and pulsed RF operations. This switch maintains low insertion loss less than 0.3 dB and greater than 40 dB isolation, making it ideal for high power switching applications across both defense and commercial platforms. .

Functional Block Diagram



Electrical Specifications(unless otherwise stated, T_A=+25℃, V_{c1}=0V/-25V, V_{c2}=-25V/0V, see truth table)

Parameters		Min.	Typ.	Max.	Units
Insertion Loss	DC ~ 1.0GHz	—	-0.3	-0.35	dB
	1.0GHz to 2.0GHz	—	-0.4	-0.46	dB
	2.0GHz to 4.0GHz	—	-0.5	-0.99	dB
Isolation	DC to 1.0GHz	-37	-45	—	dB
	1.0GHz to 2.0GHz	-31	-35	—	dB
	2.0GHz to 4.0GHz	-23	-30	—	dB
Input Return Loss	DC ~ 1.0GHz	-19	-26	—	dB
	1.0GHz to 2.0GHz	-15	-16	—	dB
	2.0GHz to 4.0GHz	-9	-13	—	dB
Output Return Loss	DC ~ 1.0GHz	-19	-26	—	dB
	1.0GHz to 2.0GHz	-15	-16	—	dB
	2.0GHz to 4.0GHz	-10	-14	—	dB
Input Power for 0.1dB Compression	0.4 GHz	—	47	—	dBm
	2.0 GHz	—	47	—	dBm
Switching Time Characteristics					
t_{RISE},t_{FALL} (10/90% RF)	DC ~ 4.0GHz	—	35	—	ns
t_{ON},t_{OFF} (50% CTL-10/90% RF)		—	50	—	ns

Absolute Maximum Ratings

Maximum RF input Power: 47dBm

Control Voltage Range: 0V/-50V

Maximum Heat Change Power: 47dBm

Recommended Operating Conditions

Control Voltage: 0V/-40V

Operating Temperature: -55℃ ~ +125℃

Storage Temperature: -65℃ ~ +150℃

Exceeding any one or a combination of the Absolute Maximum Rating conditions may cause permanent damage to the device. Extended application of Absolute Maximum Rating conditions to the device may reduce device reliability.

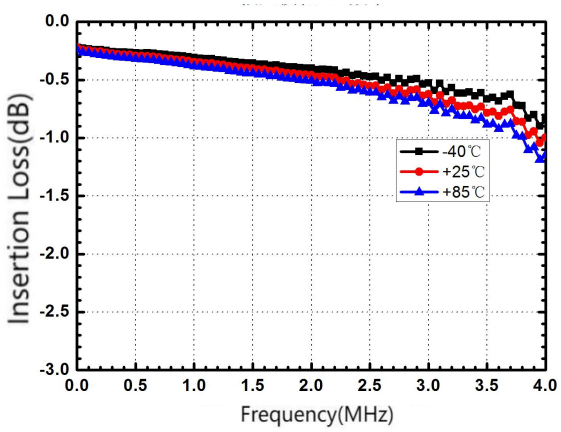
ESD WARNING



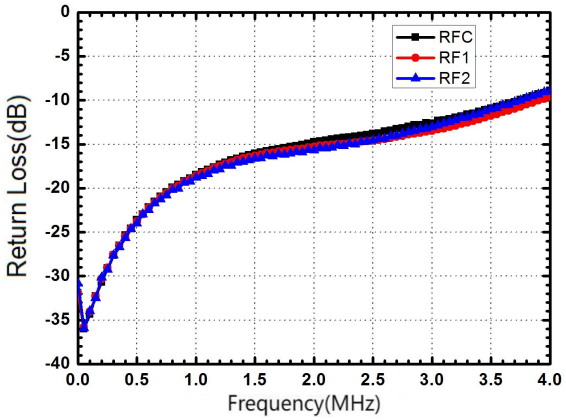
ELECTROSTATIC SENSITIVE DEVICE

OBSERVE HANDLING PRECAUTIONS

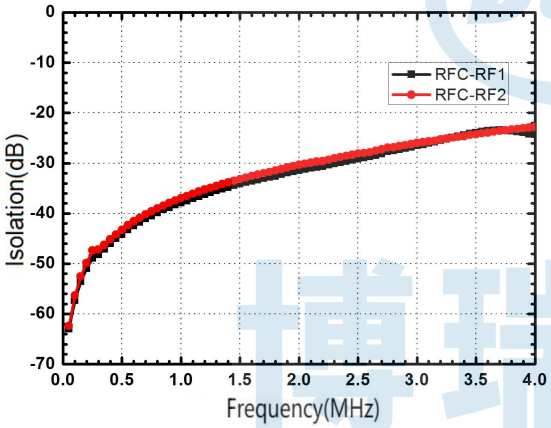
Typical Performance



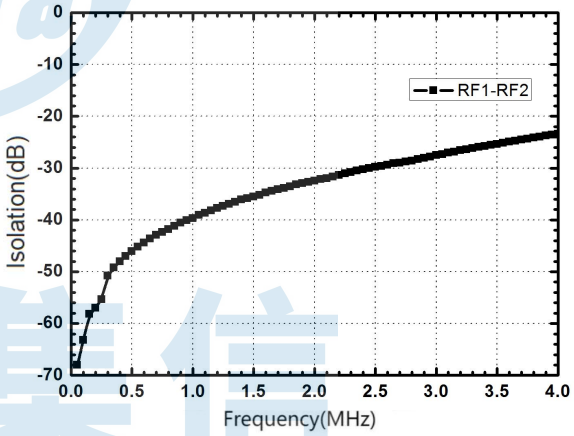
Insertion Loss



Return Loss

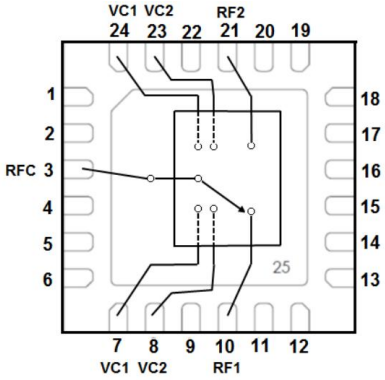


Isolation (RFC-RF1/RF2)



Isolation (RF1-RF2)

Pin Description

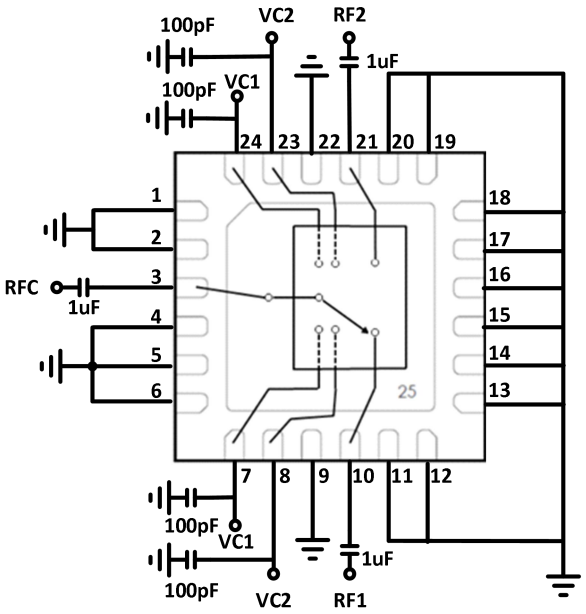


Pin Number	Pin Name	Description
3	RFC	RF input/output pins; Matched to 50 ohm; DC coupled
10	RF1	
21	RF2	
7, 24	VC1	Control voltage #1; External components are not required
8,23	VC2	Control voltage #2; External components are not required
1,5,6,11 ~ 20	N/C	Not connected internally. Recommended to be grounded at EVB level
2,4,9,22	GND	Ground. Connected to GND paddle (pin 25); should be grounded on PCB to improve isolation
25	EP	Backside Paddle. Multiple vias should be employed to minimize inductance and thermal resistance.

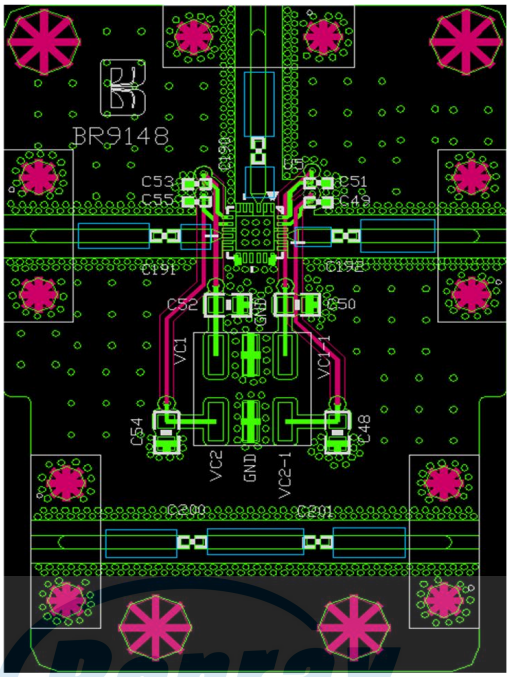
Control Voltage Truth Value Table

Control Input		Mode of Signal Path	
VC1	VC2	RFC/RF1	RFC/RF2
0	-40	On-State (Insertion Loss)	Off-State (Isolation)
-40	0	Off-State (Isolation)	On-State (Insertion Loss)

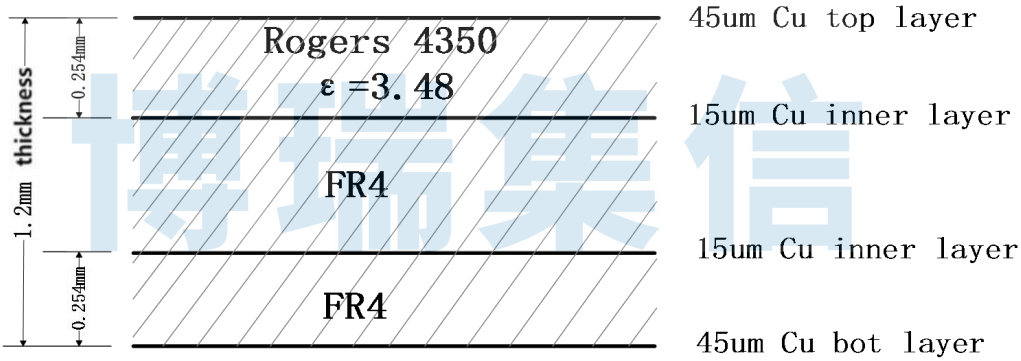
Typical Application Schematic



PCB Evaluation Board

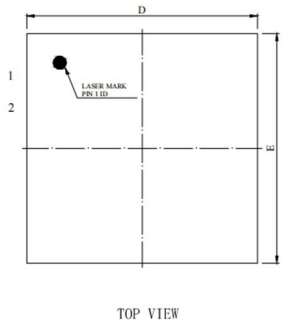


PCB

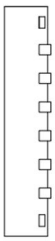


50 ohms Impedance Signal Lines： width=0.52mm, spacing=0.52mm

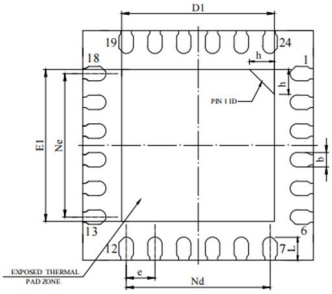
Package Dimensions (mm)



TOP VIEW

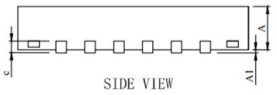


SIDE VIEW



BOTTOM VIEW

SYMBOL	MILLIMETER		
	MIN	NOM	MAX
A	0.70	0.75	0.80
A1	--	0.02	0.05
b	0.20	0.25	0.30
c	0.203REF		
D	3.90	4.00	4.10
D1	2.60	2.70	2.80
e	0.50BSC		
Ne	2.50BSC		
Nd	2.50BSC		
E	3.90	4.00	4.10
E1	2.60	2.70	2.80
L	0.35	0.40	0.45
h	0.30	0.35	0.40



SIDE VIEW

Bonray
博瑞集信