Product Features

Operating Frequency: 8GHz ~ 12GHz

Clipping Threshold: +12.5dBm@10GHz

Insertion Loss: 0.6dB@10GHz

Maximum RF input Power: 20W

Package: QFN16（3mm*3mm）

Applications

Radar

Electronic Countermeasures

Communication Systems

Receiver Protection

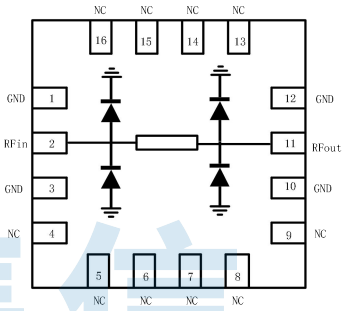
General Description

The BR9734FDJ is a 8 GHz to 12 GHz diode limiter in a surface-mount QFN16 package. The product typically offers a threshold level of +12.5dBm, an insertion loss of 0.6 dB, and the maximum RF input Power is 20 W. The product features high RF input Power, low insertion loss, and is widely used in the front end of receiving systems, such as electronic countermeasures, communication systems, and receiver Protection.

Ordering Information

Part Number	Package	Description
BR9734FDJ	QFN16	8GHz~12GHz Limiter

Functional Block Diagram



Absolute Maximum Ratings

Maximum RF Input Power: +43dBm

Recommended Operating Conditions

Storage Temperature: -65℃ ~ +150℃

Operating Temperature: -55℃ ~ +125℃

Note: Operation of the device outside the parameter ranges given absolute-maximum-ratings conditions may cause permanent damage, and. exposure to absolute-maximum-ratings conditions for extended periods will affect the reliability.

ESD WARNING

ELECTROSTATIC SENSITIVE DEVICE

OBSERVE HANDLING PRECAUTIONS

Electrical Specifications（Temp=+25℃）

Parameters	Test Condition	Min.	Typ.	Max.	Units
Insertion Loss	8000MHz	-	-0.49	-	dB
	10000MHz	-	-0.62	-	
	12000MHz	-	-0.86	-	
Input Return Loss	8000MHz	-	-25.1	-	dB
	10000MHz	-	-21.9	-	
	12000MHz	-	-13.1	-	
Output Return Loss	8000MHz	-	-27.6	-	dB
	10000MHz	-	-24.0	-	
	12000MHz	-	-14.4	-	
Threshold Level	8000MHz	-	13.0	-	dBm
	10000MHz	-	12.5	-	
	12000MHz	-	11.0	-	
Clipping Level	8000MHz	-	12.1	-	dBm
	10000MHz	-	11.3	-	
	12000MHz	-	11.3	-	

Typical Performance

S- Parameter EVB Test Results (Temp = +25 ℃)

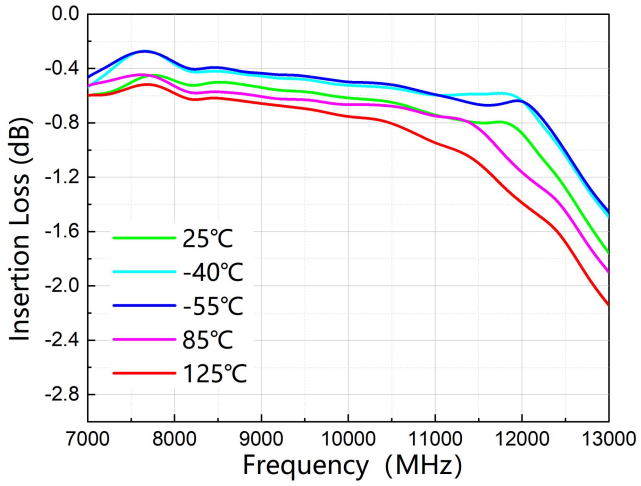
Parameters	Typ.											Units
Frequency	8000	8200	8400	8600	8800	9000	9200	9400	9600	9800	10000	MHz
Insertion Loss	-0.49	-0.54	-0.50	-0.50	-0.52	-0.54	-0.56	-0.57	-0.58	-0.60	-0.62	dB
Input Return Loss	-25.1	-26.1	-26.2	-26.3	-25.6	-25.7	-26.4	-24.5	-23.2	-23.0	-21.9	dB
Output Return Loss	-27.6	-29.2	-29.9	-29.9	-29.4	-29.3	-28.6	-27.3	-25.7	-24.9	-24.0	dB
Test Conditions: Pin=0dBm, Temp=+25℃												

Parameters	Typ.											Units
Frequency	10200	10400	10600	10800	11000	11200	11400	11600	11800	12000	-	MHz
Insertion Loss	-0.63	-0.64	-0.66	-0.70	-0.74	-0.77	-0.79	-0.81	-0.78	-0.86	-	dB
Input Return Loss	-21.2	-20.6	-20.0	-19.0	-17.9	-17.5	-16.3	-14.7	-13.9	-13.1	-	dB
Output Return Loss	-23.8	-23.3	-22.5	-21.7	-20.8	-20.2	-19.2	-17.8	-15.9	-14.4	-	dB
Test Conditions: Pin=0dBm, Temp=+25℃												

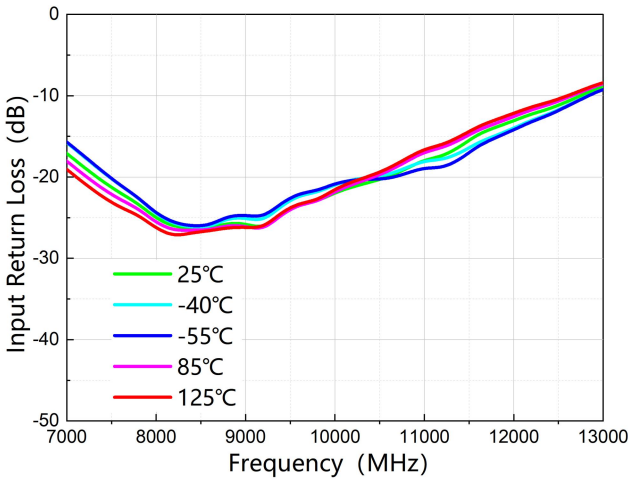
Output Power vs.Input Power（EVB Test Results, Temp=+25℃）

Input Power(dBm)	8GHz	9GHz	10GHz	11GHz	12GHz
	Output Power (dBm)				
0	-0.9	-1.0	-1.3	-1.2	-1.8
1	0.0	-0.1	-0.1	-0.1	-0.9
2	1.1	0.8	0.6	0.6	0.3
3	2.1	2.0	1.5	1.4	1.3
4	3.1	2.9	3.0	2.5	2.6
5	4.0	3.9	3.4	3.5	3.2
6	5.0	4.8	4.5	4.3	4.2
7	6.0	6.0	5.5	5.2	5.0
8	7.0	7.0	6.9	6.8	6.1
9	7.9	7.7	7.6	7.4	6.8
10	8.7	8.7	8.6	8.1	7.3
11	9.4	9.4	9.2	9.0	7.8
12	9.9	10.0	9.8	9.3	8.0
13	10.3	10.6	10.2	9.6	8.2
14	10.7	10.8	10.4	9.7	8.4
15	11.0	11.0	10.6	9.8	8.5
16	11.2	11.1	10.6	9.9	8.6
17	11.4	11.1	10.7	9.9	8.8
18	11.5	11.2	10.7	9.9	8.8
19	11.6	11.2	10.8	10.0	9.0
20	11.7	11.2	10.8	10.1	9.1
21	11.8	11.3	10.9	10.1	9.2
22	11.8	11.3	10.9	10.2	9.4
23	11.9	11.3	10.9	10.3	9.5
24	12.0	11.3	11.0	10.3	9.7
25	12.0	11.3	11.0	10.4	9.9
26	12.0	11.3	11.1	10.4	10.2
27	12.0	11.3	11.1	10.6	10.6
28	12.1	11.3	11.2	10.6	10.9
29	12.1	11.4	11.2	10.7	11.2
30	12.0	11.4	11.3	10.8	11.4
31	12.0	11.4	11.3	10.8	11.3
32	12.0	11.4	11.2	10.8	11.3
33	12.0	11.5	11.2	10.7	11.2
34	12.0	11.4	11.1	10.7	11.3
35	12.0	11.4	11.0	10.7	11.2
36	12.1	11.3	10.9	10.5	11.1
37	12.0	11.2	10.8	10.5	11.2
38	11.8	11.1	10.8	10.4	11.0
39	11.6	11.0	10.6	10.4	10.8
40	11.5	10.9	10.4	10.2	10.7
41	11.3	10.8	10.3	9.9	10.3
42	11.0	10.7	10.0	9.8	10.4
43	10.9	10.5	9.8	9.4	10.1

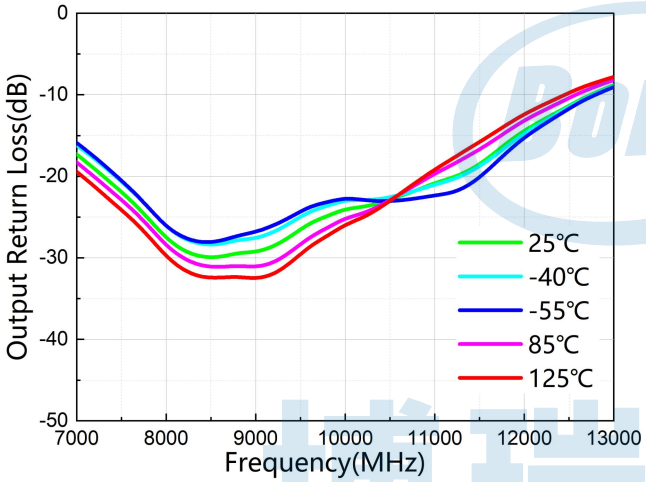
Performance Curve (EVB Test Results)



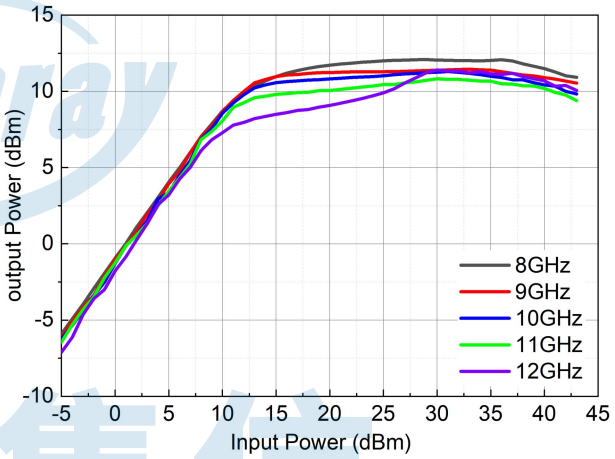
Insertion Loss vs. Freq



Input Return Loss vs. Freq

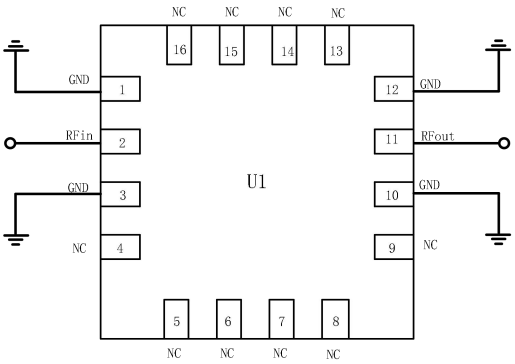


Output Return Loss vs. Freq



P_{in} vs. P_{out}

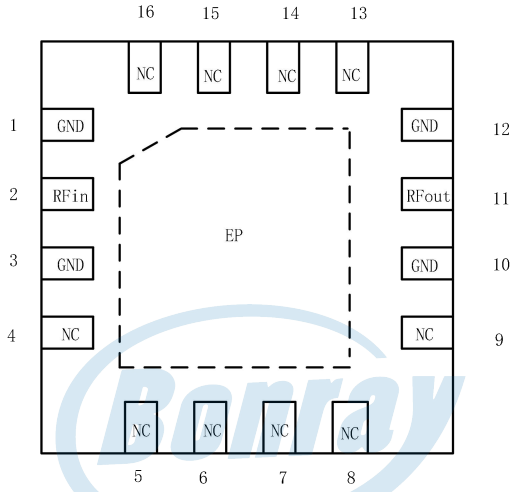
Typical Application Schematic



Bill of Material

Device	Package Type	Value	P/N
U1	QFN16	/	BR9734FDJ

Pin Configuration and Description

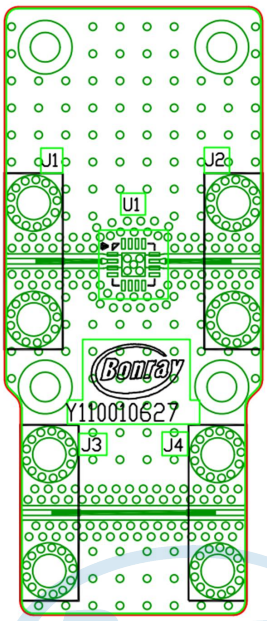


Pin Configuration

Pin Description

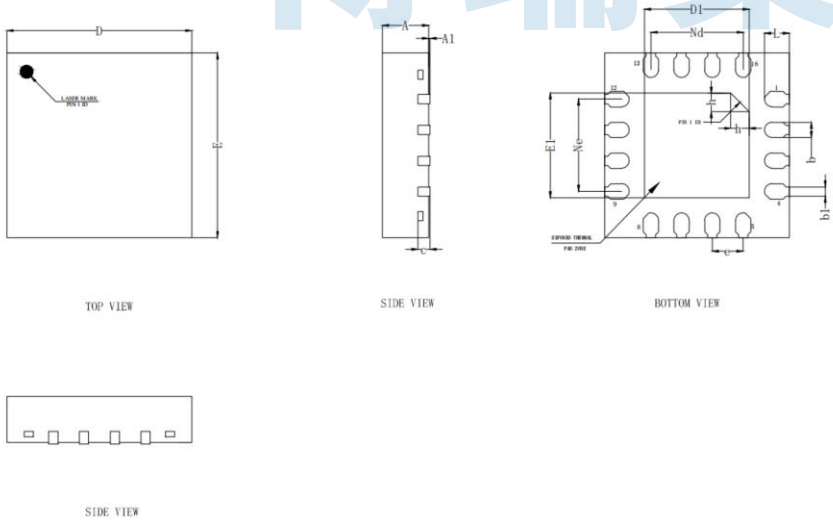
Pin Number	Pin Name	Description
2	RFin	RF input pin. An external DC-blocking capacitor is required during use
11	RFout	RF output pin. An external DC-blocking capacitor is required during use
1,3,10,12	GND	Ground pin .Connect to RF/DC ground.
4,5,6,7,8,9,13,14,15,16	NC	Floating or grounded.. It is recommended to ground the device during use
17	EP	Exposed pin. The exposed pad must be connected to RF ground and DC ground.

PCB Evaluation Board



56Ω line：width=0.406mm, spacing=0.33mm,
PCB thickness0.4mm

Package Dimensions (mm)



SYMBOL	MILLIMETER		
	MIN	NOM	MAX
A	0.70	0.75	0.80
A1	—	0.02	0.05
b	0.20	0.25	0.30
b1	0.150REF		
c	0.203REF		
D	2.90	3.00	3.10
D1	1.60	1.70	1.80
e	0.50BSC		
Ne	1.50BSC		
Nd	1.50BSC		
E	2.90	3.00	3.10
E1	1.60	1.70	1.80
L	0.25	0.30	0.35
h	0.25	0.30	0.35