Product Features

Operating Band: 10MHz ~ 1GHz

Threshold Level: +11dBm

Insertion Loss: 0.4dB

Response Time: 2.4ns

Package: DFN8 (plastic seal)

General Description

The BR9301DA is a surface mount low capacitance diode limiter. The chip adopts DFN8 package, working band 10MHz ~ 1GHz, Threshold Level +11dBm, Insertion Loss 0.4dB, clipping response time 2.4ns.

Absolute Maximum Ratings

Maximum RF input Power: +30dBm

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.

Apply

Low Insertion Loss

High Power limiting

Receiver Protection

Ordering Information

Part Number	Package	Description
BR9301DA	DFN8	limiter

Recommended Operating Conditions

Storage Temperature: -65℃ ~ +150℃

Operating Temperature: -55℃ ~ +125℃

ESD WARNING

ELECTROSTATIC SENSITIVE DEVICE

OBSERVE HANDLING PRECAUTIONS

Electrical Specifications

Parameters	Test Condition	Min.	Typ.	Max.	Units
Operating Frequency Band	-	10	-	1000	MHz
Linear Range					
Maximum input Power	30MHz	-	9.2	-	dBm
	100MHz	-	9.2	-	
	1000MHz	-	9.5	-	
Insertion Loss	30MHz	-	-0.14	-	dB
	100MHz	-	-0.16	-	
	1000MHz	-	-0.59	-	
Input Return Loss	30MHz	-	-35.0	-	dB
	100MHz	-	-29.1	-	
	1000MHz	-	-13.1	-	
Limiting Range					
Input Power	The input power is greater than the input 1dB compression point	10	-	30	dBm
Output Power	-	-	+11	-	dBm
Response Time	Input 20dBm pulse signal, pulse width 50us, period 1ms, frequency 100MHz	-	2.4	-	ns
Test Condition: Pin=0dBm, Temp=+25℃ in linear range					

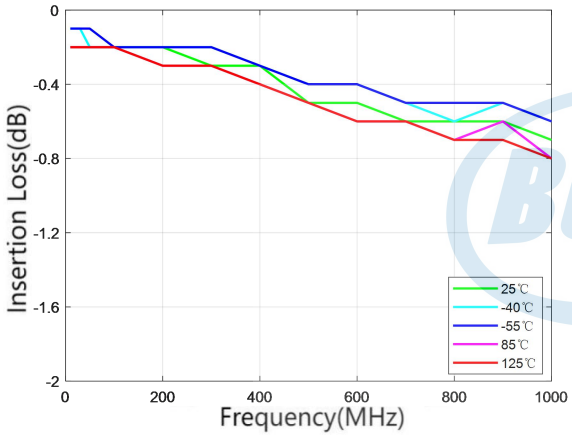
Typical Performance (EVB test results)

Parameters	Typ.							Units
Frequency	10	30	100	200	500	800	1000	MHz
Insertion Loss	-0.14	-0.14	-0.16	-0.20	-0.36	-0.54	-0.59	dB
Input Return Loss	-36.3	-35.0	-29.1	-23.5	-16.0	-13.6	-13.1	dB
Output Return Loss	-35.9	-35.0	-29.1	-23.7	-16.5	-14.2	-13.7	dB
Test Condition: Pin=0dBm, Temp=+25℃								

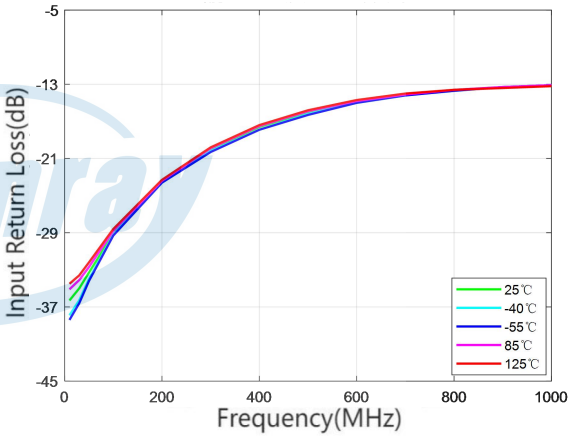
Test Results of limiting Power

Frequency Point	30MHz	100MHz	1000MHz
Pin (dBm)	Pout (dBm)		
-2	-2.1	-2.1	-3.2
-1	-1.1	-1.1	-2.2
0	-0.1	-0.1	-1.2
1	0.9	0.9	-0.2
2	1.9	1.9	0.9
3	2.9	2.9	1.8
4	3.9	3.9	2.8
5	4.9	4.9	3.8
6	5.9	5.9	4.8
7	6.9	6.8	5.8
8	7.7	7.7	6.7
9	8.4	8.4	7.5
10	8.8	8.9	8.2
11	9.2	9.3	8.7
12	9.6	9.7	9.1
13	9.8	9.9	9.4
14	10.1	10.2	9.9
15	10.3	10.4	10.1
16	10.4	10.6	10.2
17	10.6	10.7	10.3
18	10.7	10.8	10.5
19	10.9	11.0	10.6
20	11.0	11.1	10.7
21	11.1	11.3	10.8
22	11.2	11.4	10.9
23	11.4	11.5	11.0

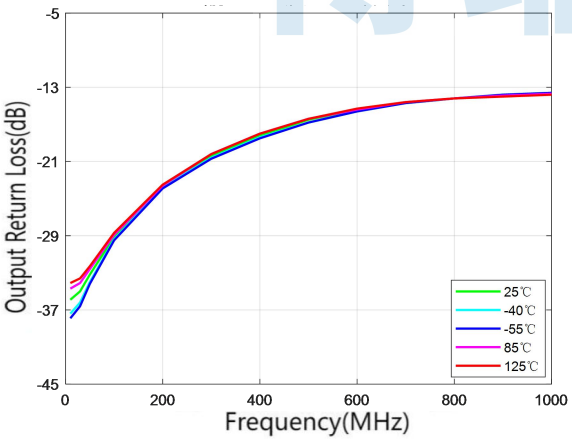
24	11.5	11.6	11.2
25	11.5	11.7	11.3
26	11.5	11.9	11.4
27	11.5	12.0	11.5
28	11.6	12.2	11.6
29	11.6	12.4	11.7
30	11.7	12.6	11.8



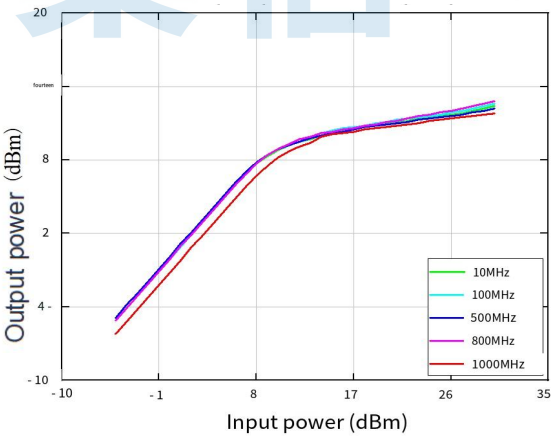
Insertion Loss



Input Return Loss

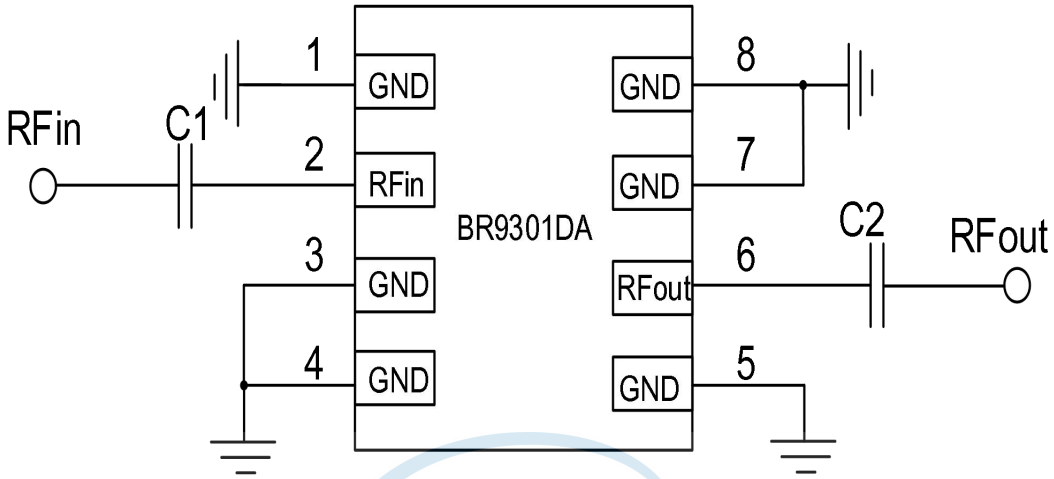


Output Return Loss



P_{out} vs P_{in}

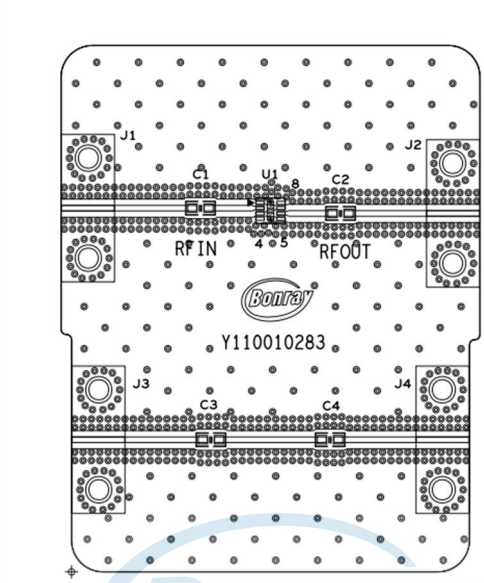
Typical Application Schematic



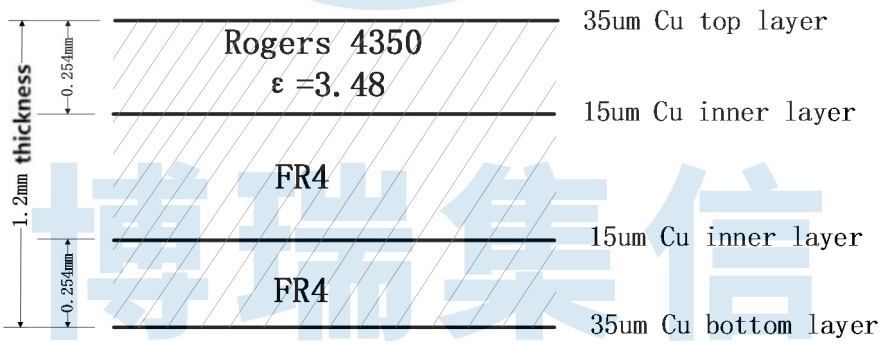
Bill of Material

Designator	Package	Description	Part Number
C1, C2	0402	1uF	GRM1555C1H105JA01

PCB Evaluation Board

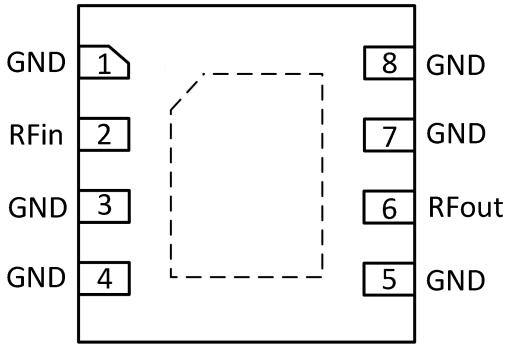


PCB



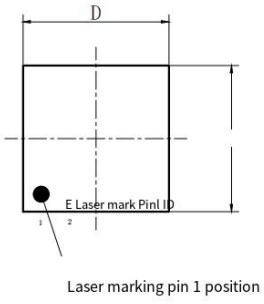
50 ohms Impedance Signal Lines：width=0.53mm, spacing=0.53mm

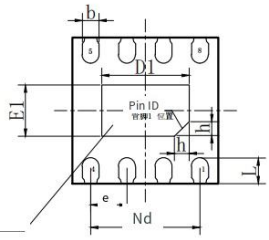
Pin Configuration and Description



Pin Number	Pin Name	Description
2	RFin	Rf input pins; The pin is DC coupled and has been internally matched to 50 ohms, and only needs to be added with a spacer capacitor.
1,3,4,5,7,8	GND	Ground pins; This pin and the package substrate must be connected to the RF/DC ground.
6	RFout	Rf output pins; The pin is DC coupled and has been internally matched to 50 ohms, requiring an additional isolation capacitor.
-	EP	Be grounded.

Package Dimensions (mm)





SYMBOL	MILLIMETER		
	MIN	NOM	MAX
A	0.75	0.80	0.85
A1	0.01	0.02	0.05
b	0.20	0.25	0.30
c		0.270REF	
D	1.95	2.00	2.05
D1	1.50	1.60	1.70
e		0.50BSC	
Nd		1.50BSC	
E	1.95	2.00	2.05
E1	0.80	0.90	1.00
L	0.20	0.25	0.30
h	0.25	0.30	0.35