

Product Features

Operating Frequency: 6GHz ~ 18GHz

Insertion Loss: 0.4dB@12GHz

Clipping Threshold: +13dBm@12GHz

Maximum RF Input Power: +40dBm

Apply

Radar

Electronic Countermeasures

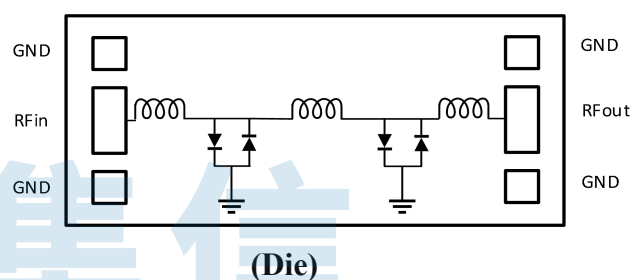
Communication Systems

TDD or FDD System

General Description

The BR9735LDZ is a high-power MMIC limiter covering a frequency range of 6 GHz to 18 GHz. As a passive device, it requires no power supply and only needs external DC-blocking capacitors at the RF input and output ports. This product features high reliability, low insertion loss, low clipping level, and fast response time. It is widely used in the front end of receiving systems, such as electronic countermeasures, communication systems, and receiver Protection.

Functional Block Diagram



Absolute Maximum Ratings

Maximum RF Input Power: +40dBm

Recommended Operating Conditions

Storage Temperature: -65°C ~ +150°C

Operating Temperature: -55°C ~ +125°C

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°C)

Parameters	Test Condition	Min.	Typ.	Max.	Units
Insertion Loss	6GHz	-	-0.7	-	dB
	10GHz	-	-0.4	-	
	14GHz	-	-0.4	-	
	18GHz	-	-0.8	-	
Input Return Loss	6GHz	-	-11.4	-	dB
	10GHz	-	-34.0	-	
	14GHz	-	-21.9	-	
	18GHz	-	-30.6	-	
Output Return Loss	6GHz	-	-11.4	-	dB
	10GHz	-	-26.4	-	
	14GHz	-	-18.8	-	
	18GHz	-	-19.8	-	
Clipping Level	6GHz	-	13.0	-	dBm
	10GHz	-	11.9	-	
	14GHz	-	11.3	-	
	18GHz	-	10.9	-	

Typical Performance

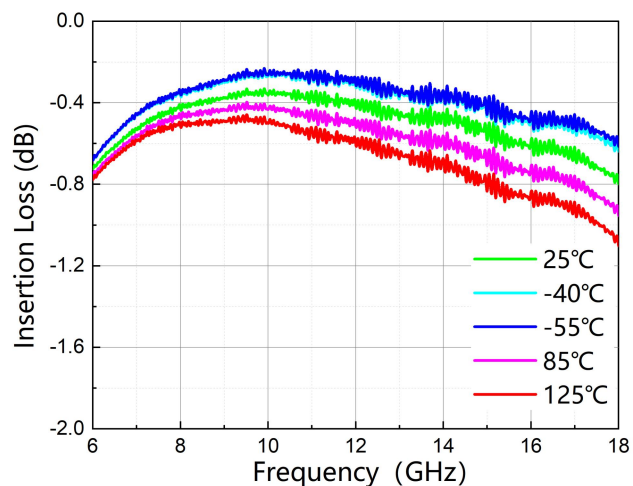
S-Parameter (Probe Test Results)

Parameters	Typ.							Units
Frequency	6000	7000	8000	9000	10000	11000	12000	MHz
Insertion Loss	-0.73	-0.52	-0.43	-0.38	-0.35	-0.39	-0.42	dB
Input Return Loss	-11.4	-14.3	-18.0	-23.2	-34.0	-33.7	-26.1	dB
Output Return Loss	-11.4	-14.4	-18.1	-22.6	-26.4	-24.5	-21.7	dB
Parameters	Typ.							Units
Frequency	12500	13000	14000	15000	16000	17000	18000	MHz
Insertion Loss	-0.45	-0.47	-0.49	-0.55	-0.63	-0.68	-0.8	dB
Input Return Loss	-24.2	-23.0	-21.9	-21.8	-23.4	-27.0	-30	dB
Output Return Loss	-20.7	-19.9	-18.8	-18.7	-19.0	-19.5	-19.8	dB
Test Conditions: Pin=0dBm, Temp=+25°C								

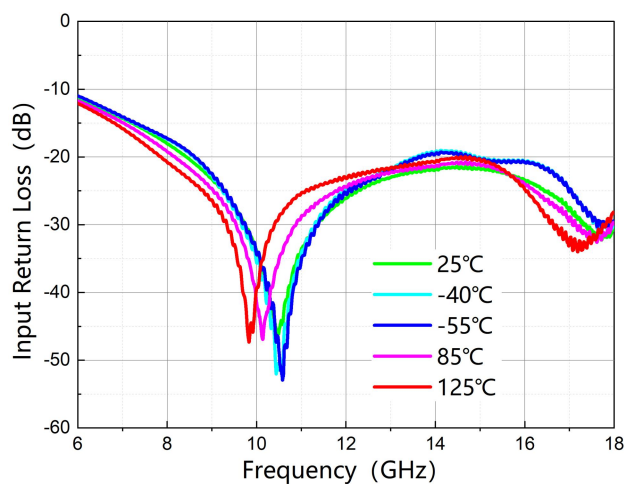
EVB Test Results of Output Power vs Input Power (Temp = +25 °C)

Input Power (dBm)	6GHz	8GHz	10GHz	12GHz	14GHz	16GHz	18GHz
	Output Power (dBm)						
3	1.4	1.8	1.4	1.4	1.3	0.5	-0.4
4	2.4	2.9	2.4	2.4	2.2	1.5	0.6
5	3.4	3.8	3.5	3.4	3.2	2.5	1.7
6	4.3	4.9	4.3	4.4	4.2	3.5	2.4
7	5.4	5.8	5.4	5.3	5.1	4.4	3.5
8	6.4	6.8	6.5	6.4	6.0	5.3	4.5
9	7.4	7.9	7.3	7.3	7.0	6.5	5.5
10	8.4	8.7	8.3	8.4	7.8	7.2	6.4
11	9.4	9.7	9.0	9.1	8.6	8.1	7.3
12	10.3	10.5	9.7	9.9	9.4	8.8	7.9
13	11.1	11.1	10.3	10.7	9.9	9.3	8.5
14	11.7	11.5	10.7	11.2	10.2	9.6	8.9
15	12.1	11.8	11.0	11.6	10.4	9.8	9.2
16	12.3	12.0	11.3	11.8	10.7	10.0	9.3
17	12.4	12.1	11.4	12.0	10.8	10.1	9.3
18	12.5	12.2	11.6	12.1	10.9	10.1	9.4
19	12.6	12.3	11.7	12.1	11.0	10.1	9.4
20	12.7	12.4	11.9	12.1	11.0	10.2	9.4
21	12.8	12.4	11.9	12.2	11.0	10.2	9.4
22	12.9	12.4	11.9	12.1	11.0	10.2	9.5
23	12.9	12.4	11.9	12.1	11.0	10.2	9.5
24	13.0	12.4	11.9	12.1	11.0	10.2	9.6
25	13.0	12.4	11.8	12.1	11.0	10.2	9.7
26	12.9	12.3	11.8	12.1	11.0	10.3	9.7
27	12.9	12.2	11.7	12.1	11.0	10.3	9.8
28	12.8	12.1	11.7	12.0	11.1	10.3	10.0
29	12.8	12.1	11.6	12.0	11.1	10.4	10.1
30	12.7	11.9	11.5	11.9	11.1	10.4	10.3
31	12.7	11.8	11.5	11.8	11.2	10.5	10.4
32	12.6	11.7	11.4	11.7	11.2	10.6	10.6
33	12.5	11.5	11.4	11.7	11.2	10.6	10.7
34	12.3	11.3	11.4	11.6	11.2	10.8	10.9
35	12.1	11.2	11.4	11.5	11.3	10.9	10.9
36	12.0	11.1	11.4	11.7	10.4	10.9	10.7
37	11.8	10.9	10.8	10.8	9.6	10.8	10.6
38	11.3	10.5	10.5	10.3	8.8	9.6	10.4
39	11.0	10.1	10.2	9.9	9.1	9.3	9.8
40	10.5	9.8	9.8	9.4	8.8	8.9	9.5

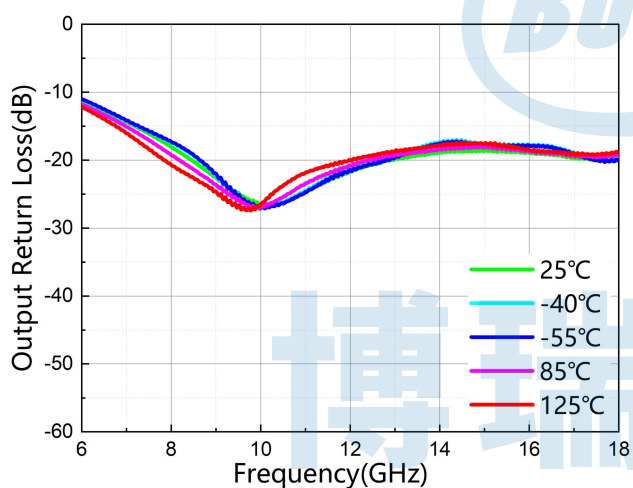
Performance Curve



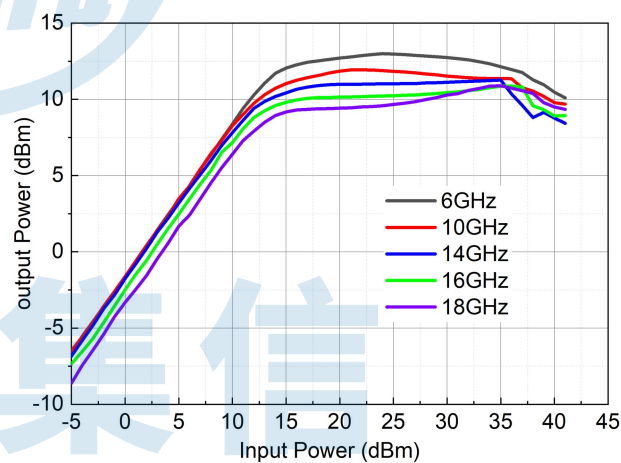
Insertion Loss vs. Freq



Input Return Loss vs. Freq

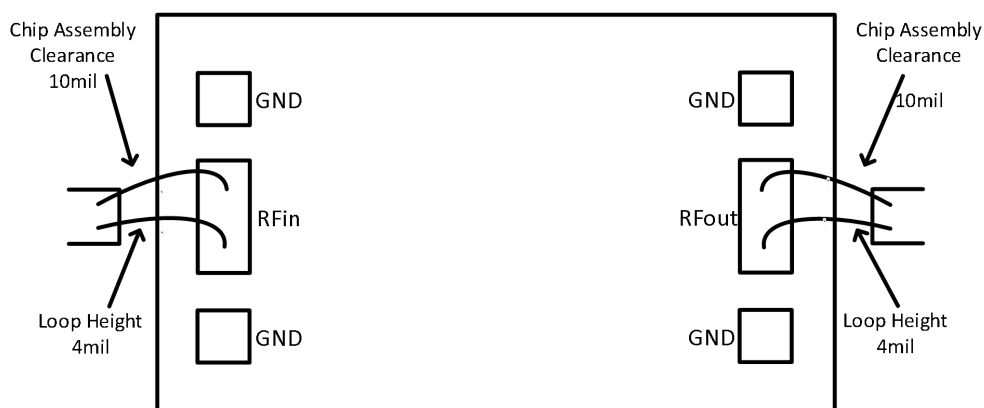


Output Return Loss vs. Freq



Output power vs. Input power

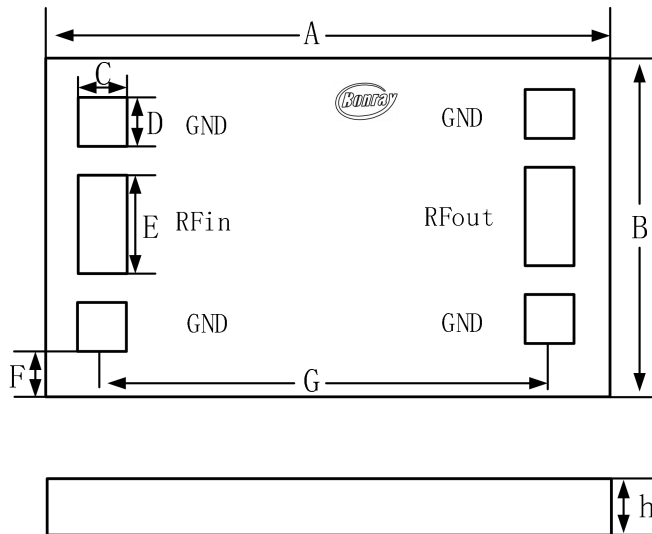
Assembly Diagram



Important Notes for Use:

1. **Storage :** The chips must be stored in electrostatic-protective containers under a nitrogen atmosphere.
2. **Cleaning:** Die must be handled in a clean environment. The use of liquid cleaning agents on the chip is prohibited.
3. **ESD Protection:** Strictly adhere to ESD protection requirements to prevent electrostatic damage.
4. **General Handling:** Use vacuum tweezers or precision fine-tip tweezers to pick up the chip. Avoid touching the chip surface with tools or fingers during operation.
5. **Mounting :** The chip can be mounted using either AuSn solder eutectic bonding or conductive adhesive bonding. The mounting surface must be clean and flat, and the gap between the chip and the input/output RF transmission lines on the substrate should be as small as possible.
6. **Sintering Process :** When using 80/20 AuSn solder, the recommended peak reflow temperature is 300 °C with a duration of approximately 5 seconds.
7. **Adhesive Bonding Process:** For conductive adhesive bonding, the adhesive must spread to cover at least 75 % of each side, and the adhesive fillet height must not exceed the chip surface. Refer to the adhesive manufacturer's data for the curing conditions.
8. **Wire Bonding :** Unless otherwise specified, a 25 μm gold wire wedge-bonding process is recommended. The recommended thermosonic bonding temperature is 150 °C.
9. **Support:** Please contact customer service for any further inquiries.

Mechanical Information (mm)



Dimension Symbol	Value		
	Min	Nom	Max
A	0.80	0.85	0.90
B	0.45	0.50	0.55
C	0.054	0.064	0.074
D	0.054	0.064	0.074
E	0.129	0.139	0.149
F	0.033	0.068	0.081
G	0.651	0.671	0.691
h	0.080	0.100	0.120

Notes:

1. Backside and bond pad metal: Gold;
2. Backside is RF and DC ground;
3. The bonding pads are gold-plated. Pad dimensions: RFin pad: $64\ \mu\text{m} \times 139\ \mu\text{m}$; RFout pad: $64\ \mu\text{m} \times 139\ \mu\text{m}$;
4. Cannot be bonded on the hole.

Functional Description

Pin Name	Description
RFin	RF input pin. An external DC-blocking capacitor is required.
RFout	RF output pin. An external DC-blocking capacitor is required.
GND	Ground pin. Connected to ground via the Die backside.