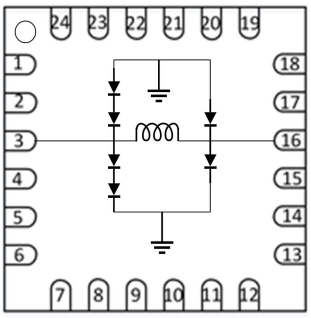
★1.Product Features

- Operating frequency: 1 ~ 3 GHz
- Clipping threshold: +13 dBm @ 2 GHz
- Insertion loss: 0.45 dB @ 2 GHz
- Maximum RF input power: +53 dBm (CW)
- Maximum RF input power: +56 dBm (Pulse)
- Package: QFN24 (4 mm × 4 mm)

Functional Block Diagram



★2.Product Introduction

TFLM0103P is a diode limiter in a surface-mount QFN24 package (4 mm × 4 mm). It covers the 1 ~ 3 GHz frequency range and typically provides a clipping threshold of +13 dBm with an insertion loss of 0.45 dB. The maximum continuous wave input power is 53 dBm and the maximum pulse input power is 56 dBm. The product features high RF input power handling and low insertion loss, and is widely used in the front end of receiving systems such as electronic countermeasures, communication systems and receiver protection.

Applications

- Electronic countermeasures
- Communication systems
- Receiver protection

★3.Absolute Maximum Ratings and Recommended Operating Conditions

Absolute Maximum Ratings

Maximum RF input Power:
+53dBm（25℃，CW，15s）
Maximum RF input Power: +56dBm
（25℃，Pulse，3ms pulse width，10% duty cycle）

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.

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★4.ESD Warning



ELECTROSTATIC SENSITIVE DEVICE
OBSERVE HANDLING PRECAUTIONS

★5.Typical Performance

EVB Test Results，CW，Temp = +25 ℃

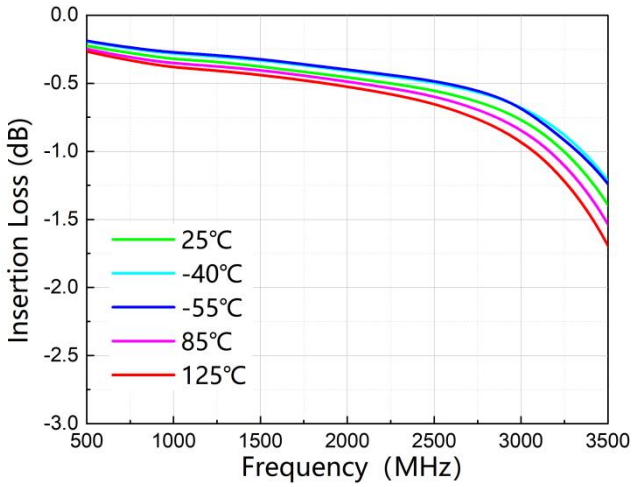
Parameters	Typ.					Units
Freq	1000	1500	2000	2500	3000	MHz
Insertion Loss	-0.32	-0.38	-0.45	-0.55	-0.76	dB
Input Return Loss	-18.5	-22.5	-24.7	-45.1	-17.7	dB
Output Return Loss	-19.9	-29.9	-28.6	-35.5	-16.7	dB
Maximum RF input Power(CW)	-	-	53	-	-	dBm
Maximum RF input Power(Pulse)	-	-	56	-	-	dBm
Clipping response time	-	-	3.8	-	-	ns
IIP3	21.48	21.27	21.08	21.16	20.97	dBm
Pulse wave test conditions: 3ms pulse width, duty cycle 10%； IIP3 test conditions: IIP3 Spacing = 10 MHz, Pin = -10 dBm.						

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

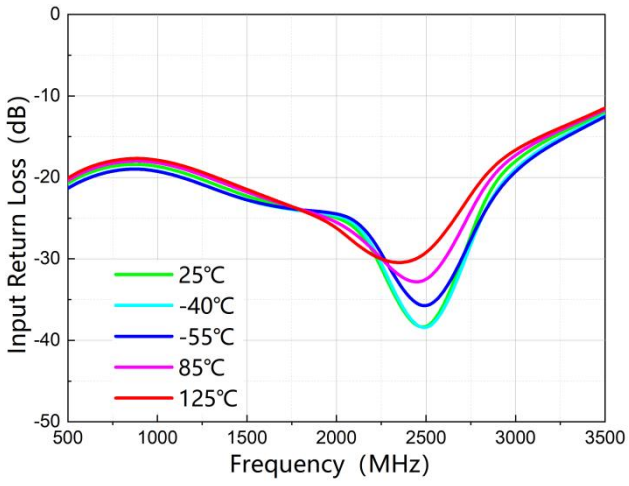
1000MHz		2000MHz		3000MHz	
Input Power（dBm）	Output Power（dBm）	Input Power（dBm）	Output Power（dBm）	Input Power（dBm）	Output Power（dBm）
10	9.35	10	9.10	10	7.98
11	10.22	11	9.87	11	8.74
12	11.32	12	10.83	12	9.210
15	12.86	15	11.88	15	9.72
18	13.36	18	11.98	18	9.97
20	13.41	20	11.90	20	10.03
21	13.42	21	11.93	21	10.05
22	13.38	22	11.92	22	10.07
25	13.23	25	11.93	25	10.13

1000MHz		2000MHz		3000MHz	
Input Power（dBm）	Output Power（dBm）	Input Power（dBm）	Output Power（dBm）	Input Power（dBm）	Output Power（dBm）
28	13.22	28	11.89	28	10.09
30	13.19	30	11.88	30	10.08
31	13.18	31	11.82	31	10.06
32	13.16	32	11.75	32	10.00
35	13.10	35	11.66	35	9.57
38	12.99	38	11.35	38	9.45
40	12.89	40	11.33	40	9.86
41	12.85	41	11.30	41	9.77
42	12.76	42	11.26	42	9.66
45	12.52	45	10.52	45	8.90
48	12.09	48	9.33	48	7.07
50	11.52	50	8.13	50	5.79
53	11.30	53	8.01	53	5.40

★6.Performance Curve (EVB Test Results,CW)

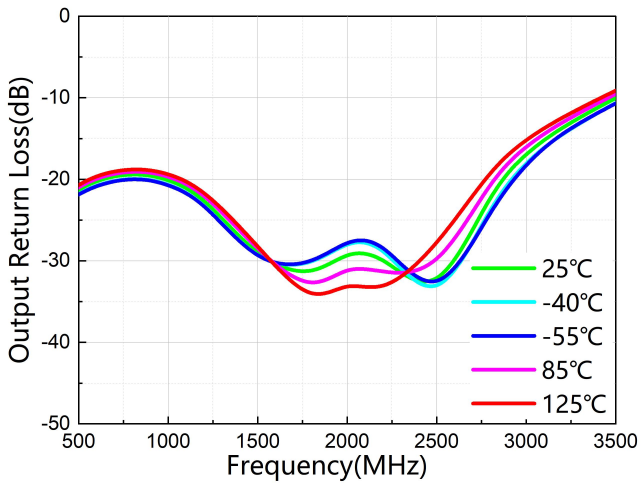


Insertion Loss vs. Freq

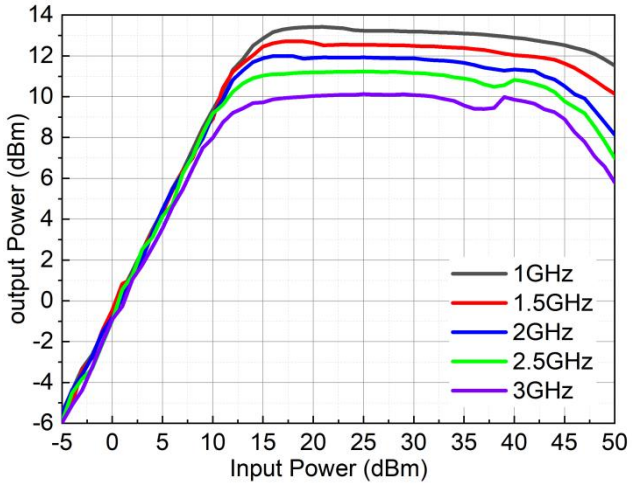


Input Return Loss vs. Freq

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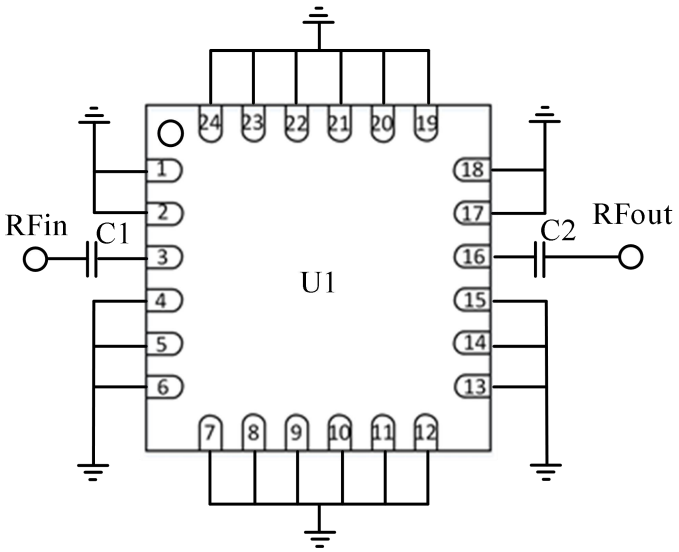


Output Return Loss vs. Freq



Pin vs. Pout

★7.Typical Application Schematic

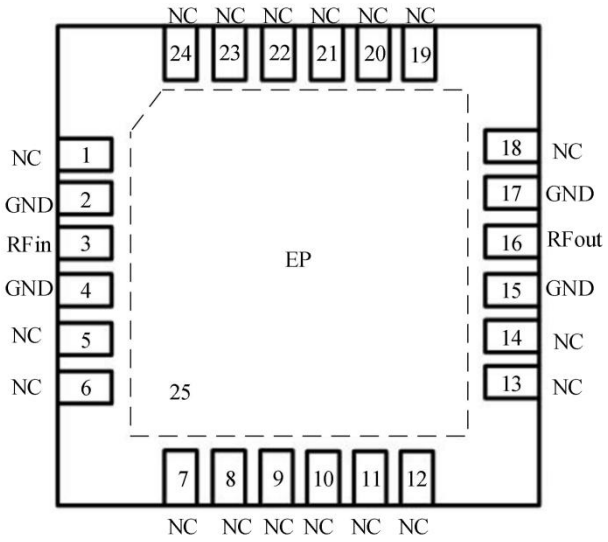


★8.Bill of Material

Reference Designator	Package	Description	P/N
U1	QFN24	Limiter	TFLM0103P
C1, C2	/	/	Short with solder

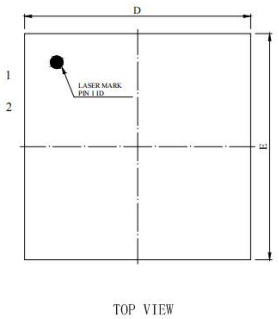
Note: This product is not integrated with internal DC blocking capability. In the event of DC current existing in the RF signal path, an external DC block shall be mandatorily installed.

★9.Pin Configuration and Description

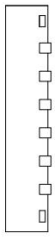


Pin Number	Pin Name	Description
3	RFin	RF input pin.
16	RFout	RF output pin.
2, 4, 15, 17	GND	Ground pins.
1, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 18, 19, 20, 21, 22, 23, 24	NC	Floating or grounded.
25	EP	Exposed pad. The exposed pad must be connected to RF ground and DC ground.

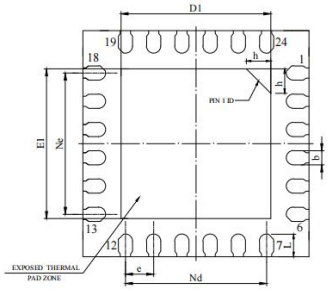
★10.Package Dimensions



TOP VIEW

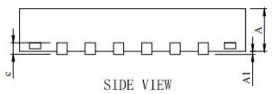


SIDE VIEW



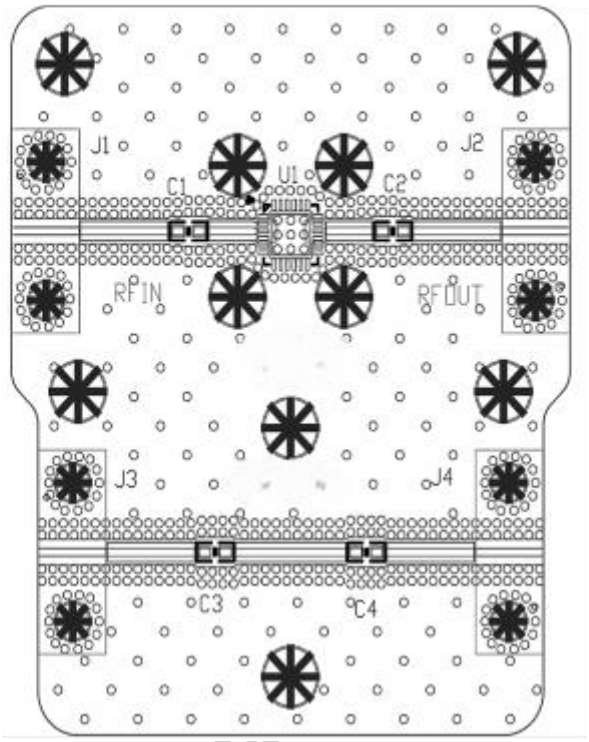
BOTTOM VIEW

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

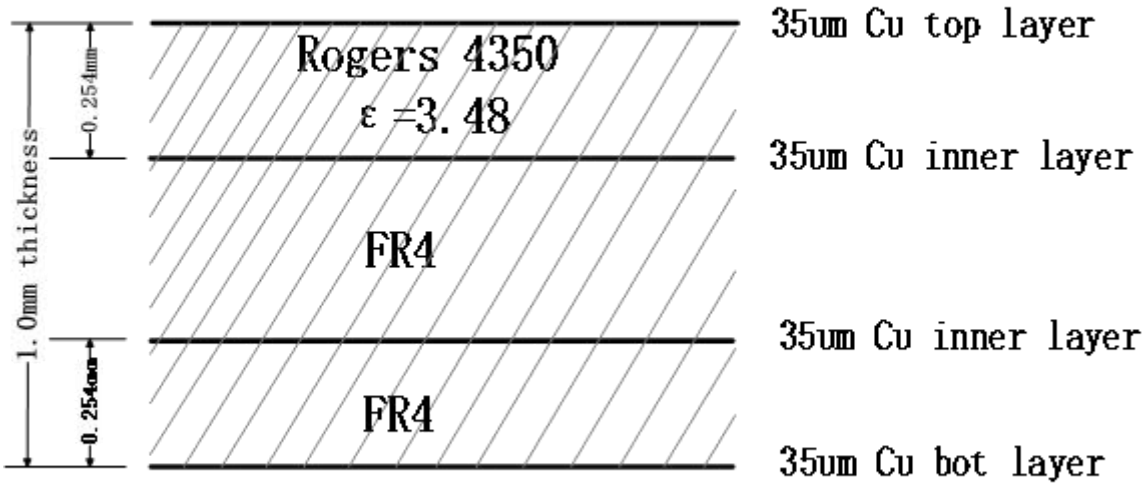


SIDE VIEW

★11.PCB Evaluation Board



PCB



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