

Product Features

- Frequency: 1MHz ~ 1GHz
- Gain : 22.1dB@0.5GHz@8V
- P1dB Compression: 27.7dBm@0.5GHz@8V
- Noise Figure: 1.35dB@0.5GHz@8V
- OIP3: 42dBm@0.5GHz@8V
- Vdd=+5V, static current 129mA
- Vdd=+8V, static current 220mA
- Package: SOT89 (plastic seal)

Application

- Communication Base Stations
- Test and Measurement Equipment
- Point-to-point Communication
- VHF/UHF Stations

Recommended Operating Conditions

- Power Supply Voltage: +4.5V ~ +8.5V
- Storage Temperature: -65°C ~ +150°C
- Operating Temperature: -55°C ~ +125°C

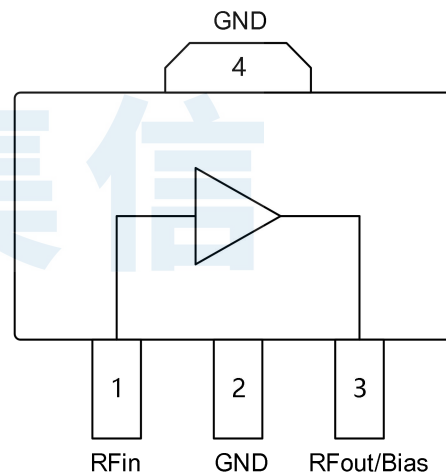
Ordering Information

Part Number	Package	Description
BR9548TA	SOT89	1MHz to 1GHz Driver Amplifier

General Description

BR9548TA is a high linear drive amplifier chip designed based on the GaAs process. The chip is housed in SOT89 package. On a +8V power supply BR9548 provides 22.1dB gain at 500MHz, the Noise Figure is 1.35dB, The 1dB compression point is greater than 27.7dBm and the OIP3 is greater than 42dBm The device has good performance of input-output standing wave, high linearity and low Noise Figure in the wide band range.

Functional Block Diagram



Absolute Maximum Ratings

Maximum Operating Voltage (Vdd) : +10V

Maximum RF input power: +21dBm

ESD WARNING



ELECTROSTATIC SENSITIVE DEVICE

OBSERVE HANDLING PRECAUTIONS



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Electrical Specifications(+5V)

Parameters	Min.	Typ.	Max.	Units	Test Conditions
Gain	-	23.4	-	dB	1MHz
	-	24.6	-	dB	10MHz
	-	19.7	-	dB	800MHz
P1dB Compression	-	21.4	-	dBm	10MHz
	-	23.2	-	dBm	800MHz
OIP3	-	40.1	-	dBm	10MHz
	-	35.1	-	dBm	800MHz
Noise Figure	-	1.26	-	dB	500MHz
Input Return Loss	-	-11.8	-	dB	500MHz
Output Return Loss	-	-15.7	-	dB	500MHz
Reverse Isolation	-	-26.2	-	dB	500MHz
Supply Voltage	-	+5	-	V	-
Quiescent Current	-	129	-	mA	-
Test Conditions: V _{dd} =+5V, I=129mA, OIP3 spacing=0.5MHz, P _{out} =0dBm/tone, Temp=+25°C					

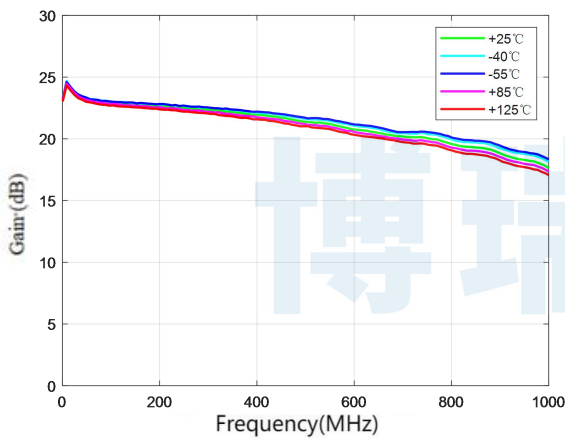
Electrical Specifications(+8V)

Parameters	Min.	Typ.	Max.	Units	Test Condition
Gain	-	23.8	-	dB	1MHz
	-	25	-	dB	10MHz
	-	20.6	-	dB	800MHz
Output Power for 1dB Compression	-	26.2	-	dBm	10MHz
	-	27	-	dBm	800MHz
Output Third-Order Interception	-	42.8	-	dBm	10MHz
	-	42	-	dBm	800MHz
Noise Figure	-	1.34	-	dB	500MHz
Input Return Loss	-	-13.1	-	dB	500MHz
Output Return Loss	-	-18.8	-	dB	500MHz
Isolation	-	-26.3	-	dB	500MHz
Supply Voltage	-	+8	-	V	-
Quiescent Current	-	220	-	mA	-
Test Conditions: V _{dd} =+8V, I=220mA, OIP3 spacing=0.5MHz, P _{out} =0dBm/tone, Temp=+25°C					

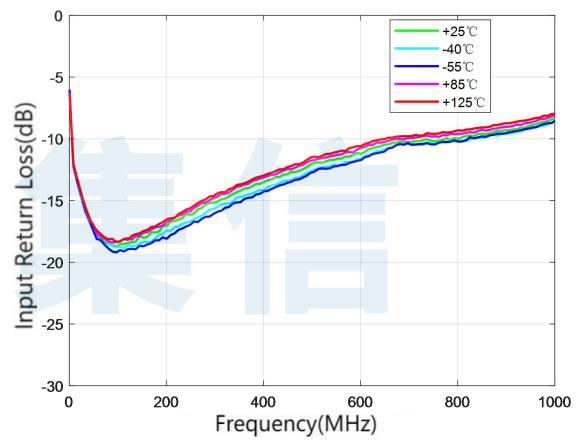
Typical Performance (EVB test results)

Parameters	Typ.								Units
	1	10	100	300	500	800	1000		
Frequency	1	10	100	300	500	800	1000	MHz	
Gain	23.43	24.56	22.99	22.36	21.38	19.68	18.1	dB	
Input Return Loss	-6.71	-12.74	-18.24	-14.83	-11.83	-9.7	-8.39	dB	
Output Return Loss	-7.29	-25.94	-19.01	-20.28	-15.69	-9.7	-7.03	dB	
P1dB Compression	21.09	21.42	23.72	23.76	23.59	23.24	22.33	dBm	
OIP3	39.37	40.07	38.23	37.63	36.47	35.07	34.23	dBm	
Noise Figure	-	1.03	1.18	1.23	1.28	1.22	1.24	dB	

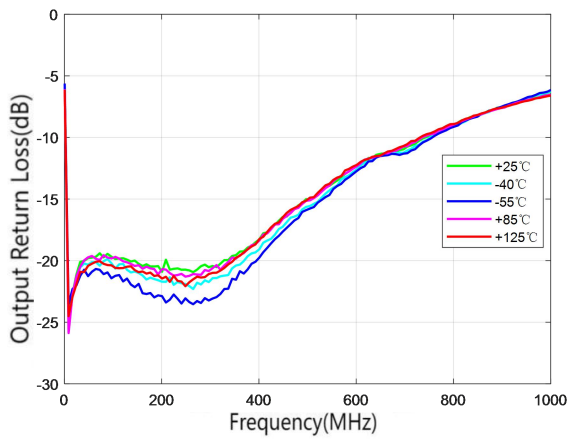
Test Conditions: Vdd=+5V, I=129mA, OIP3 spacing=0.5MHz, Pout=0dBm/tone, Temp=+25°C



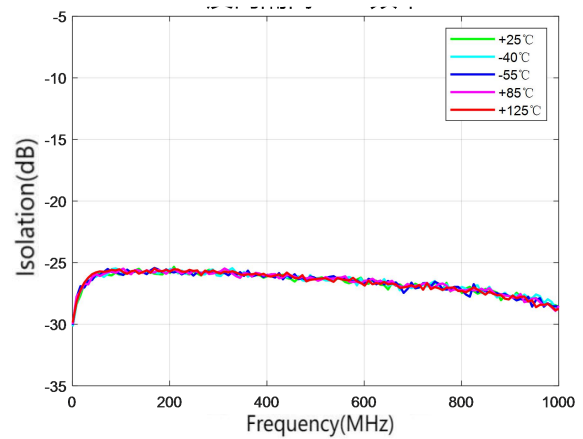
Gain



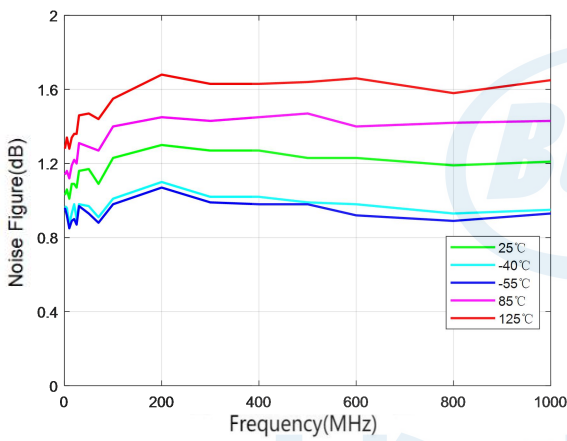
Input Return Loss



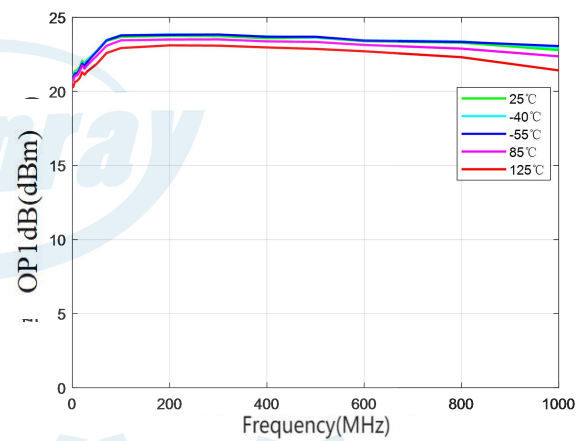
Output Return Loss



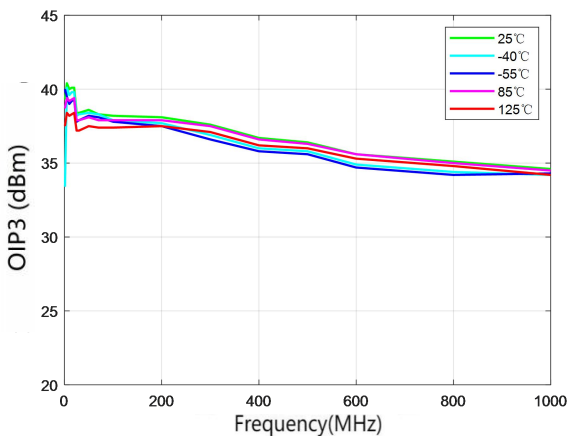
Reverse Isolation



Noise Figure



Output Power for 1dB Compression

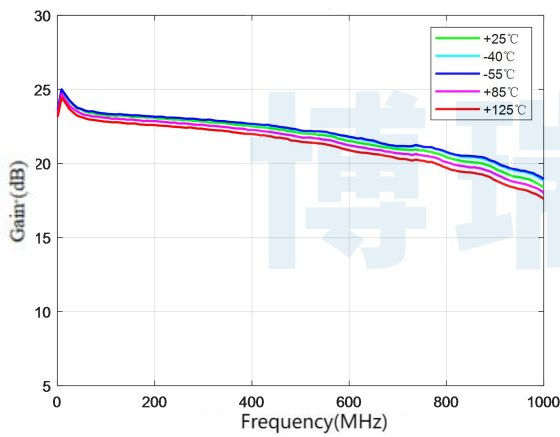


Output Third-Order Interception

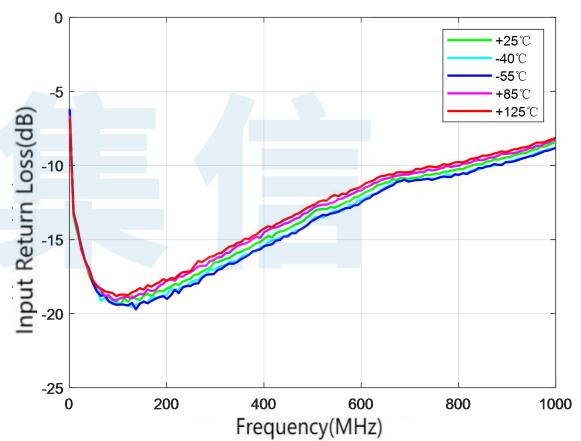
Typical Performance (EVB test results)

Parameters	Typ.								Units
	1	10	100	300	500	800	1000		
Frequency	1	10	100	300	500	800	1000	MHz	
Gain	23.80	24.94	23.29	22.84	22.07	20.57	18.92	dB	
Input Return Loss	-6.95	-13.67	-18.78	-16.33	-13.10	-10.17	-8.55	dB	
Output Return Loss	-7.18	-25.67	-19.40	-26.59	-18.8	-9.93	-6.84	dB	
P1dB Compression	25.8	26.19	27.72	27.81	27.7	27.04	25.94	dBm	
OIP3	42.33	42.8	40.8	42.1	41.97	42.03	41.6	dBm	
Noise Figure	-	1.2	1.26	1.3	1.35	1.31	1.32	dB	

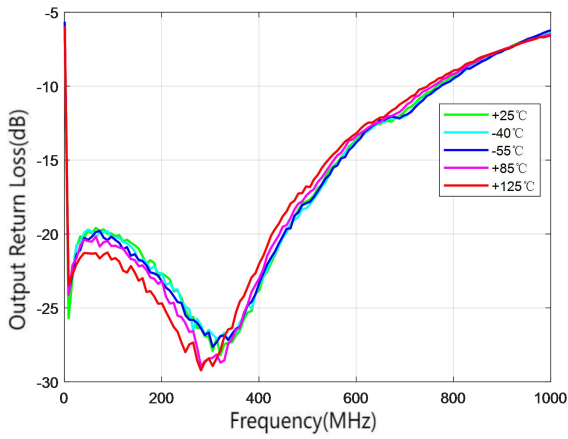
Test Condition: Vdd=+8V, I=220mA, OIP3 spacing=0.5MHz, Pout=0dBm/tone, Temp=+25°C



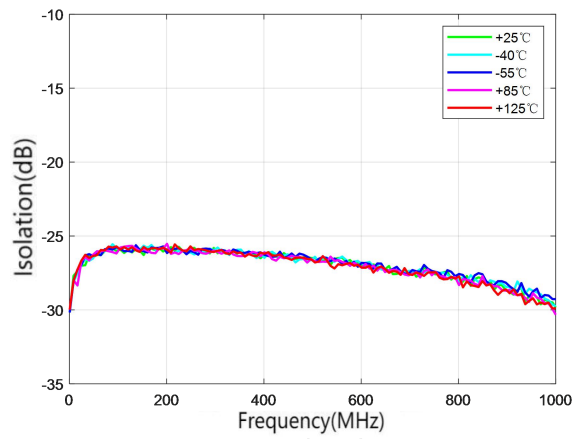
Gain



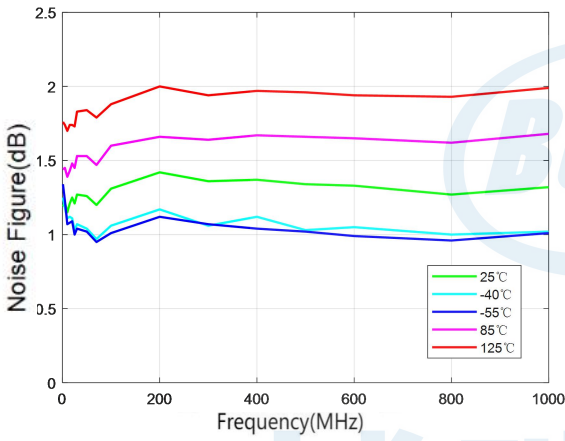
Input Return Loss



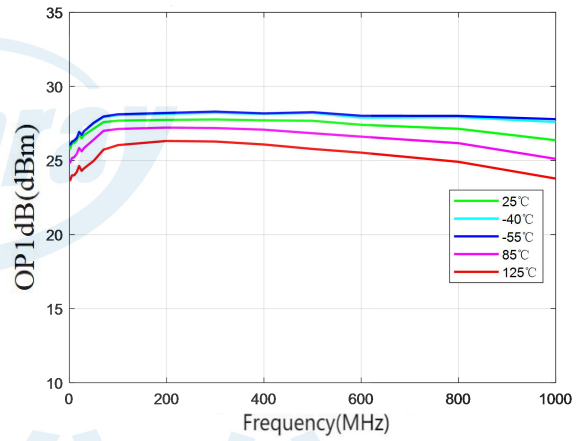
Output Return Loss



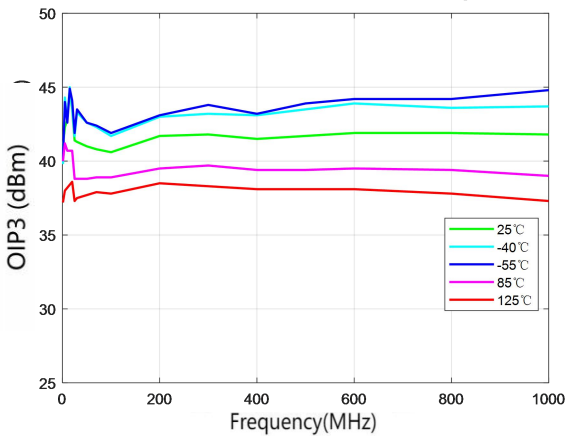
Reverse Isolation



Noise Figure

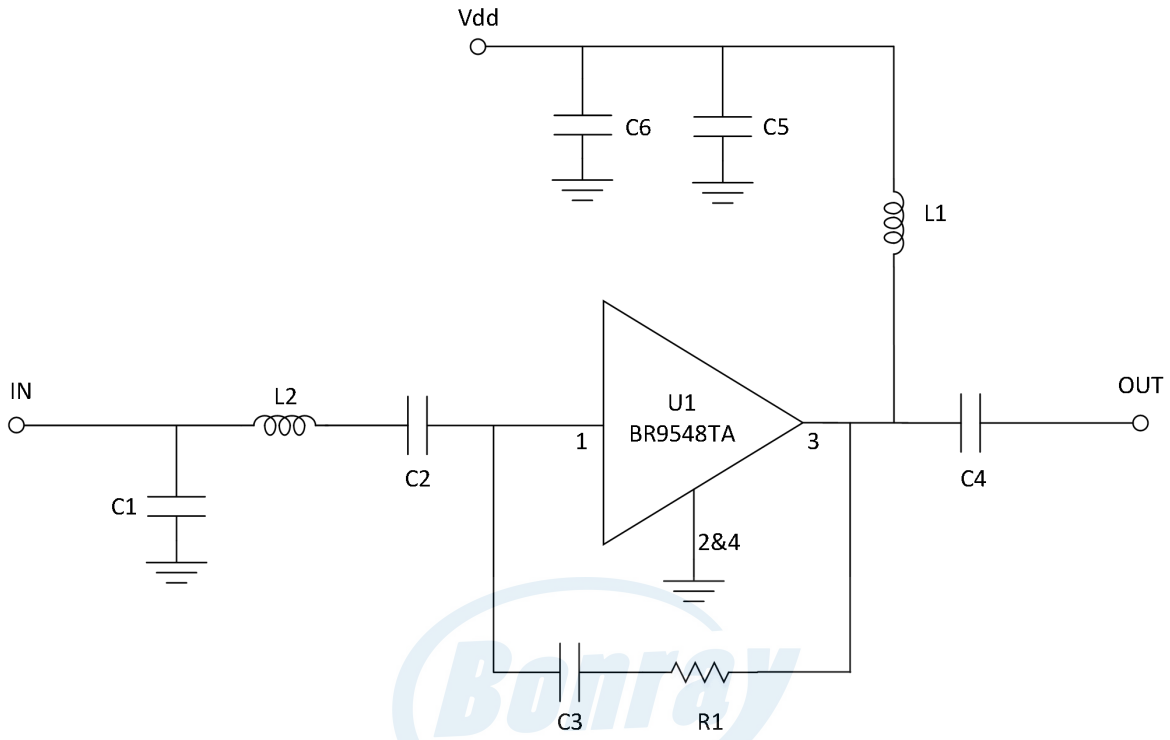


Output Power for 1dB Compression



Output Third-Order Intercept

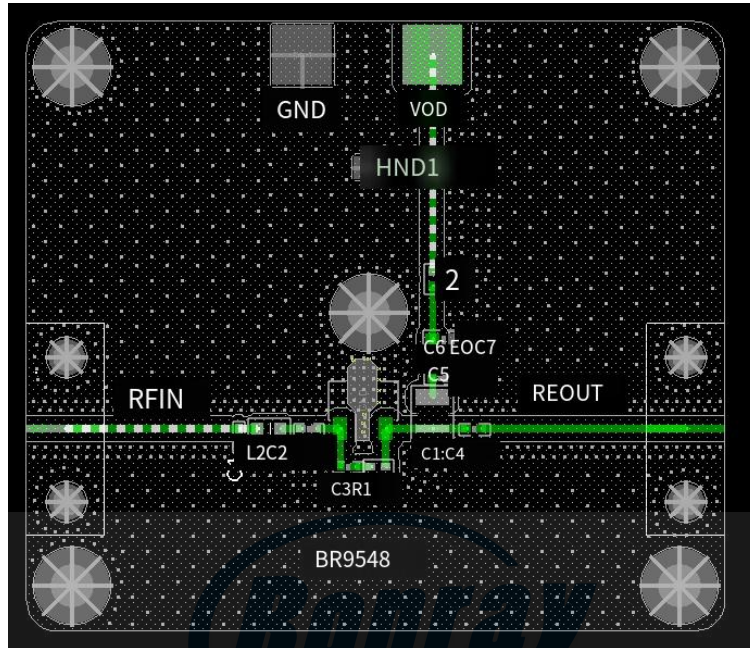
Application Information



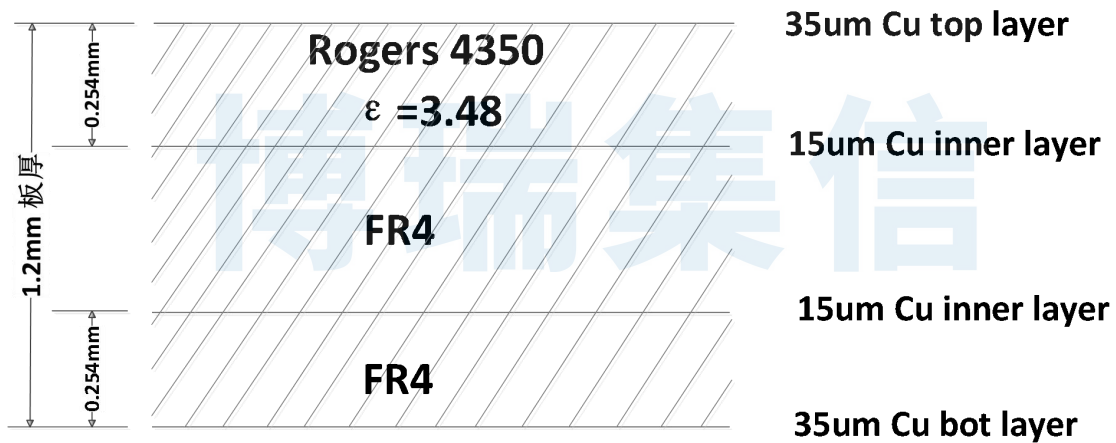
Bill of Material

Designator	Package	Description	Part Number
C1	0402	1.5 pF	GRM1555C1H1R5CZ01
C2, C4	0603	2.2 u F	GRM155C71A225KE11D
C3	0402	0.1 u F	GRM1555R71H104KE14D
C5	0402	1000pF	GRM1555C1H102JA01D
C6	0805	10 u F	0805YC106MAT2A
L1	1210	15 mu H	LQH32DN150K53L
L2	0603	5.1 nH	0402HP-5N1XJRU
R1	0402	1500 Ω	RC0402JR-071K5L

Evaluation Board

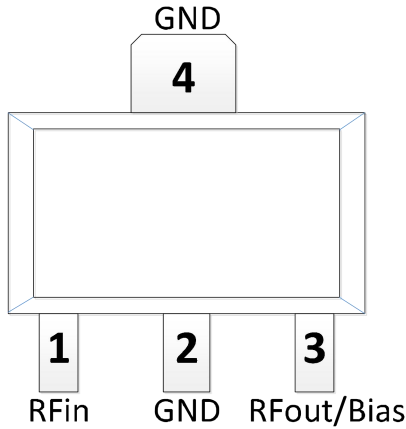


PCB :



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

Pin layout and Description



Pin Number	Pin Name	Description
1	RFin	Rf input pins.
2,4	GND	Ground pins; This pin and the package substrate must be connected to the RF/DC ground.
3	RFout/Bias	Rf output pin, also used for external DC power supply.



Package Dimensions (mm)

SYMBOL	MILLIMETER		
	MIN	NOM	MAX
A	1.40	1.50	1.60
b	0.37	0.42	0.45
c	0.38	--	0.42
a	0.45	0.48	0.51
D	4.40	4.50	4.60
E	4.00	4.10	4.20
E1	2.40	2.50	2.60
e	1.50BSC		
L	0.89	1.045	1.20
D2	1.50	1.60	1.70
E2	2.218	2.318	2.418