

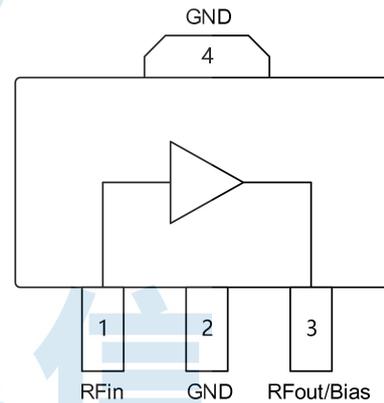
Product Features

- Frequency: 30MHz ~ 4GHz
- Gain: 15.1dB@1.8GHz
- Gain Flatness: $\pm 0.3\text{dB}@50\text{MHz}\sim 4\text{GHz}$
- Output Power for 1dB Compression:
20.8dBm@1.8GHz
- Noise Figure: 2.2dB@1.8GHz
- Output Third-Order Interception:
35.9dBm@1.8GHz
- Supply Current:
95mA @ Vdd=5V
- Package: SOT89

General Description

The BR9554TA is a wideband MMIC low noise amplifier designed in SOT89 package. At 1.8GHz, the amplifier typically offers a gain of 15.1dB, a noise figure of 2.2dB, an output P1dB of 20.8dBm, and an output IP3 of 35.9dBm under the condition of +5V supply power, which is well suitable for application with high gain flatness, high linearity and low noise.

Functional Block Diagram



Application

- IF Amplification/RF Driver Amplification
- Test and Measure Equipment
- VHF/UHF Stations

Ordering Information

Part Number	Package	Description
BR9554TA	SOT89	30MHz ~ 4GHz Low Noise Amplifier

Electrical Specifications

Parameter	Test Condition	Min.	Typ.	Max.	Units
Gain	30MHz	-	16.3	-	dB
	2000MHz	-	15.0	-	dB
	4000MHz	-	15.3	-	dB
Output Power for 1dB Compression	30MHz	-	17.6	-	dBm
	2000MHz	-	21.0	-	dBm
	4000MHz	-	19.0	-	dBm
Output Third-Order Interception	30MHz	-	38.4	-	dBm
	2000MHz	-	36.0	-	dBm
	4000MHz	-	33.6	-	dBm
Noise Figure	30MHz	-	1.9	-	dB
	2000MHz	-	2.4	-	dB
	4000MHz	-	2.4	-	dB
Input Return Loss	2000MHz	-	-10.7	-	dB
	4000MHz	-	-12.9	-	dB
Output Return Loss	2000MHz	-	-13.6	-	dB
	4000MHz	-	-19.8	-	dB
Supply Voltage	-	-	5	-	V
Supply Current	-	-	94	-	mA

Test Condition: Vdd=+5V, I=94mA, OIP3 spacing=1MHz, Pout=5dBm/tone, TA=+25°C

Absolute Maximum Ratings

Maximum Operating Voltage (Vdd): +7V;

Maximum RF input Power: +23dBm;

Recommended Operating Conditions

Supply Voltage: +5V;

Supply Current: 94mA;

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.

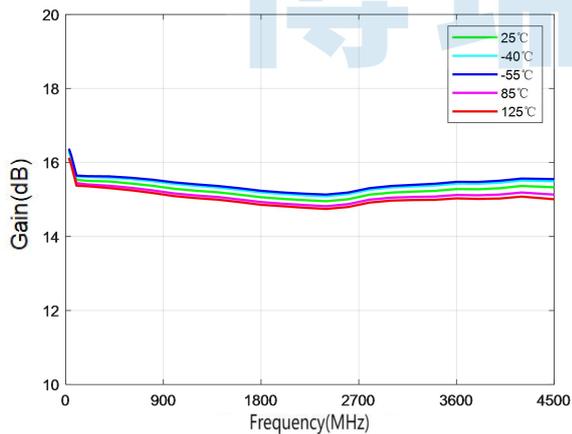
ESD WARNING

ELECTROSTATIC SENSITIVE DEVICE
OBSERVE HANDLING PRECAUTIONS

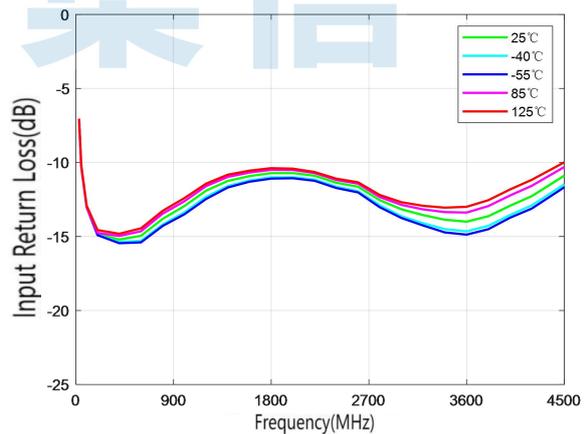
Typical Performance (EVB test results)

Parameter	Typ.											Units
	30	100	200	400	600	800	1000	1200	1400	1600	1800	
Frequency	30	100	200	400	600	800	1000	1200	1400	1600	1800	MHz
Gain	16.3	15.5	15.5	15.4	15.4	15.4	15.3	15.2	15.2	15.1	15.1	dB
Input Return Loss	-7.2	-13.0	-14.9	-15.2	-15.0	-13.8	-12.9	-11.9	-11.2	-10.9	-10.7	dB
Output Return Loss	-19.2	-28.6	-27.5	-24.6	-22.0	-19.7	-17.7	-15.8	-14.6	-13.9	-13.5	dB
Reverse Isolation	-20.5	-19.8	-19.4	-19.6	-19.8	-19.3	-19.6	-20.3	-19.9	-19.8	-20.1	dB
Output Power for 1dB Compression	17.6	18.3	19.2	20.2	20.2	20.1	20.3	20.7	20.6	20.6	20.8	dBm
Output-Third-Order Interception	38.4	39.0	38.4	39.1	38.4	37.7	37.6	37.3	36.9	36.7	35.9	dBm
Noise Figure	1.9	2.3	2.2	2.1	2.1	2.1	2.2	2.3	2.2	2.2	2.2	dB
Frequency	2000	2200	2400	2600	2800	3000	3200	3400	3600	3800	4000	MHz
Gain	15.0	15.0	15.0	15.0	15.1	15.2	15.2	15.2	15.3	15.3	15.3	dB
Input Return Loss	-10.7	-10.9	-11.4	-11.6	-12.5	-13.2	-13.6	-13.9	-14.0	-13.6	-12.9	dB
Output Return Loss	-13.6	-14.0	-14.7	-15.3	-16.8	-18.1	-19.3	-20.5	-20.8	-20.2	-19.8	dB
Reverse Isolation	-20.0	-20.3	-20.6	-20.0	-20.1	-20.7	-20.5	-20.4	-20.6	-20.6	-20.8	dB
Output Power for 1dB Compression	21.0	20.9	20.9	20.7	20.4	20.4	20.1	19.7	19.4	19.3	19.0	dBm
Output-Third-Order Interception	36.0	36.2	35.9	35.8	35.1	35.1	34.9	33.7	34.7	33.6	33.6	dBm
Noise Figure	2.4	2.4	2.4	2.5	2.3	2.4	2.4	2.5	2.4	2.4	2.4	dB

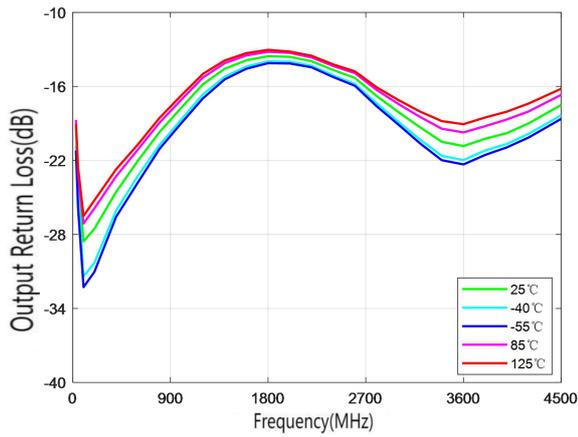
Test Condition: Vdd=+5V, I=94mA, OIP3 spacing=1MHz, Pout=5dBm/tone, TA=+25°C



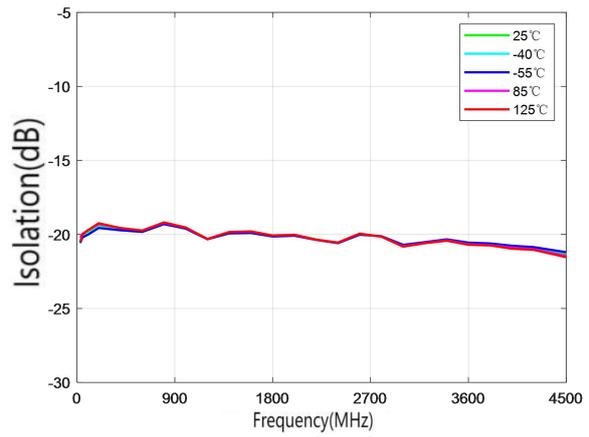
Gain



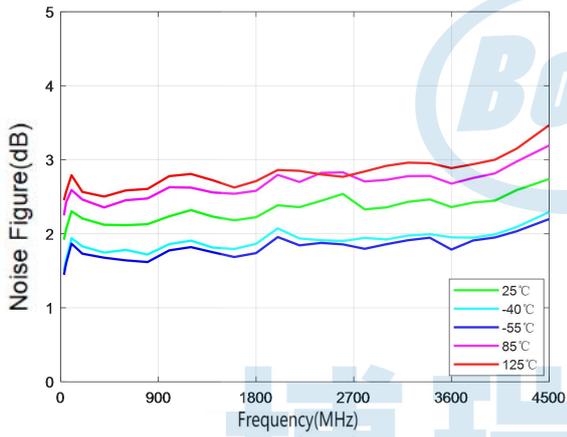
Input Return Loss



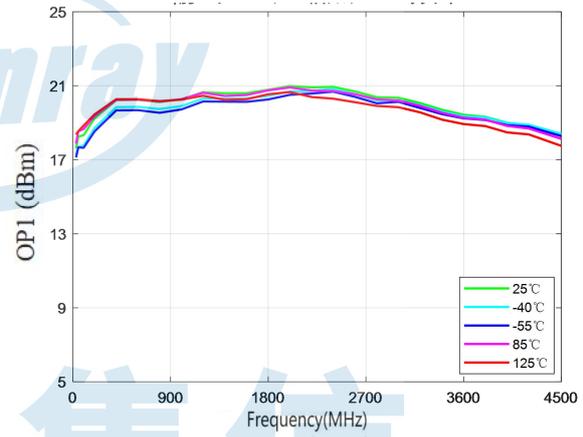
Output Return Loss



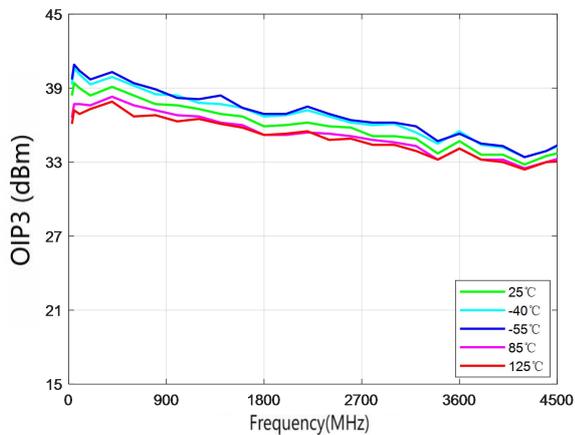
Reverse Isolation



Noise Figure

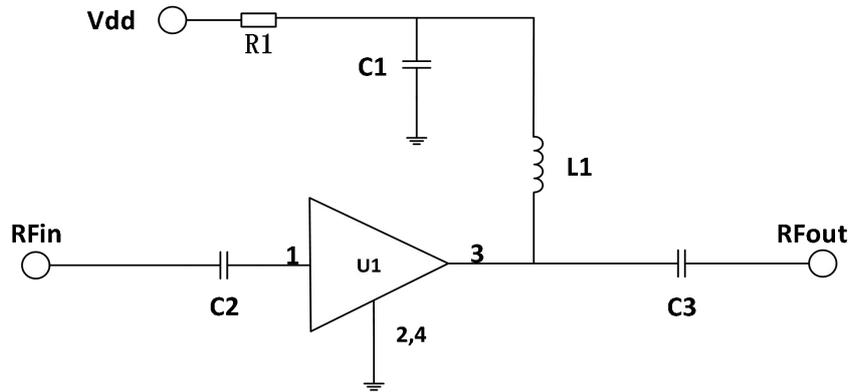


Output Power for 1dB Compression



Output Third-Order Interception

Typical Application Schematic

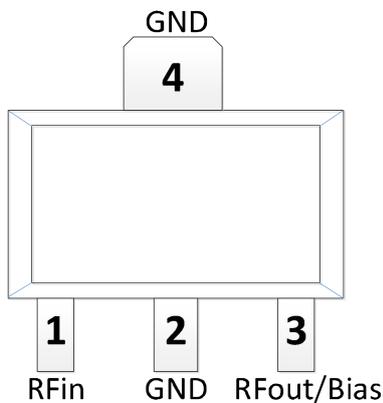


Bill of Material

Reference Designator	Package	Value	P/N
C1	0402	8.2nF	GCM155R71E822KA37D
C2, C3	0402	1nF	GRM1555C1H102JA01D
L1	1008	1.1uH	1008AF-112XJEB
R1	0402	0 Ω	RC0402JR-070RL

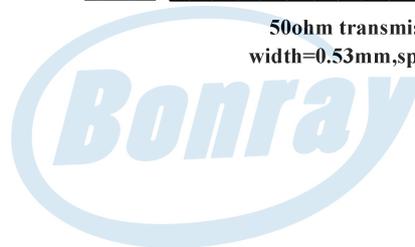
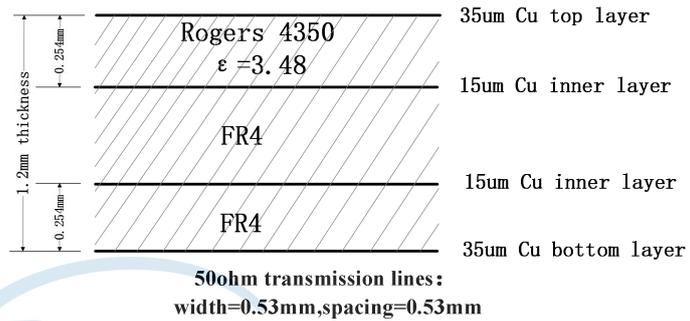
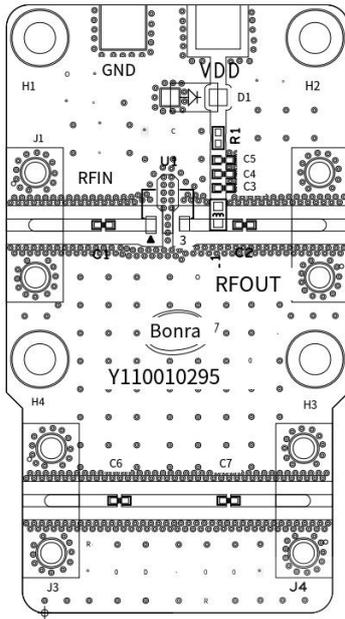


Pin Configuration and Description

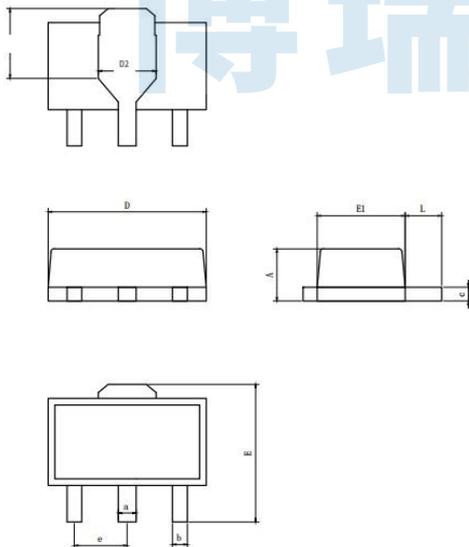


Pin Number	Pin Name	Description
1	RFin	RF Input pin. A DC Block is required.
2,4	GND	Ground pins. These pins must be connected to RD/DC ground
3	RFout/Bias	RF Output and DC bias pin. DC bias will also need to be injected through a RF bias choke/inductor for operation.

PCB Evaluation Board



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