Product Features

Operating Frequency: 30MHz ~ 1GHz

Gain: 27.8dB@100MHz

Noise Figure: 0.7dB@100MHz

Output Third-Order Interception:

38.6dBm @ 100MHz

38.7 dBm @ 1000 MHZ

Output Power for 1dB Compression:

23.9dBm@100MHz

23.4dBm @ 1000 MHZ

Supply Current: 117mA @ Vdd=+5V

Package: SOT89

Application

Cellular

PCS

GSM

Satellite Navigation

IF Amplifier

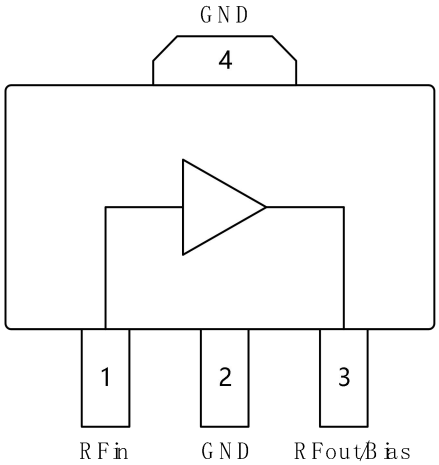
Ordering information

Part Number	Package	Description
BR9555TA	SOT89	30MHz ~1GHz Low Noise Amplifier

General Description

The BR9555TA is a MMIC low noise amplifier using GaAs process. The amplifier is internally matched to 50 ohms with frequency range of 30MHz ~ 1GHz, and only require an external RF choke and blocking/bypass capacitors. The amplifier contains on-chip active bias network to ensures that the quiescent current is not affected by the process and temperature. The product, with +5V single power supply, provides high reliability, high linearity, low noise, general package, etc., which makes the product can be applied in system with high dynamic range.

Functional Block Diagram



Electrical Specifications

Parameter	Conditions	Min.	Typ.	Max.	Units
Gain	30MHz	-	28.0	-	dB
	500MHz	-	24.3	-	dB
	1000MHz	-	19.8	-	dB
Input Return Loss	30MHz	-	-10.7	-	dB
	1000MHz	-	-14.5	-	dB
Output Return Loss	30MHz	-	-16.5	-	dB
	1000MHz	-	-11.8	-	dB
Reverse Isolation	30MHz	-	-32.0	-	dB
	1000MHz	-	-26.8	-	dB
Output Power for 1dB Compression	30MHz	-	22.0	-	dBm
	500MHz	-	23.1	-	dBm
	1000MHz	-	23.4	-	dBm
Output Third-Order Interception	30MHz	-	33.3	-	dBm
	500MHz	-	38.3	-	dBm
	1000MHz	-	38.7	-	dBm
Noise Figure	30MHz	-	0.8	-	dB
	500MHz	-	0.7	-	dB
	1000MHz	-	0.9	-	dB
Supply Voltage	-	-	5	-	V
Supply Current	-	-	117	-	mA
Test conditions: Vdd=+5V, I=117mA, OIP3 spacing=1MHz, Pout=5dBm/tone, TA=+25℃					

Absolute Maximum Ratings

Maximum Supply voltage (Vdd) : +7V

Maximum RF input power: +18dBm

Recommended Operating Conditions

Supply Voltage: +5V

Supply current: 117mA

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.

ESD WARNING

ELECTROSTATIC SENSITIVE DEVICE

OBSERVE HANDLING PRECAUTIONS

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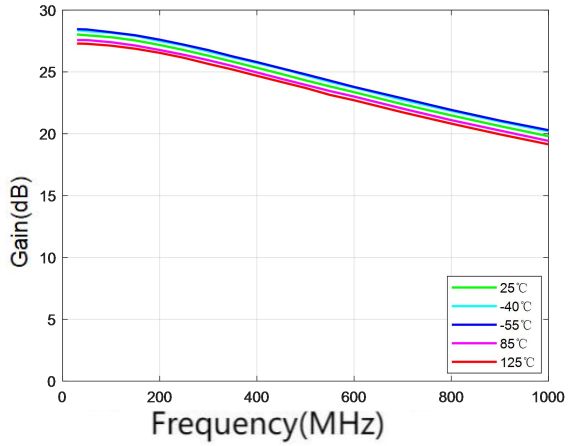
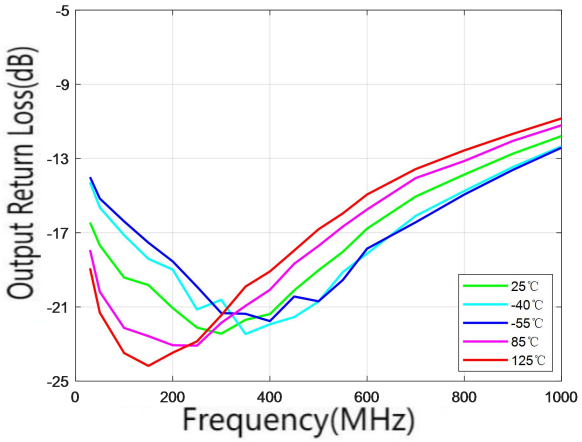
Typical Performance (EVB test results)

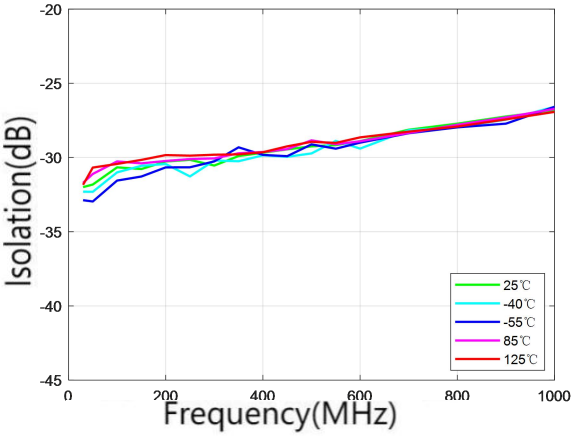
Parameters	Typ.											Units
Frequency	30	100	200	300	400	500	600	700	800	900	1000	MHz
Gain	28.0	27.8	27.2	26.3	25.3	24.3	23.4	22.4	21.5	20.6	19.8	dB
Input Return Loss	-10.7	-13.6	-14.9	-14.9	-14.8	-14.7	-14.5	-14.1	-13.8	-14.0	-14.5	dB
Output Return Loss	-16.5	-19.4	-21.1	-22.4	-21.4	-19.0	-16.8	-15.0	-13.9	-12.7	-11.8	dB
Reverse Isolation	-32.0	-30.7	-30.3	-30.5	-29.7	-29.2	-28.9	-28.1	-27.7	-27.2	-26.8	dB
Output Power for 1dB Compression	22.0	23.9	23.9	24.0	24.0	23.1	23.0	23.6	22.5	22.3	23.4	dBm
Output Third-Order Interception	33.3	38.6	37.8	38.4	38.9	38.3	39.1	38.6	38.0	38.5	38.7	dBm
Noise Figure	0.8	0.7	0.6	0.6	0.7	0.7	0.7	0.7	0.8	0.9	0.9	dB
Test conditions: Vdd=+5V, I=117mA; OIP3 spacing=1MHz, Pout=5dBm/tone; TA=+25℃												



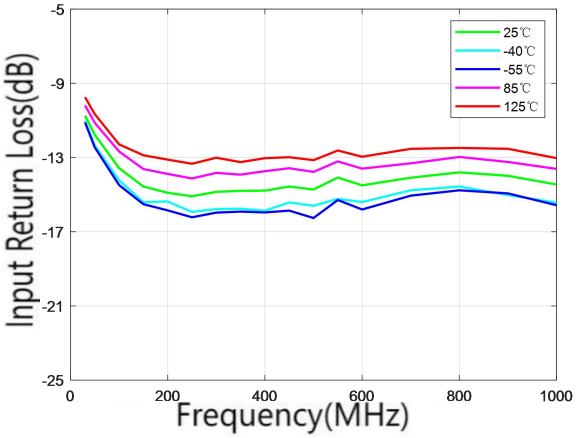
Gain



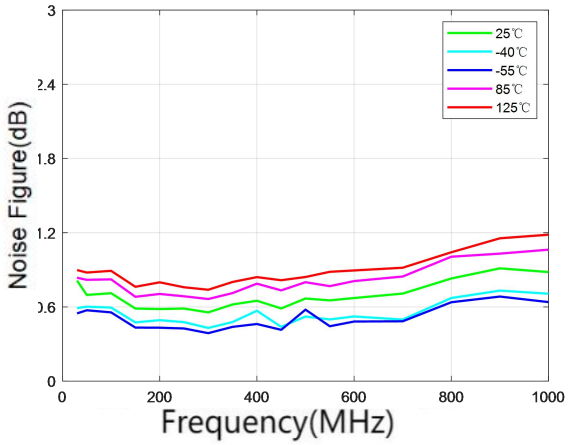
Output Return Loss



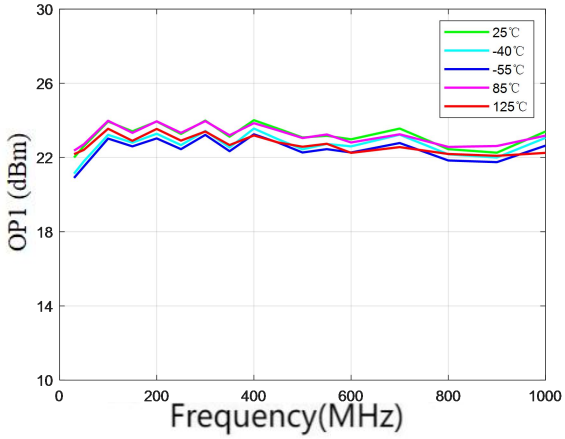
Reverse Isolation



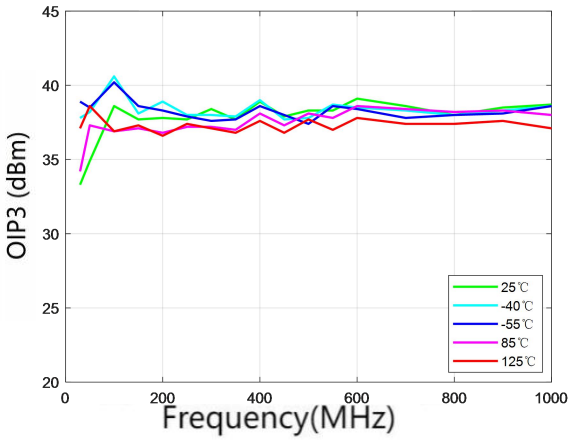
Input Return Loss



Noise Figure

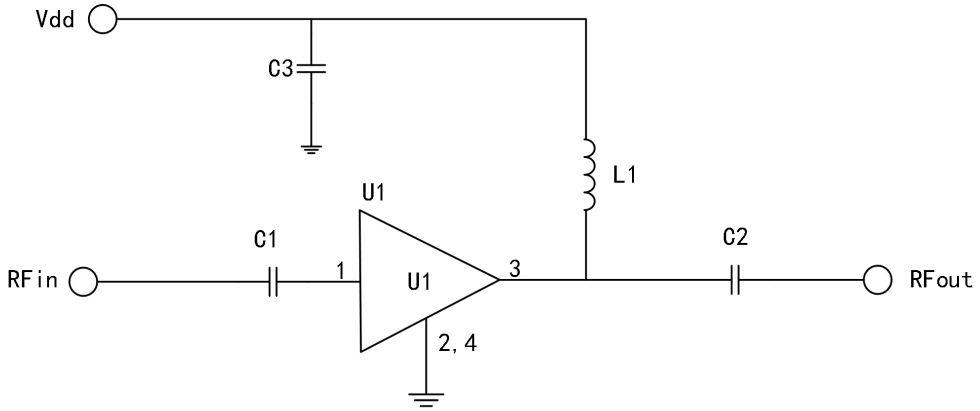


Output Power for 1dB Compression



Output Third-Order Interception

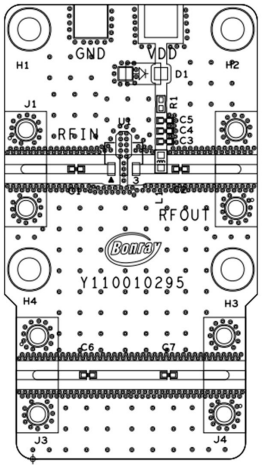
Typical Application Schematic

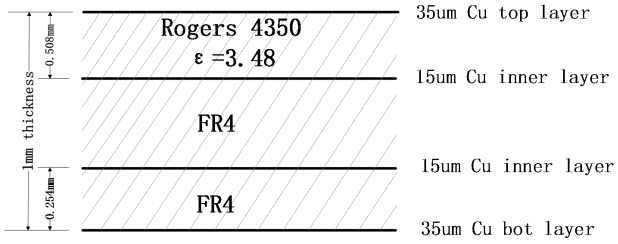


Bill of Material

Reference Designator	Package Size	Value	P/N
L1	1008	1.1uH	1008AF-112XJRB
C1, C2	0402	2.2nF	GRM155R71H222JA01D
C3	0402	10nF	GRM1555C1H103JA01D

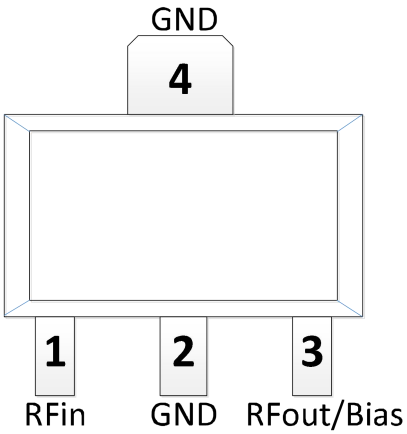
PCB Evaluation Board





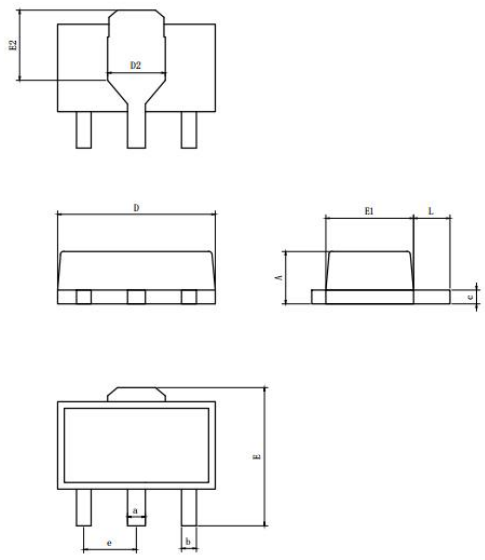
50 ohms Impedance Signal Lines: width=1.1mm, spacing=1.1mm

Pin Configuration and Description



Pin Number	Pin Name	Description
1	RFin	RF input pin. A DC Block is required.
2, 4	GND	RF/DC Ground pin. Use recommended via pattern to minimize inductance and thermal resistance; See PCB Mounting Pattern for suggested footprint.
3	RFout/Bias	RF Output pin. DC bias will also need to be injected through a RF bias choke/inductor for operation.

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