Product Features

Operating Frequency: 30MHz ~ 4GHz

Gain: 21.4dB@1.6GHz

Output Power for 1dB Compression: 19.9dBm@1.6GHz

Noise Figure: 2.2dB@1.6GHz

Output Third-Order Interception: 38.6dBm@1.6GHz

Supply Current: 81mA@ Vdd=+5V

Package: SOT89

Application

Communication base stations

Test and measurement equipment

Point-to-point communication

VHF/UHF stations

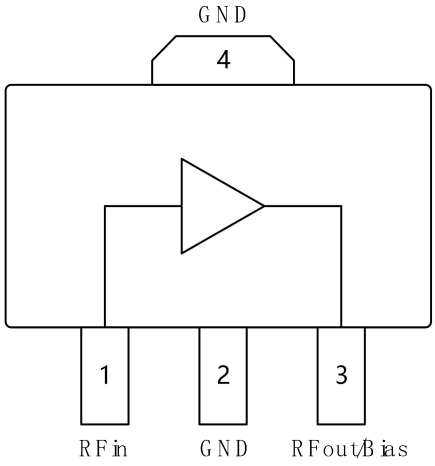
Ordering Information

Part Number	Package	Description
BR9522TA	SOT89	30MHz ~ 4GHz Gain Block Amplifier

General Description

The BR9522TA is a gain block amplifier using GaAs process in a surface-mount SOT89 package. At 1.6GHz, the Amplifier typically provides 21.4dB gain, 2.2dB noise figure, 19.9dBm output power for 1dB compression, and 38.6dBm output third-order interception under the condition of +5V power supply. The product has the advantages of good input and output standing waves, high linearity, and low noise figure in the wideband range.

Functional Block Diagram



Electrical Specifications

Parameter	Min.	Typ.	Max.	Units	Test Condition
Gain	-	22.9	-	dB	30MHz
	-	21.4	-	dB	1600MHz
	-	19.5	-	dB	4000MHz
Output Power for 1dB	-	19.2	-	dBm	30MHz
Compression	-	19.9	-	dBm	1600MHz
Output Third-Order	-	38.4	-	dBm	30MHz
Interception	-	38.6	-	dBm	1600MHz
Noise Figure	-	2.2	-	dB	1600MHz
Input Return Loss	-	-10.8	-	dB	1600MHz
Output Return Loss	-	-13.8	-	dB	1600MHz
Reverse Isolation	-	-25.9	-	dB	1600MHz
Supply Voltage	-	5	-	V	-
Supply Current	-	81	-	mA	-
Test conditions: Vdd=+5V, I=81mA, OIP3 spacing=1MHz, Pout=0dBm/tone, Temp=+25℃					

Absolute Maximum Ratings

Maximum operating voltage (Vdd) : +6.5V

Maximum RF input power: +23dBm

Recommended Operating Conditions

Supply Voltage: +5V

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

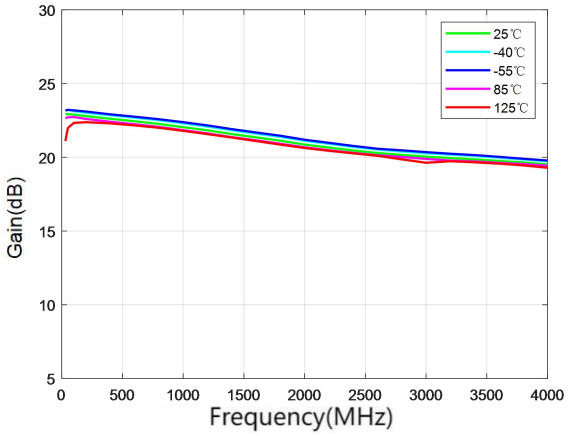
ELECTROSTATIC SENSITIVE DEVICE

OBSERVE HANDLING PRECAUTIONS

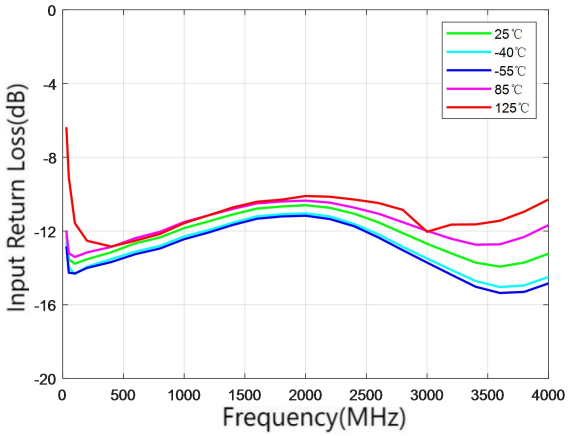
Typical Performance (EVB test results)

Parameter	Typ							Units
Frequency	30	50	100	200	400	800	1000	MHz
Gain	22.9	22.9	22.9	22.8	22.6	22.3	22.0	dB
Input Return Loss	-12.3	-13.5	-13.8	-13.5	-13.2	-12.4	-11.8	dB
Output Return Loss	-15.2	-16.8	-18.5	-19.5	-19.1	-17.0	-16.0	dB
Output Power for 1dB Compression	19.2	20.0	20.1	20.2	20.3	20.1	20.2	dBm
Output Third-Order Interception	38.4	36.9	35.2	40.2	43.8	43.2	39.9	dBm
Noise figure	2.8	1.8	1.8	1.9	1.9	1.8	1.9	dB

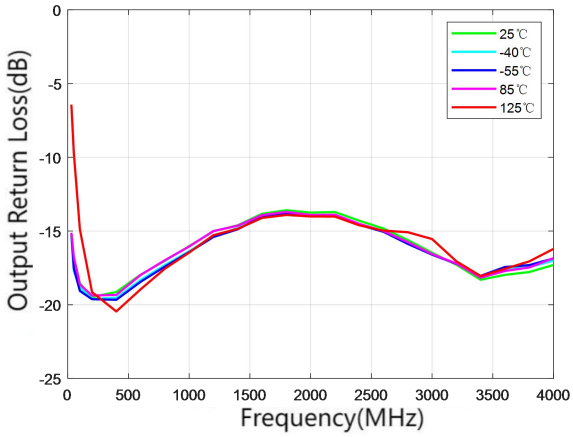
Parameter	Typ							Units
Frequency	1400	2000	2400	2600	3000	3800	4000	MHz
Gain	21.6	20.9	20.5	20.3	20.0	19.7	19.5	dB
Input Return Loss	-11.1	-10.6	-11.1	-11.5	-12.7	-13.7	-13.2	dB
Output Return Loss	-14.6	-13.8	-14.3	-14.8	-16.5	-17.8	-17.3	dB
Output Power for 1dB Compression	20.0	20.0	19.9	19.7	20.0	18.3	18.2	dBm
Output Third-Order Interception	39.4	35.6	34.8	34.3	32.7	30.4	29.2	dBm
Noise Figure	2.0	2.4	2.4	2.4	2.8	3.4	3.6	dB
Test Condition: Vdd=+5V, I=81mA, OIP3 spacing=1MHz, Pout=+0dBm/tone, Temp=+25℃								



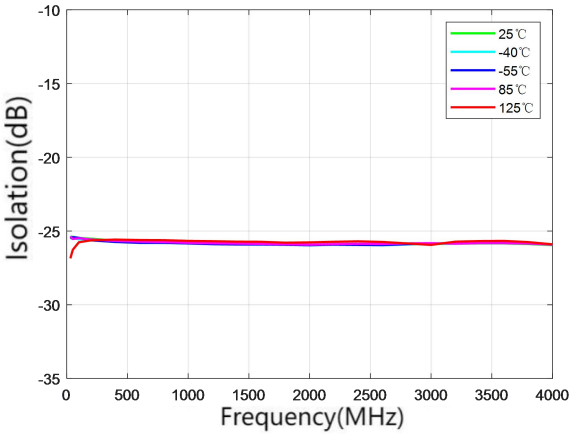
Gain



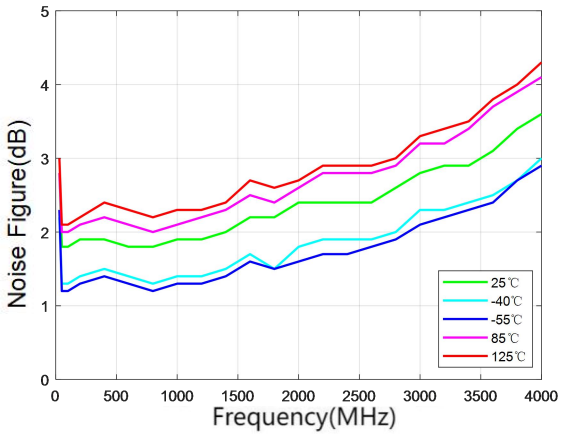
Input Return Loss



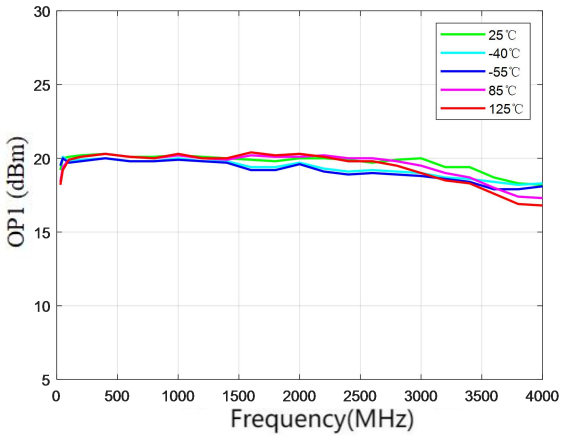
Output Return Loss



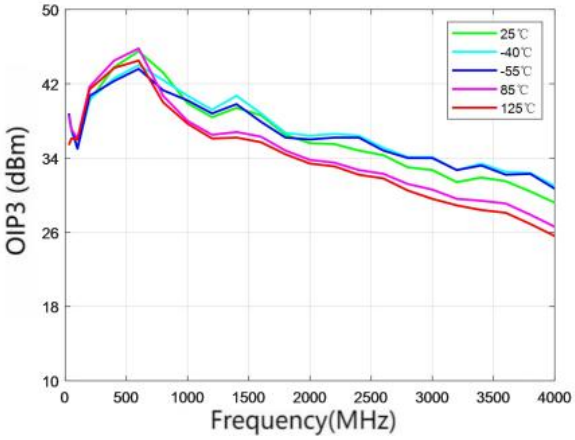
Reverse Isolation



Noise Figure

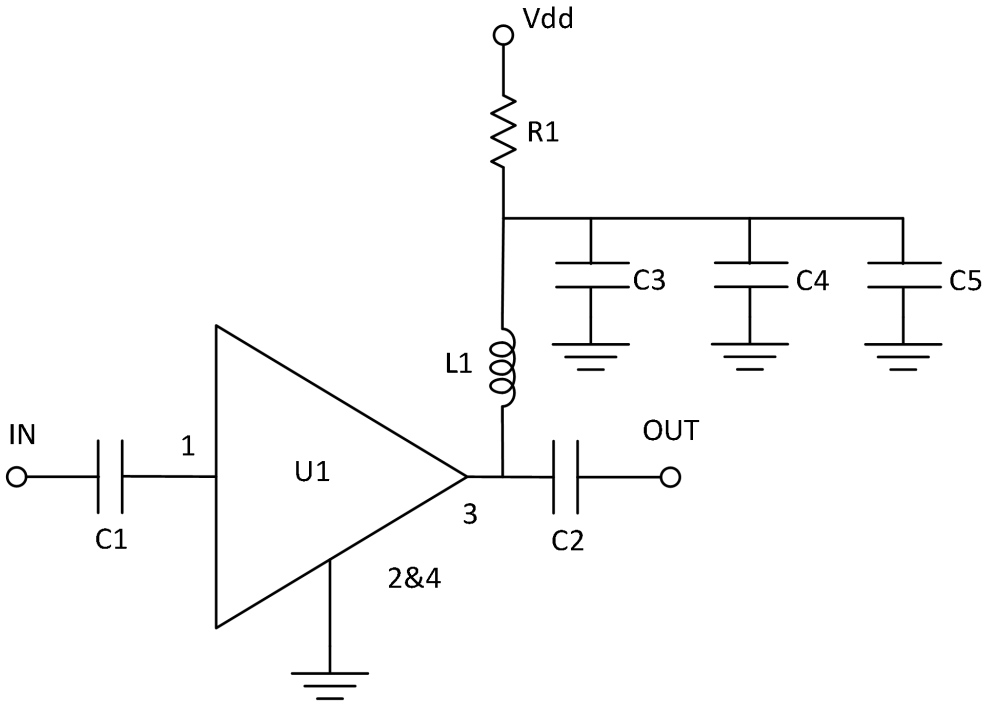


Output Power for 1dB Compression



Output Third-Order Interception

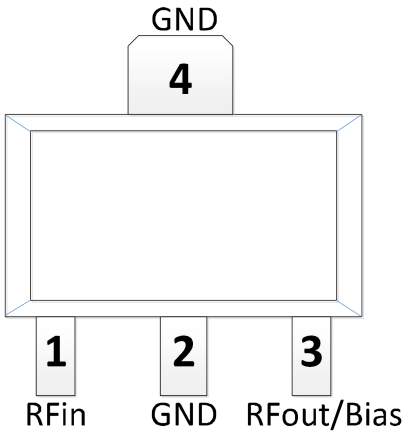
Typical Application Schematic



Bill of Material

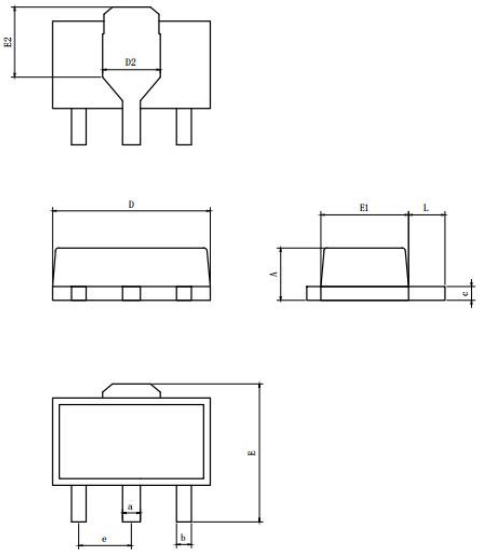
Reference Designator	Package Size	Value	P/N
C1, C2, C4	0402	1000pF	GRM1555C1H102JA01D
C3	0402	68pF	GRM1555C1H680JA16D
C5	0402	1uF	GRM1555C1H105JA01
L1	0603	1.1uH	1008AF-112XJRB
R1	0402	0 Ω	RC0402JR-070RL

Pin Configuration and Description



Pin Number	Pin name	Description
1	RFin	RF input pin. A DC Block is required.
2,4	GND	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