Product Features

Operating frequency:
30MHz~6GHz
gain: 13.5dB@3GHz
Output Third-Order Interception:
38.8dBm@3GHz
Output Power for 1dB Compression:
26.9dBm@3GHz
Noise Figure: 4.2dB@3GHz
Supply Current: 175mA @ Vdd=+9V
Package: SOT89

Application

Wireless Infrastructure
FDD/TDD Base Stations
Test and Measurement Equipment
Commercial and Military Radars
High Power Amplifiers

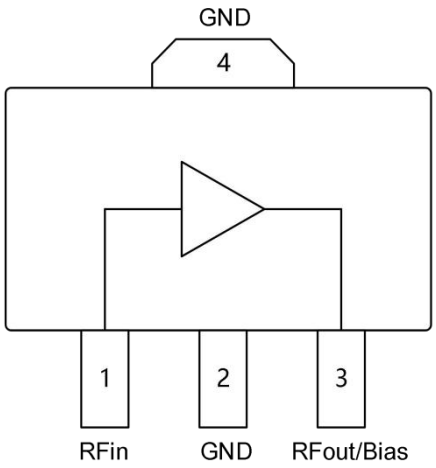
Ordering information

Part Number	Package	Description
BR9321TA	SOT89	30MHz~6GHz Driver Amplifier

General Description

The BR9321TA is an MMIC high-linearity driver amplifier using GaAs process in a SOT89 plastic package. The amplifier, with built-in temperature compensation network, maintains good gain flatness in frequency range from 30MHz to 6GHz, , and has a. At 3GHz, the amplifier provides 13.5dB gain, 4.2dB noise figure, and 38.8dBm output third-order interception while drawing 175mA quiescent current from +9V single power supply which makes the product suitable for wireless communication infrastructure, FDD/TDD base stations, radars, driver stage or terminal stage of high power amplifier.

Functional Block Diagram



Technical Specifications

Parameters	Min.	Typ.	Max.	Units	Test condition
Gain	-	14.2	-	dB	30MHz
	-	13.5	-	dB	3000MHz
	-	13.1		dB	5000MHz
Output Power for 1dB Compression	-	25.8	-	dBm	30MHz
	-	26.9	-	dBm	3000MHz
	-	22.4	-	dBm	5000MHz
Output Third-Order Interception	-	42.8	-	dBm	30MHz
	-	38.8	-	dBm	3000MHz
	-	36.4	-	dBm	5000MHz
Noise Figure	-	4.2	-	dB	3000MHz
Input Return Loss	-	-20.6	-	dB	3000MHz
Output Return Loss	-	-15.4	-	dB	3000MHz
Reverse Isolation	-	-20.4	-	dB	3000MHz
Supply Voltage	-	9	-	V	-
Supply Current	-	175	-	mA	-
Test conditions: Vdd=+9V, I=175mA, OIP3 spacing=1MHz, Pout=+8dBm/tone, TA=+25℃;					

Absolute Maximum Ratings

Maximum Supply voltage (Vdd) : +9V

Maximum RF input power: +24dBm

Recommended Operating Conditions

Supply Voltage: +9V

Supply Current: 175mA

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

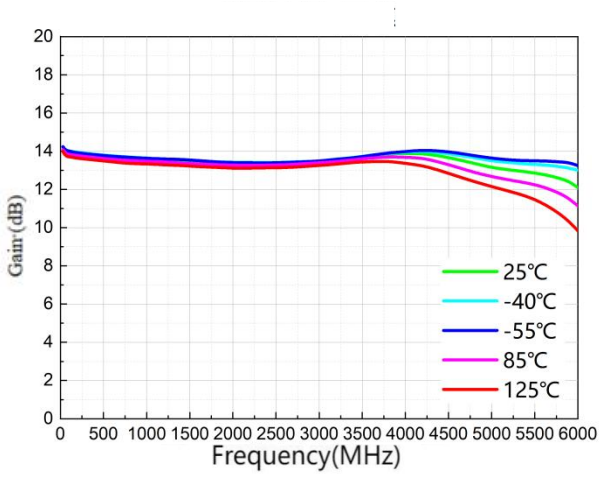
ELECTROSTATIC SENSITIVE DEVICE

OBSERVE HANDLING PRECAUTIONS

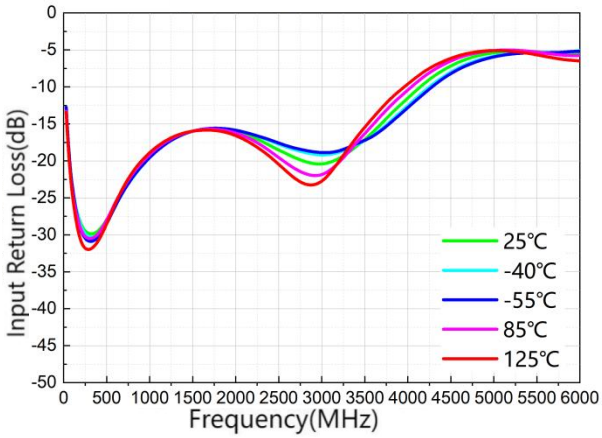
ESD Rating: Class 1B

Typical Performance (EVB test results)

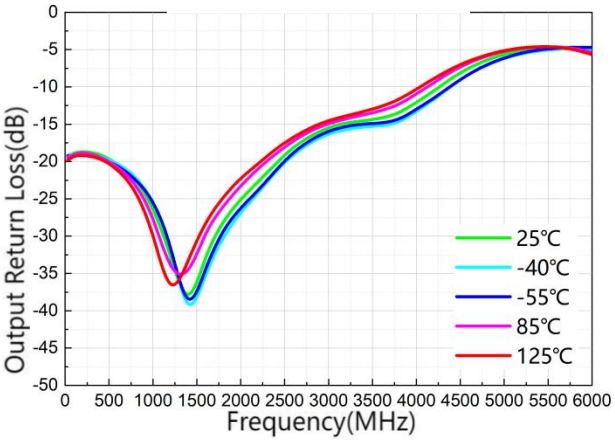
Parameters	Typical values							Units
Frequency	30	100	600	1000	1600	2000	2600	MHz
Gain	14.2	13.9	13.7	13.6	13.5	13.4	13.4	dB
Input Return Loss	-13.2	-23.7	-25.8	-19.3	-15.7	-16.0	-19.1	dB
Output Return Loss	-19.3	-18.9	-20.3	-26.0	-32.3	-25.0	-18.0	dB
Output Power for 1dB compression	25.8	26.4	26.7	27.0	27.4	27.5	27.0	dBm
Output Third-Order Interception	42.8	42.9	42.5	44.2	44.2	40.9	39.5	dBm
Noise Figure	3.2	3.2	3.1	3.1	3.3	3.5	4.0	dB
Reverse Isolation	-18.7	-18.6	-18.8	-18.9	-19.4	-19.7	-20.1	dB
Frequency	3000	3600	4000	4600	5000	5600	6000	MHz
Gain	13.5	13.8	13.9	13.6	13.1	12.8	12.1	dB
Input Return Loss	-20.6	-16.1	-11.5	-6.5	-5.4	-5.4	-5.5	dB
Output Return Loss	-15.4	-14.2	-12.1	-7.4	-5.6	-4.7	-5.1	dB
Output Power for 1dB compression	26.9	25.4	23.9	23.1	22.4	21.8	20.4	dBm
Output Third-Order Interception	38.8	39.4	37.6	37.8	36.4	35.1	32.5	dBm
Noise figure	4.2	4.8	5.3	5.5	5.7	6.0	6.7	dB
Reverse Isolation	-20.4	-20.9	-21.5	-23.1	-24.5	-26.9	-29.4	dB
Test Condition: Vdd=+9V, I=175mA, OIP3 spacing=1MHz, Pout=+8dBm/tone, TA=+25℃								



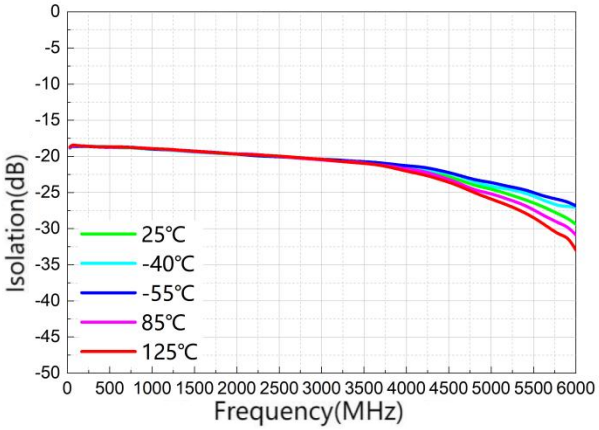
Gain



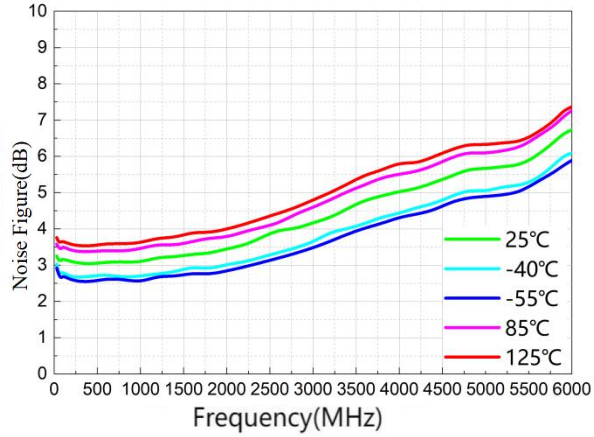
Input Return Loss



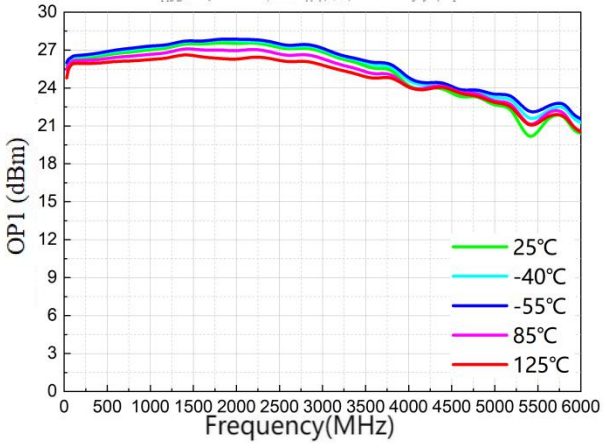
Output Return Loss



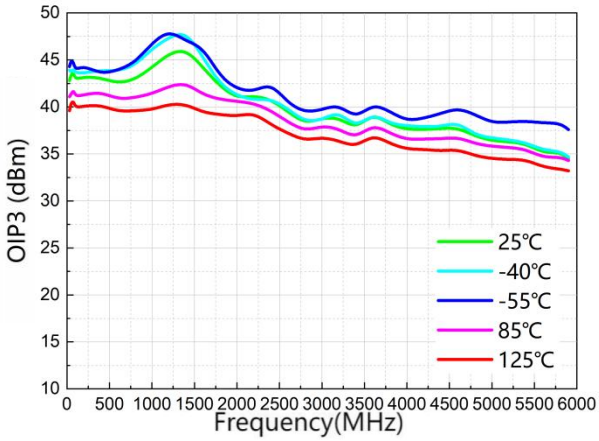
Reverse Isolation



Noise Figure

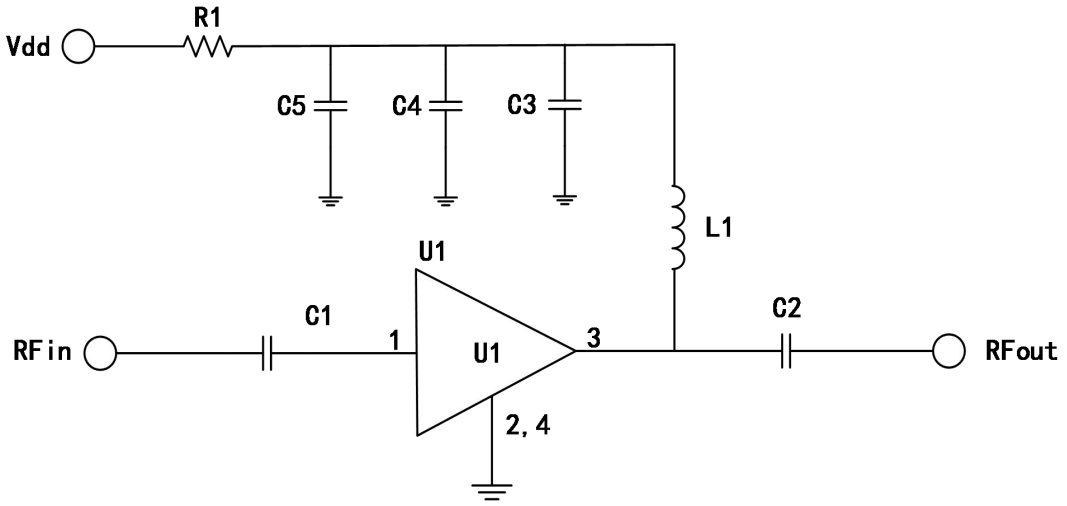


Output Power for 1dB Compression



Output Third-Order Interception

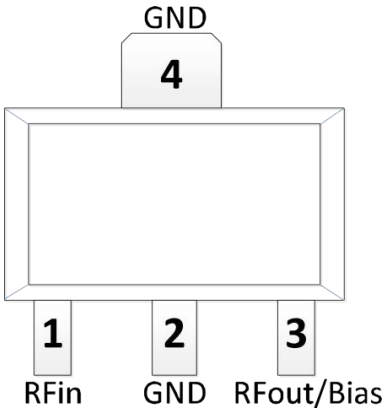
Typical Application Schematic



Bill of Material

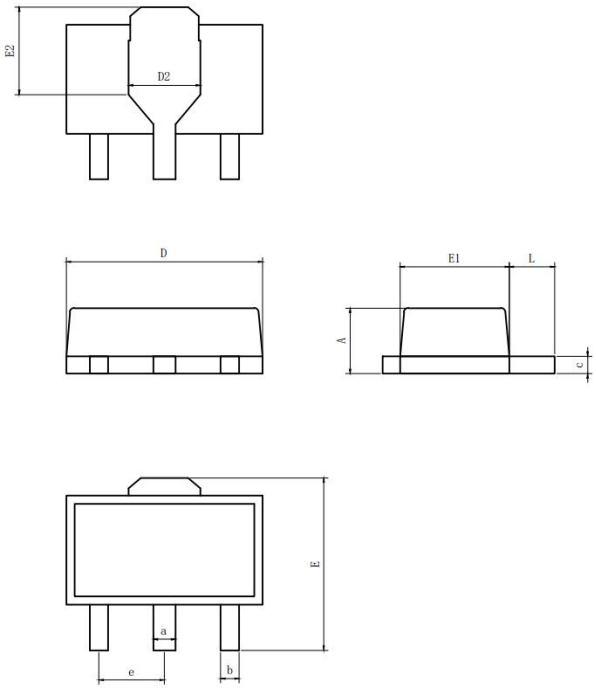
Reference Designator	Package Size	Value	P/N
R1	0402	0 Ω	RC0402FR-070RL
L1	1008	1.1uH	1008AF-112XJRB
C1, C2, C4	0402	1nF	GRM1555C1H102JA01D
C3	0402	100pF	RM1555C1H101JA01D
C5	0402	0.1 uF	GRM155R71H104KE14D

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