Product Features

Frequency: 1.1GHz ~ 1.9GHz

Gain : 29.4dB@1.5GHz

P1dB Compression: 31.0dBm@1.5GHz

OIP3: 42.4dBm@1.5GHz

Vcc=+5V,I_{CQ} 253mA

Package: QFN20

Application

Wireless Infrastructure

FDD/TDD Base Stations

Test and Measurement Equipment

Commercial and Military Radars

High Power Amplifiers

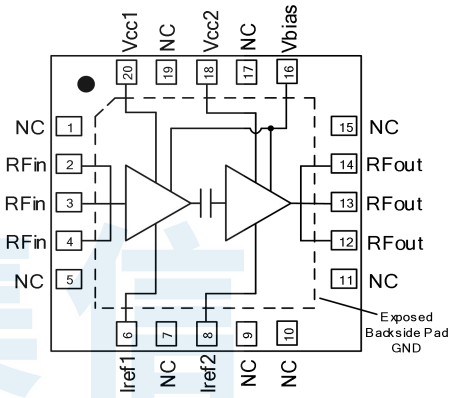
Ordering Information

Part Number	Package	Description
BR9211FE	QFN20	1.1GHz to 1.9GHz 1W Drive Amplifier

General Description

BR9211FE is a 1W broadband driver amplifier constructed with GaAs process ~~design~~. The device is housed in a QFN20 package, small signal gain 29.4dB at 1.5GHz, achieves a peak power of 31dBm P1dB , and 42.4dBm OIP3. The product is suitable for wireless communication infrastructure, FDD/TDD base station, radar, high power amplifier driver stage or final stage and other applications.

Functional Block Diagram



Electrical Specifications

Parameters	Test Conditions	Min.	Typ.	Max.	Units
Gain	1300MHz	-	29.6	-	dB
	1700MHz	-	28.6	-	dB
Input Return Loss	1300MHz	-	-20.8	-	dB
	1700MHz	-	-16.7	-	dB
Output Return Loss	1300MHz	-	-10.9	-	dB
	1700MHz	-	-10.4	-	dB
Reverse Isolation	1300MHz	-	-45.1	-	dB
	1700MHz	-	-46.4	-	dB
Output Power for 1dB compression	1300MHz	-	31.7	-	dBm
	1700MHz	-	30.7	-	dBm
Output Third-Order Interception	1300MHz	-	45.9	-	dBm
	1700MHz	-	44.0	-	dBm
Operating Voltage	-	-	5	-	V
Static Current	-	-	253	-	mA
Test Condition: Vcc=VPD=+5V, I=253mA, OIP3 tested with spacing=1MHz, Pout=22dBm per tone, TA=+25℃					

Absolute Maximum Ratings

Maximum Operating Voltage (Vcc) : +6V

Maximum RF input Power: +15dBm

ESD Rating: Class 2 (< 3000V)

Recommended Operating Conditions

Power 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

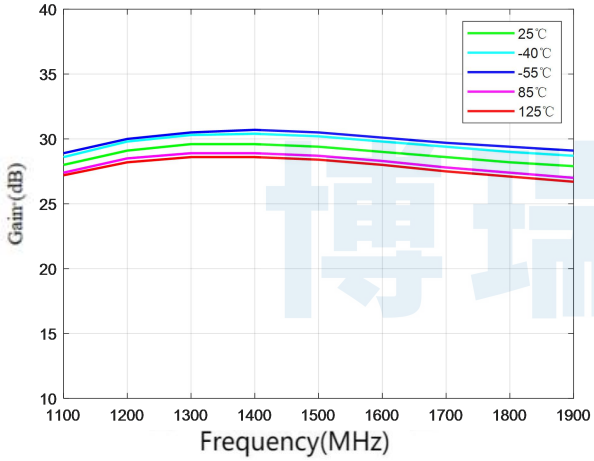
ELECTROSTATIC SENSITIVE DEVICE

OBSERVE HANDLING PRECAUTIONS

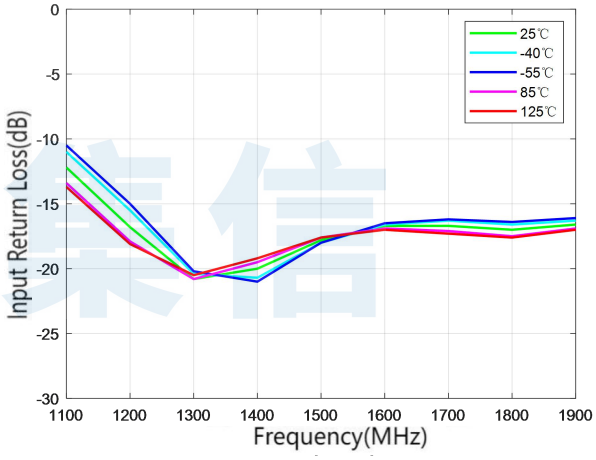
ESD Rating: Class 2B

Typical Performance (EVB test)

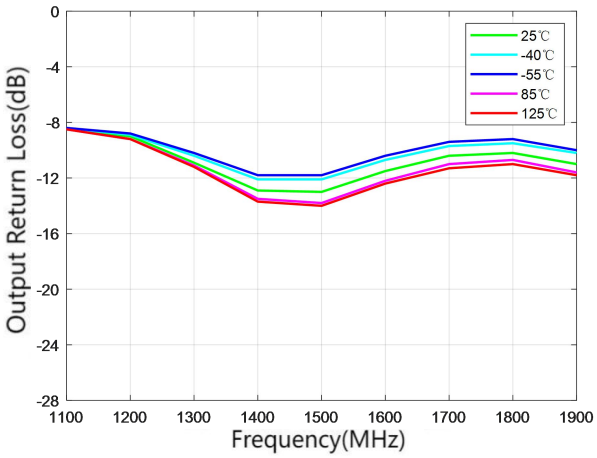
Parameters	Typical Value									Units
Frequency	1100	1200	1300	1400	1500	1600	1700	1800	1900	MHz
Gain	28.0	29.1	29.6	29.6	29.4	29.0	28.6	28.2	27.9	dB
Input Return Loss	-12.2	-16.8	-20.8	-20.0	-17.8	-16.7	-16.7	-17.0	-16.6	dB
Output Return Loss	-8.5	-9.0	-10.9	-12.9	-13.0	-11.5	-10.4	-10.2	-11.0	dB
Isolation	-47.8	-46.2	-45.1	-44.7	-45.6	-46.5	-46.4	-47.2	-47.7	dB
P1dB	30.8	31.4	31.7	32.1	31.0	30.7	30.7	30.6	30.5	dBm
OIP3	46.9	48.4	45.9	46.3	42.4	43.0	44.0	45.0	44.2	dBm
Psat	31.8	32.8	33.6	33.5	33.0	32.6	32.3	32.2	32.1	dBm
Test Condition: Vcc=VPD=+5V, I=253mA, OIP3 spacing=1MHz, Pout=+22dBm/tone, Temp=+25°C										



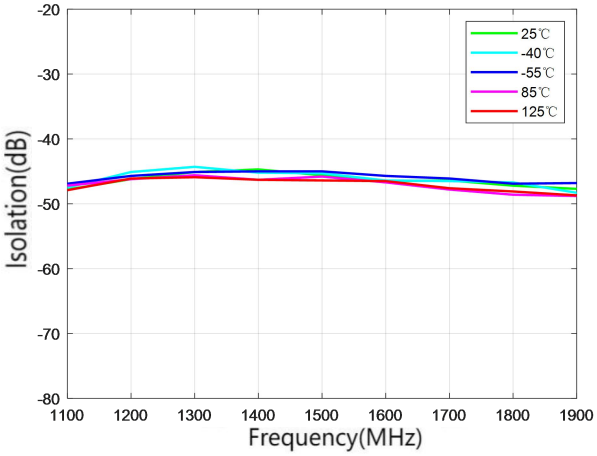
Gain



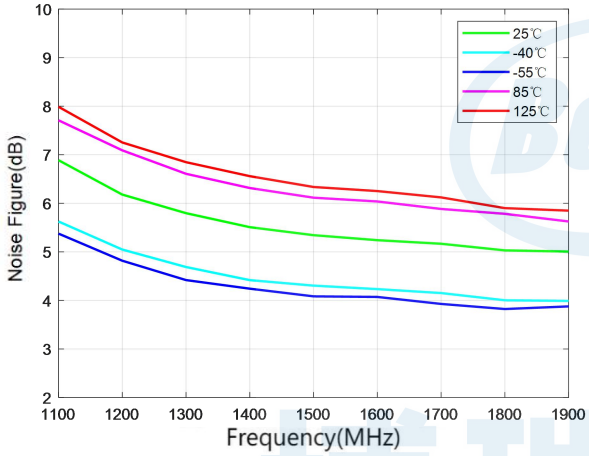
Input Return Loss



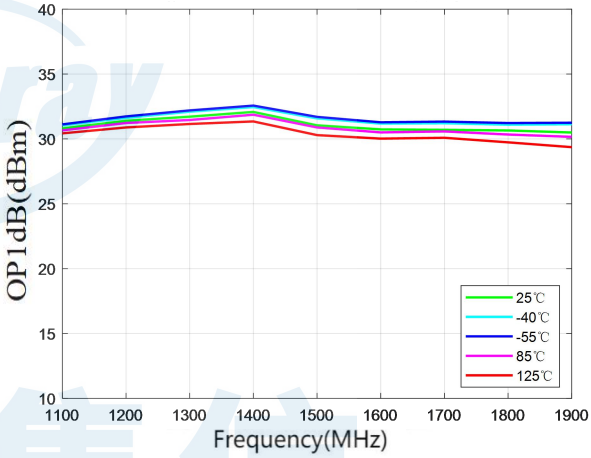
Output Return Loss



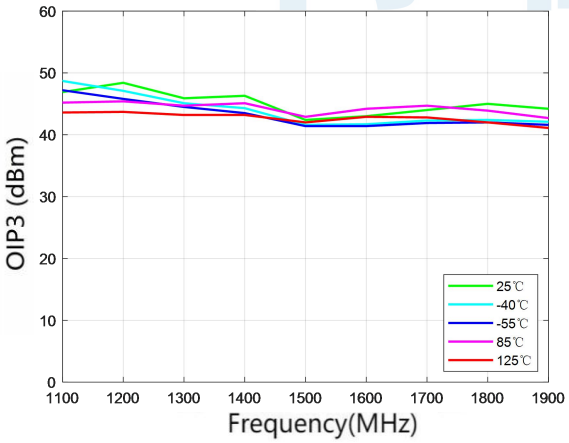
Reverse Isolation



Noise Figure

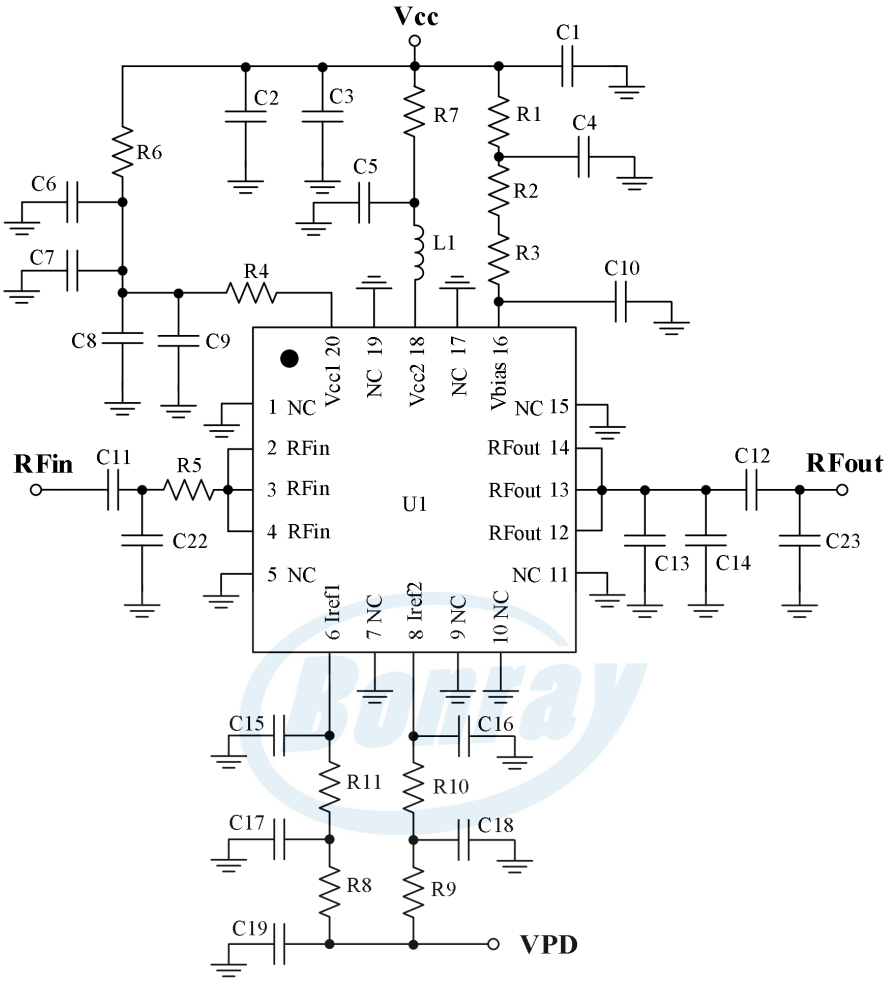


Output Power for 1dB Compression



Output Third-Order Intercept

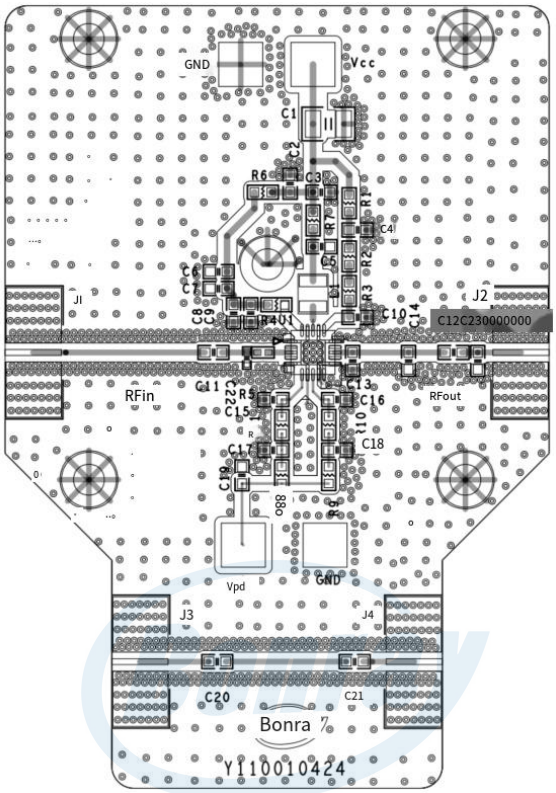
Typical Application Schematic

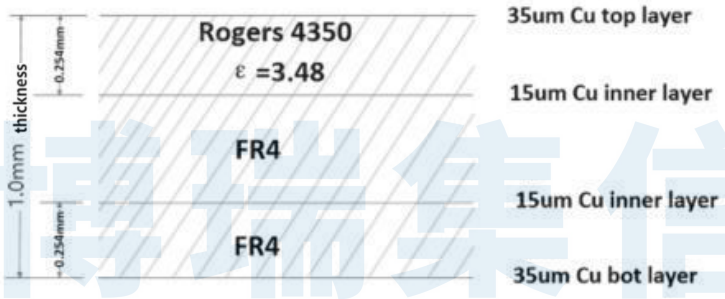


Bill of Material

Designator	Package	Description	Part Number
R1 to R7, R10 to R11	0402	0 Ω	RC0402FR-070RL
R8	0402	1.8 k Ω	RC0402JR-071K8L
R9	0402	1.1 k Ω	RC0402JR-071K1L
C1	1210	10uF	GRM32ER71H106KA12L
C3~C6, C8, C19	0402	1000pF	GRM1555C1H102JA01D
C2, C7, C10~C12	0402	100pF	GRM1555C1H101JA01D
C15~C18	0402	2200pF	GRM155R71H222JA01D
C23	0402	2pF	GRM1555C1H2R0WA01
C13	0402	5.1 pF	GRM1555C1H5R1CA01D
L1	0603	10nH	LQW18AN10NG80
C9, C14, C22	/	NC	/

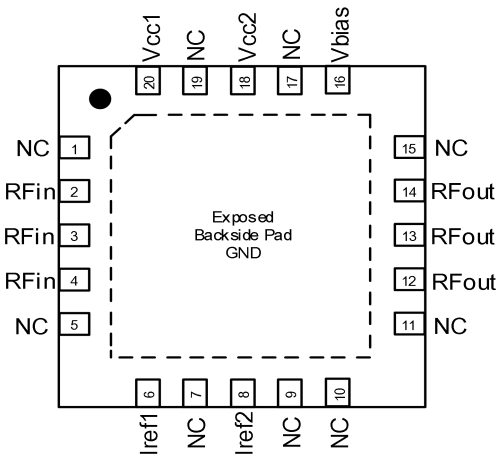
PCB Evaluation Board





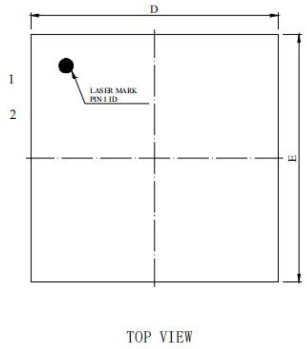
50 ohms Impedance Signal Lines： width=0.53mm,spacing=0.53mm

Pin Configuration and Description

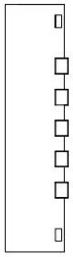


Pin Number	Pin Name	Description
1,5,7,9.10, 11,15,17,19	NC	The inside is not connected, and these ports need to be connected to an external RF ground or DC ground when testing to achieve RF isolation and good heat dissipation.
2 and 4	RFin	Rf input, External DC block required
6	Iref1	Set the first stage amplifier bias current, which can also be used to power down the first stage amplifier.
8	Iref2	Set the second stage amplifier bias current, which can also be used to power down the second stage amplifier.
12 ,13,14	RFout	Rf output, requires external straightener capacitors and RF matching for best performance.
16	Vbias	Bias the circuit supply voltage.
18	Vcc2	Second stage amplifier DC supply voltage.
20	Vcc1	First stage amplifier DC supply voltage.
-	EP	Rf/DC ground. Reduce parasitic inductance and thermal resistance using the recommended through-hole type, see PCB Mount type.

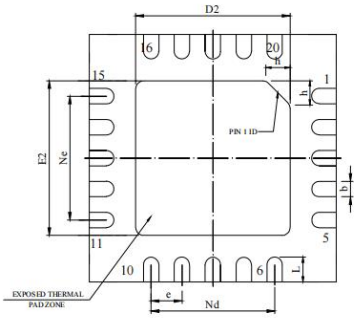
Package information (in mm)



TOP VIEW

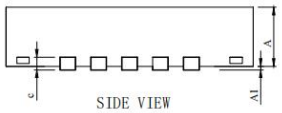


SIDE VIEW



BOTTOM VIEW

SYMBOL	MILLIMETER		
	MIN	NOM	MAX
A	0.95	1.00	1.05
A1	0.01	0.02	0.05
b	0.20	0.25	0.30
c	0.203REF		
D	3.90	4.00	4.10
D2	2.55	2.65	2.75
e	0.50BSC		
Ne	2.00BSC		
Nd	2.00BSC		
E	3.90	4.00	4.10
E2	2.55	2.65	2.75
L	0.35	0.40	0.45
h	0.35	0.40	0.45



SIDE VIEW