Product Features

Operating Frequency: 30MHz ~ 1GHz

Gain: 20.7dB@500MHz

Output Power for 1dB Compression: 22.4dBm@500MHz

Noise Figure: 1.2dB@500MHz

Output Third-Order Interception: 37.5dBm@500MHz

Supply Current: 92mA @ Vdd=+5V

Package: QFN16

Application

Cellular, PCS, GSM

Satellite navigation

Driver amplifier

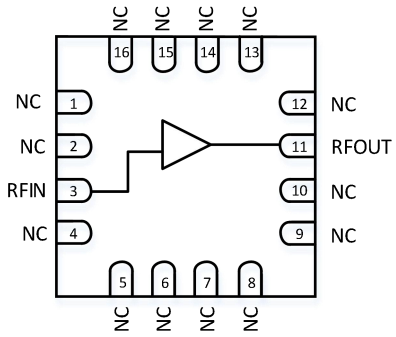
General Description

The BR9562FD is a wide-band MMIC low noise amplifier using GaAs process in QFN16 package. 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. At 500MHz, the amplifier provides 20.7dB gain, 1.2dB noise figure, 22.4dBm output power for 1dB compression, 37.5dBm output third-order interception, and good input and output return loss over a wide frequency range, which is suitable for high flatness and high dynamic application.

Ordering information

Part Number	Package	Description
BR9562FD	QFN16	30MHz~1GHz Low Noise Amplifier

Functional Block Diagram



Electrical Specifications

Parameters	Test conditions	Min	Typ	Max	Units
Gain	30MHz	-	20.6	-	dB
	0.5 GHz	-	20.7	-	dB
	1GHz	-	20.1	-	dB
Input Return Loss	0.5 GHz	-	-28.3	-	dB
	1GHz	-	-18.8	-	dB
Output Return Loss	0.5 GHz	-	-26.3	-	dB
	1GHz	-	-21.8	-	dB
Reverse Isolation	0.5 GHz	-	-23.3	-	dB
	1GHz	-	-23.7	-	dB
Output Power for 1dB Compression	30MHz	-	21.6	-	dBm
	0.5 GHz	-	22.4	-	dBm
	1GHz	-	22.3	-	dBm
Output Third-Order Interception	30MHz	-	39.2	-	dBm
	0.5 GHz	-	37.5	-	dBm
	1GHz	-	36.1	-	dBm
Noise Figure	30MHz	-	1.5	-	dB
	0.5 GHz	-	1.2	-	dB
	1GHz	-	1.3	-	dB
Supply Voltage	-	-	5	-	V
Supply Current	-	-	92	-	mA
Test conditions: Vdd=+5V, I=92mA, OIP3 Pout=5dBm/tone, fspacing=1MHz, TA=+25°C					

Absolute Maximum Ratings

Maximum Supply voltage (Vdd) : +9V

Maximum RF input power: +20dBm

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.

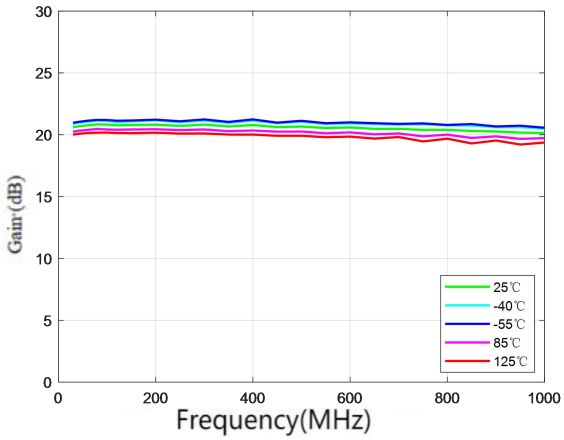
ESD WARNING

ELECTROSTATIC SENSITIVE DEVICE

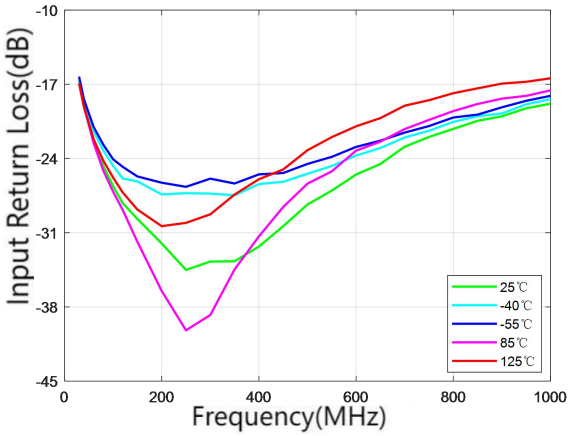
OBSERVE HANDLING PRECAUTIONS

Typical Performance (EVB test results)

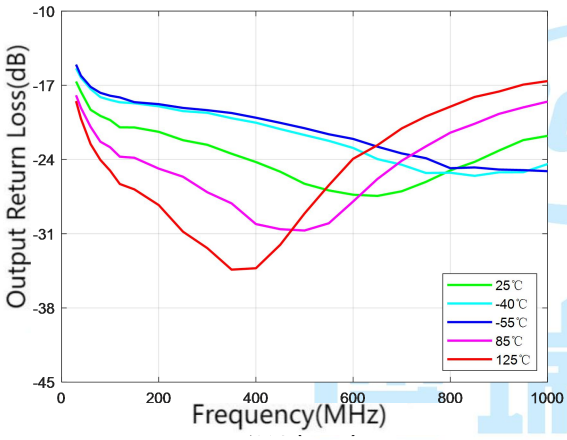
Parameters	Typ											Units
Frequency	30	60	80	100	150	200	250	300	350	400	450	MHz
Input return loss	-16.9	-22.3	-24.7	-26.6	-29.7	-32.0	-34.5	-33.7	-33.7	-32.3	-30.4	dB
Small signal gain	20.6	20.8	20.8	20.8	20.8	20.8	20.7	20.8	20.7	20.8	20.6	dB
Reverse isolation	-23.5	-23.5	-23.2	-23.3	-23.1	-23.3	-23.3	-23.2	-23.4	-23.3	-23.3	dB
Output return loss	-16.6	-19.3	-19.9	-20.3	-21.0	-21.4	-22.2	-22.6	-23.5	-24.2	-25.1	dB
Output Power for 1dB Compression	21.6	22.3	22.4	22.5	22.3	22.5	22.4	22.4	22.5	22.4	22.5	dBm
Output-Third-Order Interception	39.2	39.7	37.9	37.1	38.0	37.4	37.7	37.8	37.3	38.0	36.7	dBm
Noise figure	1.5	1.2	1.3	1.2	1.2	1.2	1.1	1.1	1.1	1.2	1.1	dB
Frequency	500	550	600	650	700	750	800	850	900	950	1000	MHz
Input Return Loss	-28.3	-27.0	-25.5	-24.5	-22.9	-22.0	-21.2	-20.4	-20.0	-19.3	-18.8	dB
Gain	20.7	20.5	20.6	20.5	20.5	20.4	20.4	20.3	20.3	20.2	20.1	dB
Reverse Isolation	-23.3	-23.4	-23.3	-23.4	-23.4	-23.6	-23.4	-23.6	-23.8	-23.7	-23.7	dB
Output Return Loss	-26.3	-26.9	-27.3	-27.4	-27.0	-26.1	-25.0	-24.2	-23.2	-22.2	-21.8	dB
Output Power for 1dB Compression	22.4	22.5	22.5	22.5	22.4	22.4	22.3	22.4	22.3	22.3	22.3	dBm
Output Third-Order Interception	37.5	37.4	37.0	36.4	37.1	36.4	37.0	36.8	36.2	37.0	36.1	dBm
Noise Figure	1.2	1.1	1.2	1.2	1.2	1.2	1.3	1.3	1.2	1.2	1.3	dB
Test conditions: Vdd=+5V, I=92mA, OIP3 Pout=5dBm/tone, spacing=1MHz, TA=+25°C												



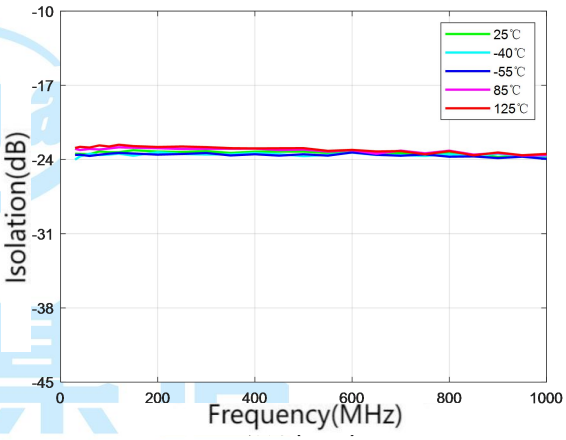
Gain



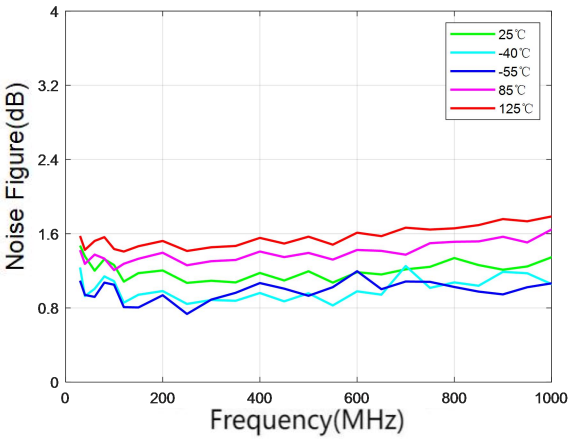
Input return loss



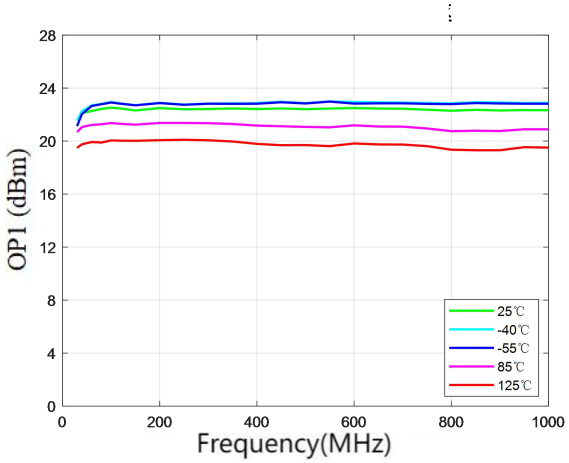
Output return loss



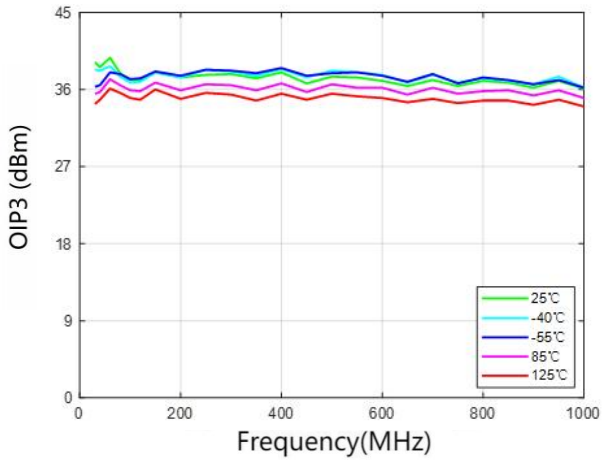
Reverse isolation



Noise Figure

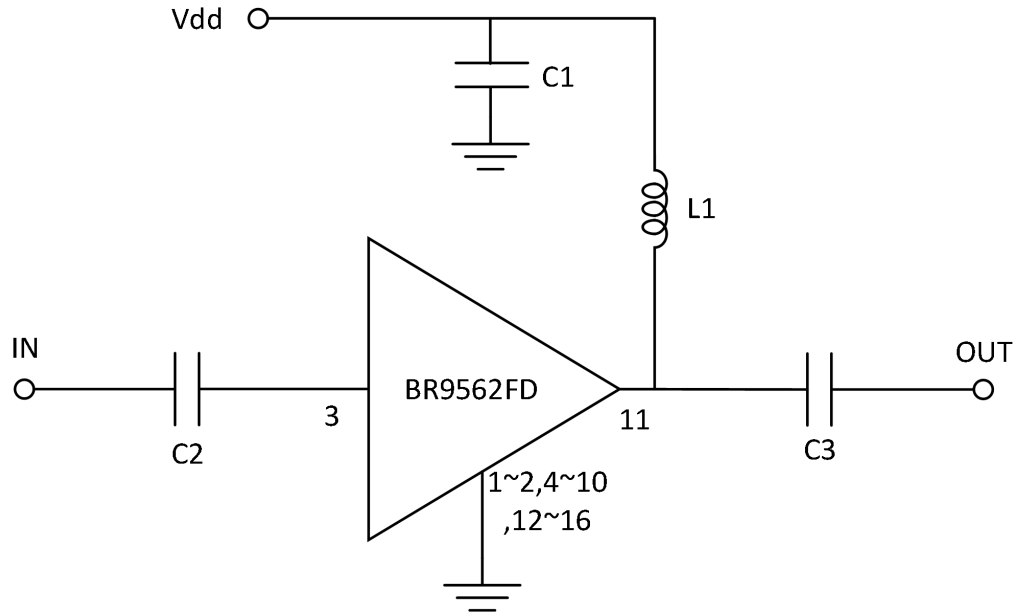


Output Power for 1dB compression



Output Third-Order Interception

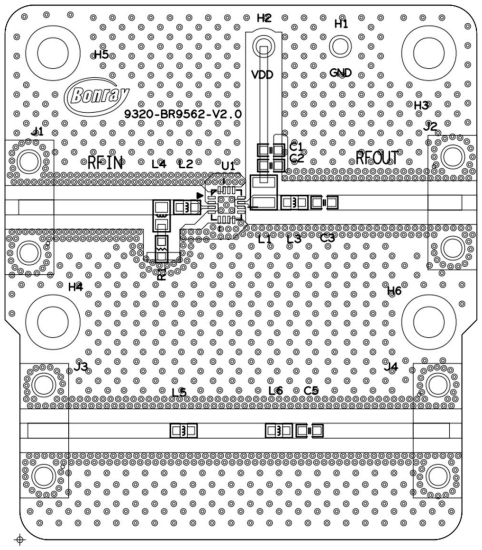
Typical Application Schematic

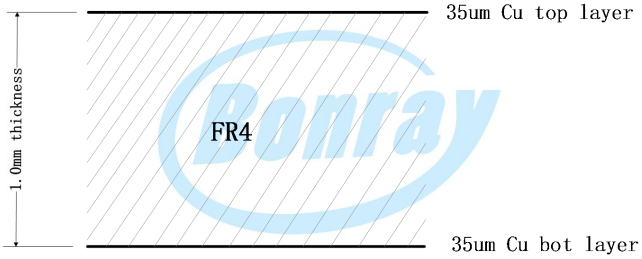


Bill of Material

Reference Designator	Package Size	Value	P/N
C1	0402	10nF	GRM155R71H103JA88D
C2, C3	0402	2.2nF	GRM155R71H222JA01D
L1	0402	1.1 uH	1008AF-112XJRB
R0	0402	0 Ω	RC0402JR-070RL

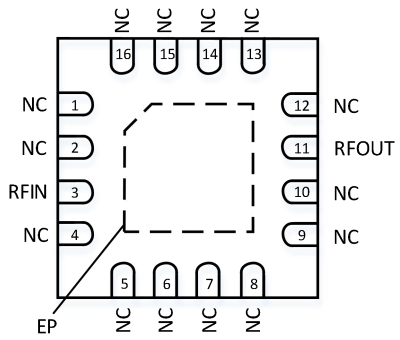
PCB Evaluation Board





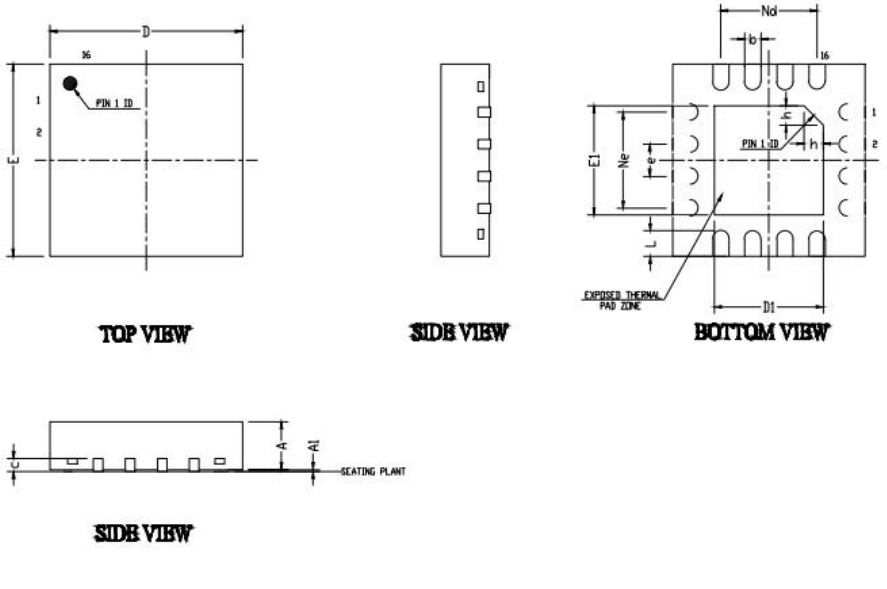
50 ohmsImpedance Signal Lines: width=1.56mm,spacing=1.56mm

Pin Configuration and Description



Pin Number	Pin Name	Description
1, 2, 4, 5~ 10, 12 ~ 16	NC	No electrical connection. Provide grounded land pads for PCB mounting integrity.
3	RFIN	RF input pin. A DC Block is required.
11	RFOUT	RF Output pin. DC bias will also need to be injected through a RF bias choke/inductor for operation.
-	EP	RF/DC ground. Use recommended via pattern for suggested footprint. to minimize inductance and thermal resistance; See PCB Mounting Pattern for suggested footprint.

Package Dimensions (mm)



SYMBOL	MILLIMETER		
	MIN	NOM	MAX
A	0.75	0.80	0.85
A1	0.01	0.02	0.05
b	0.20	0.25	0.30
c		0.270REF	
D	2.90	3.00	3.10
D1	1.60	1.70	1.80
e		0.50BSC	
Ne		1.50BSC	
Nd		1.50BSC	
E	2.90	3.00	3.10
E1	1.60	1.70	1.80
L	0.25	0.30	0.35
h	0.30	0.35	0.40