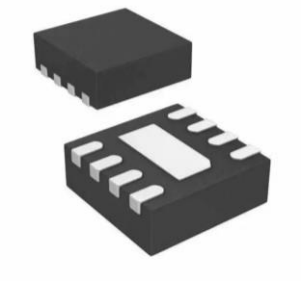
Wide-band, Low-noise Amplifier

PRODUCT DESCRIPTION

The MS2692 is a wide-band, low-noise amplifier, operating at the frequency from 0.45GHz to 5.0GHz, which has characteristics such as high-linearity, low-noise and flat-gain. Between 0.85GHz and 4.0GHz, the gain fluctuation is less than 3dB. Between 0.85GHz and 5.0GHz, the noise figure is less than 1.2dB. It integrates the bias circuit, enable control circuit and ESD protection circuit internally. The chip adopts single power supply from 2.7V to 5.25V and can adjust operating current through external bias resistor, which can be used in different fields like the internet of things, multi-mode navigation, WIFI and communication.

The MS2692 is available in DFN8 package, which can operate from -40°C to 120°C. The detailed operating curves can be seen in the subsequent charts.



DFN8

FEATURES

- Bandwidth Operation: 0.45GHz ~ 5.0GHz
- Low Noise Figure (Remove Insertion Loss),
  Measurement Results at 3.3V@25°C
  1.11dB@0.45GHz、0.77dB@0.85GHz、0.75dB@1.207GHz、
  0.57dB@1.575GHz、0.61dB@2.45GHz、0.72dB@4.2GHz、
  0.84dB@4.5GHz、0.91dB@5.0GHz
- Between 0.85GHz and 4.0GHz: Gain More than 21dB@25°C;
  Within Entire Bandwidth: Gain Not Less than 16dB@25°C
- Adjustable External Bias Resistor for Linearity Optimization
- Output 1dB Compression Point 16.6dBm@2.45GHz, 3.3V
- 2.7V ~ 5.25V Single Power Supply
- Integrated Enable Shutdown Function Internally for Power Dissipation Reduction
- Unconditionally Stable
- On-chip ESD Protection: HBM&CDM Mode ±1000V

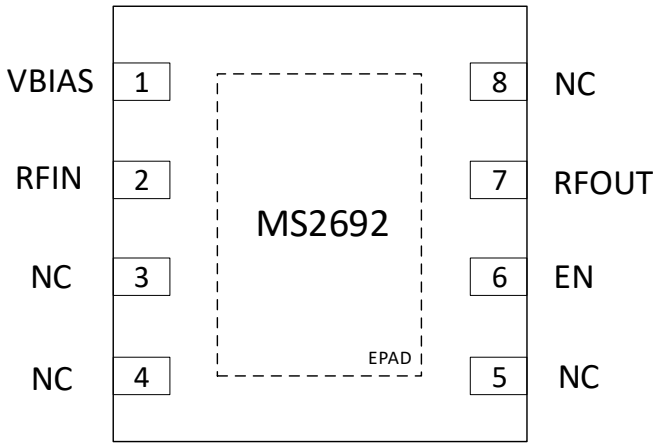
APPLICATIONS

- Repeater
- Mobile Base Station
- LTE/WCDMA/CDMA/GSM
- Universal Wireless Communication
- Time Division TDD System
- Frequency Division FDD System
- Microwave Communication

PRODUCT SPECIFICATION

Part Number	Package	Marking
MS2692	DFN8	2692

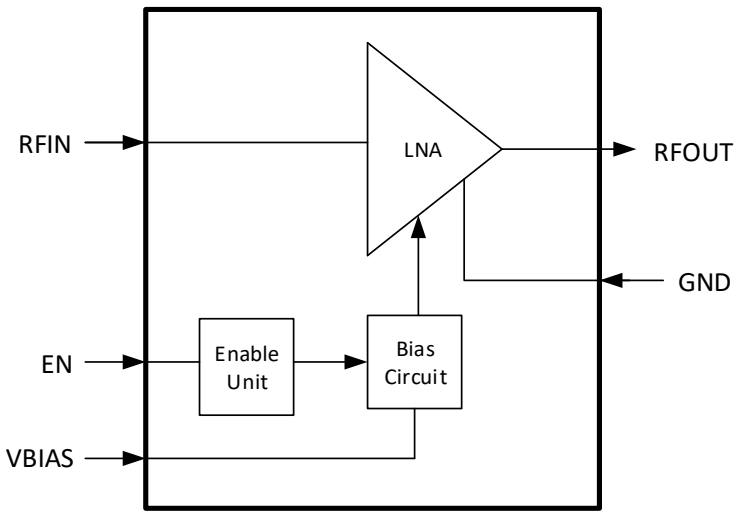
PIN CONFIGURATION



PIN DESCRIPTION

Pin	Name	Type	Description
1	VBIAS	I	External Bias Input
2	RFIN	I	RF Input
3, 4, 5, 8	NC	-	Not Connection
6	EN	I	Enable Pin, TTL level. When the low level is enabled, the high level is shut down.
7	RFOUT	O	RF Output
-	EPAD	-	Thermal Pad, Must Connect to GND

BLOCK DIAGRAM



ABSOLUTE MAXIMUM RATINGS

Any exceeding absolute maximum rating application causes permanent damage to device. Because long-time absolute operation state affects device reliability. Absolute ratings just conclude from a series of extreme tests. It doesn't represent chip can operate normally in these extreme conditions.

Parameter	Symbol	Ratings	Unit
Power Supply	V_{DD}	7	V
RF Input Power (Continuous Wave)	P_{IN}	+33	dBm
Operating Temperature	Topr	-40 ~ +120	℃
Storage Temperature	Tstg	-55 ~ +150	℃
Lead Temperature (10s)	T_{TOR}	260	℃

ELECTRICAL CHARACTERISTICS

DC Characteristics

V_{DD}=3.3V @25°C, External Bias Resistor R=1800Ω。

Parameter	Symbol	Min	Typ	Max	Unit
Enable Control Voltage	EN_{ON}	0		0.6	V
	EN_{OFF}	1		VDD	V
Turn on Supply Current	$I_{DD(ON)}$		73		mA
Turn off Supply Current	$I_{DD(OFF)}$		3.0		mA

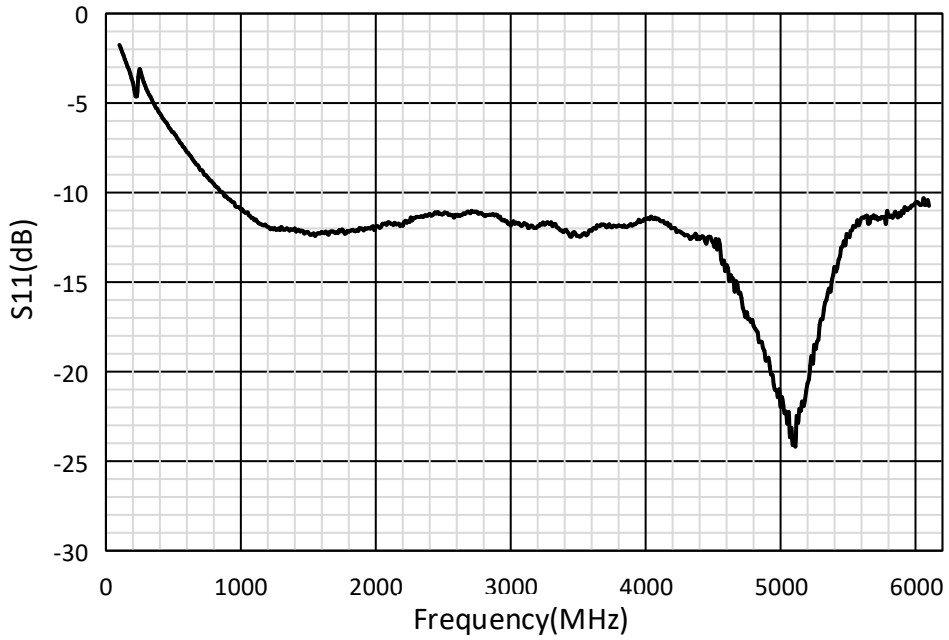
AC Characteristics

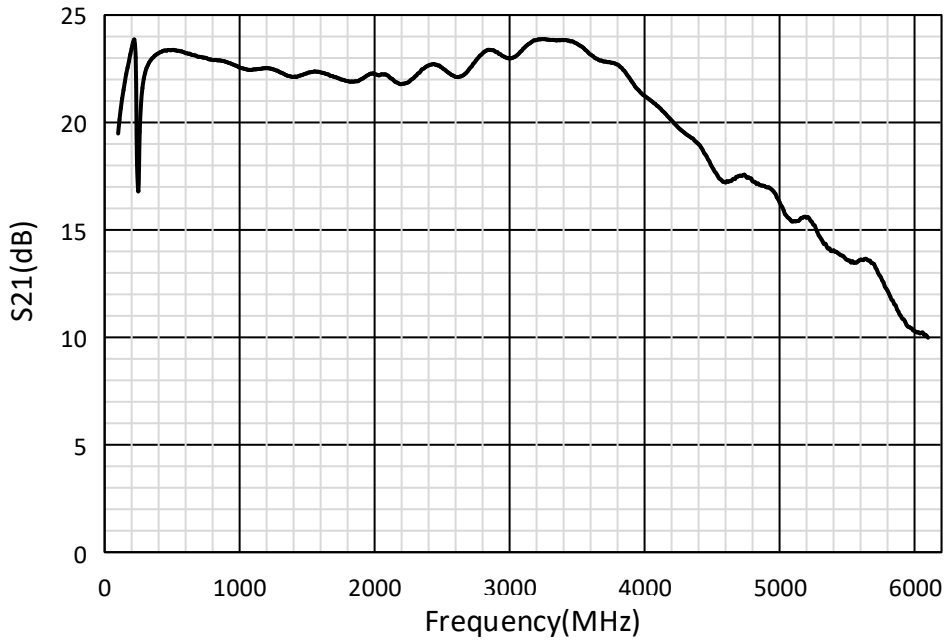
V_{DD}=3.3V @25°C, External Bias Resistor R=1800Ω, 50Ω System, Noise Figure Removal Insertion Loss.

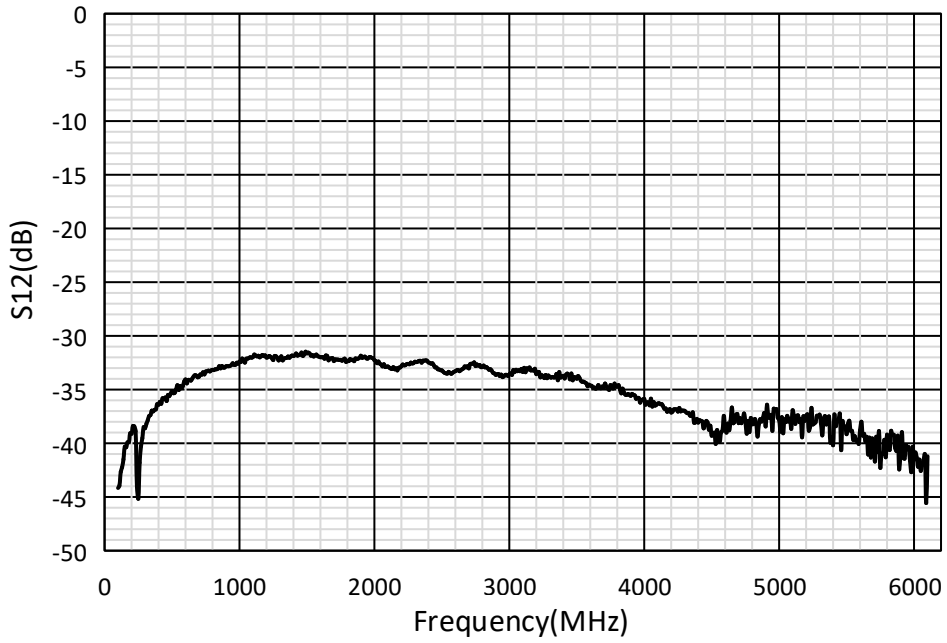
Parameter	Symbol	Parameter Value									Unit
Test Frequency	f_{TEST}	0.45	0.85	1.207	1.575	2.450	3.5	4.2	4.5	5.0	GHz
Forward Gain	S21	22.7	22.0	21.8	21.7	21.0	22.2	19.7	17.1	16.1	dB
Input Reflex Figure	S11	-5.8	-10.1	-11.7	-12.3	-12.0	-14.0	-10.3	-14.5	-24.1	dB
Reverse Isolation Degree	S12	-36	-31.3	-31.0	-31.8	-32.3	-33.5	32.0	-39.6	-38.3	dB
Output Reflex Figure	S22	-6.8	-15.6	-18.73	-16.1	-11.0	-23.2	-8.3	-7.7	-6.7	dB
Noise Figure	NF	1.11	0.77	0.75	0.57	0.61	0.78	0.72	0.84	0.91	dB
Output P1dB	OP1dB	7.2	11.4	14.0	15.3	16.6	15.8	14.2	14.1	12.9	dBm

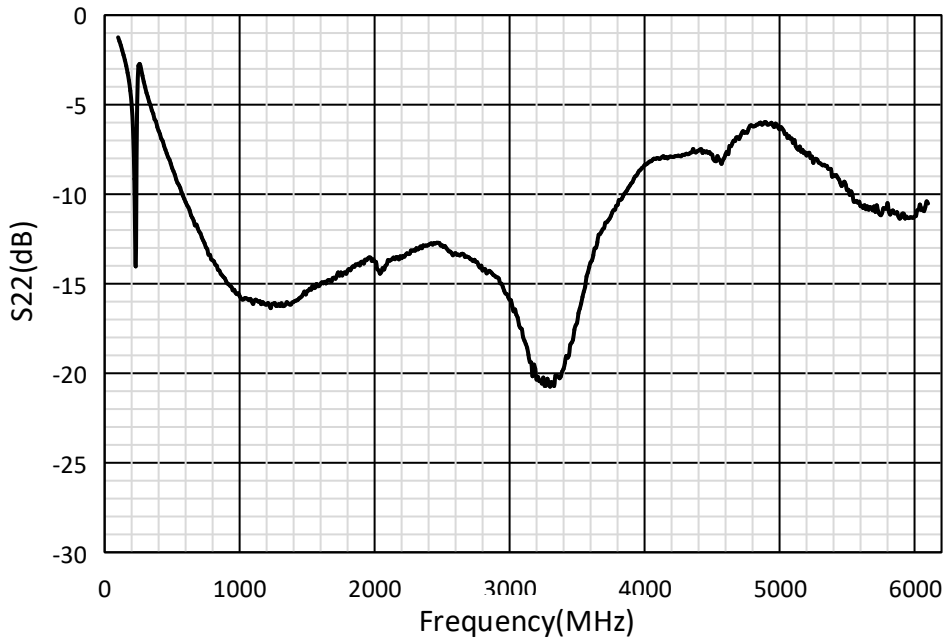
TYPICAL CHARACTERISTICS CURVE (Same Peripheral Circuit)

S Parameters at Normal Atmospheric Temperature (VDD=3.3V, 50Ω System, Bias Resistor R=1800Ω, Temperature 25°C)

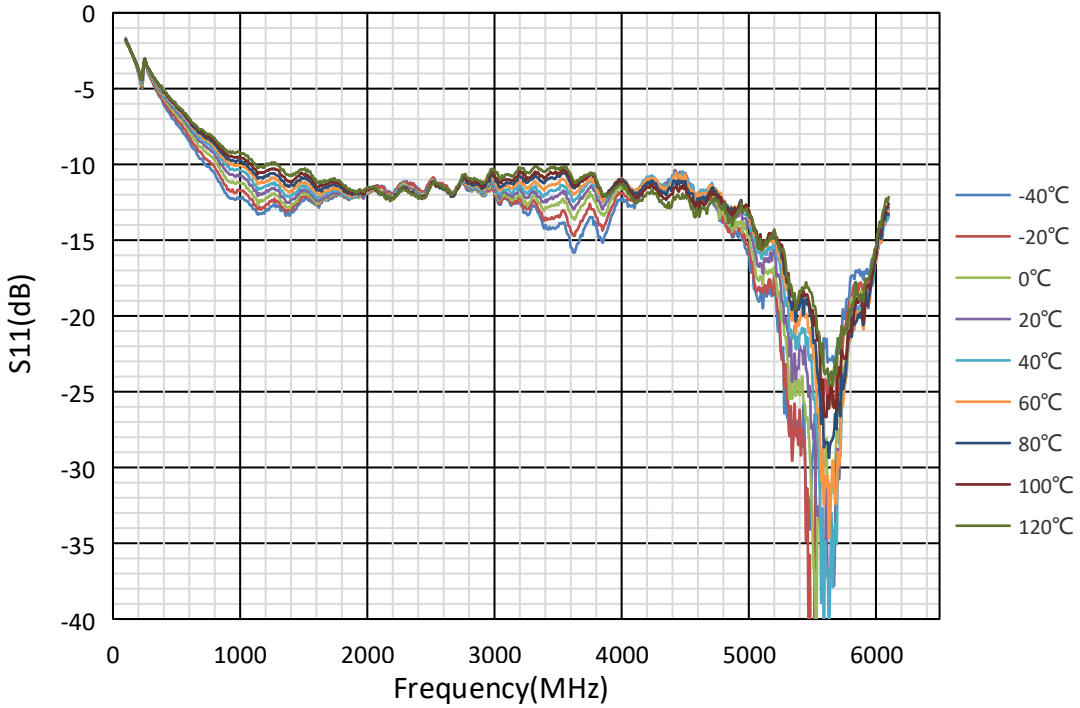


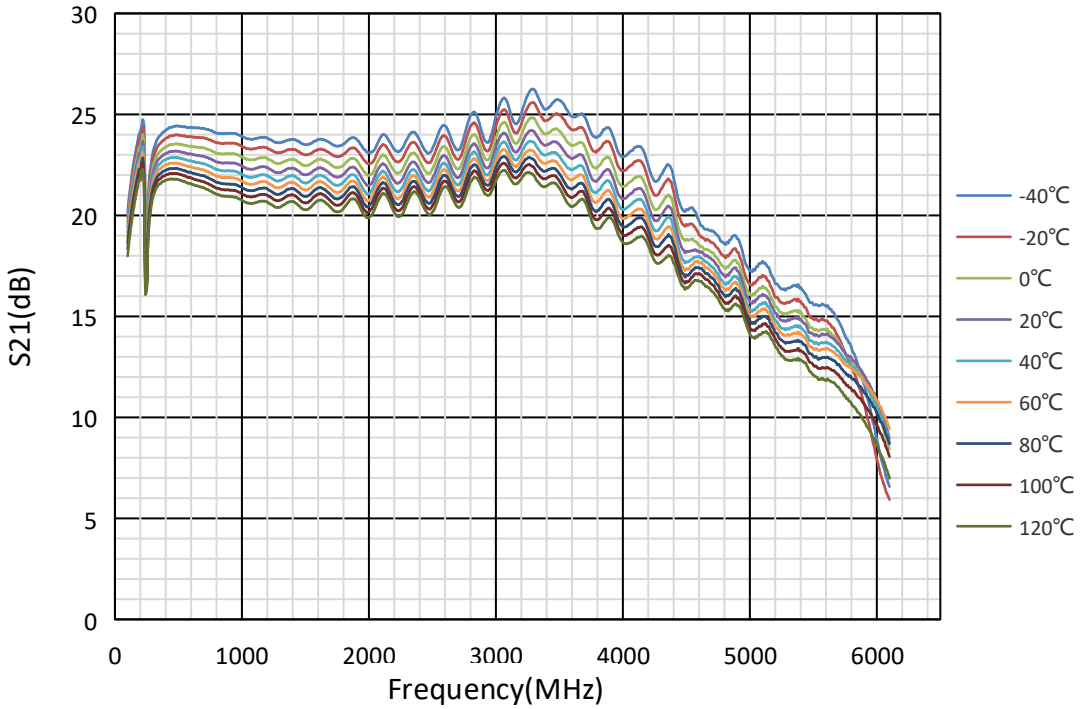


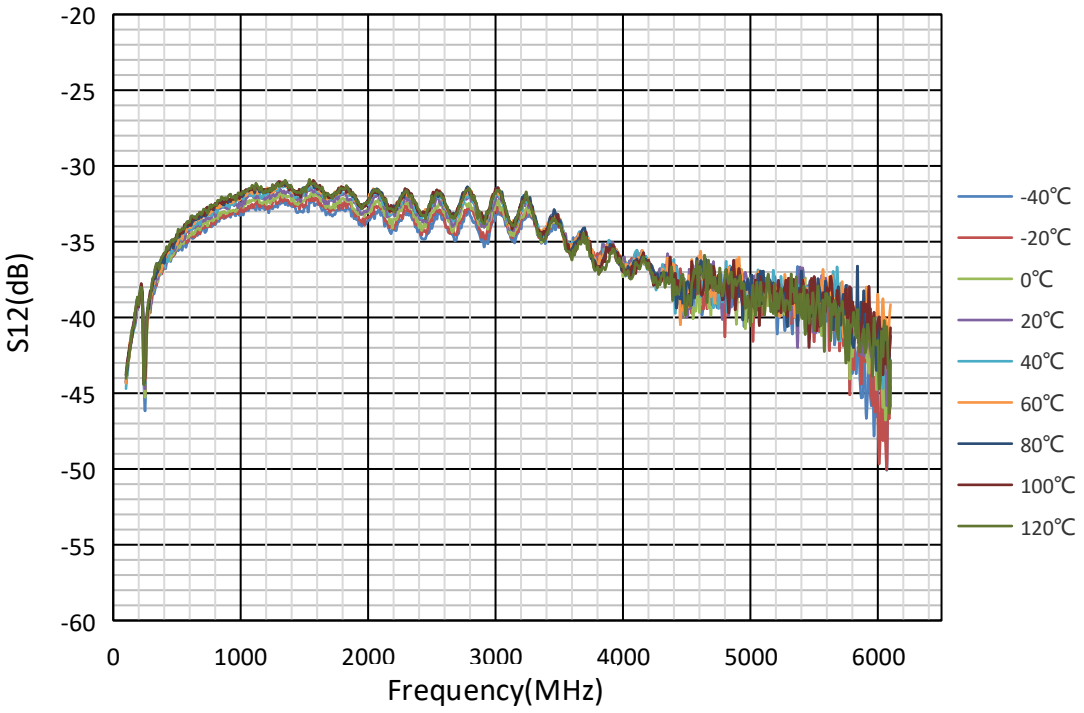

0
-5
-10
-15
-20
-25
-30
-35
-40
-45
-50
S12(dB)
0
1000
2000
3000
4000
5000
6000
Frequency(MHz)

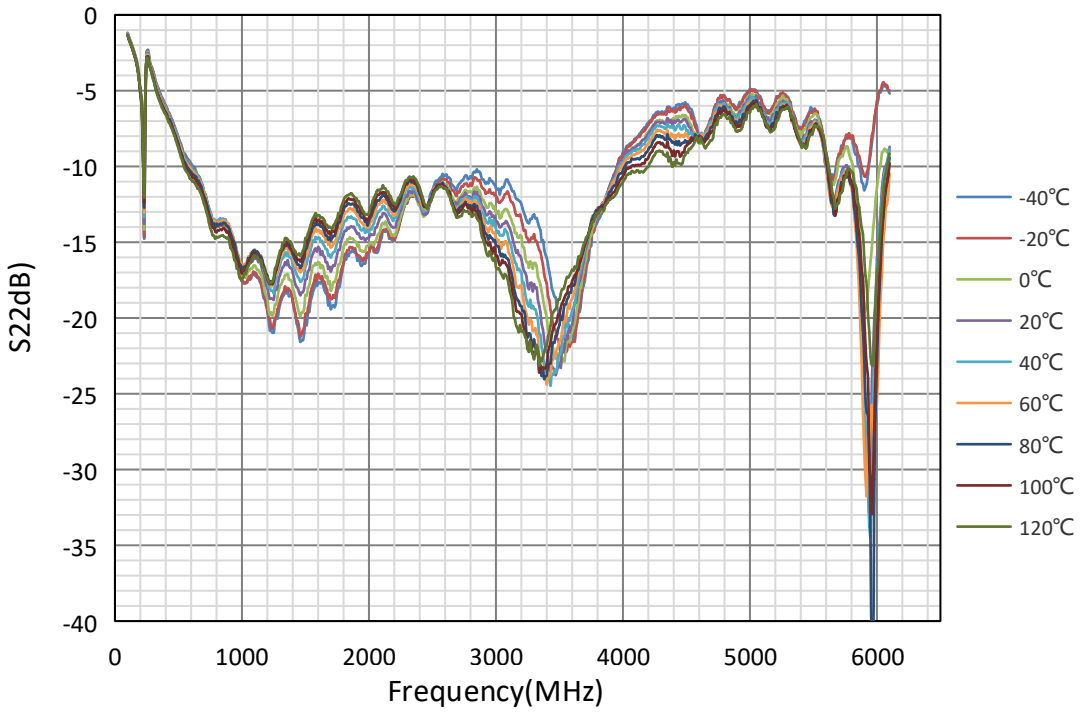

0
-5
-10
-15
-20
-25
-30
S22(dB)
0
1000
2000
3000
4000
5000
6000
Frequency(MHz)

The Variation of S Parameters with Temperature (VDD=3.3V, 50Ω System, Bias Resistor R=1800Ω, Temperature Range: -40°C ~ 120°C)

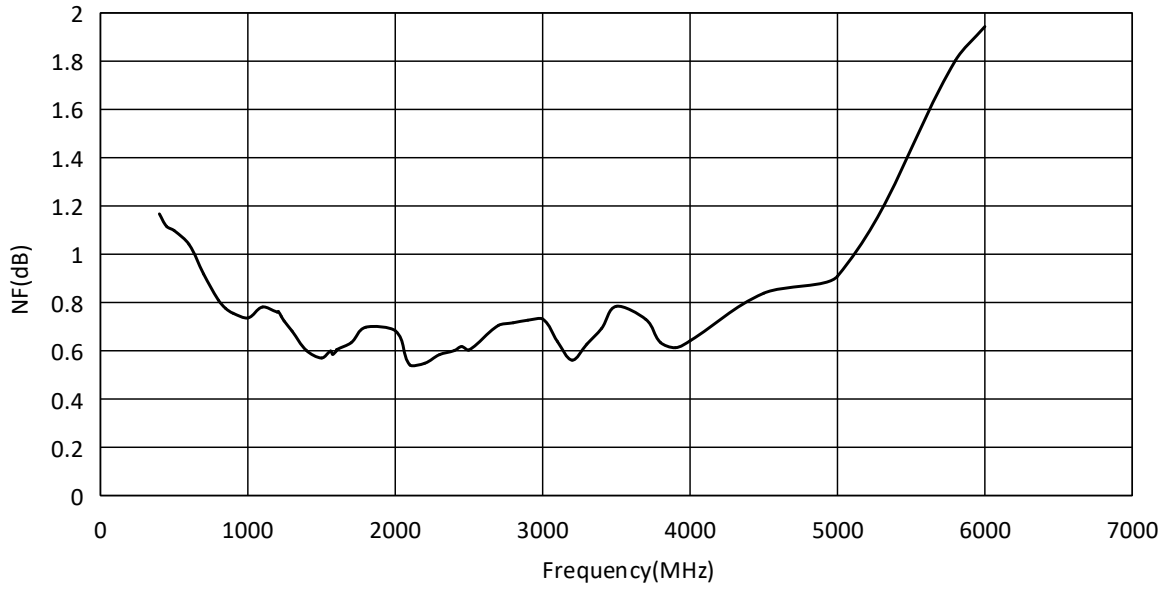




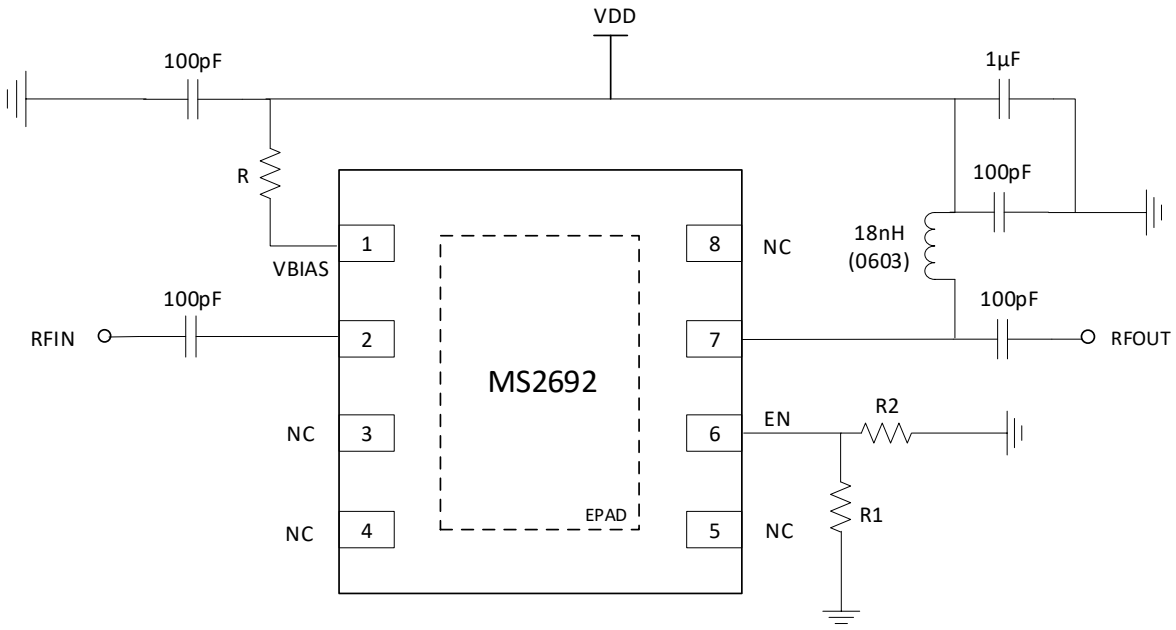

-20
-25
-30
-35
-40
-45
-50
-55
-60
S12(dB)
0
1000
2000
3000
4000
5000
6000
Frequency(MHz)
-40℃
-20℃
0℃
20℃
40℃
60℃
80℃
100℃
120℃


0
-5
-10
-15
-20
-25
-30
-35
-40
S22dB)
0
1000
2000
3000
4000
5000
6000
Frequency(MHz)
-40℃
-20℃
0℃
20℃
40℃
60℃
80℃
100℃
120℃

Noise Figure (VDD=3.3V@25°C, 50Ω System, Bias Resistor R=1800Ω, Remove Insertion Loss)



TYPICAL APPLICATION



Note:

1. Unless otherwise noted, all capacitors and resistors are available in 0402 package.

2. The bias resistor R can be adjusted according to actual application.

3. For TDD system, R1=20kΩ&R2=0。

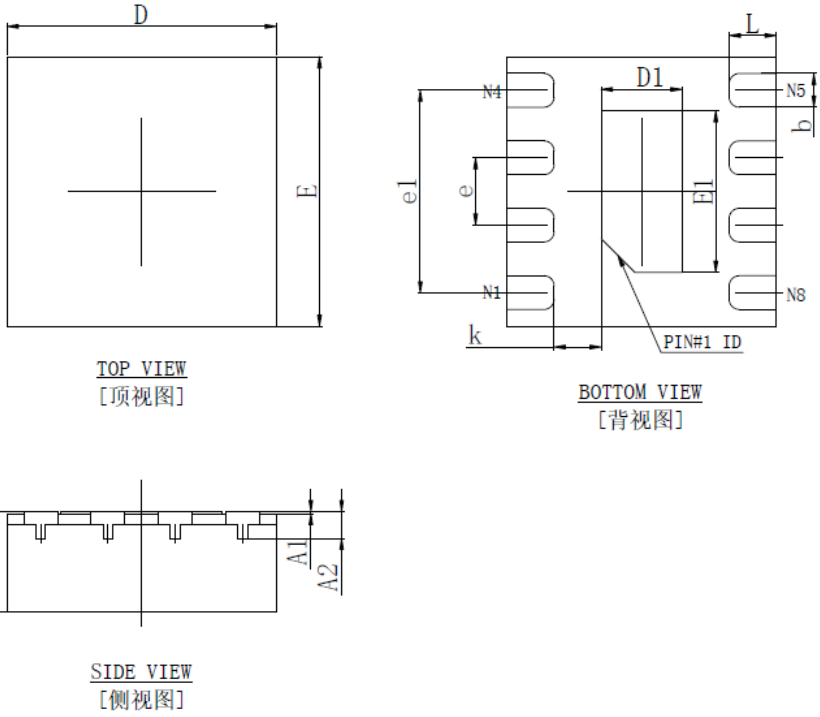
4. For FDD system, R1=20kΩ or the pin 6 is connected to the ground.

Bias Resistor R VS. Static Bias Current (VDD=3.3V, 25°C)

I(mA)	33	38	47	53	62	73
R(Ω)	6.5k	5.1k	3.9k	3.1k	2.4k	1.8k

PACKAGE OUTLINE DIMENSIONS

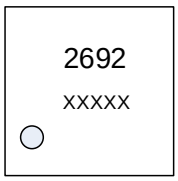
DFN8



Symbol	Dimensions in Millimeters		Dimensions in Inches	
	Min	Max	Min	Max
A	0.700	0.800	0.028	0.031
A1	0.000	0.050	0.000	0.002
A2	0.203REF.		0.008REF.	
D	1.924	2.076	0.076	0.082
E	1.924	2.076	0.076	0.082
D1	0.550	0.650	0.022	0.026
E1	1.150	1.250	0.045	0.049
b	0.200	0.300	0.008	0.012
e	0.500BSC.		0.020BSC.	
e1	1.450	1.550	0.057	0.061
k	0.300	0.400	0.012	0.016
L	0.300	0.400	0.012	0.016

MARKING and PACKAGING SPECIFICATION

1. Marking Drawing Description



Product Name: 2692

Product Code: XXXXX

2. Marking Drawing Demand

Laser printing, contents in the middle, font type Arial.

3. Packaging Specification

Device	Package	Piece/Plate	Plate/Box	Piece/Box	Box/Carton	Piece/Carton
MS2692	DFN8	3000	10	30000	4	120000

STATEMENT

- All Revision Rights of Datasheets Reserved for Ruimeng. Don't release additional notice.

  Customer should get latest version information and verify the integrity before placing order.
- When using Ruimeng products to design and produce, purchaser has the responsibility to observe safety standard and adopt corresponding precautions, in order to avoid personal injury and property loss caused by potential failure risk.
- The process of improving product is endless. And our company would sincerely provide more excellent product for customer.

MOS CIRCUIT OPERATION PRECAUTIONS

Static electricity can be generated in many places. The following precautions can be taken to effectively prevent the damage of MOS circuit caused by electrostatic discharge:

1、The operator shall ground through the anti-static wristband.

2、The equipment shell must be grounded.

3、The tools used in the assembly process must be grounded.

4、Must use conductor packaging or anti-static materials packaging or transportation.

+86-571-89966911

Rm701, No.9 Building, No. 1 WeiYe Road, Puyan Street, Binjiang District, Hangzhou, Zhejiang

http:// www.relmon.com