SAC3066Q3

GaAs MMIC Low Noise Amplifier
7GHz~11GHz

Rev 3.4

Features

- Frequency：7GHz~11GHz
- Gain：21.5dB
- Noise Figure：1.2dB
- OutputP_{-1}dB：16dBm
- Package Size：QFN3x3mm

Typical Applications

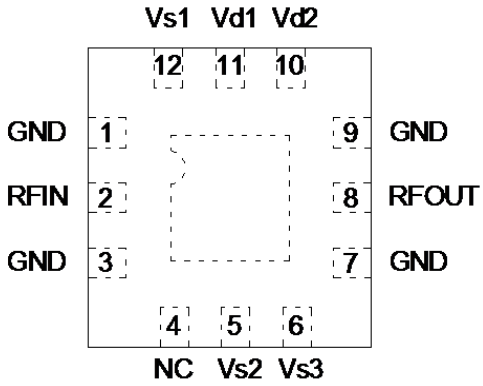
- Radar and ECM
- RF/ Microwave radio
- Test and Measurement

General Description

SAC3066Q3 is a GaAs MMIC Low Noise Amplifier in leadless 3x3mm surface mount package, which operates between 7GHz~11GHz. The amplifier can provide 21.5dB gain, 16dBm OutputP_{-1}dB, 1.2dB noise figure from a +5V supply voltage.

The amplifier I/O's are internally matched to 50 Ohms.

Functional Diagram



Electrical Performance (T_A=25℃, V_D=+5V, I_D=42mA, Z_0=50Ω)

Parameter	Min	Typ.	Max	Units
Frequency Range		7~11		GHz
Gain	20	21.5	23	dB
Gain Flatness	—	±1.5	—	dB
Reverse Isolation	-30	-34	—	dB
Input/Output Return Loss	—	-12	-8	dB
Noise Figure	—	1.2	1.4	dB
Output Power for 1 dB Compression (OP$_{-1}$dB)	13	16	—	dBm
OIP$_3$	—	28	—	dBm

Absolute Maximum Ratings

Maximum Input Power	+20dBm	Operating Temperature	-55℃ ~ +85℃
Channel Temperature	150℃	Storage Temperature	-65℃ ~ +150℃
Maximum V_D	+6V		

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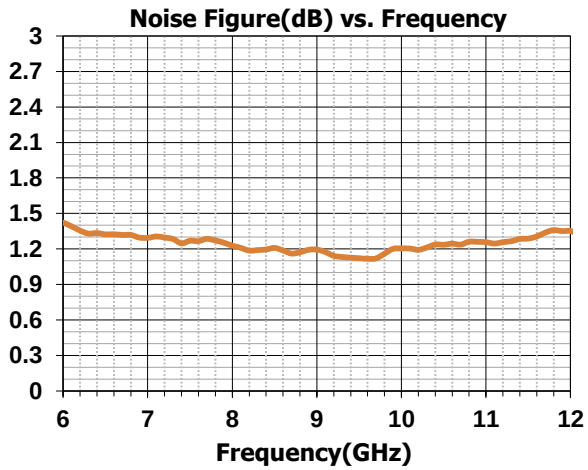
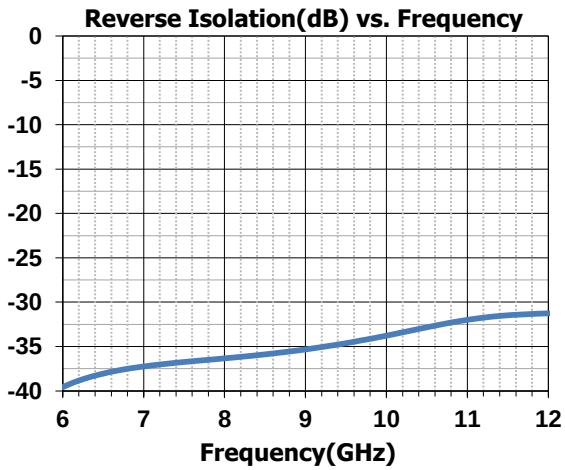
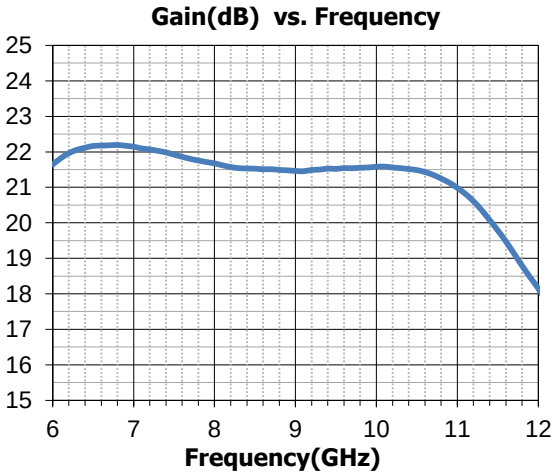
Typical Performance Curve

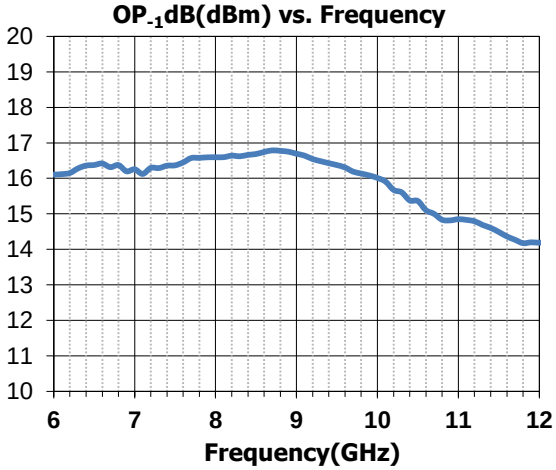
LNA bias at Vd1=5V,Id1=15mA，Vd2=5V,Id2=30mA

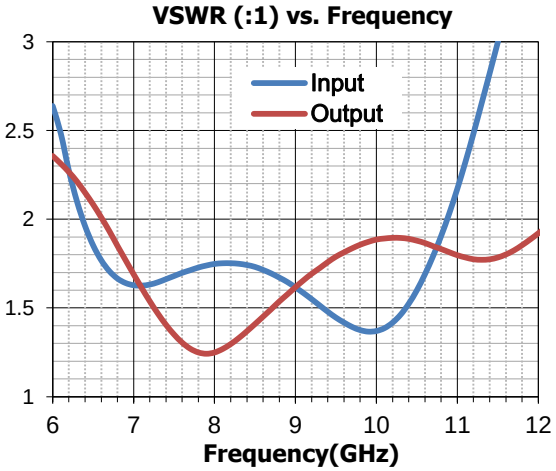
Vs1,Vs2,Vs3 no connect to GND

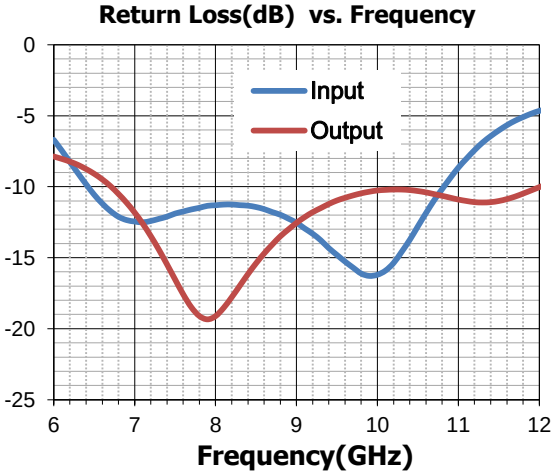












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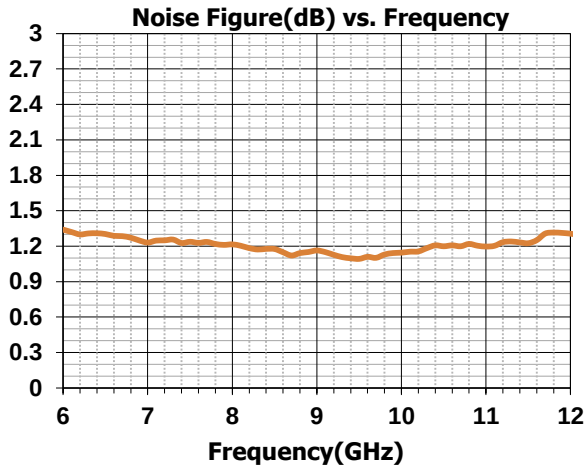
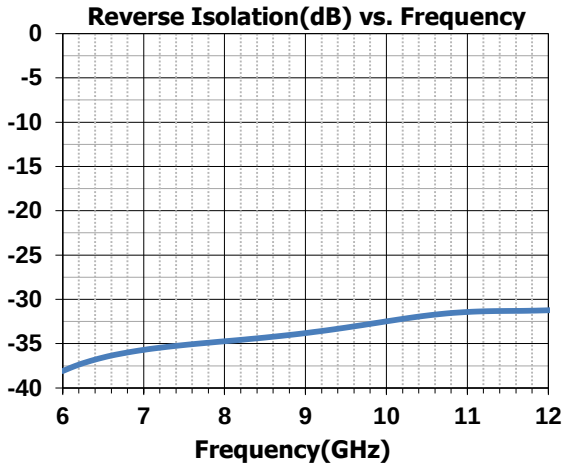
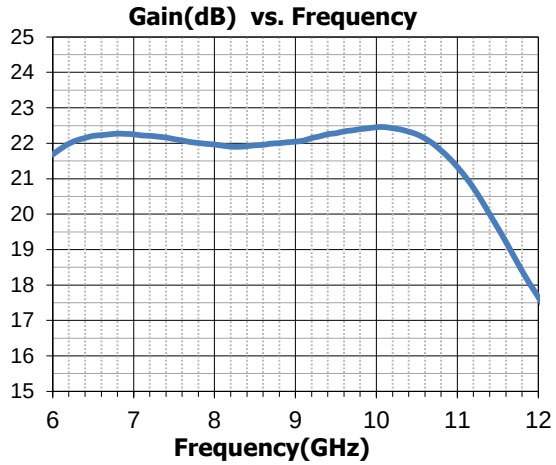
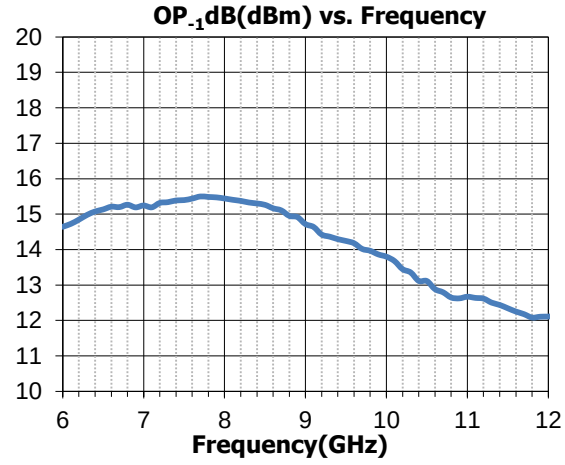
Typical Performance Curve

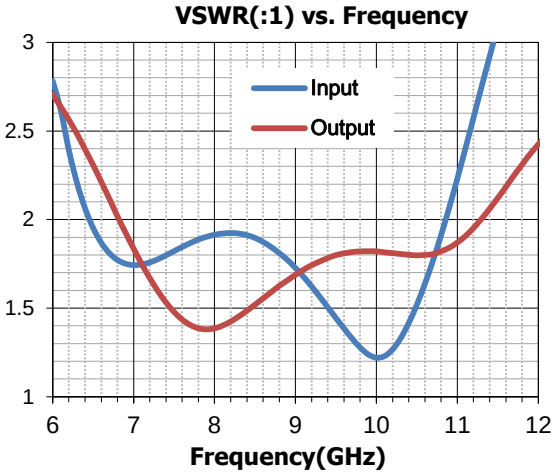
LNA bias at Vd1=3V,Id1=27mA，Vd2=4V,Id2=28mA
(Vs1 connect to GND). the lowest noise figure Application

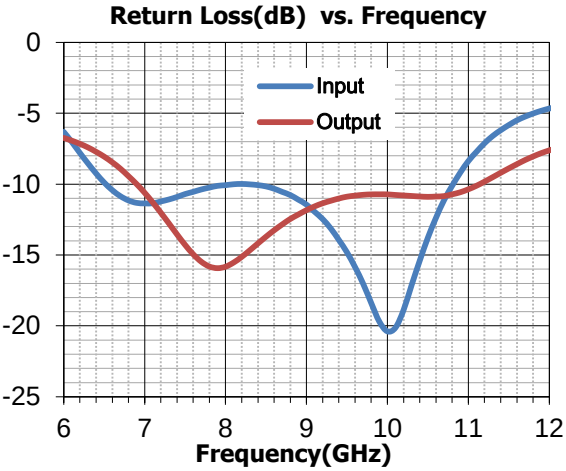












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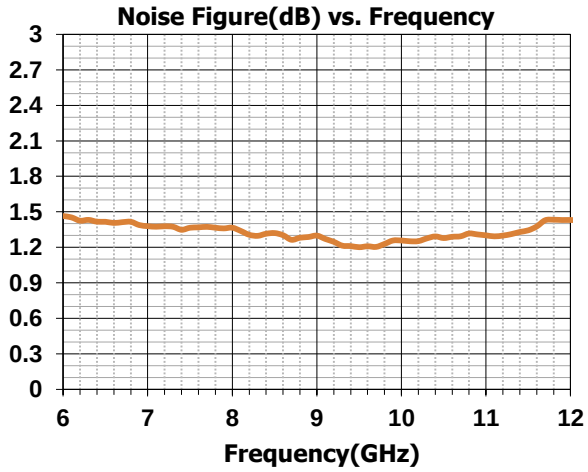
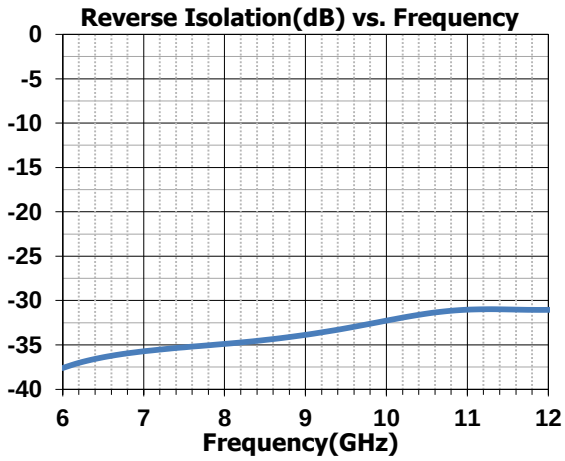
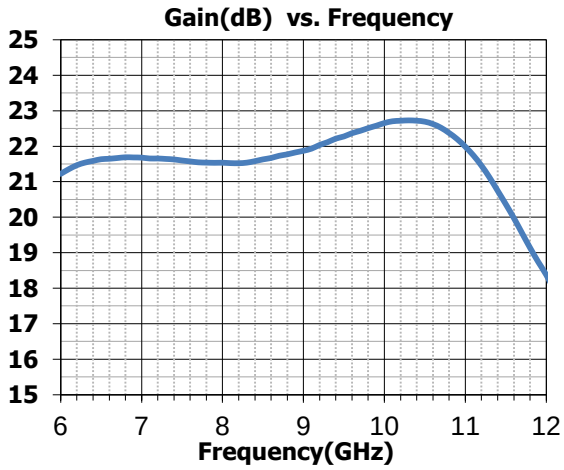
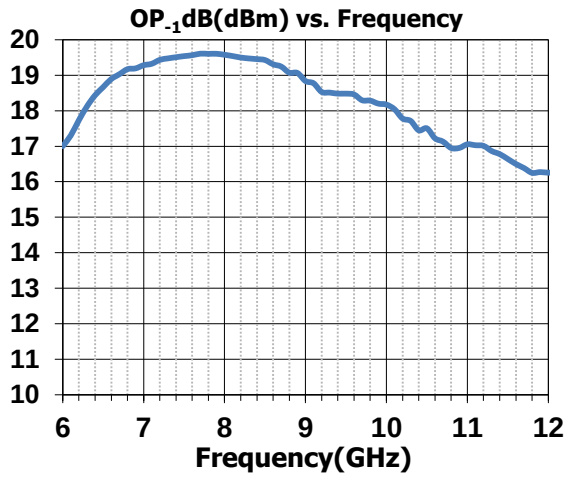
Typical Performance Curve

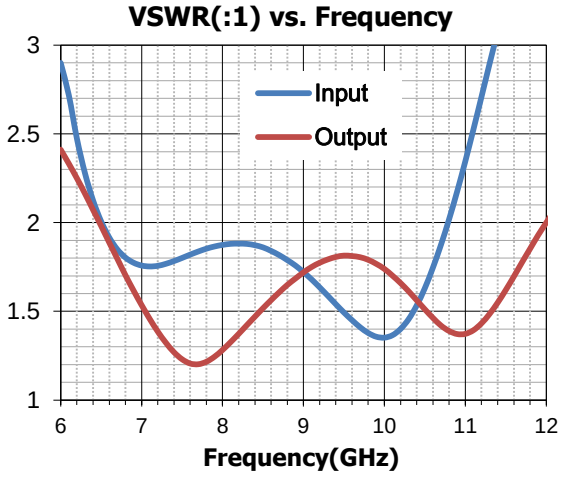
LNA bias at Vd1=3V,Id1=15mA，Vd2=6V,Id2=56mA
(Vs3 connect to GND). the highest P_{-1}dB Application

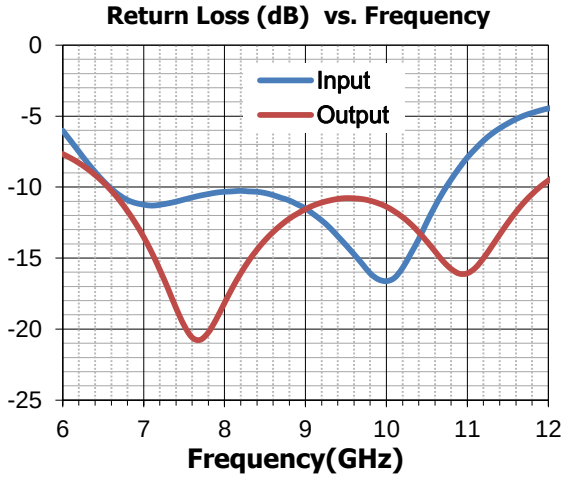










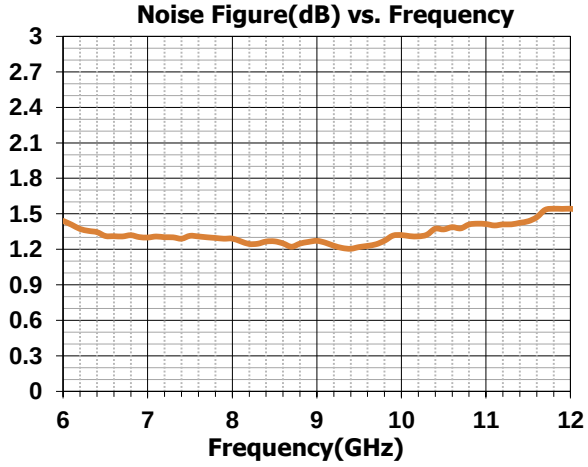


Typical Performance Curve

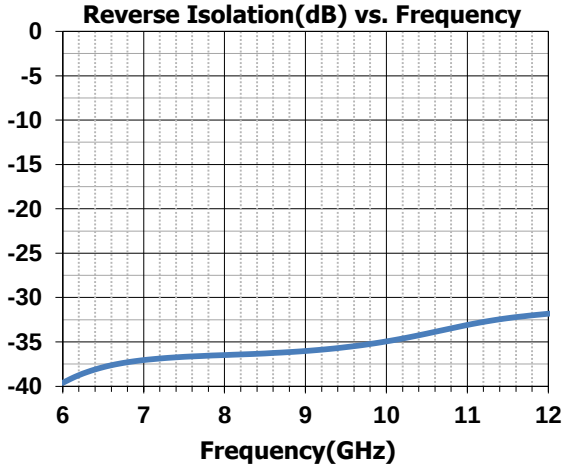
LNA bias at Vd1=5V,Id1=28mA，Vd2=5V,Id2=30mA

(Vs1 connect to GND).

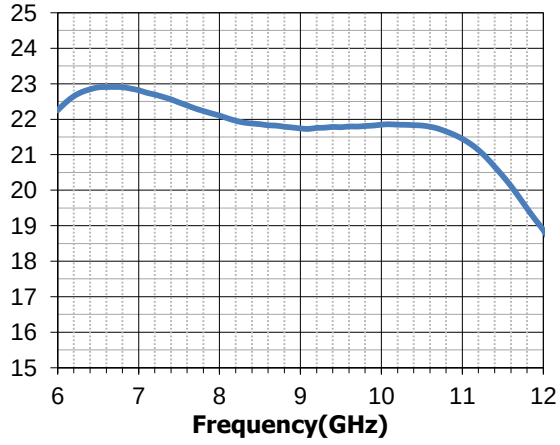
Noise Figure(dB) vs. Frequency



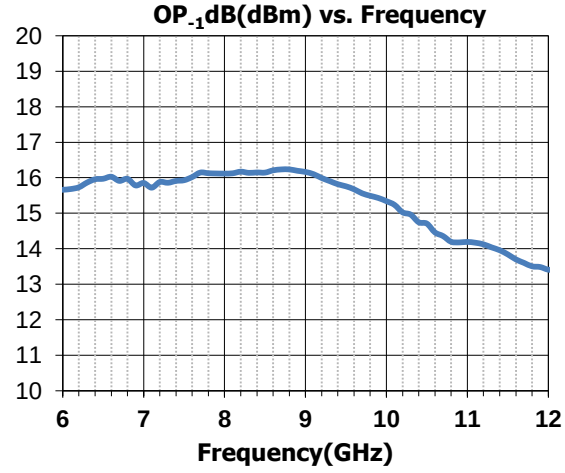
Reverse Isolation(dB) vs. Frequency



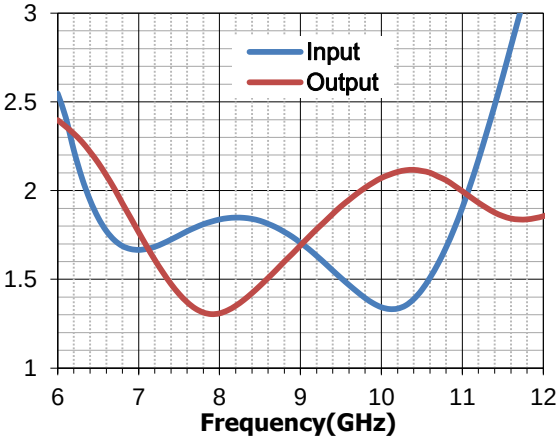
Gain(dB) vs. Frequency



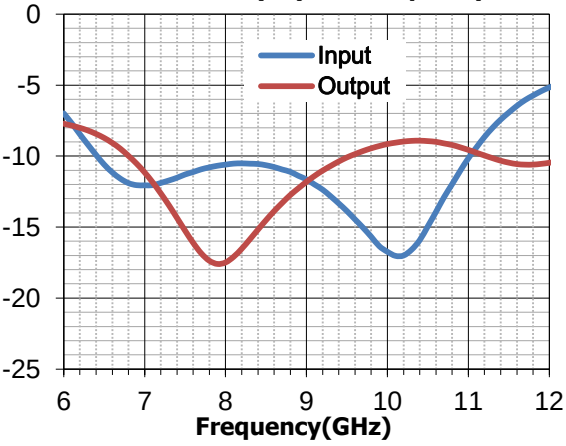
OP$_{-1}$dB(dBm) vs. Frequency

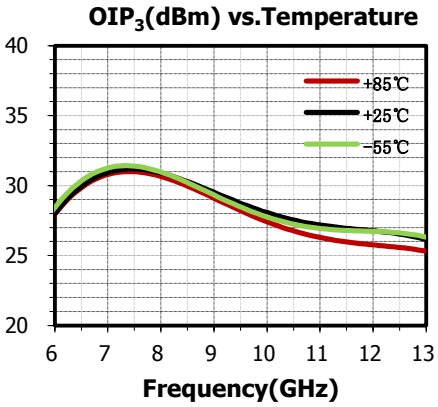


VSWR(:1)vs. Frequency



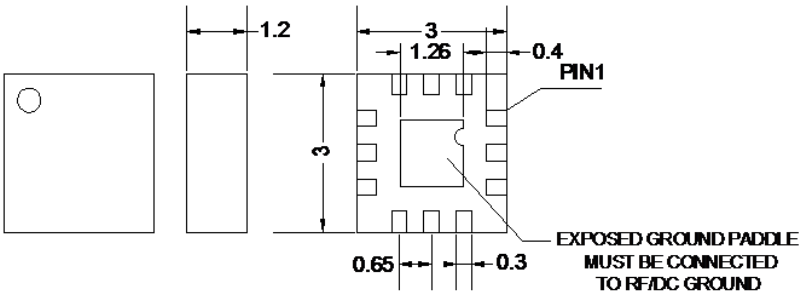
Return Loss(dB) vs. Frequency





Outline Drawing

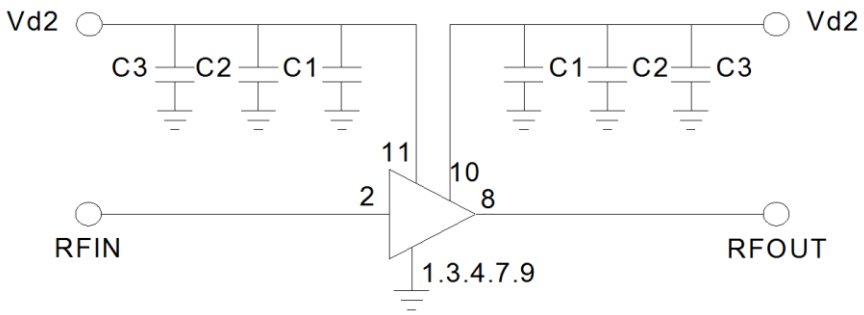
(All dimensions in mm)



Pin Function

Pin No.	Func.	Pin No.	Func.
1	Connect to GND	7	Connect to GND
2	RF IN	8	RF OUT
3	Connect to GND	9	Connect to GND
4	NC	10	Vd2 Supply
5	Vs2	11	Vd1 Supply
6	Vs3	12	Vs1

Assembly Diagram



Component list

Reference Des.	Value	Part Number	Manuf.	Size
C1	100pF	GCM1555C1H101JA16D	MURATA	0402
C2	1000pF	GRM1555C1H102JA01D	MURATA	0402
C3	0.1μF	GCM155R71C104JA55D	MURATA	0402

Attention:

1. The moisture resistant grade of products is 2A, the storage environment ≤30° C/60% RH，The surrounding workshop Life is 4 weeks. 2. After un-packing, It is necessary to bake the parts for 6 hours in 125+/-5 degree environment before soldering.