Product Features

Frequency: 700MHz ~ 6GHz

Gain: 18.01dB@2GHz

Output Power for 1dB Compression:

21.79dBm@2GHz

Noise Figure: 0.46dB@2GHz

Output Third-Order Interception:

35.40dBm@2GHz

Supply Current: 77mA @ Vdd=+5V

Package: DFN8

Application

Test Equipment

VHF/UHF Stations

LTE / WCDMA / CDMA / GSM

TDD/FDD System

Repeaters

Mobile Infrastructure

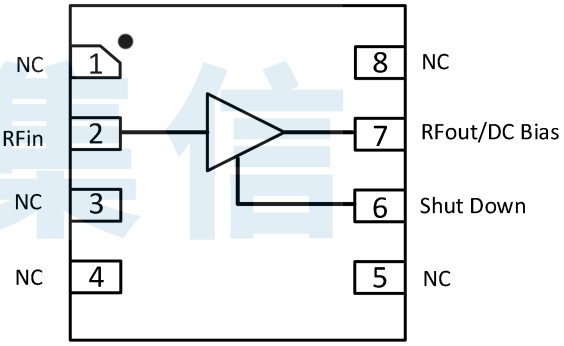
Ordering Information

Part Number	Package	Description
BR9625DA	DFN8	700MHz ~ 6GHz Low Noise Amplifier

General Description

The BR9625DA is a wideband MMIC low noise amplifier manufactured using the GaAs process in a small 2×2mm surface-mount package. At 2GHz, the amplifier typically provides 18.01dB gain, 0.46dB noise figure, 21.79dBm output P1dB and 35.40dBm OIP3. The amplifier can be biased from a single positive supply ranging from +3 to +5 volts, and has a power down control capability integrated into the die for TDD applications with high linearity, low noise.

Functional Block Diagram



Electrical Specifications

Parameters	Test Conditions	Min.	Typ.	Max.	Units
Gain	1000MHz	-	23.48	-	dB
	3000MHz	-	14.81	-	
	6000MHz	-	8.44	-	
Input Return Loss	1000MHz	-	-10.13	-	dB
	3000MHz	-	-17.80	-	
	6000MHz	-	-7.33	-	
Output Return Loss	1000MHz	-	-9.28	-	dB
	3000MHz	-	-8.95	-	
	6000MHz	-	-11.61	-	
Reverse Isolation	1000MHz	-	-30.47	-	dB
	3000MHz	-	-22.73	-	
	6000MHz	-	-18.45	-	
Output Power for 1dB Compression	1000MHz	-	21.62	-	dBm
	3000MHz	-	21.77	-	
	6000MHz	-	19.90	-	
Output Third-Order Interception	1000MHz	-	35.40	-	dBm
	3000MHz	-	36.00	-	
	6000MHz	-	33.90	-	
Noise Figure	1000MHz	-	0.42	-	dB
	3000MHz	-	0.63	-	
	6000MHz	-	1.24	-	
Operating Voltage	-	-	5	-	V
Power Switch	ON	0	-	1.0	V
	OFF	2.3	-	Vdd	
Static Working Current	ON		77		mA
	OFF	-	13	-	
Switching Time	LNA ON to OFF	-	23.8	-	ns
	LNA OFF to ON	-	39.2	-	
Test Condition: Vdd=+5V, I=77mA, OIP3 spacing=1MHz, Pout=5dBm/tone, TA=+25℃					

Absolute Maximum Ratings

Maximum Supply Voltage (Vdd) : +7V

Maximum RF input Power (LNA-ON) : +23dBm

Maximum RF input Power (LNA-OFF) : +23dBm

Recommended Operating Conditions

Supply Voltage: +5V

Supply Current: 77mA

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..

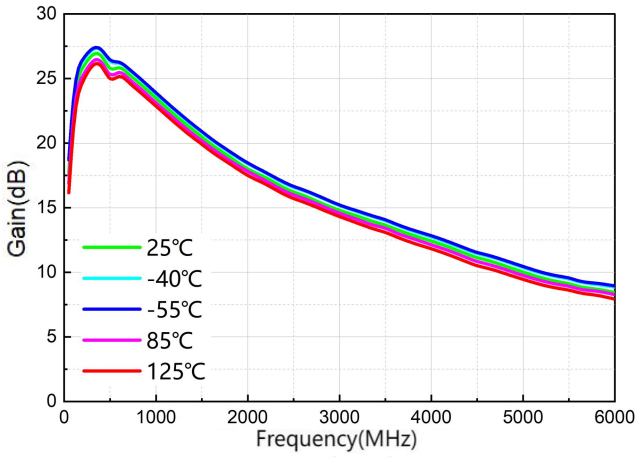
ESD WARNING

ELECTROSTATIC SENSITIVE DEVICE

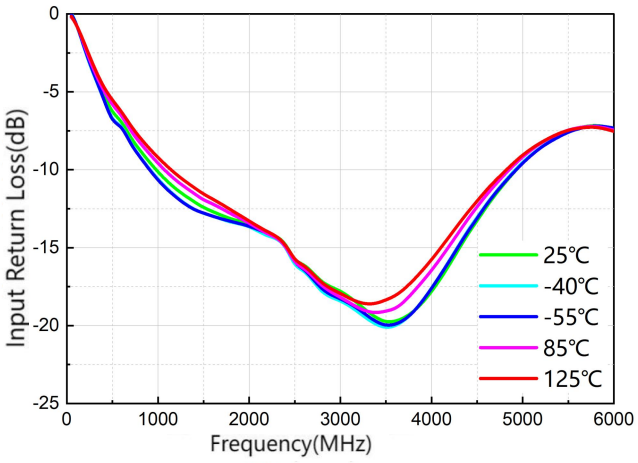
OBSERVE HANDLING PRECAUTIONS

Typical Performance (EVB test results at +5V supply voltage)

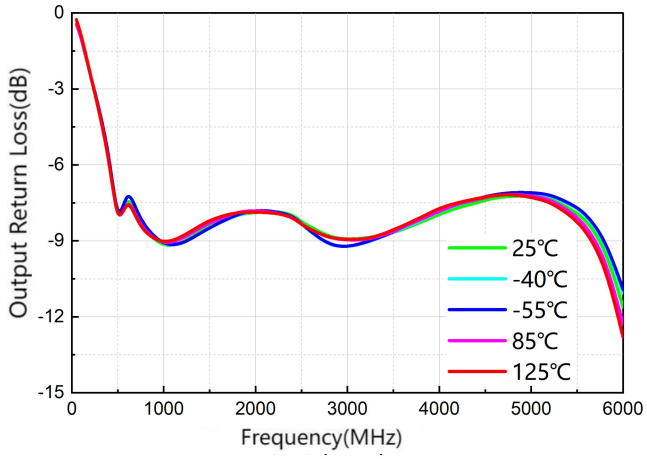
Parameters	Typ.											Units
Frequency	**700**	**1000**	**1200**	**1400**	**1600**	**1800**	**2000**	**2200**	**2400**	**2600**	**2800**	MHz
Gain	25.35	23.48	22.22	21.05	19.93	18.95	18.01	17.31	16.53	15.96	15.36	dB
Input Return Loss	-7.90	-10.13	-11.24	-12.06	-12.68	-13.15	-13.50	-14.07	-14.83	-16.12	-17.17	dB
Output Return Loss	-7.99	-9.28	-9.09	-8.63	-8.24	-7.93	-7.26	-7.81	-7.94	-8.45	-8.85	dB
Reverse Isolation	-32.95	-30.47	-29.23	-28.16	-27.23	-26.44	-25.25	-25.00	-24.45	-23.80	-23.28	dB
Output Power for 1dB Compression	21.01	21.62	21.76	21.85	21.75	21.99	21.79	21.95	21.62	21.47	21.65	dBm
Output Third-Order Interception	35.50	35.40	34.80	35.40	35.60	35.30	35.40	35.80	34.00	35.40	35.30	dBm
Noise Figure	0.32	0.42	0.40	0.34	0.39	0.41	0.46	0.49	0.54	0.60	0.60	dB
Frequency	**3000**	**3200**	**3400**	**3600**	**3800**	**4000**	**4400**	**4800**	**5200**	**5600**	**6000**	MHz
Gain	14.81	14.34	13.86	13.38	12.86	12.42	11.38	10.50	9.58	8.92	8.44	dB
Input Return Loss	-17.80	-18.63	-19.50	-19.71	-19.09	-17.80	-14.12	-10.86	-8.57	-7.34	-7.33	dB
Output Return Loss	-8.95	-8.89	-8.78	-8.55	-8.26	-7.96	-7.51	-7.22	-7.30	-8.20	-11.61	dB
Reverse Isolation	-22.73	-22.16	-21.63	-21.24	-20.92	-20.65	-20.27	-19.96	-19.55	-18.95	-18.45	dB
Output Power for 1dB Compression	21.77	21.74	21.95	21.66	21.77	21.25	22.02	20.84	20.61	19.48	19.90	dBm
Output Third-Order Interception	36.00	35.30	34.90	37.10	36.40	35.90	36.50	34.80	35.80	33.80	33.90	dBm
Noise Figure	0.63	0.69	0.75	0.86	0.90	0.94	0.94	1.10	1.32	1.38	1.24	dB
Test Condition: Vdd=+5V, I=77mA, OIP3 spacing=1MHz, Pout=5dBm/tone, TA=+25℃												



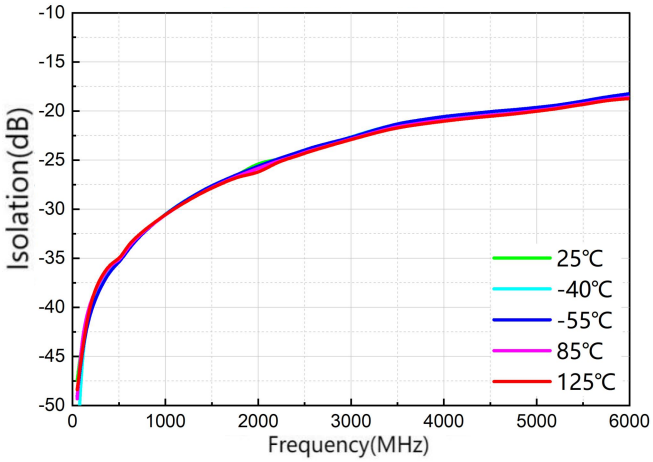
Gain



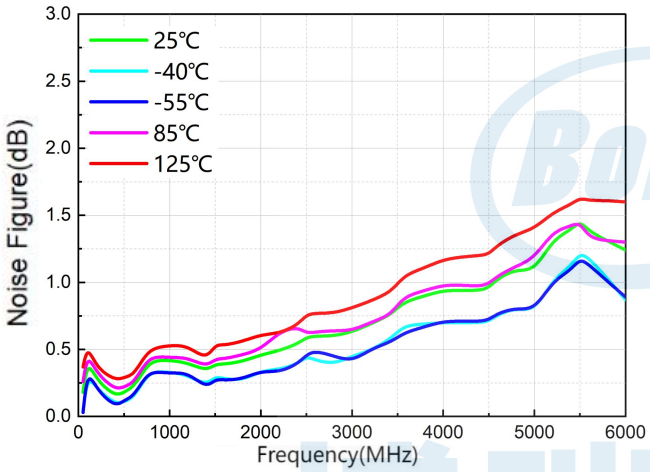
Input Return Loss



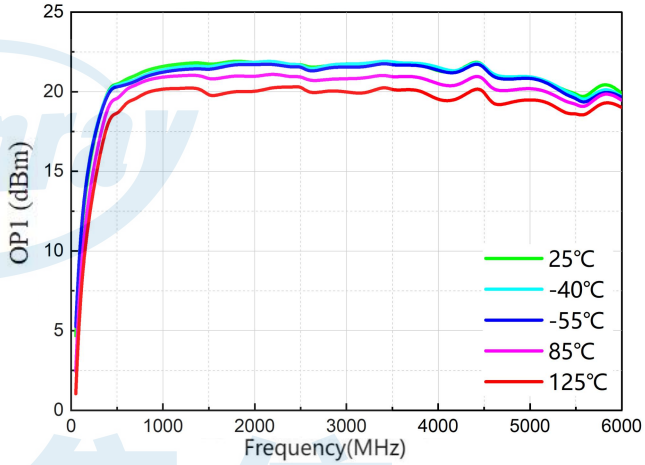
Output Return Loss



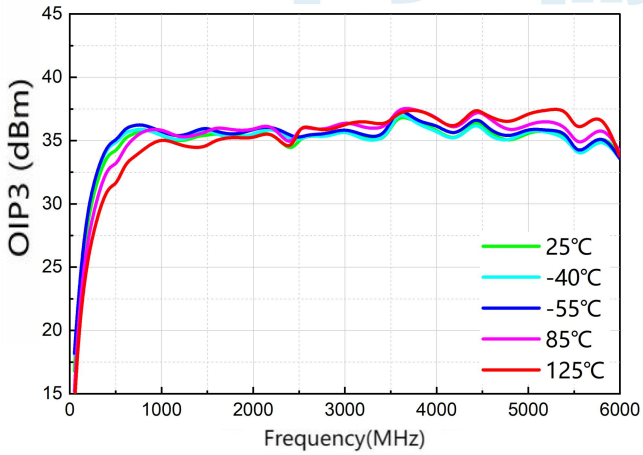
Reverse Isolation



Noise Figure



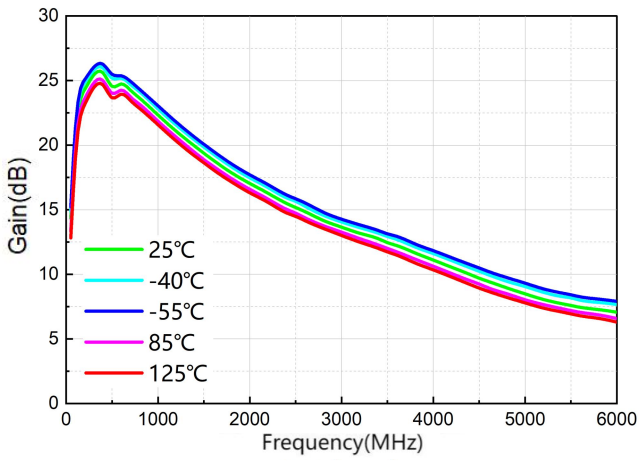
Output Power for 1dB Compression



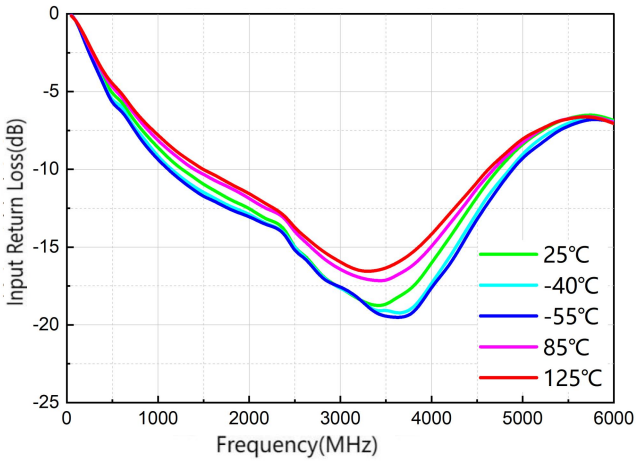
Output Third-Order Intercept

Typical Performance (EVB test results at +3V supply voltage)

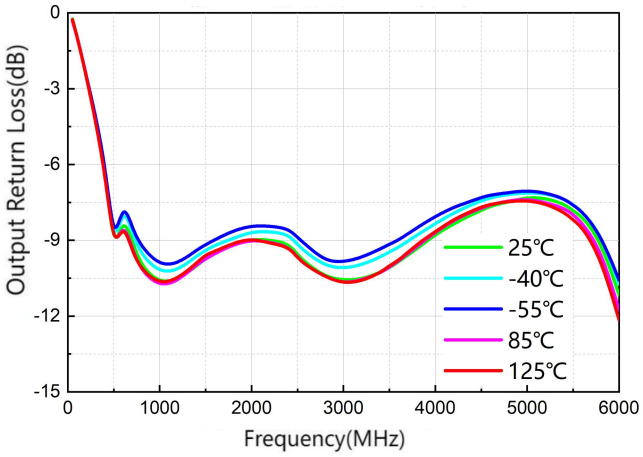
Parameters	Test Conditions	Min.	Typ.	Max.	Units
Gain	1000MHz	-	23.48	-	dB
	3000MHz	-	14.81	-	
	6000MHz	-	8.44	-	
Input Return Loss	1000MHz	-	-10.13	-	dB
	3000MHz	-	-17.80	-	
	6000MHz	-	-7.33	-	
Output Return Loss	1000MHz	-	-9.28	-	dB
	3000MHz	-	-8.95	-	
	6000MHz	-	-11.61	-	
Reverse Isolation	1000MHz	-	-30.47	-	dB
	3000MHz	-	-22.73	-	
	6000MHz	-	-18.45	-	
Output 1dB Compression Point	1000MHz	-	21.62	-	dBm
	3000MHz	-	21.77	-	
	6000MHz	-	19.90	-	
Output Third Order Ccrossover Point	1000MHz	-	35.40	-	dBm
	3000MHz	-	36.00	-	
	6000MHz	-	33.90	-	
Noise Figure	1000MHz	-	0.42	-	dB
	3000MHz	-	0.63	-	
	6000MHz	-	1.24	-	
Operating Voltage	-	-	5	-	V
Power Switch	ON	0	-	1.0	V
	OFF	2.3	-	Vdd	
Static Working Current	ON		77		mA
	OFF	-	13	-	
Switching Time	LNA ON to OFF	-	23.8	-	ns
	LNA OFF to ON	-	39.2	-	
Test Condition: Vdd=+5V, I=77mA, OIP3 spacing=1MHz, Pout=5dBm/tone, TA=+25℃					



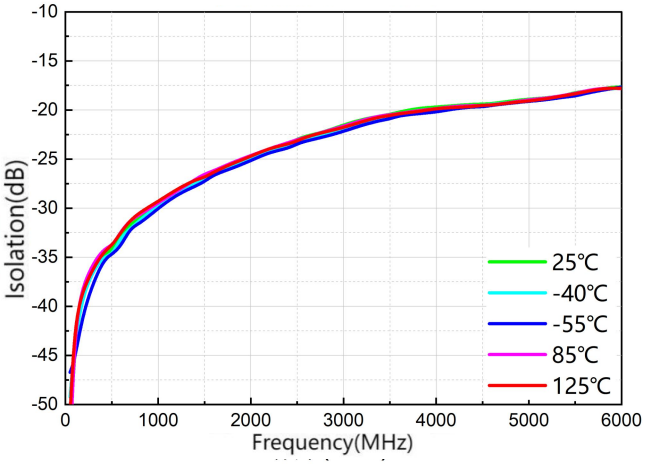
Gain



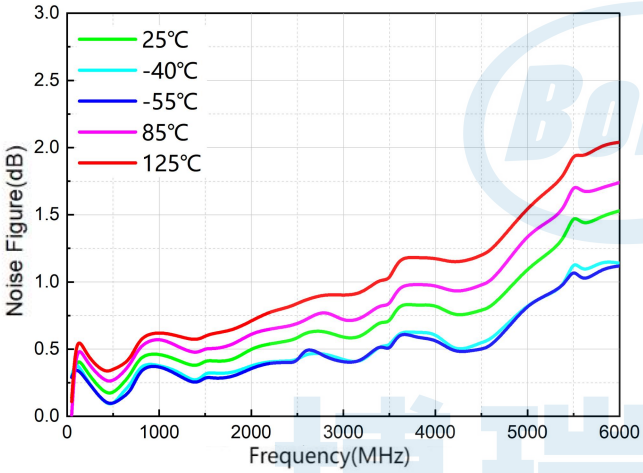
Input Return Loss



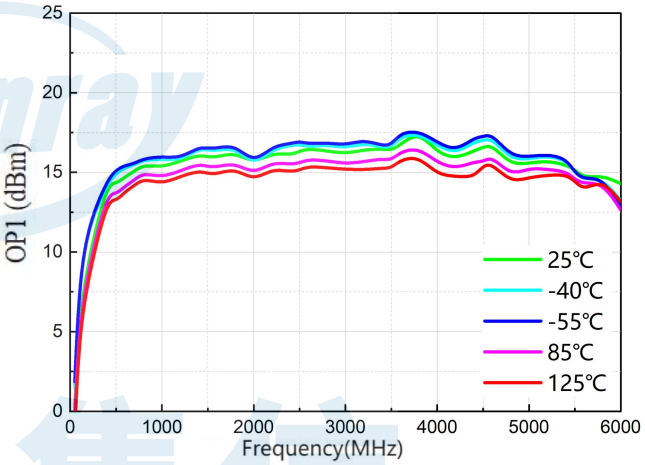
Output Return Loss



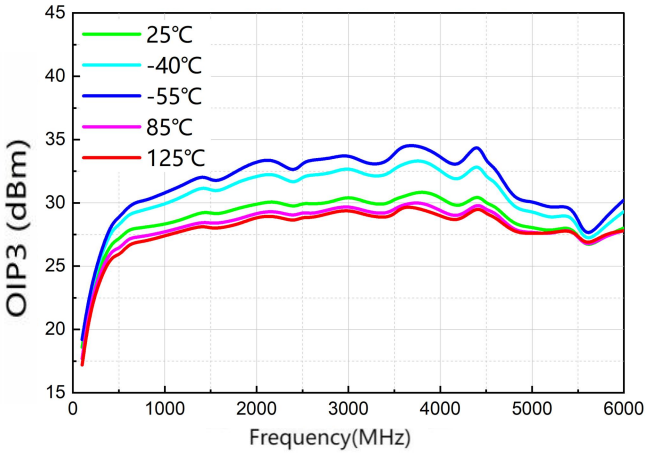
Reverse Isolation



Noise Figure

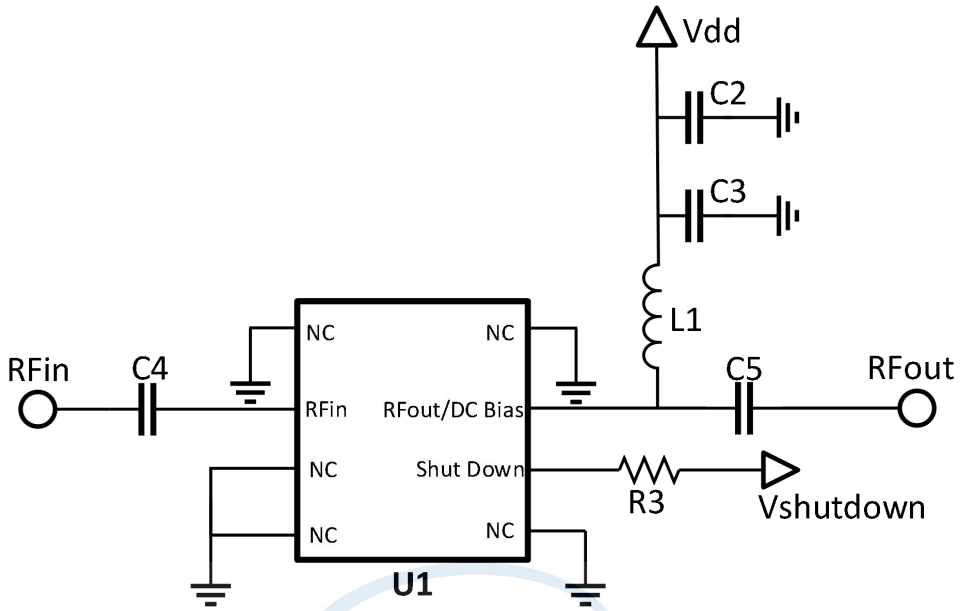


Output Power for 1dB Compression



Output Third-Order Intercept

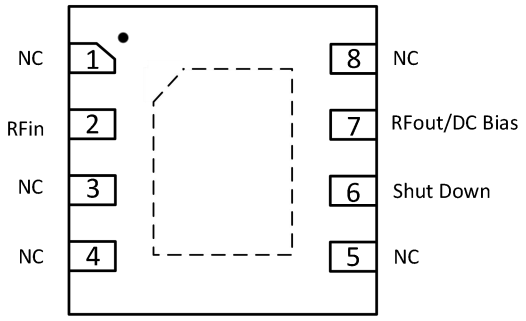
Typical Application Schematic



Bill of Material

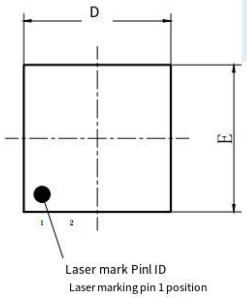
Designator	Package	Description	Part Number
C3, C4, C5	0402	100pF	GRM1555C1H101JA01D
C2	0603	1uF	GCM188R71C105KA64D
L1	0603	18nH	LQW18AN18NJ00
R3	0402	0 Ω	RC0402JR-070RL

Pin Configuration and Description

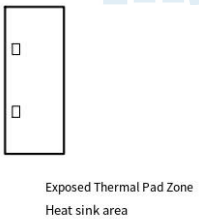


Pin Number	Pin Name	Description
2	RFin	Rf input pins; The pin is DC coupled and has been internally matched to 50 ohms, and only needs to be added with a spacer capacitor.
6	Shut Down	When the voltage is higher than 2.3V, the device turns off. When the voltage is less than 1.0V, the device turns on.
7	RFout/DC Bias	Rf output pins; The pin is DC coupled and has been internally matched to 50 ohms, only need to add a isolating capacitor.
1,3,4,5,8	NC	No electrical connection; This pin and package substrate must be connected to RF/DC ground.
-	EP	Connect to RF/DC ground.

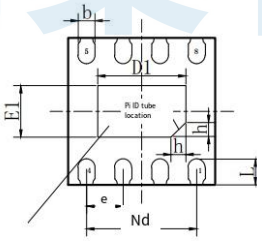
Package Dimensions (mm)



TOP VIEW

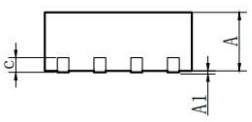


SIDE VIEW



BOTTOM VIEW

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	1.95	2.00	2.05
D1	1.50	1.60	1.70
e		0.50BSC	
Nd		1.50BSC	
E	1.95	2.00	2.05
E1	0.80	0.90	1.00
L	0.20	0.25	0.30
h	0.25	0.30	0.35



SIDE VIEW