

PL07A

GaAs p-HEMT LNA



Features

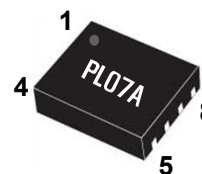
- 5 - 3000MHz
- 20.8 dB Gain at 800 MHz
- +34.0 dBm Output IP3 at 2140 MHz
- 0.65 dB Noise Figure at 800 MHz
- Single 3 V Supply Voltage
- Lead-free / Green / RoHS-compliant DFN 8L Package



Applications

- Mobile Infrastructure
- PCS, WCDMA, WiBro
- W-LAN / ISM
- RFID / Fixed Wireless

Functional Diagram



* Marking : N07X

Function	Pin No.
RF IN	2
RF OUT / Bias	7

Description

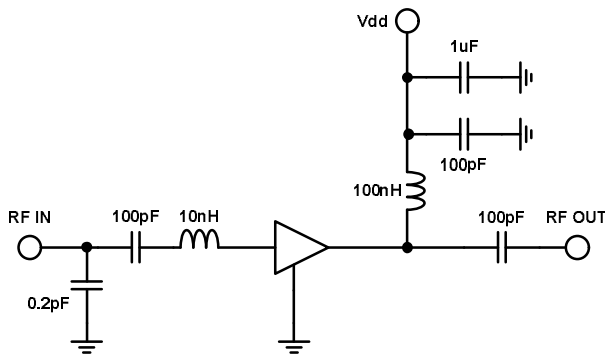
The PL07A is a high performance GaAs p-HEMT LNA (Low Noise Amplifier) in a high quality DFN 8L package. The device features high linear performance, low noise figure, low power consumption and high reliability. The PL07A can be easily matched to obtain optimum power and linearity. The PL07A operates from a single +3 voltage supply and have an internal active bias. All devices are 100% RF and DC tested.

Specifications

Symbol	Units	Freq.	Min.	Typ.	Max.
S21	dB	800 MHz 1900 MHz 2140 MHz 2600 MHz		20.8 14.6 13.2 11.8	
S11	dB	800 MHz 1900 MHz 2140 MHz 2600 MHz		-16 -16 -15 -16	
S22	dB	800 MHz 1900 MHz 2140 MHz 2600 MHz		-11 -11 -11 -11	
P1dB	dBm	800 MHz 1900 MHz 2140 MHz 2600 MHz		17.1 17.3 18.0 17.5	
OIP3	dBm	800 MHz 1900 MHz 2140 MHz 2600 MHz		31.0 33.0 34.0 33.8	
NF	dB	800 MHz 1900 MHz 2140 MHz 2600 MHz		0.65 0.86 0.92 1.08	
Icc	mA			45	
Vcc	V			3.0	
Rth	°C/W			40	

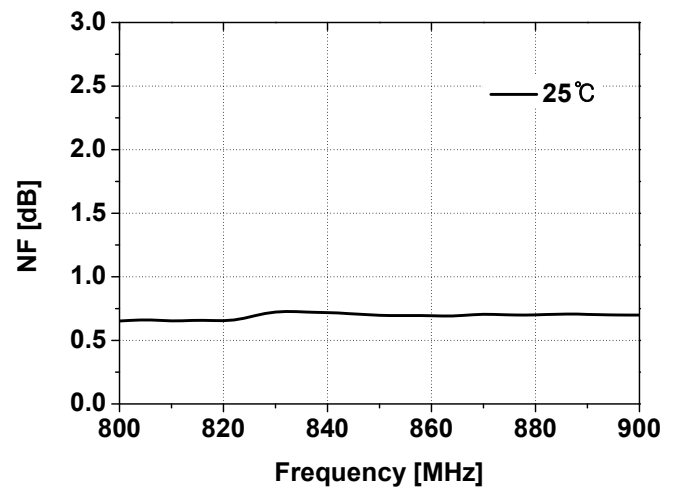
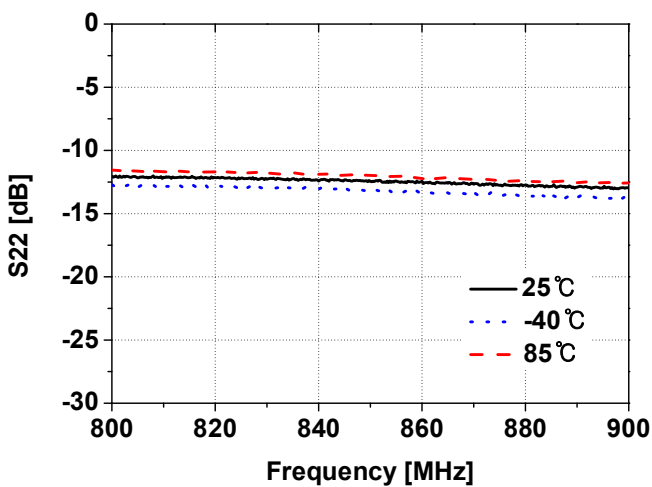
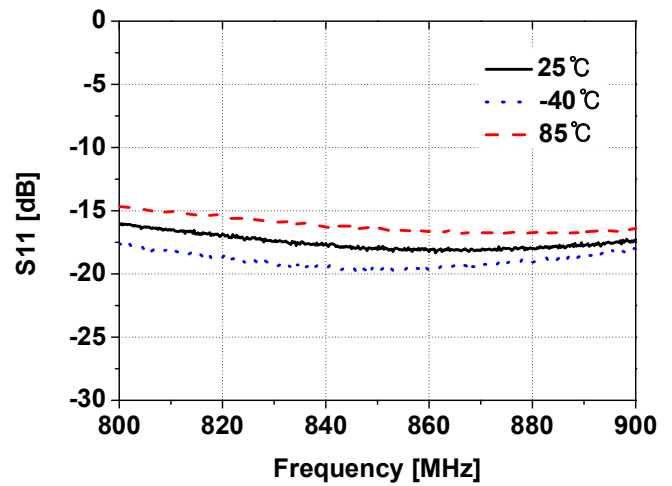
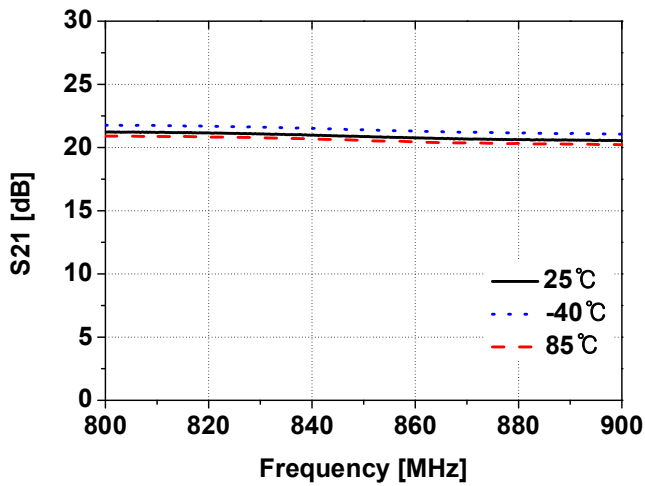
1. Test Conditions : T=25°C, Supply Voltage=+3V, 50ohm System, OIP3 measured with two tones at an output power of +3dBm/tone separated by 1MHz.
2. For NF data, board losses of the input have not been de-embedded.

800 MHz – 900 MHz Application Circuit



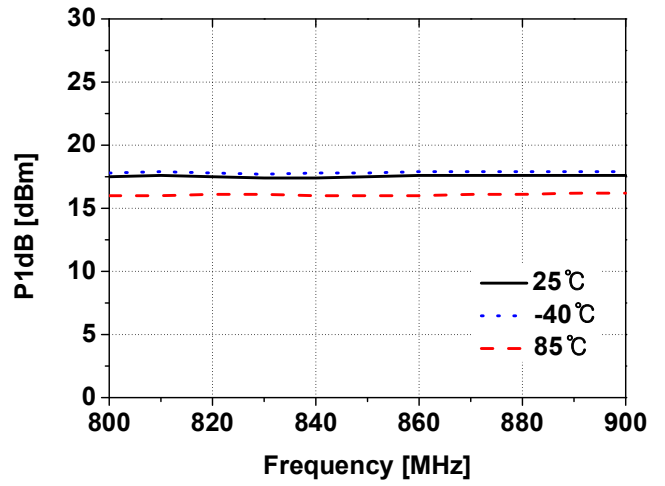
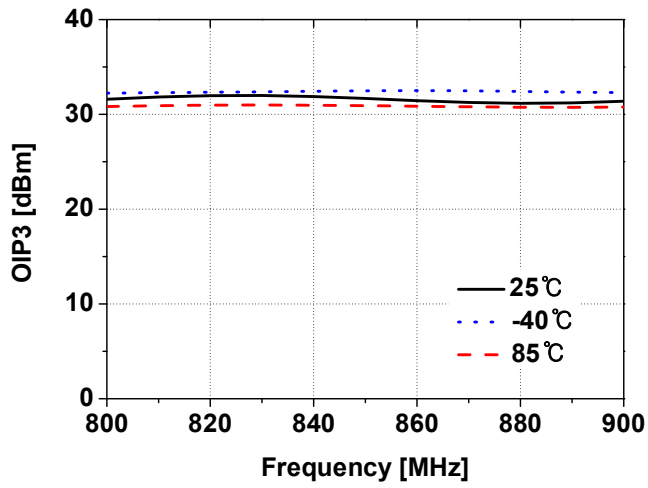
Frequency [MHz]	800	900
S21 [dB]	20.8	20.1
S11 [dB]	-16	-17
S22 [dB]	-11	-12
P1dB [dBm]	17.1	17.3
Output IP3 [dBm] ⁽¹⁾	31.0	31.5
NF [dB]	0.65	0.69
Vcc [V]	3	
Icc [mA]	45	

Note:
1. OIP3 measured with two tones at an output power of +3dBm/tone

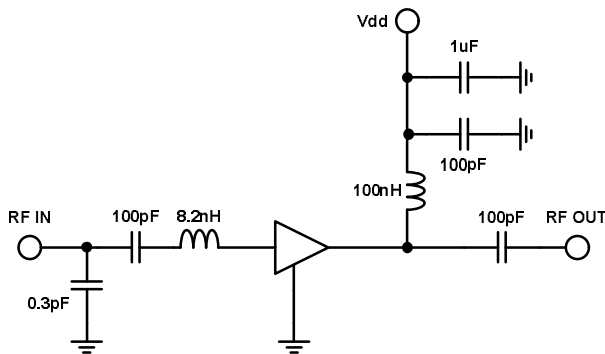


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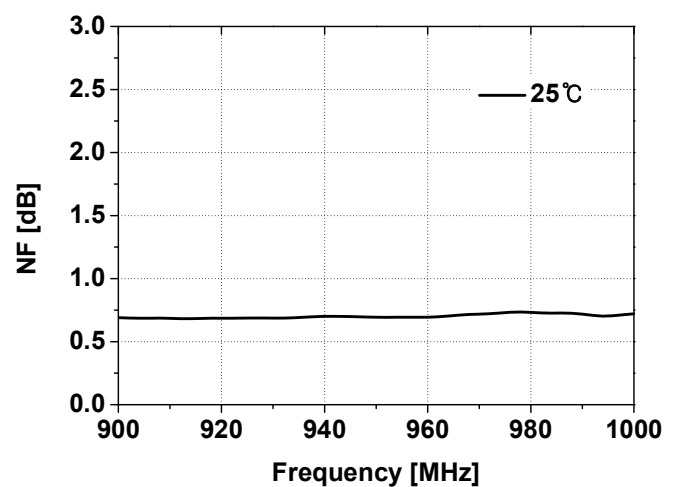
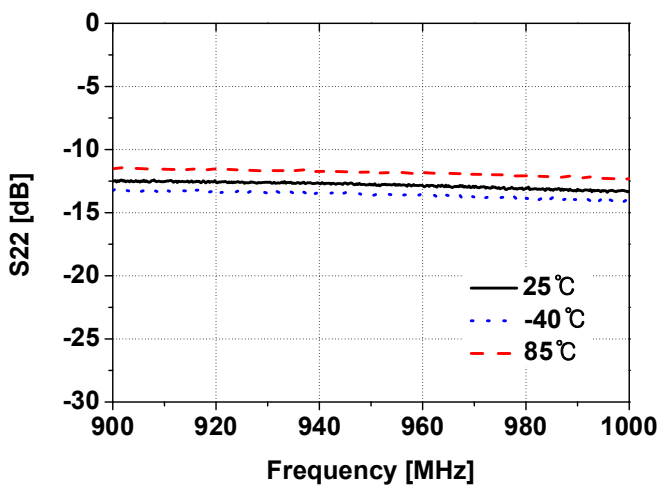
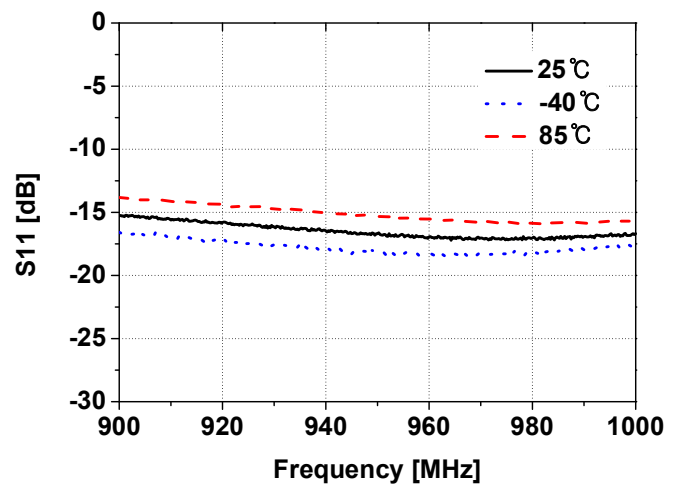
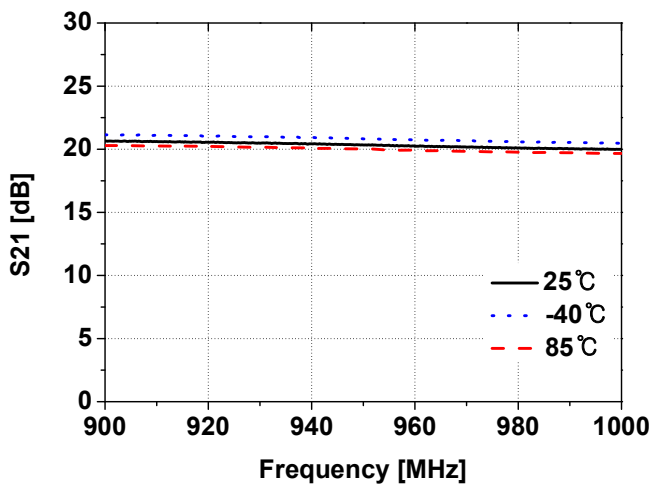


900 MHz – 1000 MHz Application Circuit



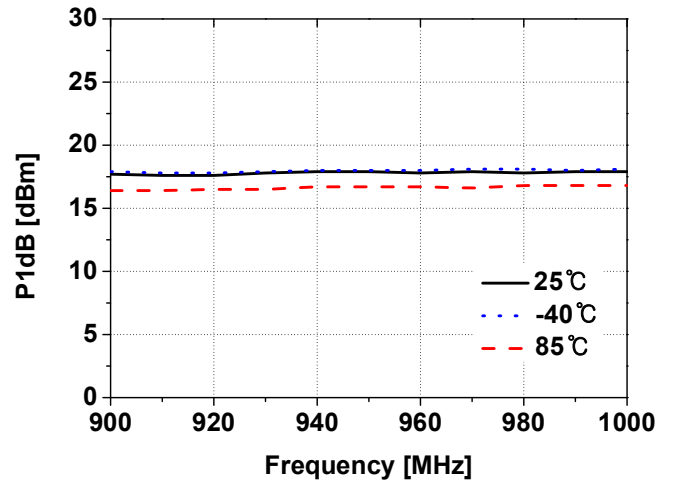
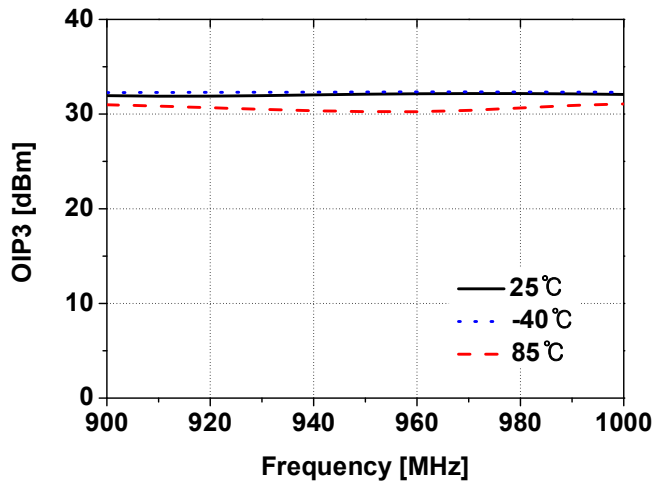
Frequency[MHz]	900	1000
S21[dB]	20.1	19.4
S11[dB]	-15	-16
S22[dB]	-12	-13
P1dB[dBm]	17.2	17.2
Output IP3[dBm] ⁽¹⁾	31.5	32.2
NF[dB]	0.69	0.72
Vcc[V]	3	
Icc[mA]	45	

Note:
1. OIP3 measured with two tones at an output power of +3dBm/tone

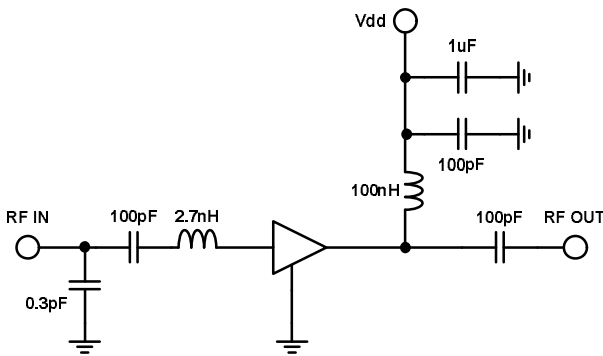


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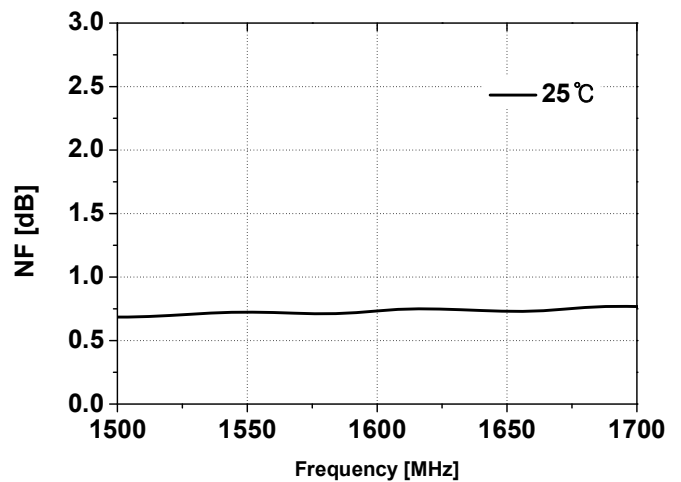
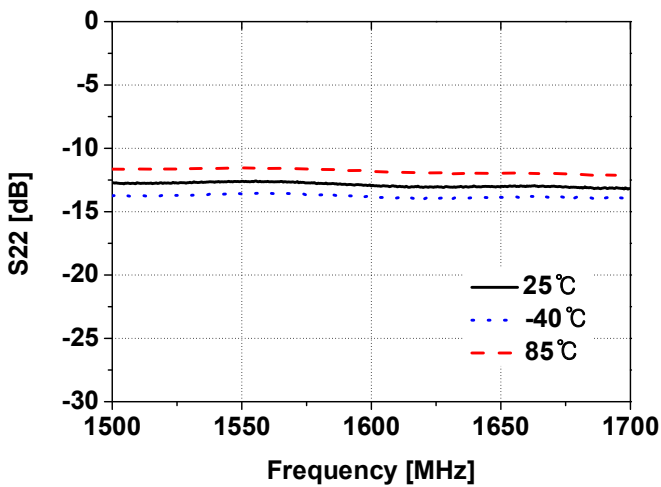
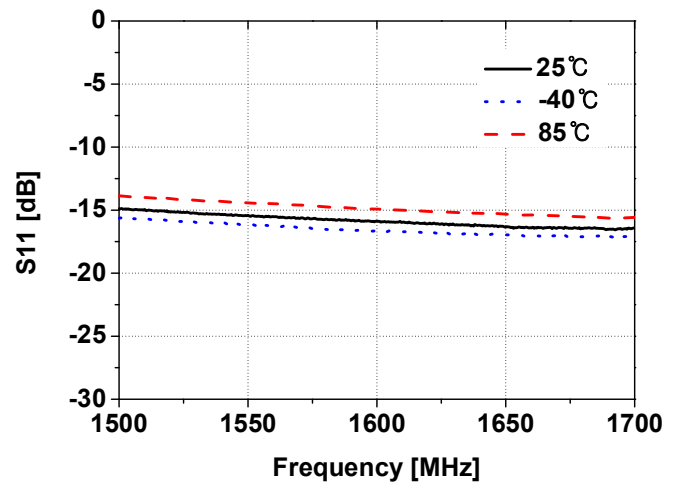
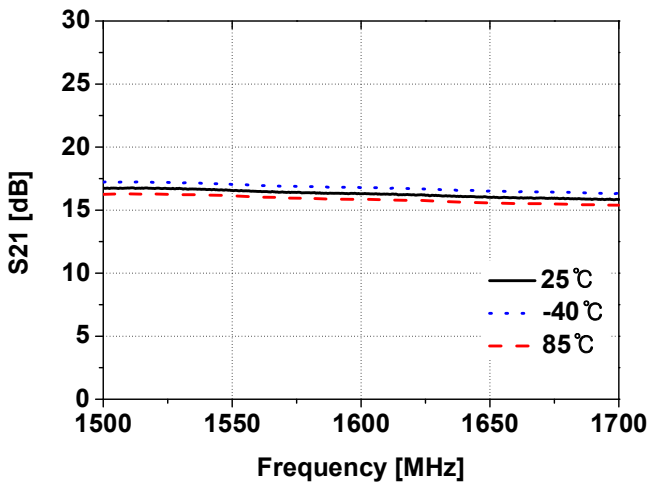


1500 MHz – 1700 MHz Application Circuit



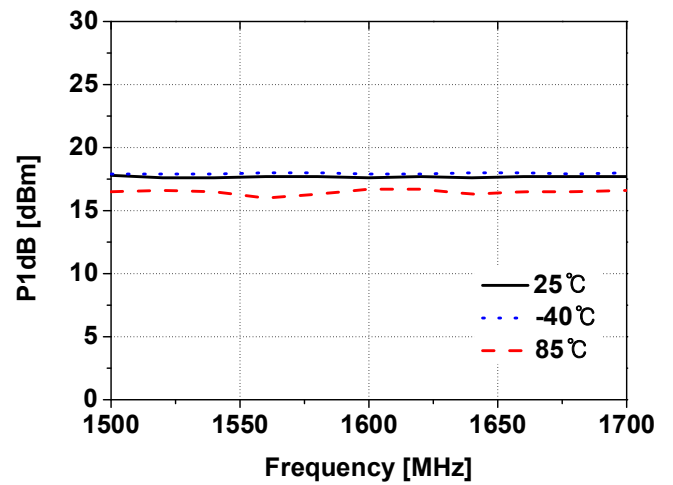
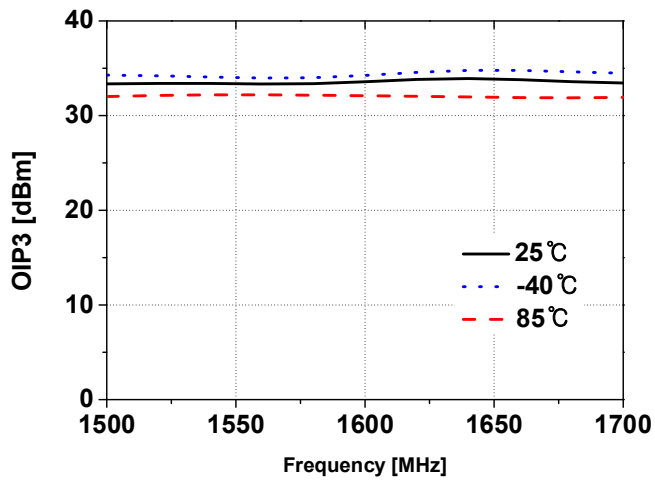
Frequency [MHz]	1500	1700
S21 [dB]	16.7	15.8
S11 [dB]	-15	-16
S22 [dB]	-13	-13
P1dB [dBm]	17.8	17.7
Output IP3 [dBm] ⁽¹⁾	33.3	33.3
NF [dB]	0.68	0.76
Vcc [V]	3	
Icc [mA]	45	

Note:
1. OIP3 measured with two tones at an output power of +3dBm/tone

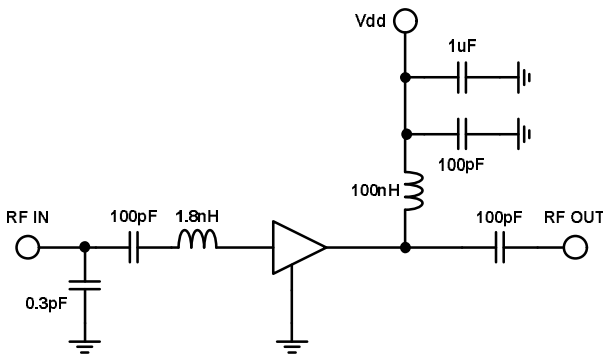


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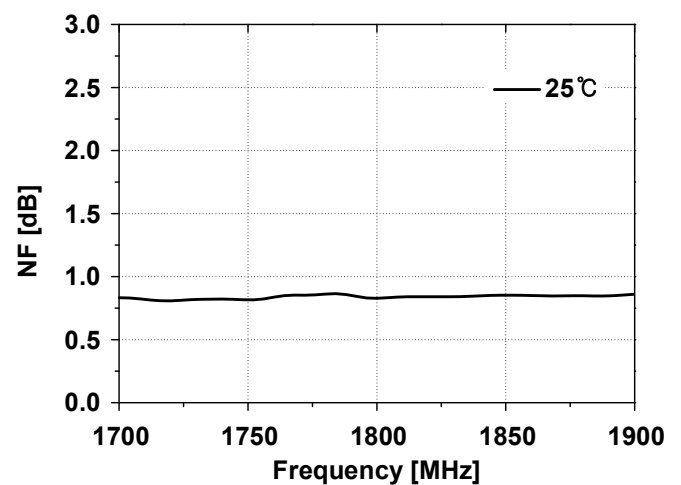
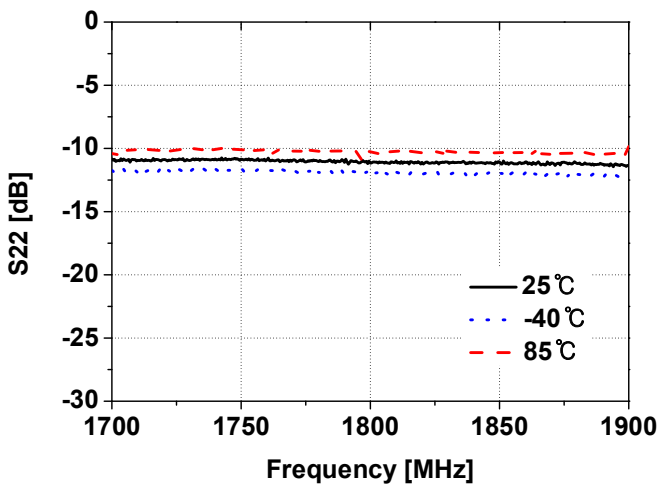
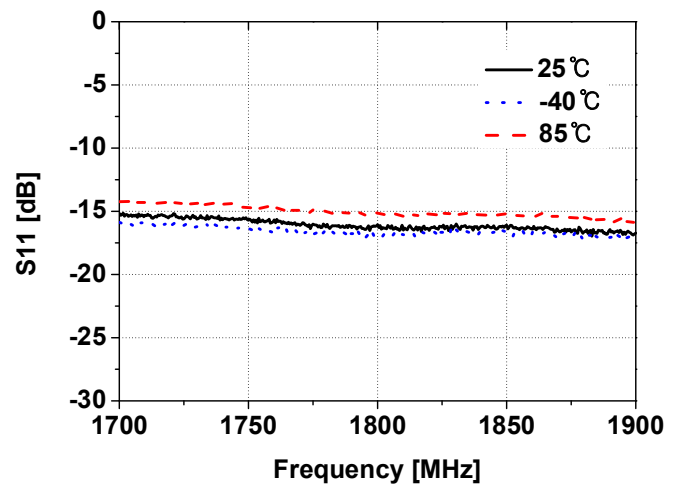
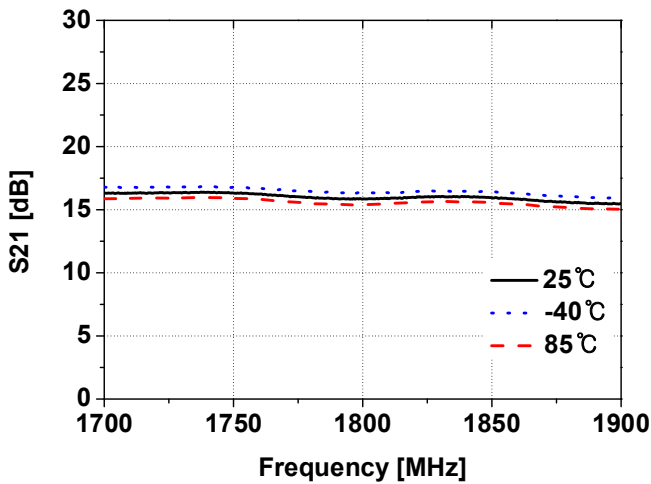


1700 MHz – 1900 MHz Application Circuit



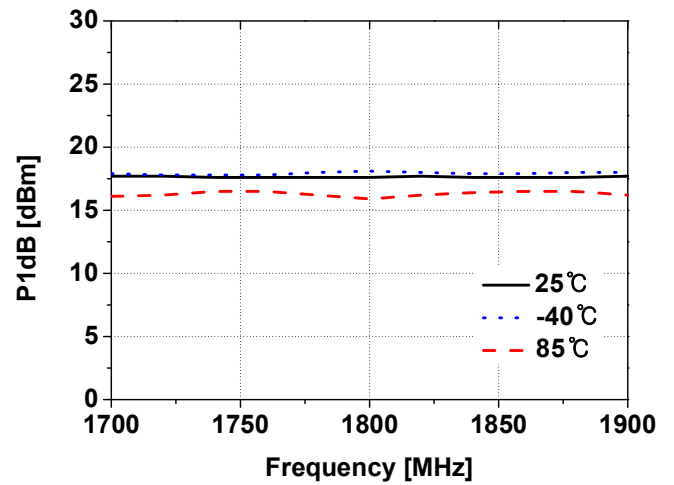
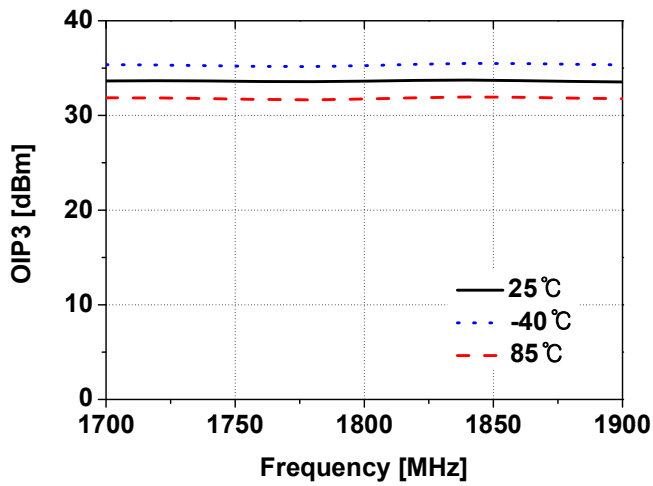
Frequency [MHz]	1700	1900
S21 [dB]	15.5	14.6
S11 [dB]	-15	-16
S22 [dB]	-10	-11
P1dB [dBm]	17.3	17.3
Output IP3 [dBm] ⁽¹⁾	33.6	33.0
NF [dB]	0.83	0.86
Vcc [V]	3	
Icc [mA]	45	

Note:
1. OIP3 measured with two tones at an output power of +3dBm/tone

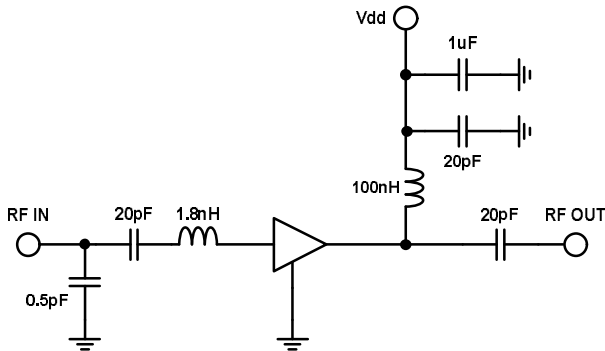


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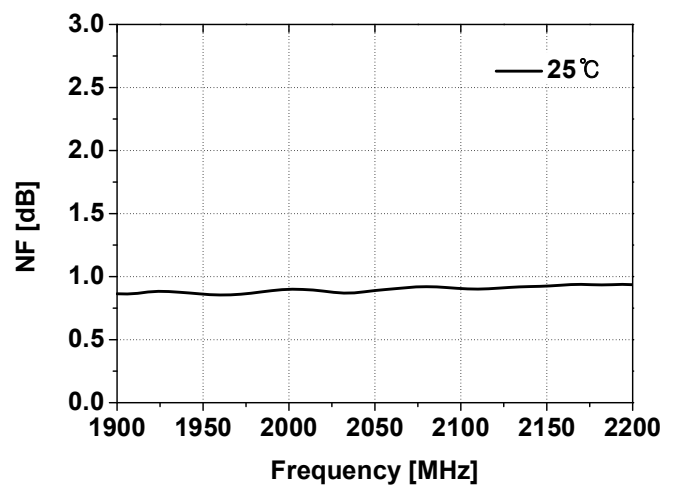
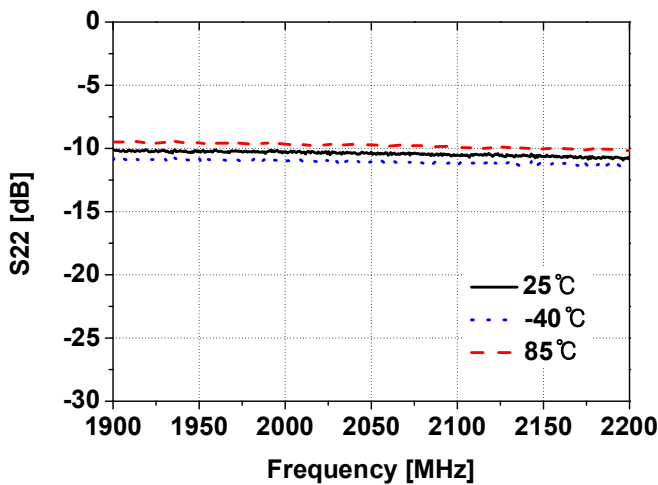
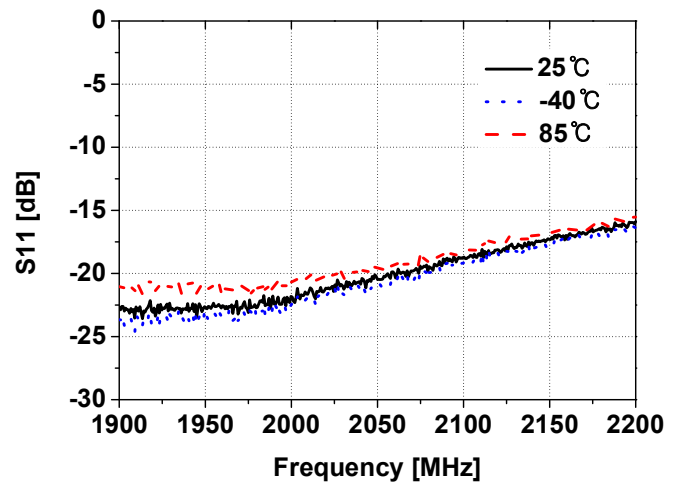
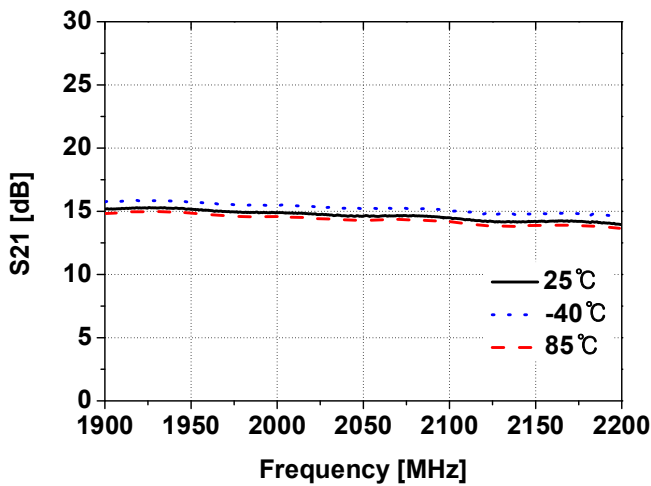


1900 MHz – 2200 MHz Application Circuit



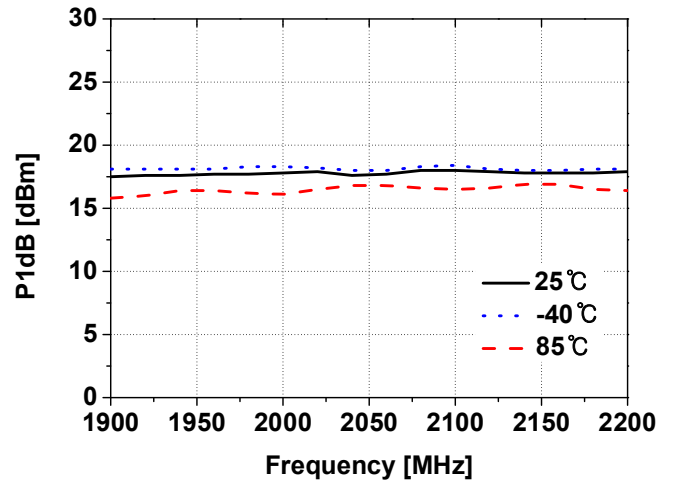
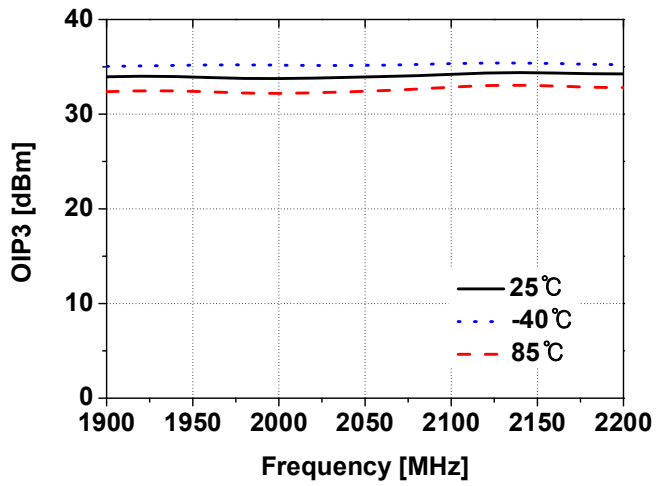
Frequency [MHz]	1900	2200
S21 [dB]	14.6	13.3
S11 [dB]	-20	-15
S22 [dB]	-10	-11
P1dB [dBm]	17.2	18.0
Output IP3 [dBm] ⁽¹⁾	32.8	34.0
NF [dB]	0.86	0.93
Vcc [V]	3	
Icc [mA]	45	

Note:
1. OIP3 measured with two tones at an output power of +3dBm/tone

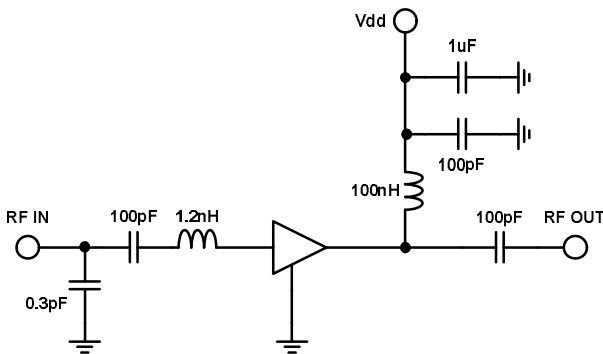


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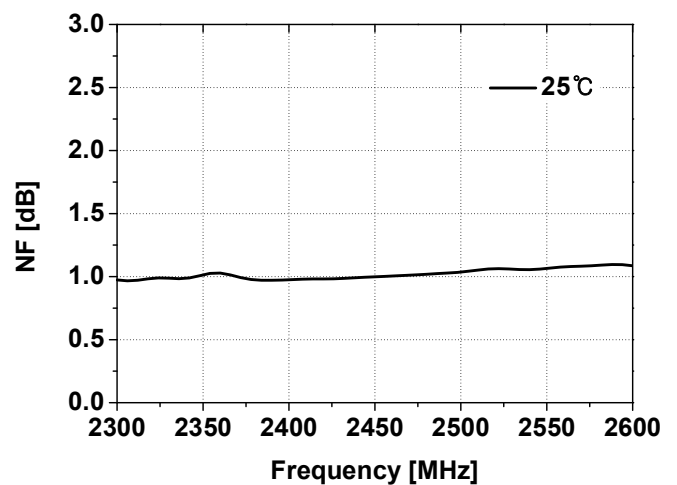
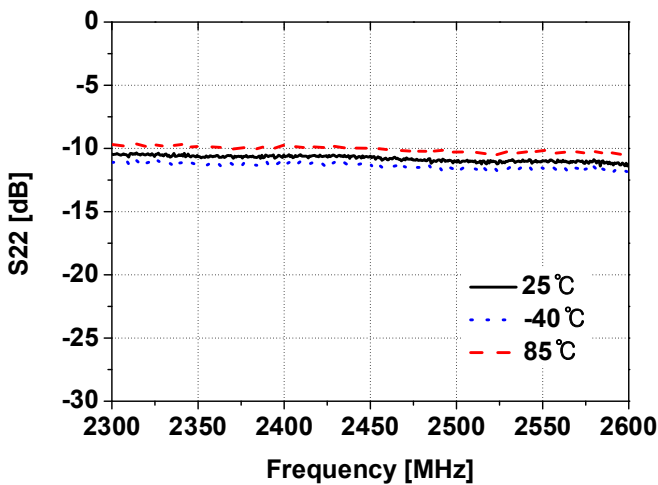
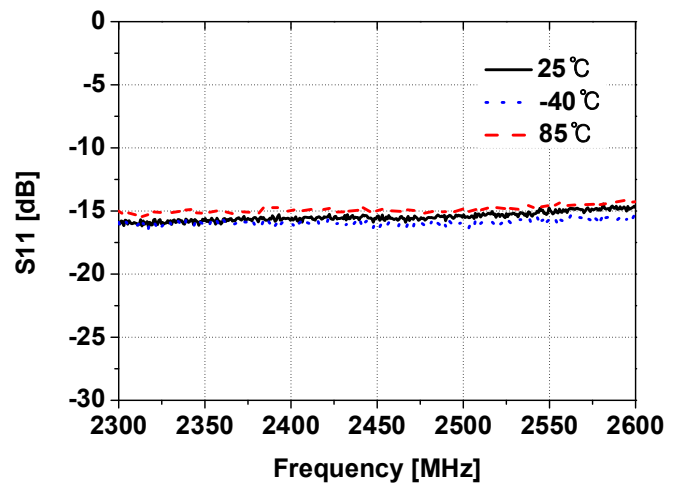
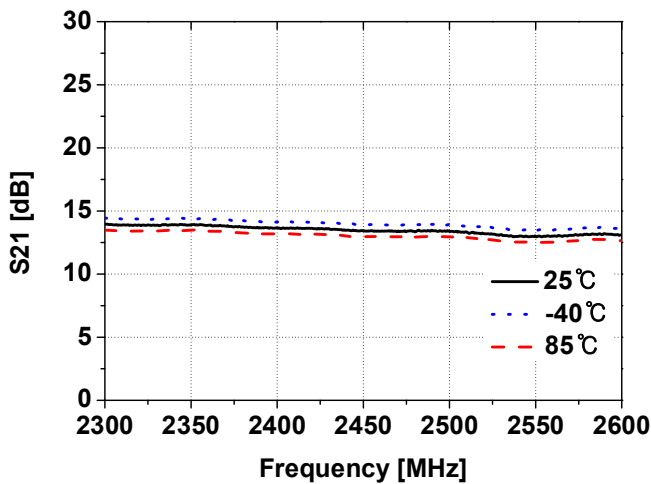


2300 MHz – 2600 MHz Application Circuit



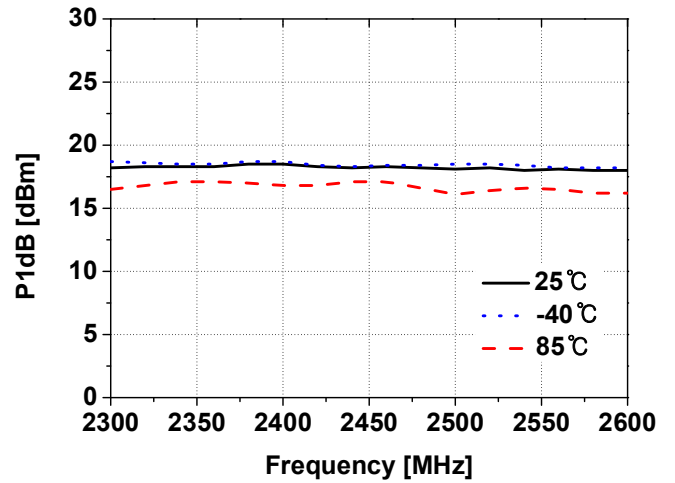
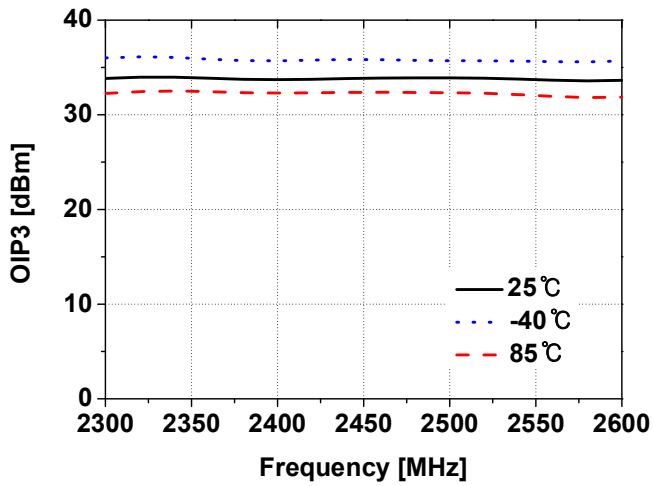
Frequency [MHz]	2300	2600
S21 [dB]	13.0	11.8
S11 [dB]	-16	-16
S22 [dB]	-11	-11
P1dB [dBm]	18.0	17.5
Output IP3 [dBm] ⁽¹⁾	33.4	33.8
NF [dB]	0.97	1.08
Vcc [V]	3	
Icc [mA]	45	

Note:
1. OIP3 measured with two tones at an output power of +3dBm/tone



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Absolute Maximum Ratings

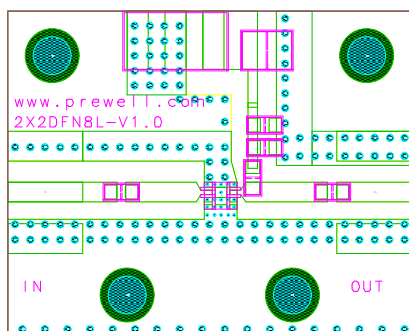
Parameter	Rating	Unit
Device Voltage	+6	V
Device Current	85	mA
RF Power Input	30	dBm
Storage Temperature	-55 to +125	°C
Junction Temperature for >10 ⁶ hours MTTF	185	°C

Operation of this device above any of these parameters may cause permanent damage.

ESD / MSL Ratings

1. ESD sensitive device. Observe Handling Precautions.
2. ESD Rating : Class 0(Passes at 150V max.) Human Body Model (HBM), JESD22-A114
3. ESD Rating : Class IV (Passes at 1000V min.) Charged Device Model (CDM), JESD22-C101
4. MSL (Moisture Sensitive Level) Rating : Level 1 at +260°C Convection reflow, J-STD-020

Evaluation Board Layout (2.7cm x 2.2cm)



Mounting Instructions

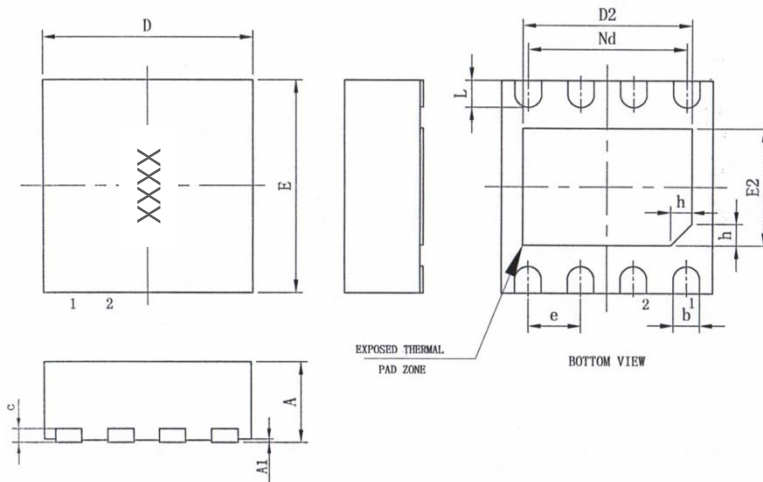
1. Use a large ground pad area with many plated through-holes as shown.
2. We recommend 1 oz copper minimum.
3. Measurement for our data sheet was made on 0.8mm thick FR-4 Board.
4. Add as much copper as possible to inner and outer layers near the part to ensure optimal thermal performance.
5. RF trace width depends on the board material and construction.
6. Add mounting screws near the part to fasten the board to a heatsink.

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Lead-free / RoHS Compliant / Green 2x2 DFN 8L Package Outline



SYMBOL	MILLIMETER		
	MIN	NOM	MAX
A	0.70	0.75	0.80
A1	—	0.02	0.05
b	0.18	0.25	0.30
c	0.18	0.20	0.25
D	1.90	2.00	2.10
D2	1.50	1.60	1.70
e	0.50BSC		
Nd	1.50BSC		
E	1.90	2.00	2.10
E2	1.00	1.10	1.20
L	0.20	0.25	0.30
h	0.15	0.20	0.25
L字表面电镀	NiPdAu(镍钯金)		
载体尺寸 (mil)	67*47		