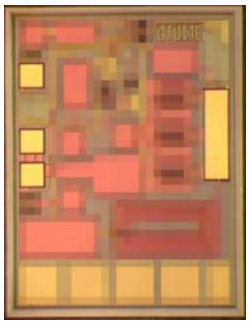
1500-4000 MHz Medium Power Amplifier

Device Features



- 45.0 dBm Output IP3 at 13dBm/tone
- 15.0 dB Gain at 1900MHz
- 27.5 dBm P1dB at 1900 MHz
- Patented Over Voltage Protection Circuit
- Application: commercial

Target Device Performance (T_a = 25°C)

Symbols	Parameters Test Conditions	Min	Typ	Max	Unit
Gain	1900MHz 2140MHz 2400MHz 3500MHz	14.0 13.0 12.2 9.7	15.1 14.0 13.3 10.7		dB
S11	1900MHz 2140MHz 2400MHz 3500MHz		-17.3 -12.0 -12.8 -25.3		dB
S22	1900MHz 2140MHz 2400MHz 3500MHz		-12.8 -12.0 -12.9 -25.3		dB
OIP3	1900MHz 2140MHz 2400MHz 3500MHz	42 42 40 37	45.0 45.2 43.1 40.2		dBm
P1dB	1900MHz 2140MHz 2400MHz 3500MHz	26.5 26.2 26.0 25.0	27.5 27.1 27.2 25.9		dBm
NF	1900MHz 2140MHz 2400MHz 3500MHz		6.8		dB
Ic	Vc = 5.0V	118	138	158	mA
Vc			5.0		V
Rth	Thermal Resistance		50		°C/W

Test conditions unless otherwise noted.

1. T = 25°C, Vdevice = 5.0V, 50 ohm system.
2. OIP3 is measured on an eval-board with two tones separated by 1 MHz.

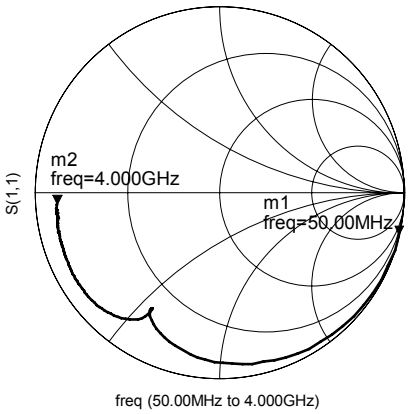
Absolute Maximum Ratings

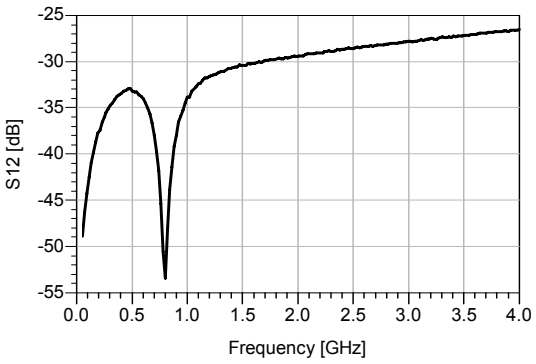
Parameter	Rating
Operating Case temperature	-40 to +85°C
Storage Temperature	-40 to +155°C
Junction Temperature	+250°C
Supply Voltage	7 V
Input RF Power	23dBm

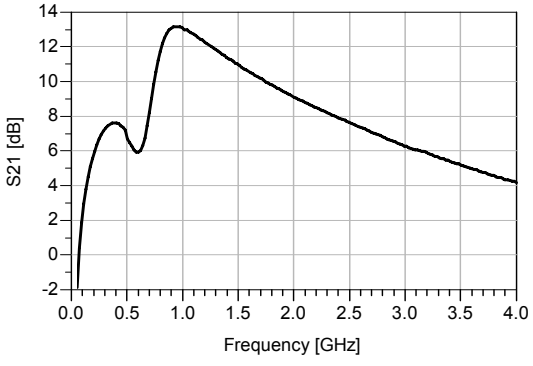
Operation of this device above any of these parameters may result in permanent damage.

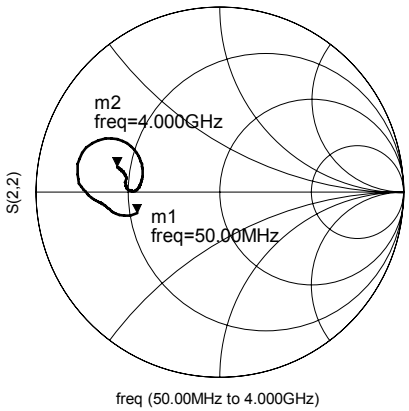
Typical Device Data

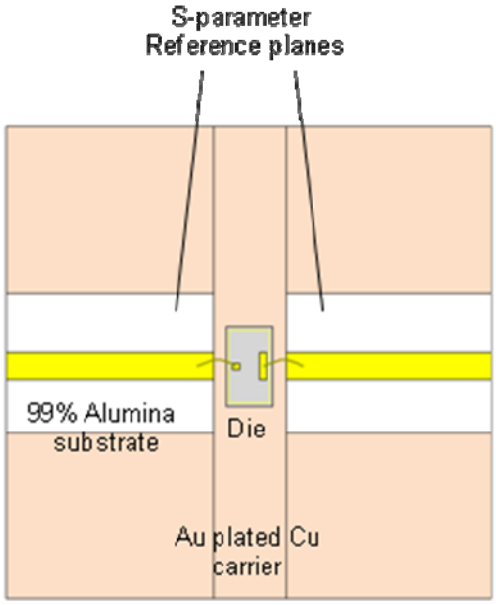
S-parameters (Vc=5V, Ic=138mA, T=25°C)





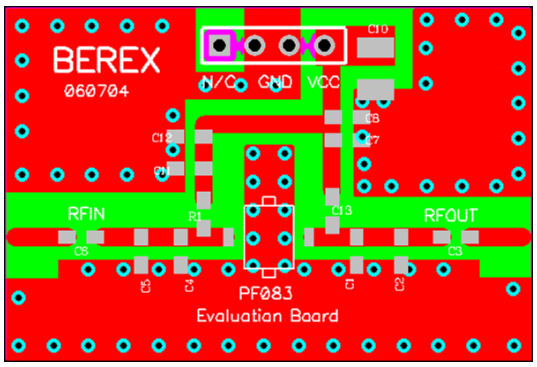






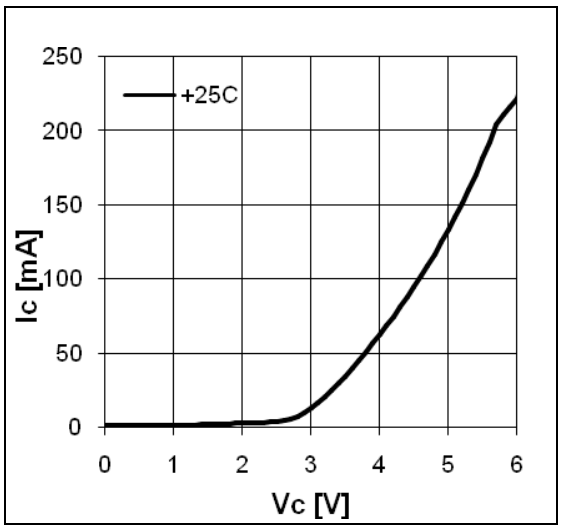
S-parameter test circuit

Generic PF083 Evaluation Board



PCB 31mil thick FR-4

I-V Characteristics



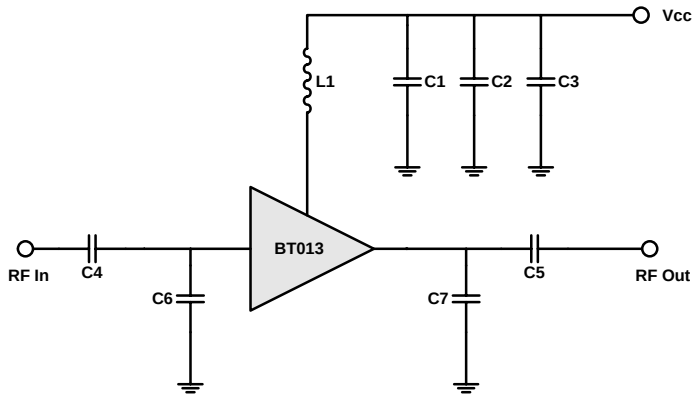
• Current drop in between 5~6V is due to patented protection circuit.

S-Parameter
(5V/135mA)

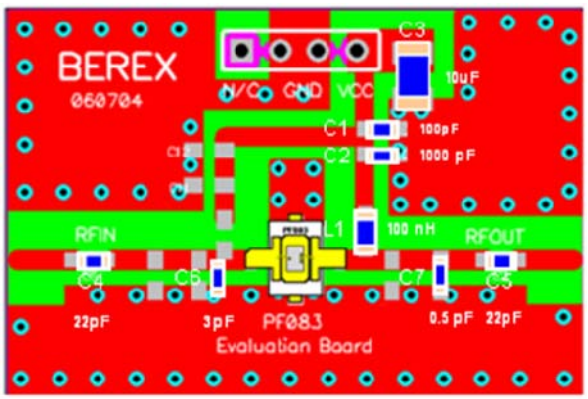
Freq [MHz]	S11 [Mag]	S11 [Ang]	S21 [Mag]	S21 [Ang]	S12 [Mag]	S12 [Ang]	S22 [Mag]	S22 [Ang]
100	-0.046	-30.149	2.219	-128.4	-41.958	66.107	-3.497	165.97
500	-0.952	-116.77	6.737	-174.18	-32.703	25.318	-3.457	162.64
1000	-1.111	-162.01	13.26	161.56	-32.513	76.255	-7.557	117.5
1500	-0.928	157.99	10.718	121.35	-30.171	46.516	-7.780	127.17
2000	-1.240	129.31	9.181	101.55	-28.599	42.527	-7.262	116.25
2500	-1.390	104.6	8.334	81.201	-26.76	37.808	-7.180	97.537
3000	-1.669	82.694	6.491	66.725	-26.706	32.623	-7.38	74.648
3500	-1.989	60.455	6.124	51.795	-25.792	26.141	-7.336	50.666
4000	-2.281	37.752	5.024	33.795	-24.653	20.698	-6.823	32.131

Application Circuit: 1900 MHz

Schematic Diagram



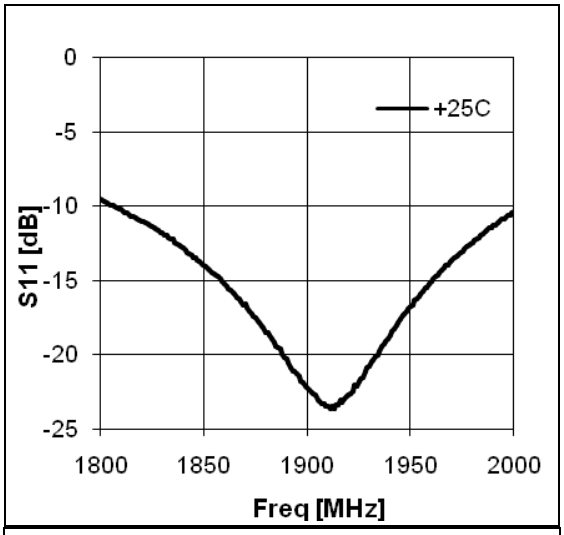
BOM		Tolerance
C1	100pF	±5%
C2	1000pF	±5%
C3	10uF	±15%
C4	22pF	±5%
C5	22pF	±5%
C6	3.0pF	±5%
C7	0.5pF	±5%
L1	100nH	±5%

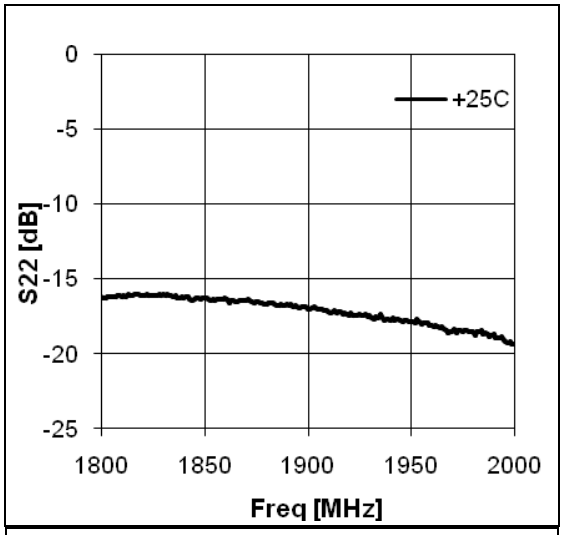


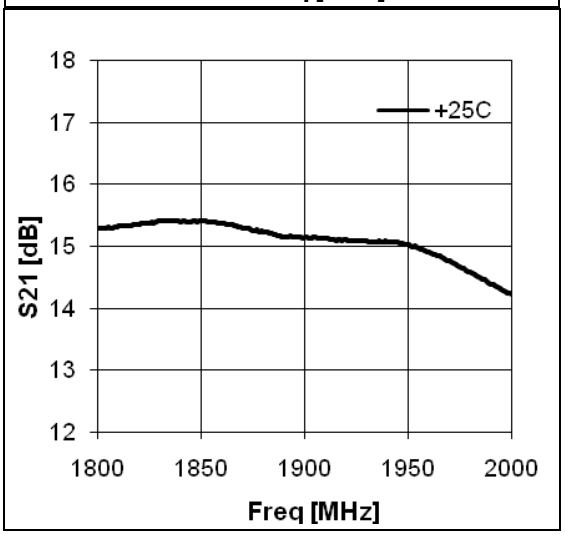
Note:

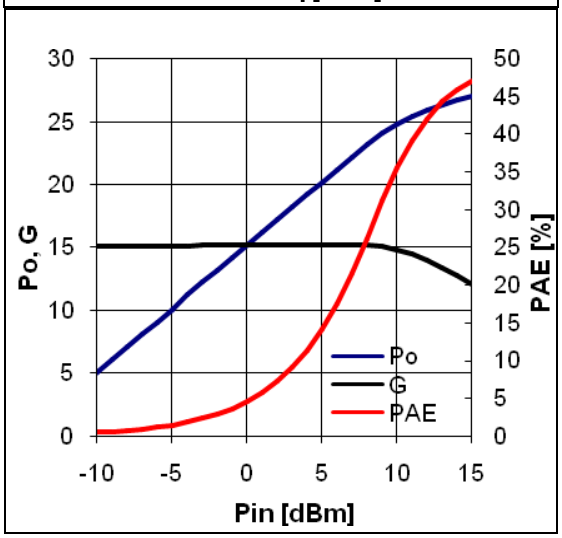
1. Chip is mounted on the PF083 open PKG, and bonded with 2-wires at both input and output.
2. PCB: 31mil thick FR4
3. Distance between the center of the shunt cap(C6) and the input pin of BT013 is 3.2mm
4. Distance between the center of the shunt cap(C7) and the output pin of BT03 is 8.3mm

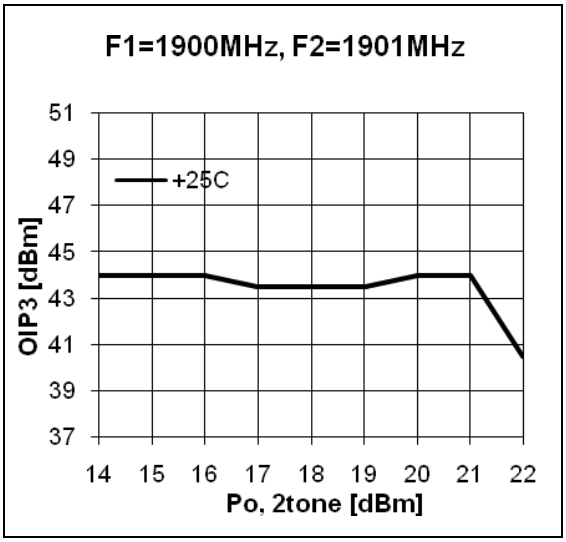
Typical Performance

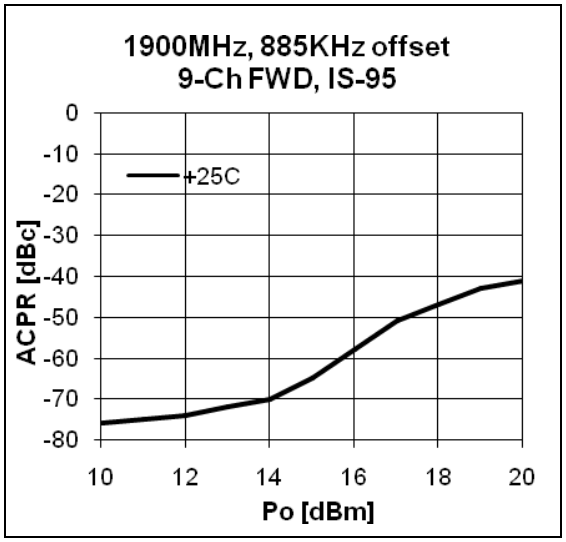






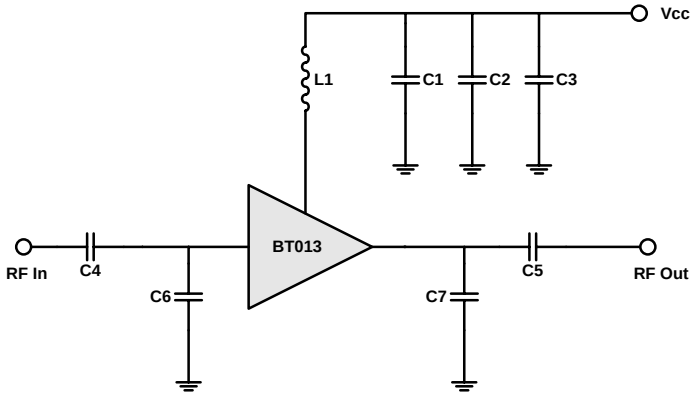




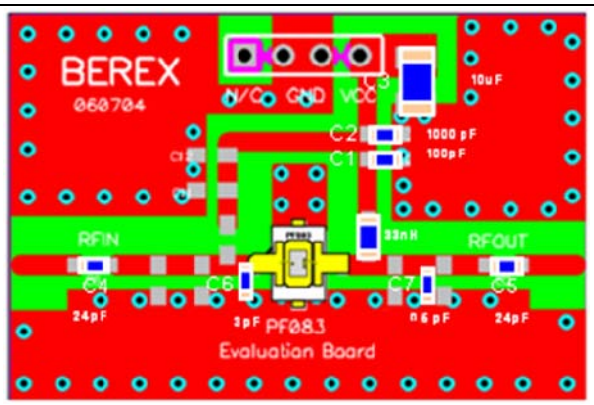


Application Circuit: 2100 MHz

Schematic Diagram



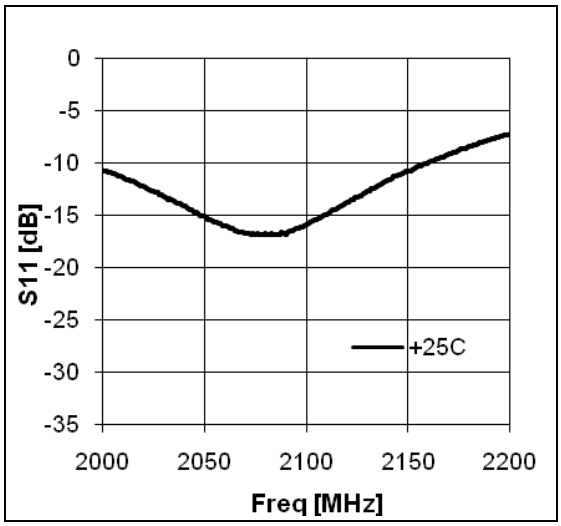
BOM		Tolerance
C1	100pF	±5%
C2	1000pF	±5%
C3	10uF	±15%
C4	24pF	±5%
C5	24pF	±5%
C6	3pF	±5%
C7	0.5pF	±5%
L1	33nH	±5%

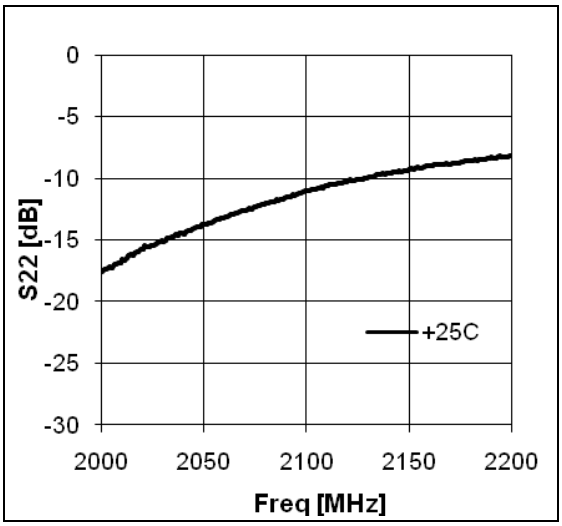


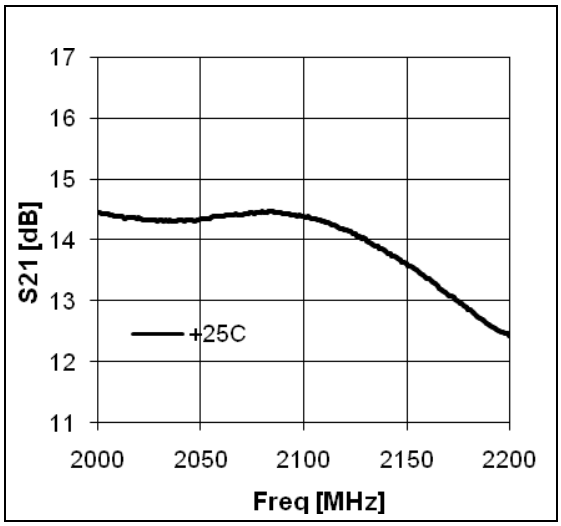
Note:

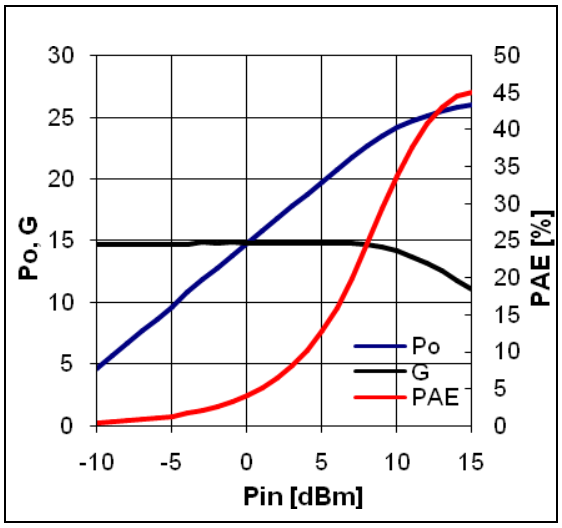
1. Chip is mounted on the PF083 open PKG, and bonded with 2-wires at Both input and output.
2. PCB: 31mil thick FR4
3. Distance between the center of the shunt cap(C6) and the input pin of BT013 is 1.5mm
4. Distance between the center of the shunt cap(C7) and the output pin of BT03 is 6.4mm

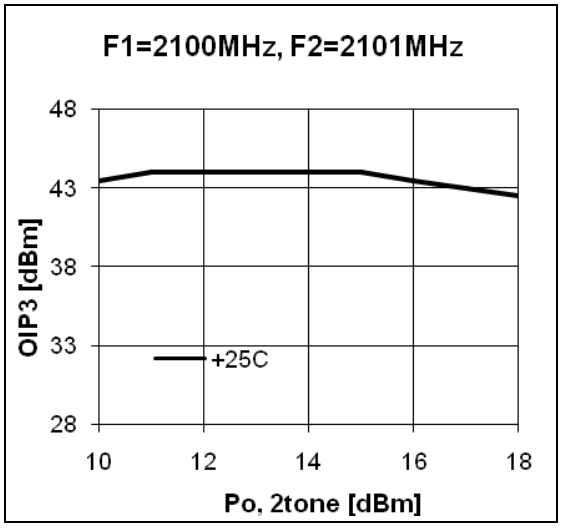
Typical Performance

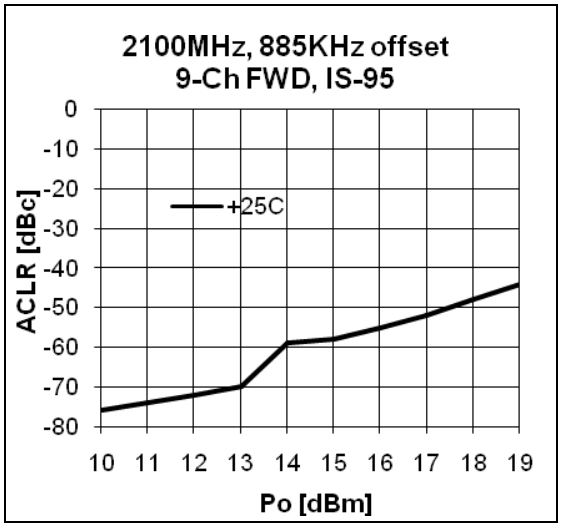




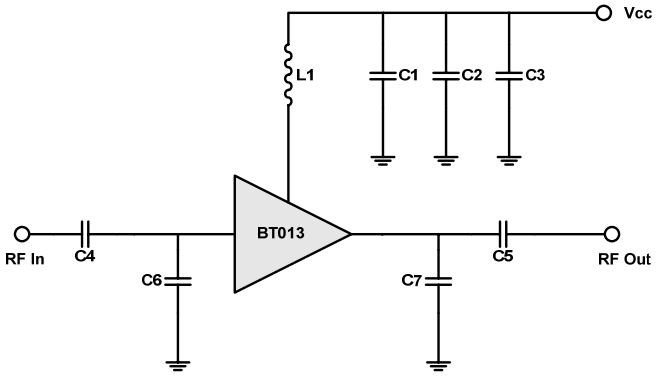


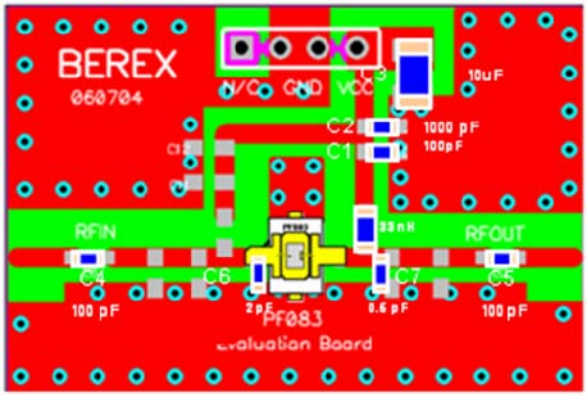






Application Circuit: 2400MHz

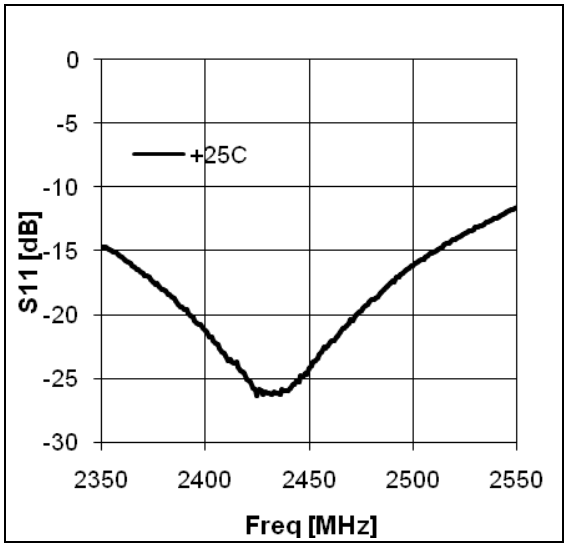
Schematic Diagram	BOM		Tolerance
	C1	100pF	±5%
	C2	1000pF	±5%
	C3	10uF	±15%
	C4	100pF	±5%
	C5	100pF	±5%
	C6	2pF	±5%
	C7	0.5pF	±5%
	L1	33nH	±5%

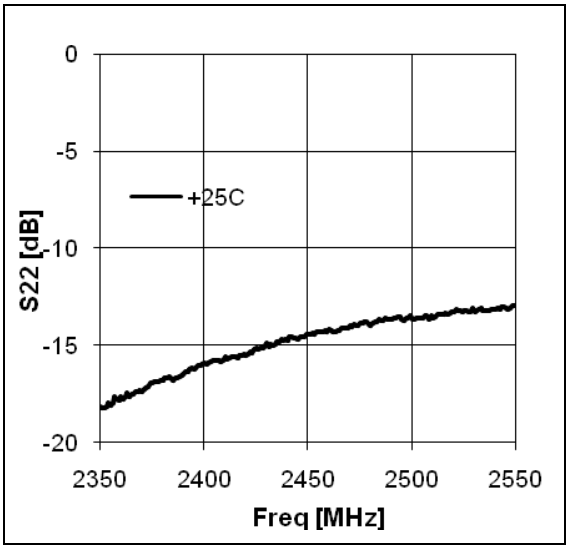


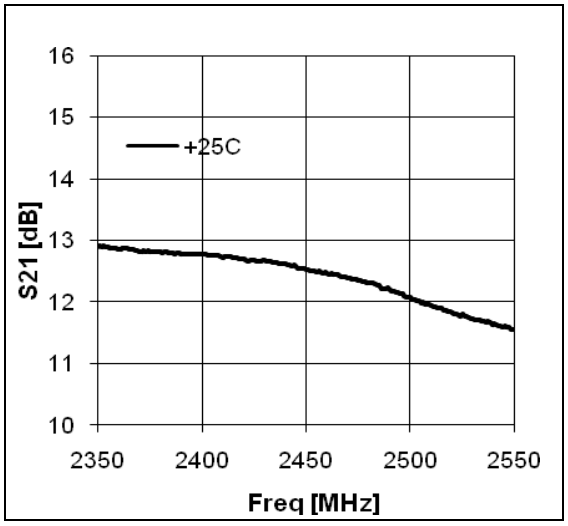
Note:

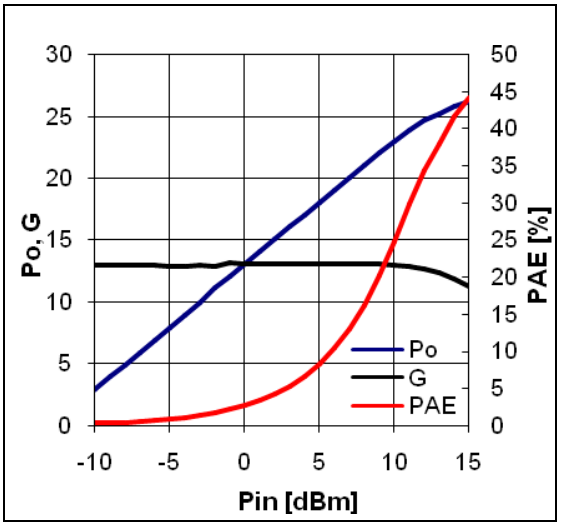
1. Chip is mounted on the PF083 open PKG, and bonded with 2-wires at Both input and output.
2 PCB: 31mil thick FR4
3 Distance between the center of the shunt cap(C6) and the input pin of BT013 is 0.7mm
4 Distance between the center of the shunt cap(C7) and the output pin of BT03 is 3.2mm

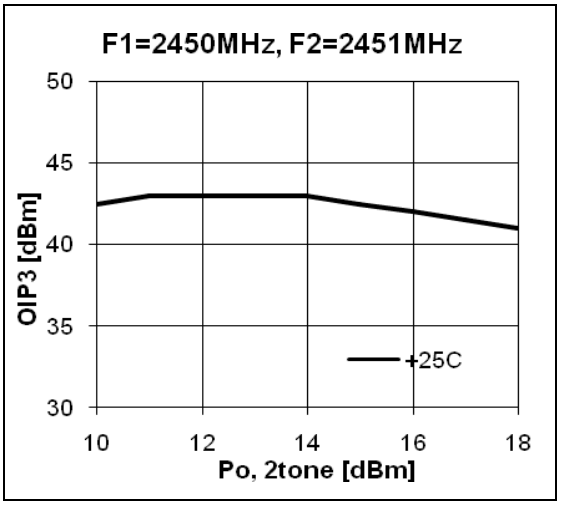
Typical Performance

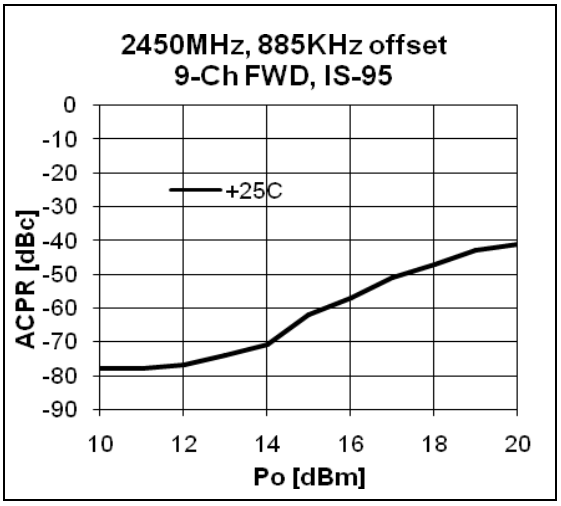




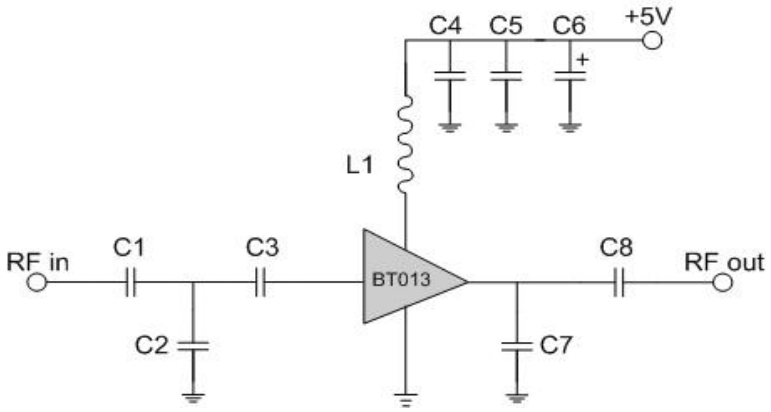


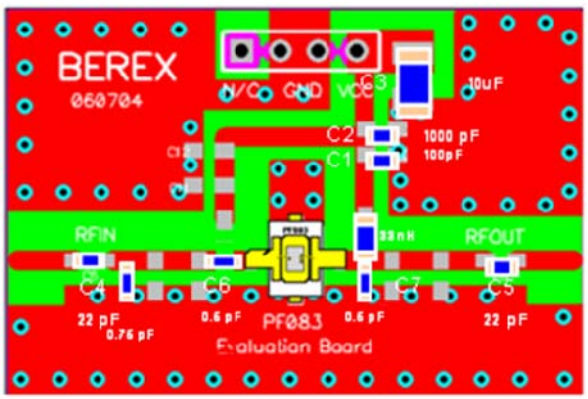






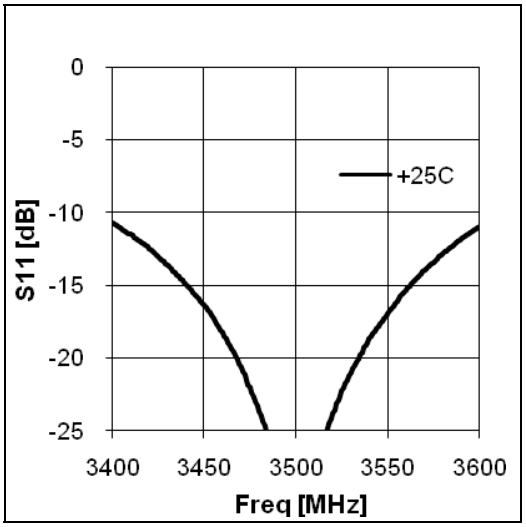
Application Circuit: 3500MHz

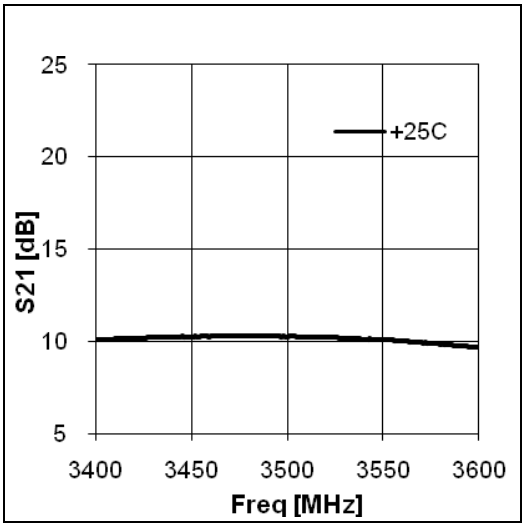
Schematic Diagram	BOM		Tolerance
	C1	22pF	±5%
	C2	0.75pF	±5%
	C3	0.5pF	±5%
	C4	100pF	±5%
	C5	1000pF	±5%
	C6	10uF	±20%
	C7	0.5pF	±5%
	C8	22pF	±5%
	L1	33nH	±5%

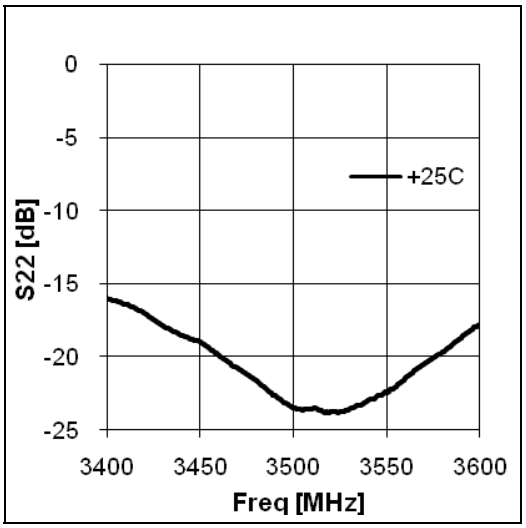


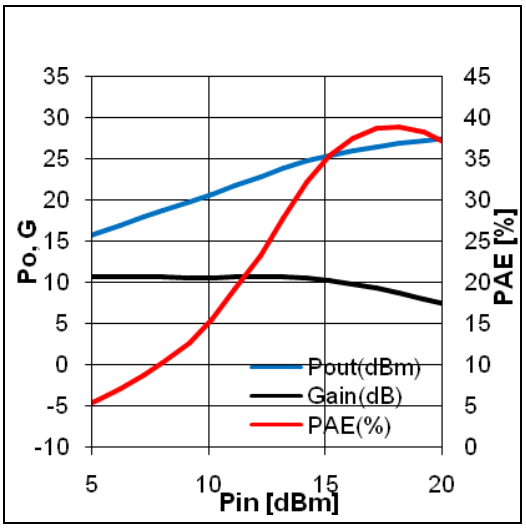
Note:
1. Chip is mounted on the PF083 open PKG, and bonded with 2-wires at both input and output.
2 PCB: 31mil thick FR4
3 Distance between the center of the shunt cap(C2) and the input pin of BT013 is 10mm
4 Distance between the center of the series cap(C3) and the input pin of BT013 is 4mm
5 Distance between the center of the shunt cap(C7) and the output pin of BT03 is 3mm

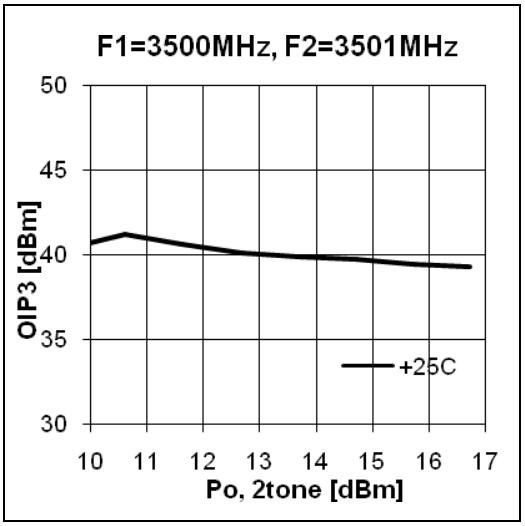
Typical Performance



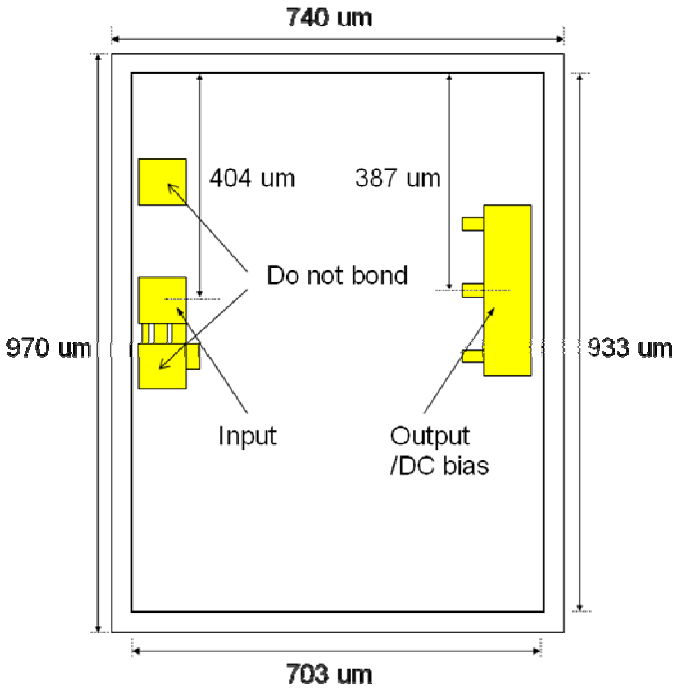








Die Outline



NOTES:

1) DIE THICKNESS 100um

2) BONDPAD METAL THICKNESS 2.8um

3) BACKSIDE METAL Au, 5um

4) DEVICE IS GROUNDED THROUGH VIA HOLES

MSL / ESD Rating

ESD Rating	Class 1
Value	Passes <1000V
Test	Human Body Model (HBM)
Standard	JEDEC Standard JESD22-A114B
MSL Rating	**Level 1** at +265°C convection reflow
Standard	JEDEC Standard J-STD-020

NATO CAGE code:

2	**N**	**9**	**6**	**F**

NOTICE

BeRex Corporation reserves the right to make changes of product specification or to discontinue product at any time without notice.

Proper ESD procedures should be followed when handling this device.