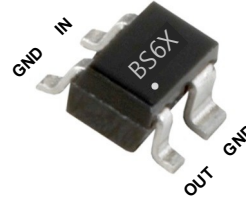


Device Features

- 3 ~ 3.3V supply
- No Dropping Resistor Required
- No matching circuit needed
- Green/RoHS2 compliant SOT-343 package

Part Marking (X: Wafer number)



Pin Description	
RF IN	3
RF OUT	1
GND	2,4

Product Description

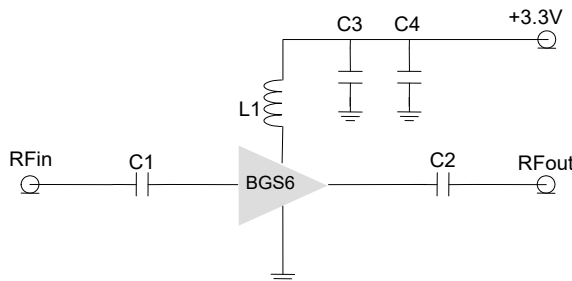
BeRex's BGS6 is a high SiGe HBT MMIC amplifier, internally matched to 50 Ohms without the need for external components. Designed to run directly from a 3.3V supply. The BGS6 is designed for high linearity 3.3V gain block applications. It is packaged in a RoHS2-compliant with SOT-343 surface mount package.

Applications

- Drive Amplifier
- Cellular, PCS, GSM, UMTS, WCDMA, LTE
- Wireless Data

Applications Circuit

Application Circuit Values Example		
Freq.	300~500MHz	700MHz~3GHz
C1/C2	2nF	100pF
C3	100pF	100pF
C4	1nF	1nF
L1 (1608 Chip Ind.)	820nH	56nH



Typical Performance¹

Parameter	Frequency					Unit
	400	900	1900	2450	2650	
Gain	23.3	21.8	18.0	16.2	15.6	dB
S11	-22.0	-19.0	-17.0	-17.0	-16.5	dB
S22	-19.0	-16.0	-10.5	-10.0	-10.0	dB
OIP3 ²	26.0	26.0	26.0	24.0	23.0	dBm
P1dB	16.5	17.0	14.0	12.5	12.0	dBm
N.F	3.0	2.9	3.0	3.3	3.5	dB

¹ Device performance _ measured on a BeRex evaluation board at 25°C, 50 Ω system.

² OIP3 _ measured with two tones at an output of 0 dBm per tone separated by 1 MHz.

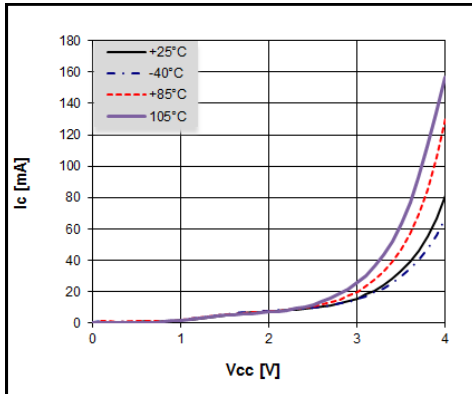
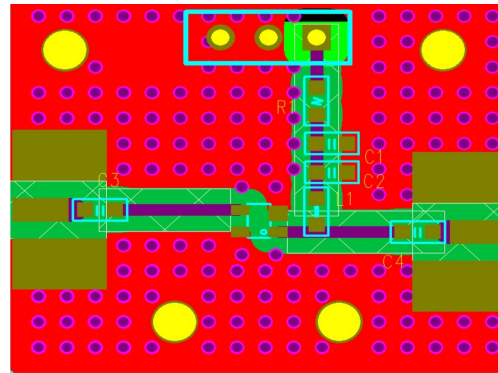
Recommended Operating Conditions

Parameter	Min.	Typical	Max.	Unit
Bandwidth	50		4000	MHz
I _c @ (V _c = 3.3V)	23	27	31	mA
V _c	3.0	3.3	3.6	V
R _{TH}		130		°C/W

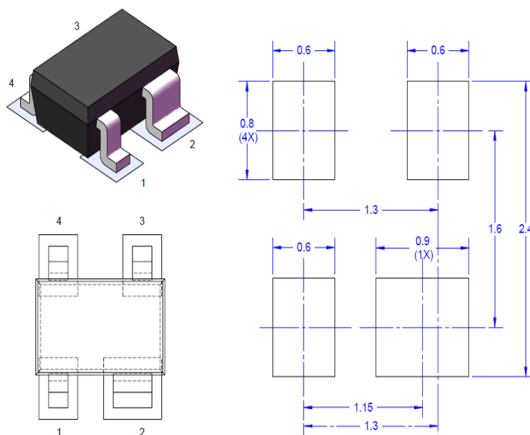
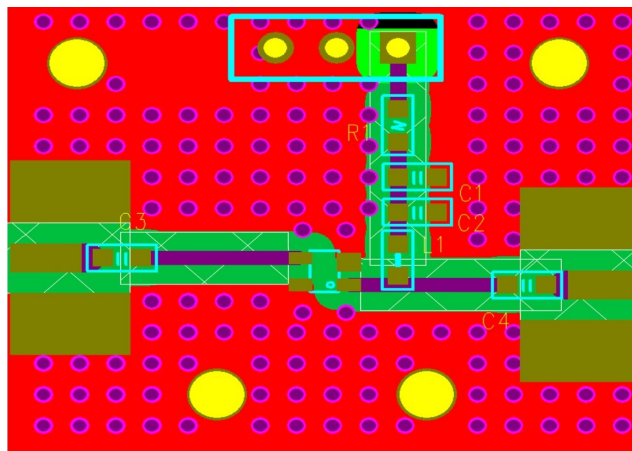
Absolute Maximum Ratings

Parameter	Rating	Unit
Operating Case Temperature	-40 to +105	°C
Storage Temperature	-55 to +155	°C
Junction Temperature	+165	°C
Supply Voltage	+4.0	V
Supply Current	100	mA
Input RF Power	15	dBm

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

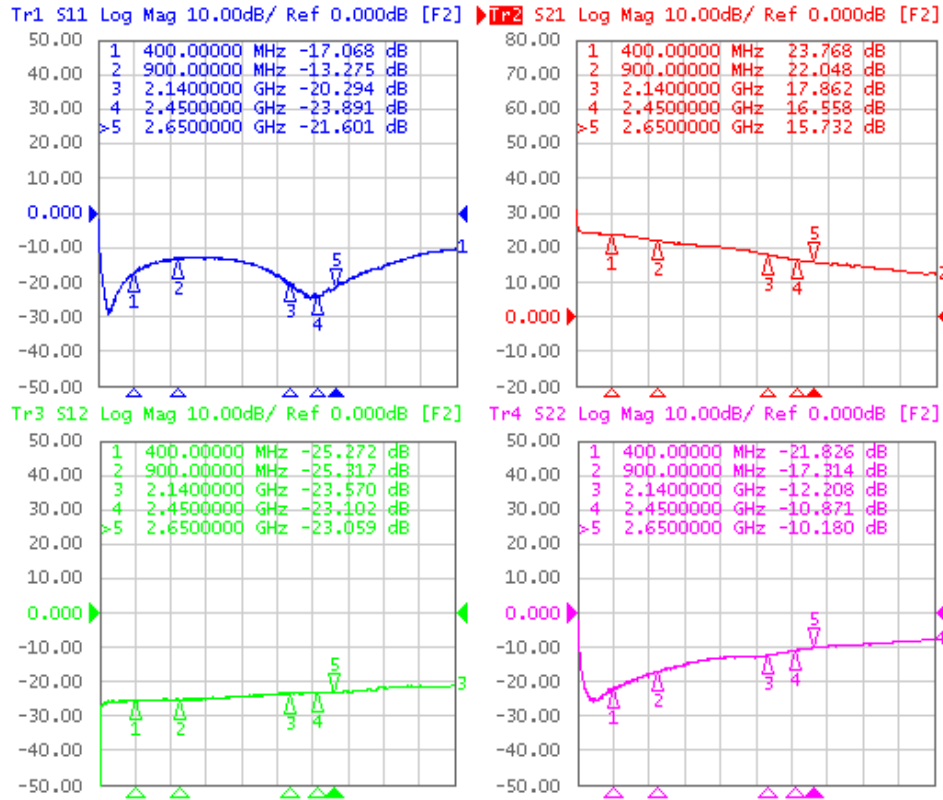
V-I Characteristics

BeRex SOT-343 Evaluation Board


*Dielectric constant _ 4.2 *31mil thick FR4 PCB

Suggested PCB Land Pattern and PAD Layout
PCB Land Pattern

PCB Mounting


Typical Device Data

S-parameters (Vc=3.3V, Ic=26mA, T=25°C)



S-Parameter

(Vdevice = 3.3V, Icc = 26mA, T = 25 °C, calibrated to device leads)

Freq [MHz]	S11 Mag	S11 Ang	S21 Mag	S21 Ang	S12 Mag	S12 Ang	S22 Mag	S22 Ang
70	0.04	-155.22	16.29	167.53	0.04	7.11	0.06	-145.56
900	0.21	41.30	12.62	125.42	0.05	13.57	0.13	86.41
1000	0.22	36.48	12.10	121.86	0.05	13.35	0.14	83.10
1500	0.21	20.11	10.43	103.05	0.05	21.21	0.21	72.16
2000	0.12	10.78	8.53	80.43	0.06	24.96	0.23	65.68
2500	0.06	68.07	6.41	66.87	0.07	26.22	0.28	67.77
3500	0.22	98.26	4.80	45.86	0.08	31.06	0.36	55.89
4000	0.30	82.94	4.07	36.16	0.08	34.11	0.40	49.61

50-4000 MHz SILICON GERMANIUM Gain Block

Typical Performance (Vd = 3.3V, Ic = 26mA, T = 25°C)

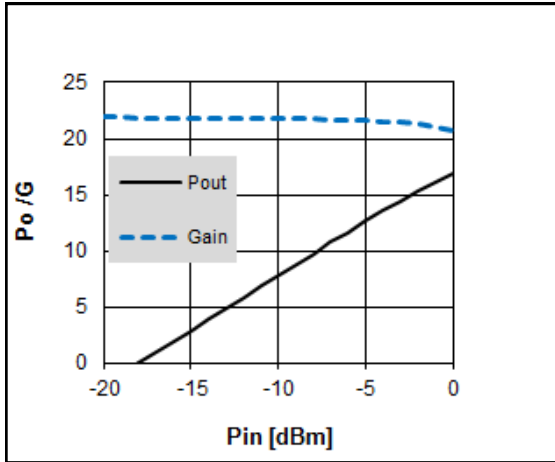
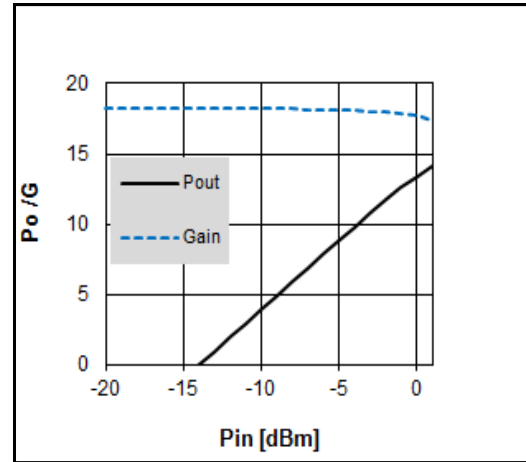
Freq	MHz	400	900	1900	2450	2650
S21	dB	23.3	21.8	18.0	16.2	15.7
S11	dB	-22.1	-19.2	-17.1	-17.1	-16.6
S22	dB	-19.2	-16.1	-10.3	-10.0	-10.2
P1	dBm	16.5	17.0	14.1	12.5	12.1
OIP3	dBm	26.1	26.1	25.9	24.1	23.0
NF	dB	3.0	2.9	3.1	3.3	3.5

Typical Performance (Vd = 3.0V, Ic = 16mA, T = 25°C)

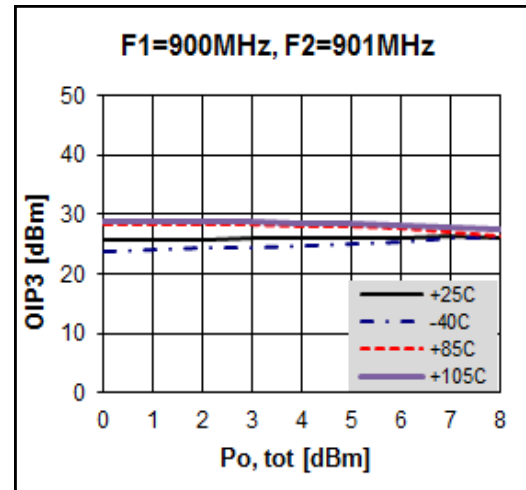
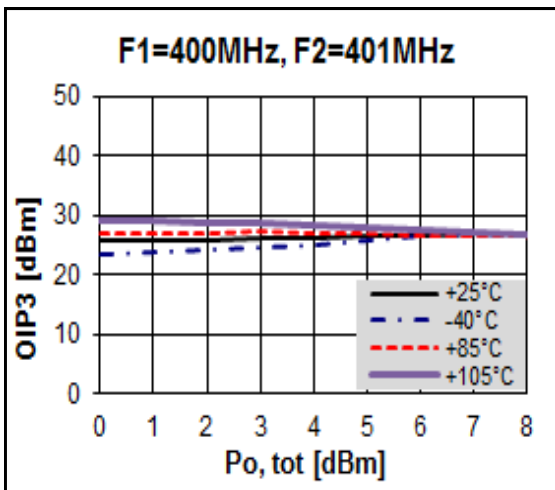
Freq	MHz	400	900	1900	2450	2650
S21	dB	23.1	21.5	17.7	16.0	15.4
S11	dB	-23.8	-22.8	-18.7	-17.2	-16.3
S22	dB	-19.6	-18.4	-11.1	-10.1	-10.1
P1	dBm	15.5	16.7	13.9	12.2	11.8
OIP3	dBm	24.3	24.4	24.1	23.3	22.6
NF	dB	2.5	2.4	2.5	2.9	3.1

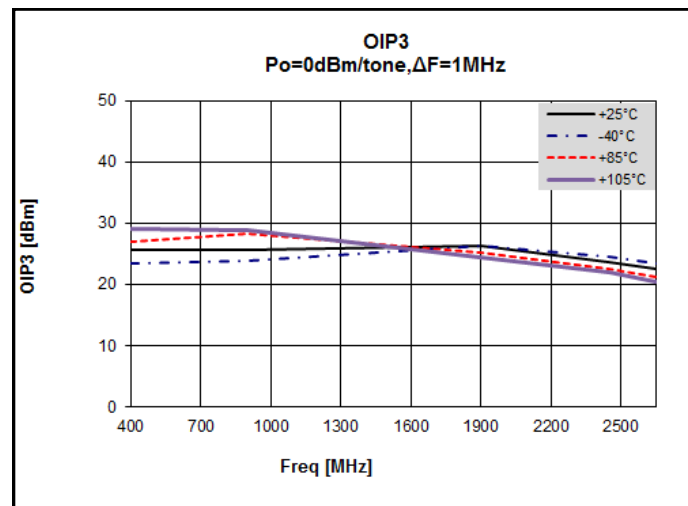
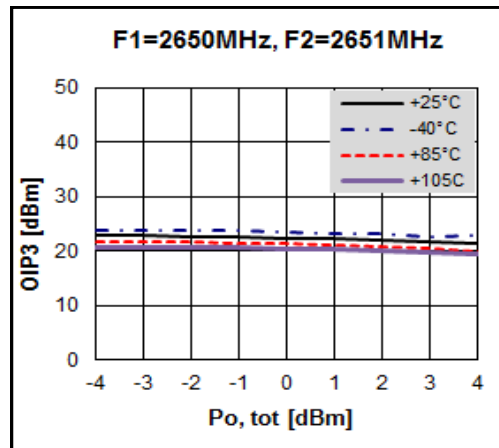
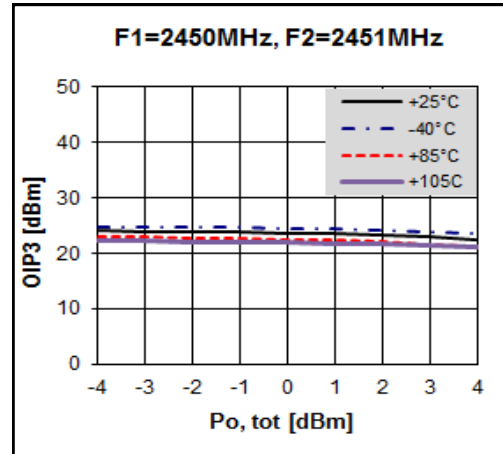
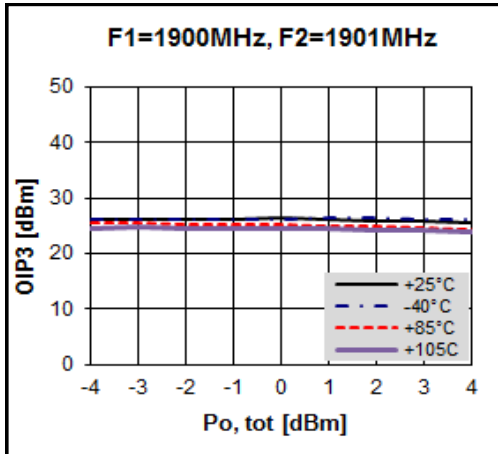
Device Performance

Pin-Pout-Gain

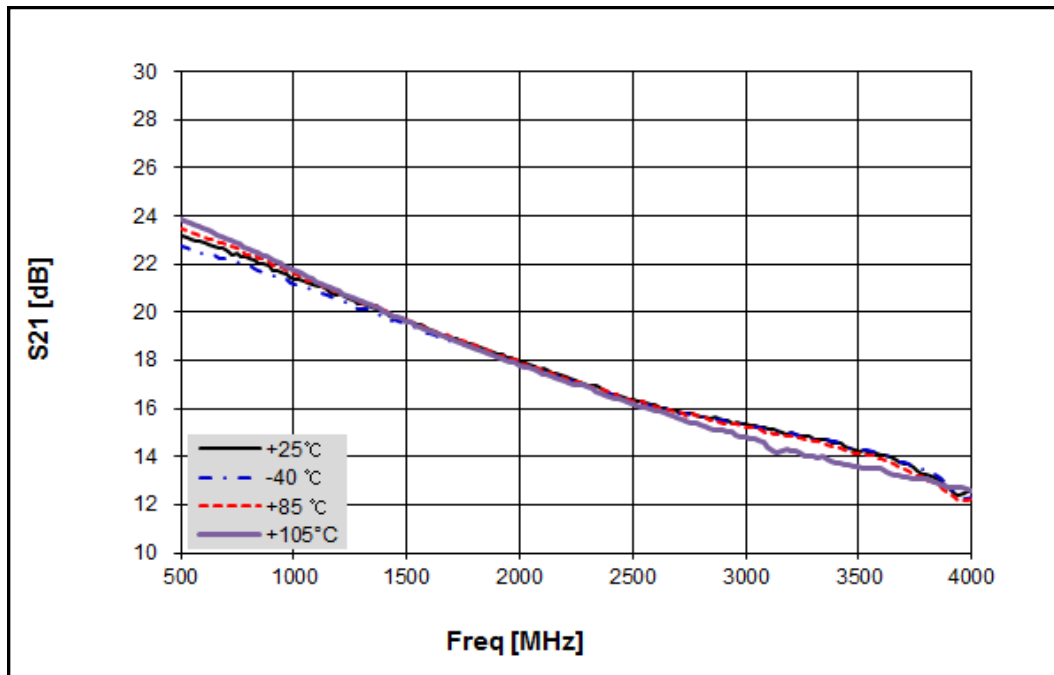

900MHz, 3.3V/26mA

1900 MHz, 3.3V/26mA

OIP3

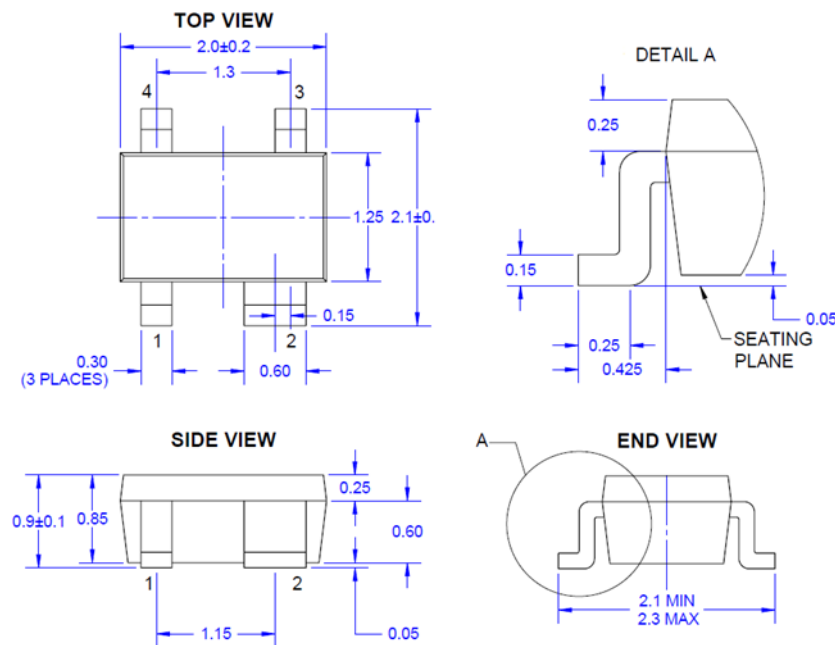


OIP3


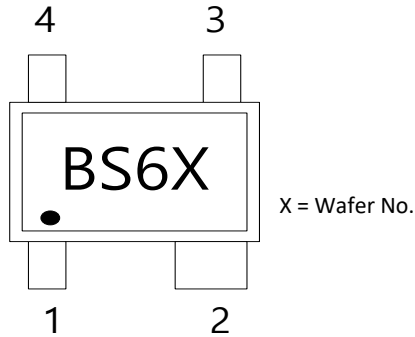
Gain Flatness



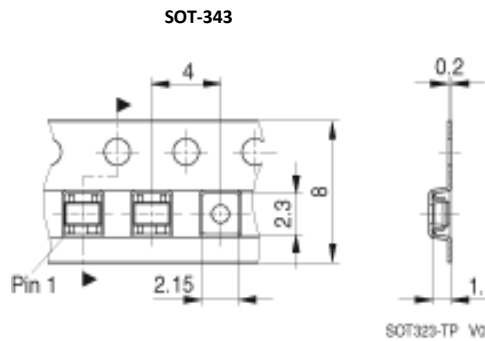
SOT-343 Package Outline Dimension (Unit. mm)



Package Marking



Tape & Reel



Packaging information:

- Tape Width (mm): 8
- Reel Size (inches): 7
- Device Cavity Pitch (mm): 4
- Devices Per Reel: 3000

Lead plating finish

100% Tin Matte finish

(All BeRex products undergoes a 1 hour, 150 degree C, Anneal bake to eliminate thin whisker growth concerns.)

MSL / ESD Rating

ESD Rating:	Class 1C
Value:	Passes <2000V
Test:	Human Body Model (HBM)
Standard:	JEDEC Standard JS-001-2012

MSL Rating:	Level 1 at +265°C convection reflow
Standard:	JEDEC Standard J-STD-020



Proper ESD procedures should be followed when handling this device.

NATO CAGE code:

2	N	9	6	F
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