

DESCRIPTION

Sanland' AG55 is a high efficiency GaAs Heterojunction Bipolar Transistor (HBT) MMIC housed in low-cost surface-mountable plastic package. These HBT MMICs are fabricated using molecular beam epitaxial growth technology which produces reliable and consistent performance from wafer to wafer and lot to lot.

These amplifiers are specially designed for use as driver devices for infrastructure equipment in the 400-4000 MHz cellular, ISM, WLL, PCS, WCDMA applications.

Its high linearity makes it an ideal choice for multi-carrier as well as digital applications.

Major Applications

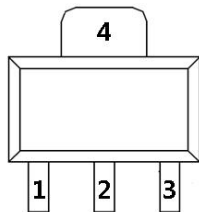
- Wireless system, IF&RF driver amplifier

KEY FEATURES

- **Medium Power:** 27dBm P1dB at 2.7GHz
- **Excellent Linearity:** 45 dBm OIP3 at 2.7GHz
- **High Gain:** 14 dB at 2.7GHz
- **High Efficiency:** 5V/125mA
- **On-chip Active Bias Control**
- **Lead-free/Green/RoHS Compliant SOT89 Package**
- **ESD 1000V HBM**
- **MSL: Level 1**



Pin Assignment



SOT89

Pin Details

Pin Number	Name	Description
1	RF IN	RF input.
2	GND	Ground.
3	RF OUT	RF output.
4	GND	Ground.

Electrical Characteristics for Application

(Vc =+5V; unless otherwise noted.)

Parameter	Specification			Units	Notes
	Min	Typ.	Max		
Freq	0.4		4.0	GHz	
Gain	19.0 14.0 13.0	21.0 15.5 14.0 12.0	23.0	dB dB dB dB	850MHz 1960MHz 2700MHz 3500MHz
P-1dB	26	24.5 28 27 25.5		dBm dBm dBm dBm	850MHz 1960MHz 2700MHz 3500MHz
OIP3	40 40	44 44 45 43		dBm dBm dBm dBm	850MHz 1960MHz 2700MHz 3500MHz
Input return loss	-10	-15 -17 -13 -18		dB dB dB dB	850MHz 1960MHz 2700MHz 3500MHz
Output return loss		-10		dB	
Reverse Isolation		-25		dB	
NF		5.0	6.5	dB	
Vc		5.0	5.5	V	
Ic	115	126	140	mA	
Test Conditions : Vs=5V ID=126mA Typ. OIP3 Tone Spacing=1MHz, Pout per ton=+5 dBm TL=25°C ZS=ZL=50 Ohms					

Absolute Maximum Ratings

<u>Parameter</u>	<u>Rating</u>	<u>Unit</u>
DC Power Supply	+5.5	V
DC Supply Current at Vc	250	mA
RF Input Power	+20	dBm
Max. Operating Dissipated Power	1.5	W
Operating Ambient Temperature	-40 to +85	°C
Storage Temperature	+150	°C
Max. Junction Temp. (TJ)	+150	°C
R _{TH}	60	°C/W
Operation beyond any one of these limits may cause permanent damage.		

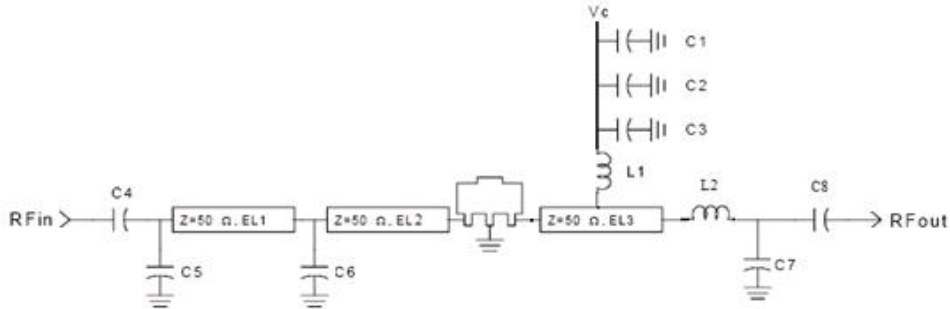
Important Note

The information provided in this datasheet is deemed to be accurate and reliable only at present time. Sanland Technology Corp. reserves the right to make any changes to the specifications in this datasheet without prior notice.



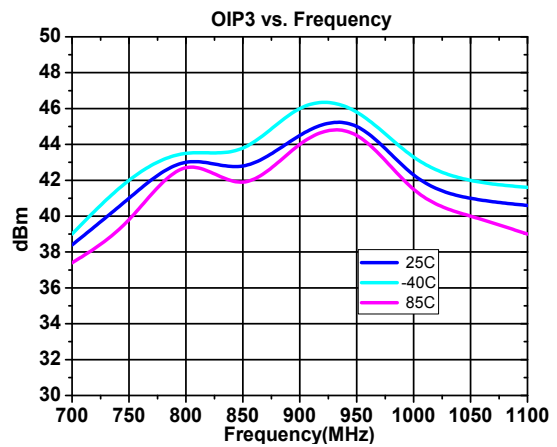
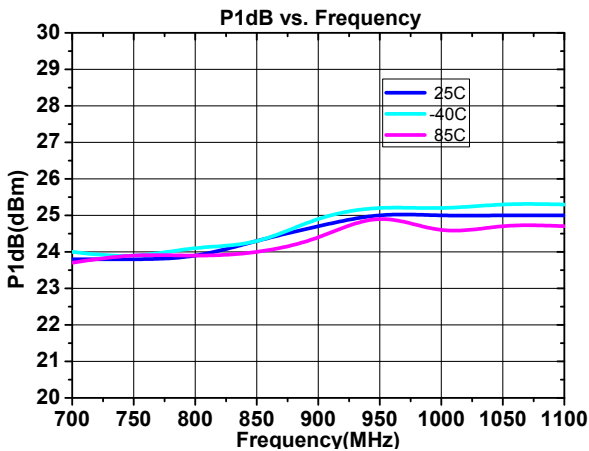
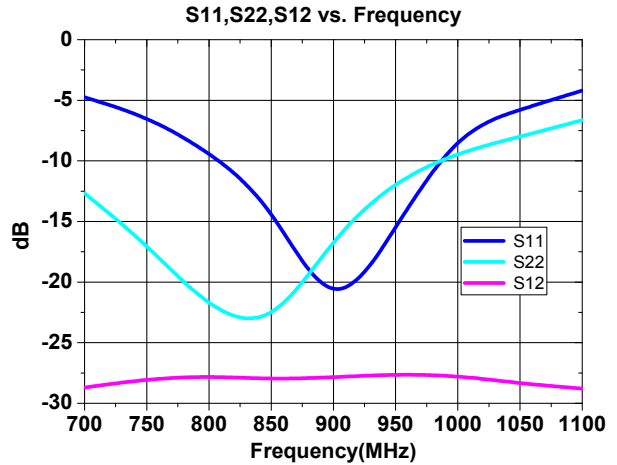
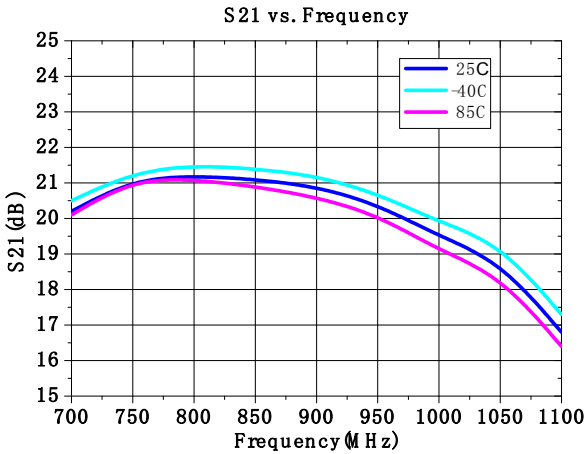
Caution: ESD Sensitive
Appropriate precaution in handling, packaging
And testing devices must be observed.

Performance Plots with 800 ~ 1100MHz Application Circuit

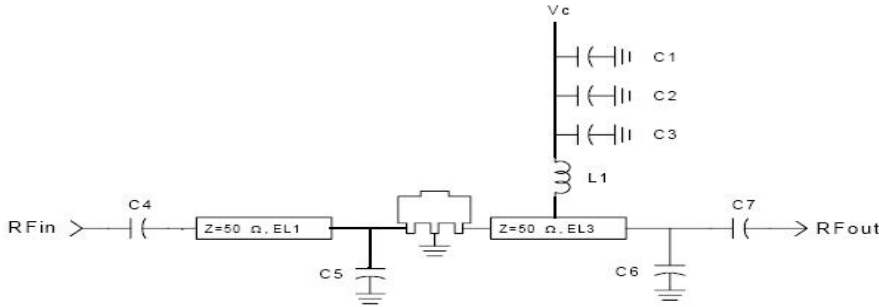


C1	C2	C3,C4,C8	C5	C6	C7	L1	L2	EL1	EL2	EL3
0.1uF	1000pF	47pF	6.8 pF	3.3 pF	1pF	33 nH	3.3nH	3.2mm	2.1mm	2.1mm

EL1, EL2 and EL3 are the length of microstrips using RO 4350 0.254mm PCB.
EL1 is 6.3° , EL2 is 4.1° , EL3 is 4.1°



Performance Plots with 1800 ~ 2200MHz Application Circuit

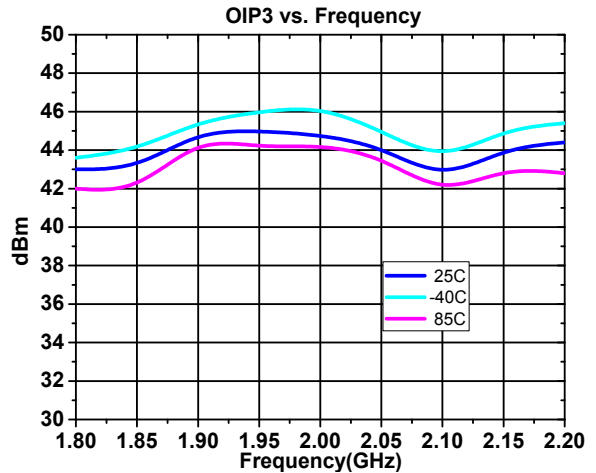
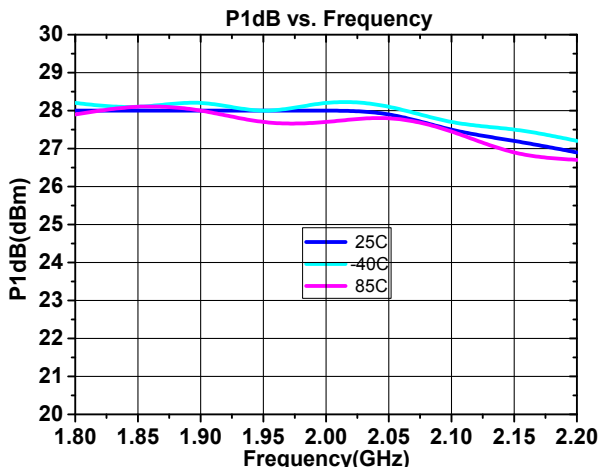
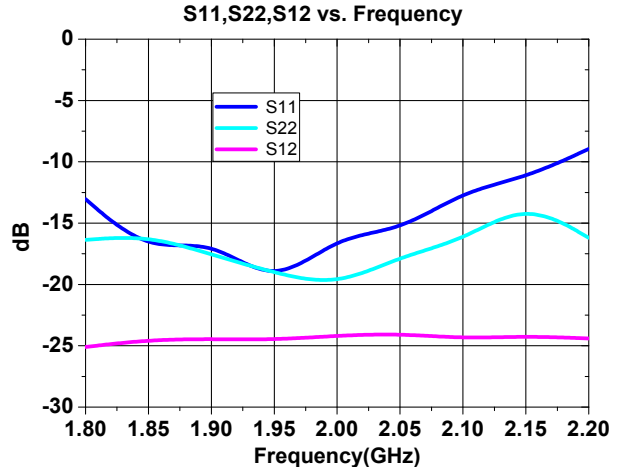
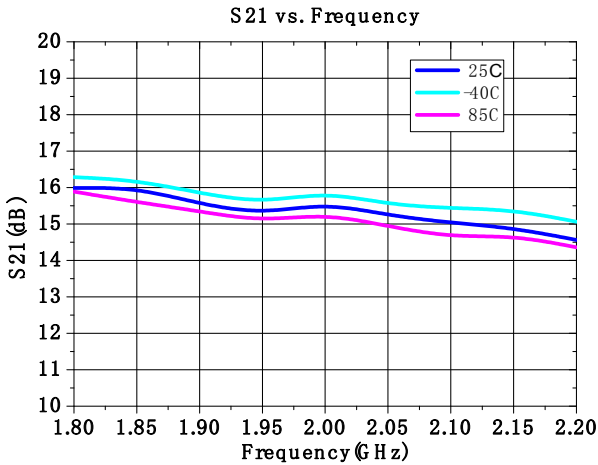


C1	C2	C3,C7	C4	C5	C6	L1	EL1	EL3
0.1uF	1000pF	22pF	1.5pF	1.0pF	1.5 pF	18 nH	6.6mm	7.5mm

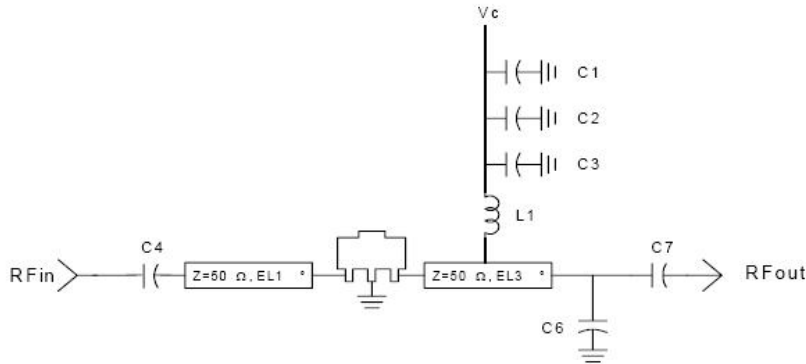
C5 must be close to Pin1 (RFIn).

EL1 and EL3 are the length of microstrips using RO 4350 0.254mm PCB.

When using other PCB EL1 is 25.8° and EL3 is 29.3°

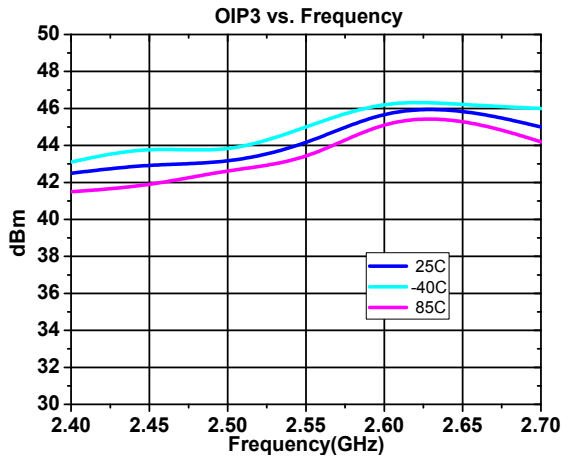
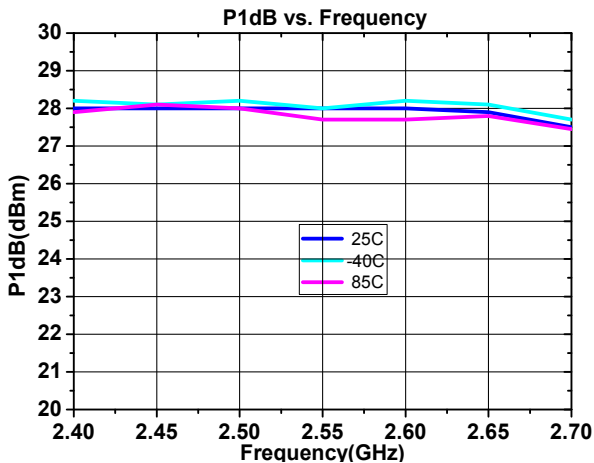
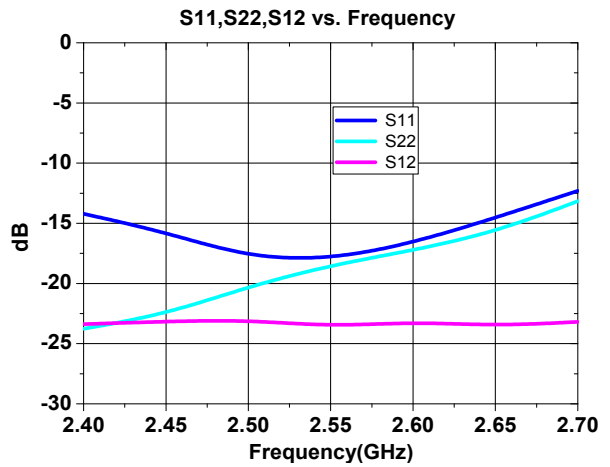
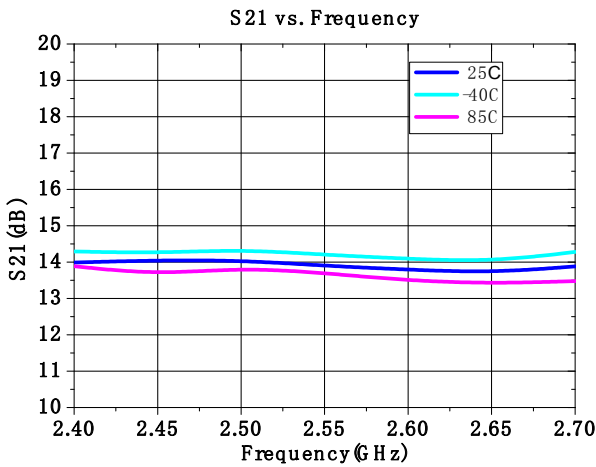


Performance Plots with 2400 ~ 2700MHz Application Circuit

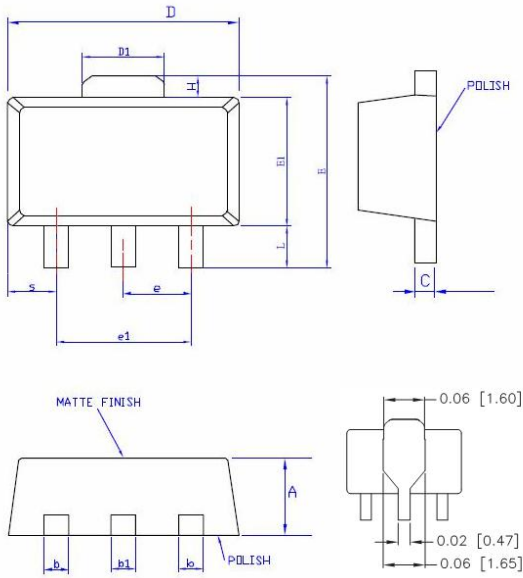


C1	C2	C3,C7	C4	C6	L1	EL1	EL3
0.1 uF	1000 pF	15pF	0.75 pF	1.0 pF	15 nH	6.2mm	6.2mm

C5 must be close to Pin 1(RFin).
EL1 and EL3 are the length of microstrips using RO 4350 0.254mm PCB.
When using other PCB EL1 is 32° and EL3 is 32°



Package Outline



Unit: mm

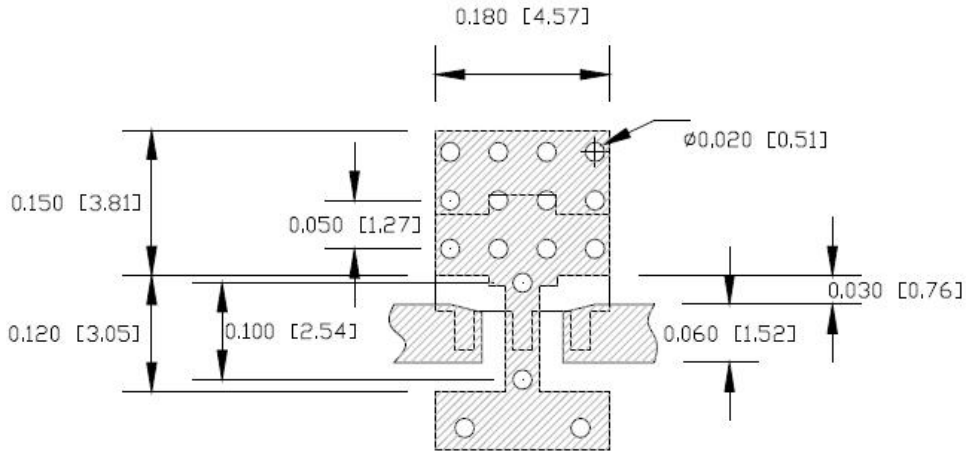
SYMBOLS	DIMENSIONS IN MILLIMETERS			DIMENSIONS IN INCHES		
	MIN	NOM	MAX	MIN	NOM	MAX
A	1.40	1.50	1.60	0.055	0.059	0.063
L	0.89	1.04	1.20	0.0350	0.041	0.047
b	0.36	0.42	0.48	0.014	0.016	0.018
b1	0.41	0.47	0.53	0.016	0.018	0.020
C	0.38	0.40	0.43	0.014	0.015	0.017
D	4.40	4.50	4.60	0.173	0.177	0.181
D1	1.40	1.60	1.75	0.055	0.062	0.069
E	3.94	—	4.25	0.155	—	0.167
E1	2.40	2.50	2.60	0.094	0.098	0.102
e1	2.90	3.00	3.10	0.114	0.118	0.122
H	0.35	0.40	0.45	0.014	0.016	0.018
S	0.65	0.75	0.85	0.026	0.030	0.034
e	1.40	1.50	1.60	0.054	0.059	0.063

For informational purpose only and is subject to change without notice

Note :

1. Dimension and tolerance conform to ASME Y14.5M-1994.
2. Refer to JEDEC STD. MO-220 WEED-2 ISSUE B

Suggested PCB Layout



NOTES:

1. Dimensions are in inch [millimeter].
2. Use 1 oz. copper minimum for top and bottom layer metal.
3. Vias are required under GND(2,4) pin for proper RF/DC grounding and thermal dissipation. Via holes could reduce lead inductance as close to ground as possible.
4. Ensure good package backside paddle solder attach for reliable operation and best electrical performance.