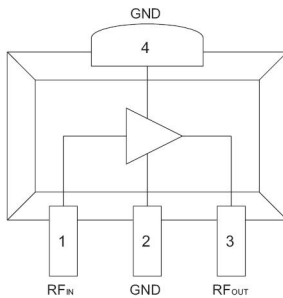


## DESCRIPTION

SG110 is a flat gain, high linearity, low noise, 23.5dB Gain Block with good OIP3 achieved through the use of 0.5um GaAs Enhancement-mode PHEMT process. SG110 is designed as low cost drive amplifiers for many applications including FTTH , CATV System .

### Major Applications

- Low Noise Amplifier for CATV, Satellite
- Cable Modem
- FTTH (G-PON, GE-PON)
- Optical node



## KEY FEATURES

- Wideband Flat Gain to 1.2GHz
- Higher Gain: 23.5 typ
- Higher linearity: 35dBm @ 500MHz/5dBm 2tone
- SOT-89 package
- -60dBc CSO 135 Channels @ +15dBmV/ch
- -70dBc CTB 135 Channels @ +15dBmV/ch
- -80dBc XMD 135 Channels @ +15dBmV/ch



### ESD Class 1A

Appropriate precautions in handling , packaging and testing devices must be observed !



### Pin Assignment

Pin	Function	Description
1	RF IN	RF input pin. This pin requires an external DC blocking capacitor.
2	GND	Connecting to ground. Use via holes for best performance to reduce lead inductance.
3	RF OUT / BIAS	RF output and bias pin. DC blocking capacitor is necessary for proper operating.

**Specifications**

PARAMETER	UNIT	MIN	TYP	MAX	Condition
Frequency	MHz	45	-	1218	-
Gain	dB	-	23.5	-	45MHz ~ 1218MHz
		-	24	-	30MHz ~ 1000MHz
Gain Flatness	dB	-	0.8	-	30MHz ~ 1218MHz
Input Return Loss	dB	-	-16	-	45MHz ~ 550MHz
		-	-12	-	550MHz ~ 1218MHz
Output Return Loss	dB	-	-16	-	45MHz ~ 550MHz
		-	-14	-	550MHz ~ 1218MHz
Output IP3	dBm	-	35	-	At 500MHz/5dBm 2tone
1dB Compression Point	dBm	-	21	-	At 500MHz
Noise Figure	dB	-	1	1.2	45MHz ~ 1218MHz
CSO	dBc	-	60	-	135 channel, +15dBmV/ch
CTB	dBc	-	70	-	135 channel, +15dBmV/ch
XMOD	dBc	-	80	-	135 channel, +15dBmV/ch
DC Current	mA	-	75	-	Vdd = 5.0V
Operating temperature	°C	-40		85	
Storage temperature	°C	-65		105	

**Absolute Maximum Ratings**

Parameter	Absolute Limit
Max. Dvice Current(ID)	75mA
Max. Device Voltage(VD)	5.5V
Max. RF Input Power	10dBm
Max. Junction Temp.(Tj)	+150°C
Max. Operating Dissipated Power	0.6w
Operating Temp.Range(TL)	-40°C~+85°C
Max. Storage Temp.	+150°C

Operation beyond any one of these limits may cause permanent damage.

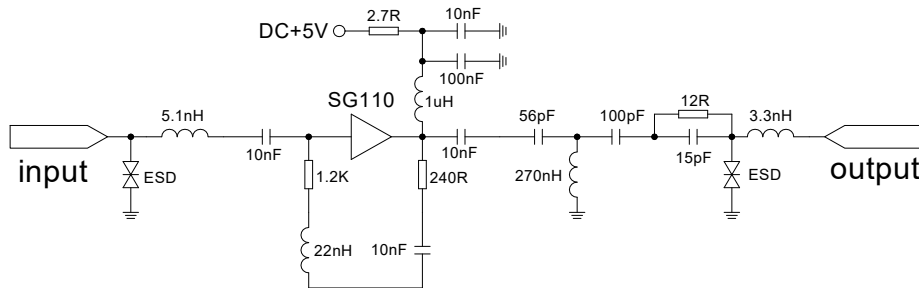
**Important Note:**

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.

**Application Schematic**

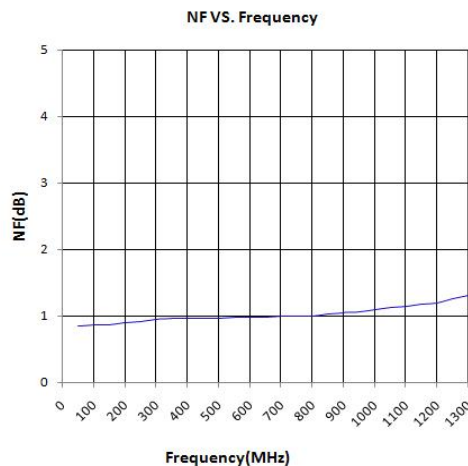
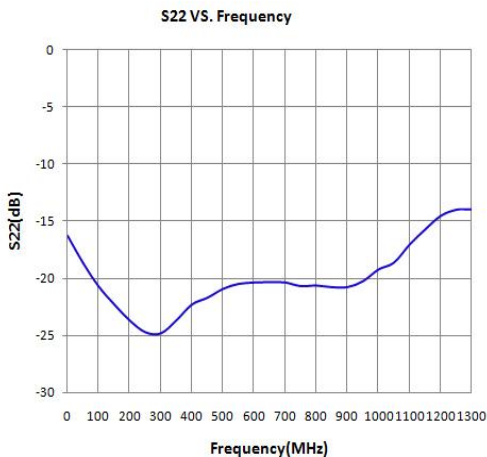
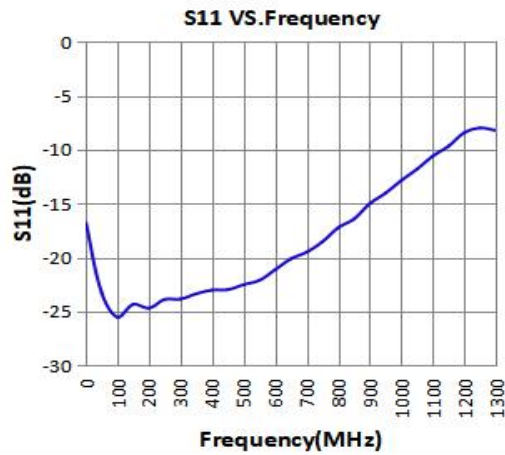
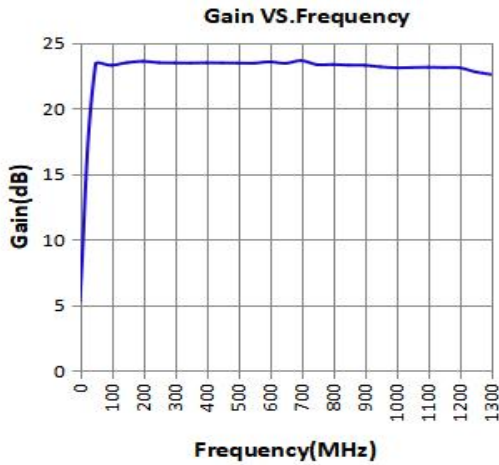
Test conditions: Test Freq = 500MHz, T=25°C, Vdd=5V, 75Ω system

Application Circuit: 45MHz-1218MHz, 75ohm System

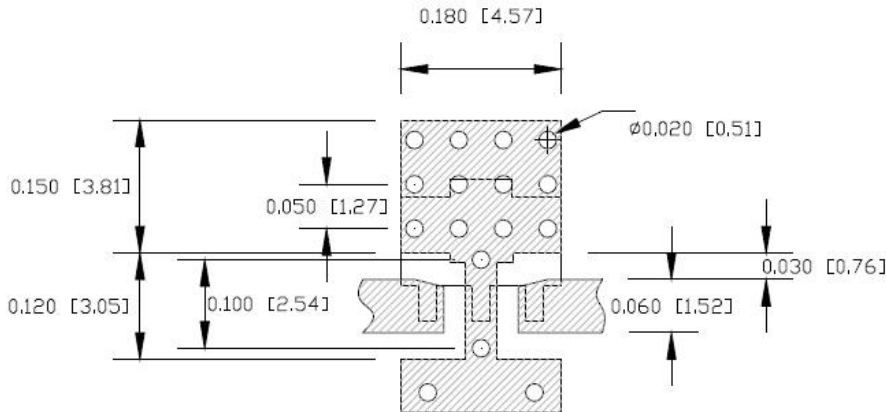


**Typical RF Performance :**

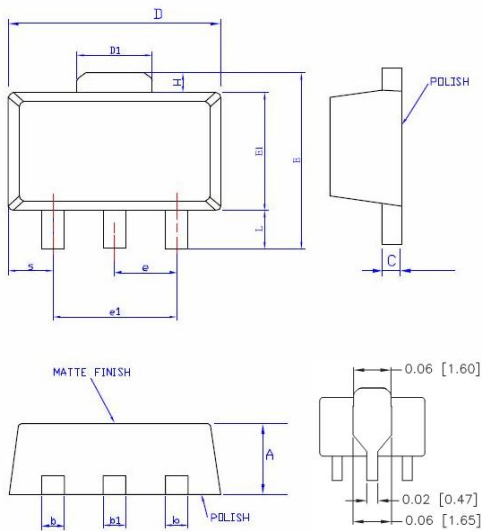
V<sub>DD</sub>=5V, I<sub>DS</sub>=75mA, T=25°C, 75ohm System



**PCB Mounting Informatio**



**Package Dimension**



SYMBOLS	DIMENSIONS IN MILLIMETERS			DIMENSIONS IN INCHES		
	MIN	NDM	MAX	MIN	NDM	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

**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.