SGK5867-30A

C-Band Internally Matched GaN-HEMT

FEATURES

- High Output Power: P5dB=45.0dBm (Typ.)
- High Gain: GL=13.5dB (Typ.)
- High PAE: ηadd=45% (Typ.)
- Broad Band: 5.85 to 6.75GHz
- Impedance Matched Zin/Zout = 50ohm
- Hermetically Sealed Package

DESCRIPTION

The SGK5867-30A is a high power GaN-HEMT that is internally matched for standard communication bands to provide optimum power and gain in a 50ohm system.

ABSOLUTE MAXIMUM RATING (Case Temperature Tc=25 deg.C)

Item	Symbol	Rating	Unit
Drain-Source Voltage	V_{DS}	26	V
Gate-Source Voltage	V_{GS}	-10	V
Total Power Dissipation	P_T	86.5	W
Storage Temperature	T_{STG}	-55 to +125	deg.C
Channel Temperature	T_{CH}	+250	deg.C

RECOMMENDED OPERATING CONDITION

Item	Symbol	Condition	Limit	Unit
Drain-Source Voltage	V_{DS}		<=24	V
Forward Gate Current	I_{GF}	Rg=100ohm	<=6	mA
Reverse Gate Current	I_{GR}	Rg=100ohm	>=-3	mA
Channel Temperature	T_{CH}		<+192	deg.C

ELECTRICAL CHARACTERISTICS (Case Temperature Tc=25 deg.C)

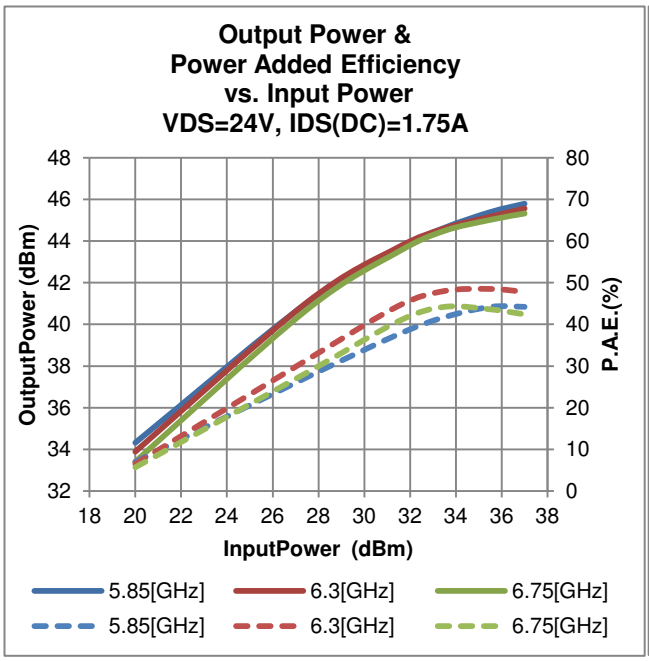
Item	Symbol	Condition	Limit			Unit
			Min.	Typ.	Max.	
Saturated Drain Current	Idss	Vds=10V, Vgs=0V		6.5		A
Trans Conductance	Gm	Vds=24V, Ids=1.3A	-	3.0	-	S
Pinch-off Voltage	V_P	Vds=10V, Ids=1.3mA	-	-3	-	V
Output Power at 5dB G.C.P.	P_{5dB}	V_{DS}=24V(Typ.) I_{DSDC}=1.75A(Typ.) f=5.85 to 6.75 GHz	44.0	45.0	-	dBm
Linear Gain at Pin=21.5dBm	GL		12.5	13.5	-	dB
Drain Current at 5dB G.C.P.	I_{dsr}		-	2.7	4.0	A
Power Added Efficiency at 3dB G.C.P.	η_{add}		-	45	-	%
Gain Flatness	ΔG		-	-	1.6	dB
3rd Order Inter modulation Distortion	IM_3	f=6.75GHz Δf=10MHz, 2-tone Test Pout=29.5dBm (S.C.L.)	-40.0	-45.0	-	dBc
Thermal Resistance	R_{th}	Channel to Case	-	2.2	2.6	deg.C/W
Channel Temperature Rise	ΔT_{ch}	(V_{DS} x I_{dsr} – P_{out} + P_{in}) x R_{th}	-	82.8	150	deg.C

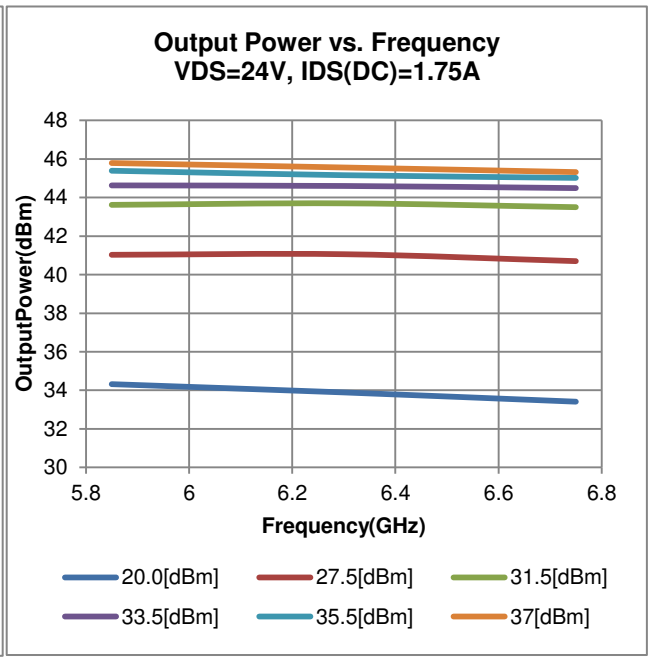
G.C.P. : Gain Compression Point, S.C.L. : Single Carrier Level

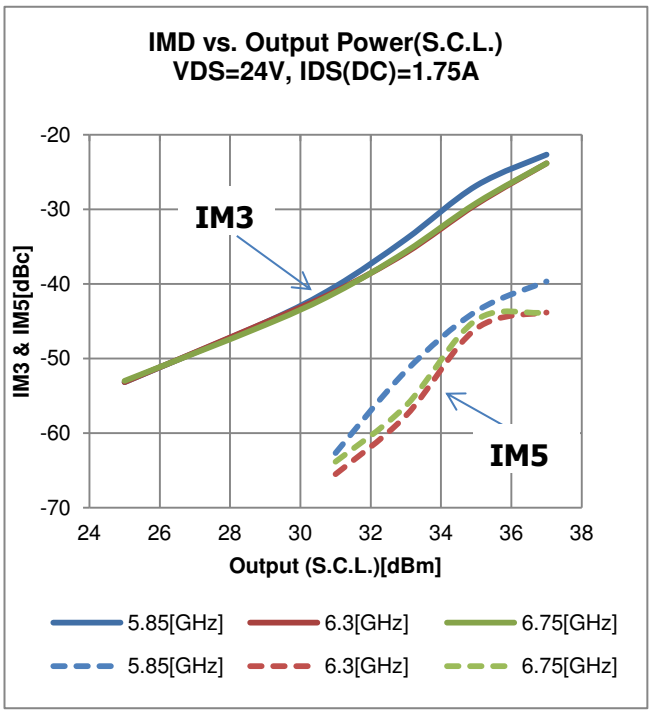
CASE STYLE	IBK	
RoHS Compliance	YES	
ESD	Class 1C	1000V to 2000V

Note : Based on EIAJ ED-4701 C-111A(C=100pF, R=1.5kohm)

● RF Characteristics





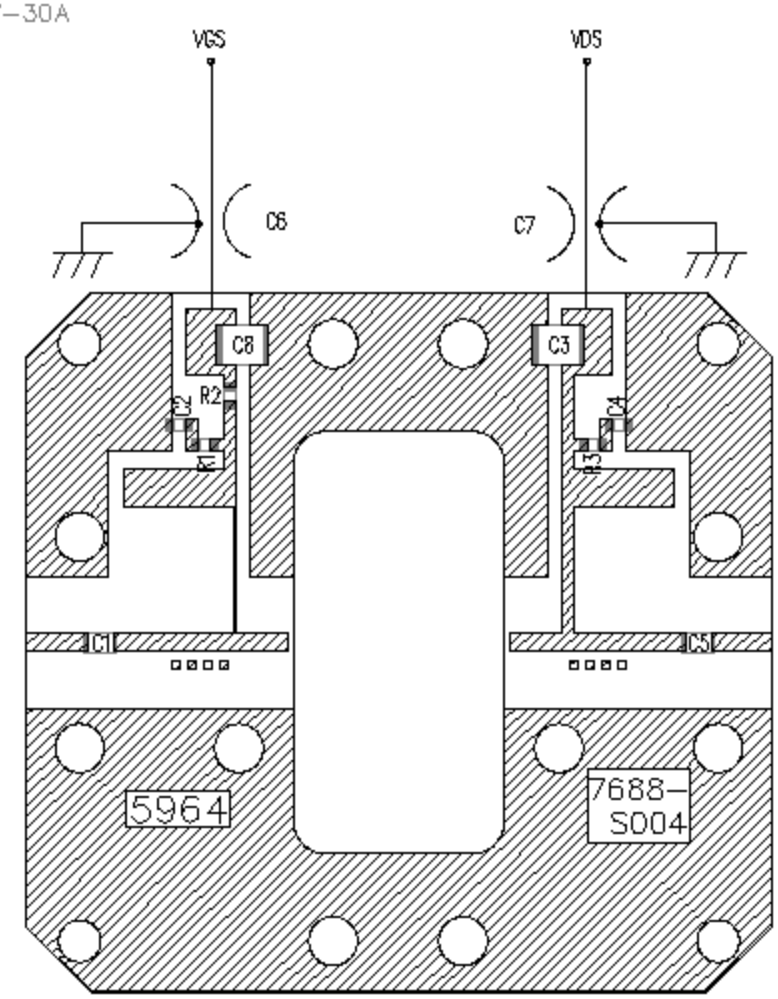


- **S-Parameter**

Freq.	S11		S21		S12		S22	
	MAG	ANG	MAG	ANG	MAG	ANG	MAG	ANG
5600MHz	0.675	50.0	5.119	-177.9	0.072	109.7	0.179	-31.1
5700MHz	0.672	37.7	5.097	159.9	0.073	87.5	0.136	-34.0
5850MHz	0.656	21.6	5.049	131.3	0.076	59.1	0.080	-34.4
6000MHz	0.620	2.4	5.105	99.1	0.079	27.0	0.023	11.1
6100MHz	0.588	-12.6	5.153	76.1	0.082	3.8	0.055	87.7
6200MHz	0.547	-29.5	5.217	52.7	0.084	-19.9	0.112	93.2
6300MHz	0.508	-45.5	5.233	32.4	0.086	-40.2	0.166	89.6
6400MHz	0.461	-67.2	5.258	7.7	0.088	-64.3	0.234	83.0
6500MHz	0.414	-92.4	5.223	-17.3	0.089	-89.2	0.308	74.8
6600MHz	0.384	-116.7	5.145	-39.1	0.089	-110.7	0.365	66.1
6750MHz	0.364	-160.8	4.883	-75.4	0.086	-147.0	0.454	50.8
6900MHz	0.396	158.0	4.505	-111.1	0.081	177.0	0.519	35.4
7000MHz	0.432	133.5	4.227	-135.1	0.077	152.8	0.550	24.9

● Amplifier Circuit Outline

SGK5867-30A



C1	3.0pF
C2	1000pF
C3	0.1uF
C4	1000pF
C5	3.0pF
C6	1000pF
C7	1000pF
C8	0.1uF
R1	51Ω
R2	100Ω
R3	51Ω

Rogers RO4003C

h=0.542mm εr=3.38

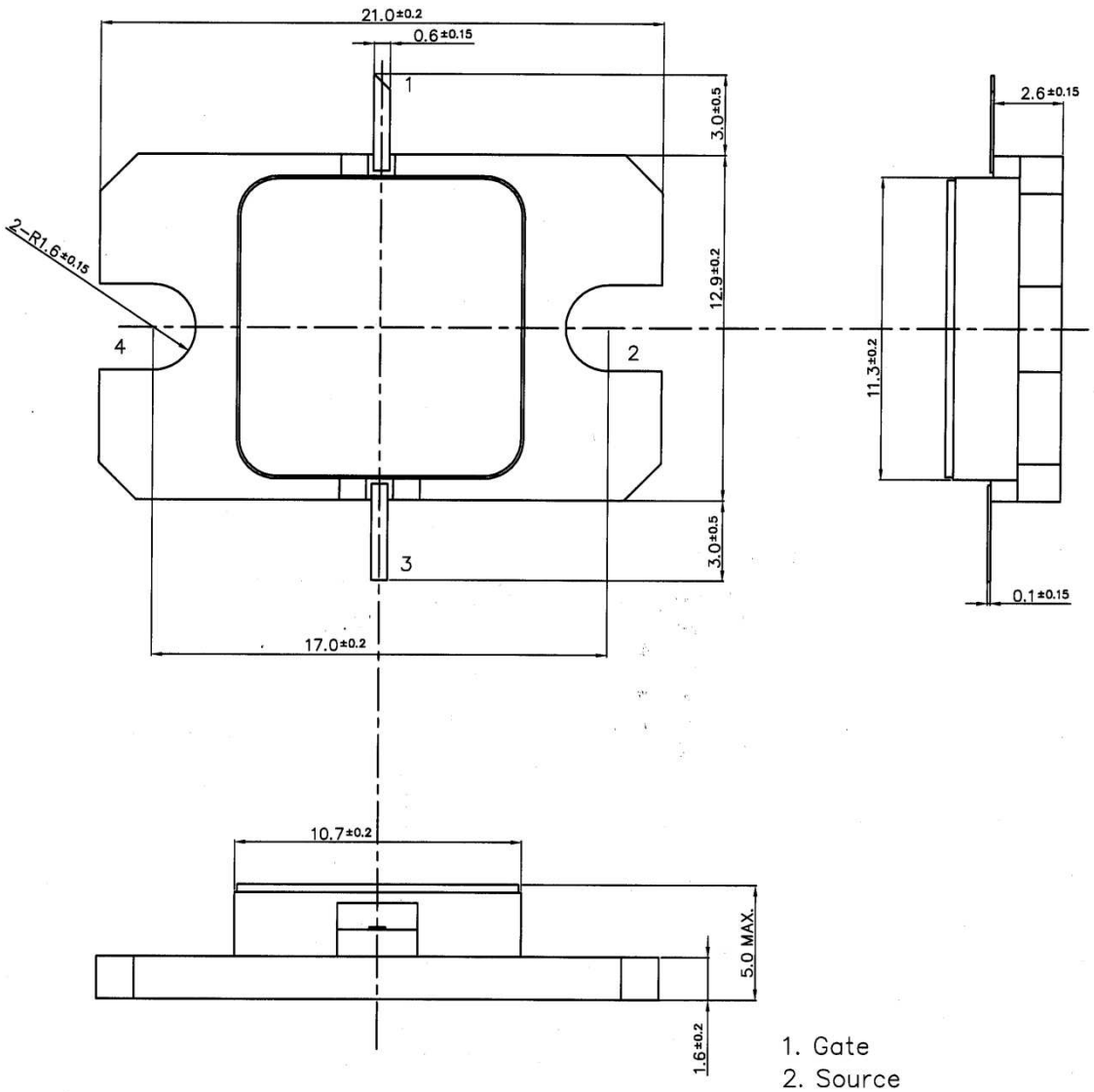
Cu=18um Unit:mm

C1 , C5 : ATC 600F(0805) , +/- 0.1pF

C6 , C7 : EMI FILTER MARUWA (FTA352AR102S-S)

- **Package Out line**

  Case Style : IBK



1. Gate
2. Source
3. Drain
4. Source

Unit: mm
Tolerance : ±0.15

For further information please contact:

http://global-sei.com/Electro-optic/about/office.html