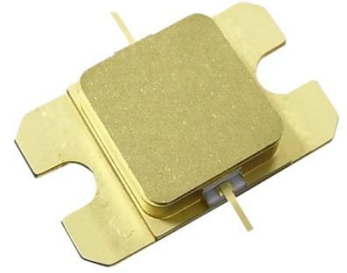


## ■ Features

- High Output Power: P5dB=45.0dBm (Typ.)
- High Linear Gain: GL=13.5dB (Typ.)
- High Power Added Efficiency: PAE=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 T<sub>c</sub>=25 deg.C)

Item	Symbol	Rating	Unit
Drain-Source Voltage	V <sub>DS</sub>	26	V
Gate-Source Voltage	V <sub>GS</sub>	-10	V
Total Power Dissipation	P <sub>T</sub>	86.5	W
Storage Temperature	T <sub>stg</sub>	-55 to +125	deg.C
Channel Temperature	T <sub>ch</sub>	+250	deg.C

### RECOMMENDED OPERATING CONDITION

Item	Symbol	Condition	Limit	Unit
Drain-Source Voltage	V <sub>DS</sub>		<=24	V
Forward Gate Current	I <sub>GF</sub>	Rg=100ohm	<=6.1	mA
Reverse Gate Current	I <sub>GR</sub>	Rg=100ohm	>=-3.2	mA
Channel Temperature	T <sub>ch</sub>		<+192	deg.C

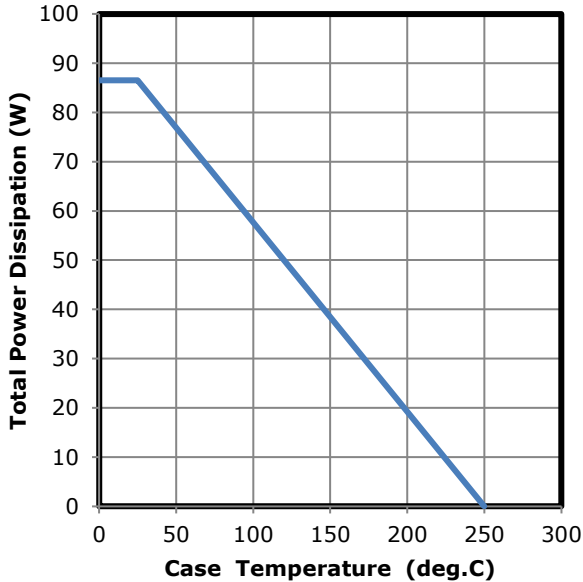
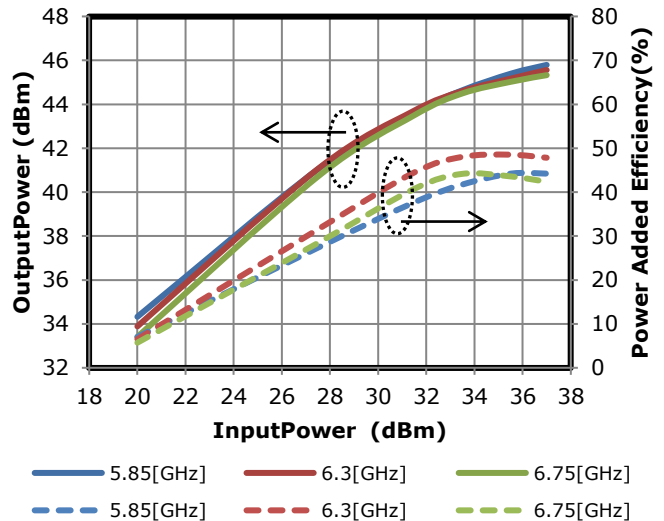
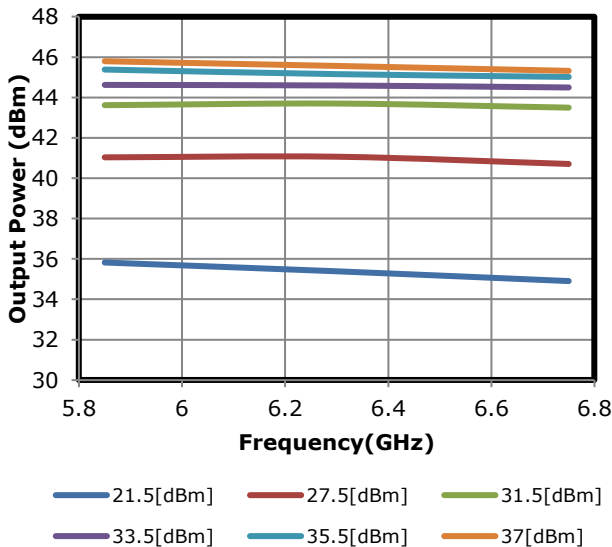
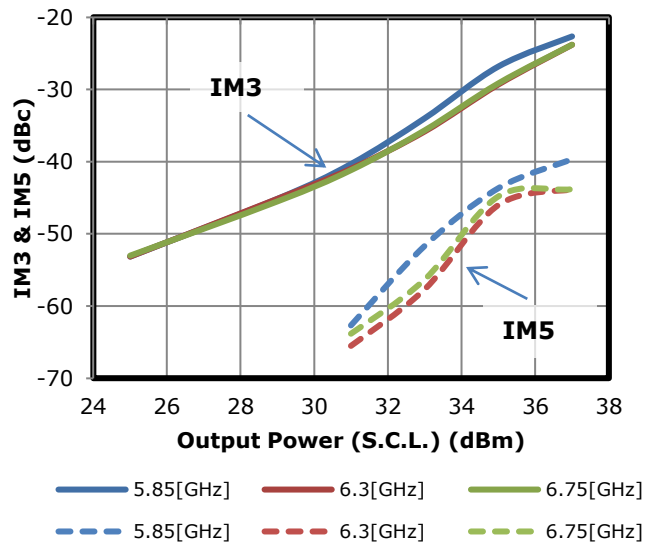
### ELECTRICAL CHARACTERISTICS (Case Temperature T<sub>c</sub>=25 deg.C)

Item	Symbol	Condition	Limit			Unit
			Min.	Typ.	Max.	
Saturated Drain Current	I <sub>DSS</sub>	V <sub>DS</sub> =10V, V <sub>GS</sub> =0V	-	6.5	-	A
Trans Conductance	G <sub>m</sub>	V <sub>DS</sub> =24V, I <sub>DS</sub> =1.3A	-	3.0	-	S
Pinch-off Voltage	V <sub>P</sub>	V <sub>DS</sub> =24V, I <sub>DS</sub> =1.3mA	-	-3.0	-	V
Output Power at 5dB G.C.P.	P <sub>5dB</sub>	V <sub>DS</sub> =24V(typ.) I <sub>DS(DC)</sub> =1.75A(typ.) f=5.85 to 6.75 GHz Vgs-constant	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 <sub>DSR</sub>		-	2.7	4.0	A
Power Added Efficiency at 3dB G.C.P.	PAE		-	45	-	%
Gain Flatness	ΔG		-	-	1.6	dB
3rd Order Inter Modulation Distortion	IM <sub>3</sub>		f=5.85GHz, 6.75GHz Δf=10MHz, 2-tone Test Pout=29.5dBm (S.C.L.)	-40.0	-45.0	-
Thermal Resistance	R <sub>th</sub>	Channel to Case	-	2.2	2.6	deg.C/W
Channel Temperature Rise	ΔT <sub>ch</sub>	(V <sub>DS</sub> × I <sub>DSR</sub> - Pout + Pin) × R <sub>th</sub>	-	83	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 ANSI/ESDA/JEDEC JS-001-2012(C=100pF, R=1.5kohm)

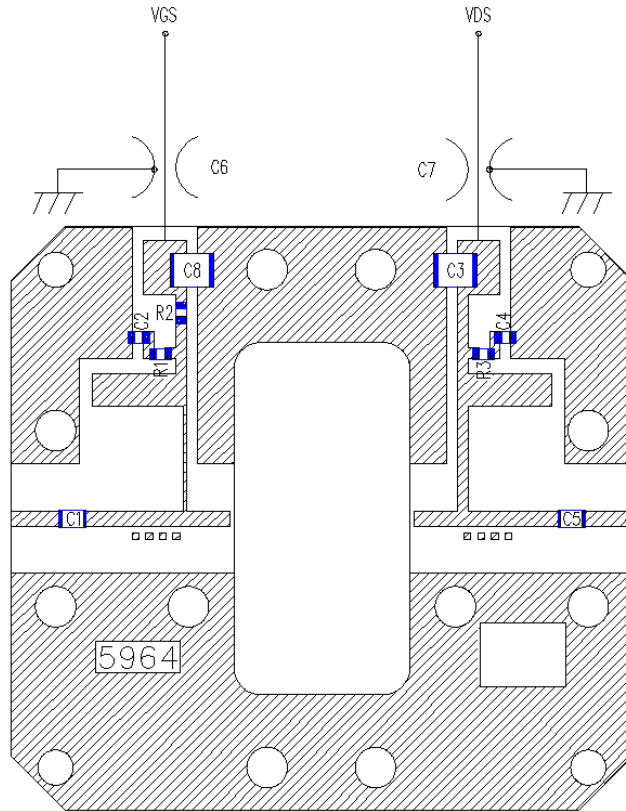
**● RF Characteristics**
**Power Derating Curve**

**Output Power & Power Added Efficiency vs. Input Power**  
 $V_{DS}=24V, I_{DS(DC)}=1.75A$ 

**Output Power vs. Frequency**  
 $V_{DS}=24V, I_{DS(DC)}=1.75A$ 

**IMD vs. Output Power (S.C.L.)**  
 $V_{DS}=24V, I_{DS(DC)}=1.75A$ 


**● S-Parameter**

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

**● Amplifier Circuit Outline**

SGK5867-30A



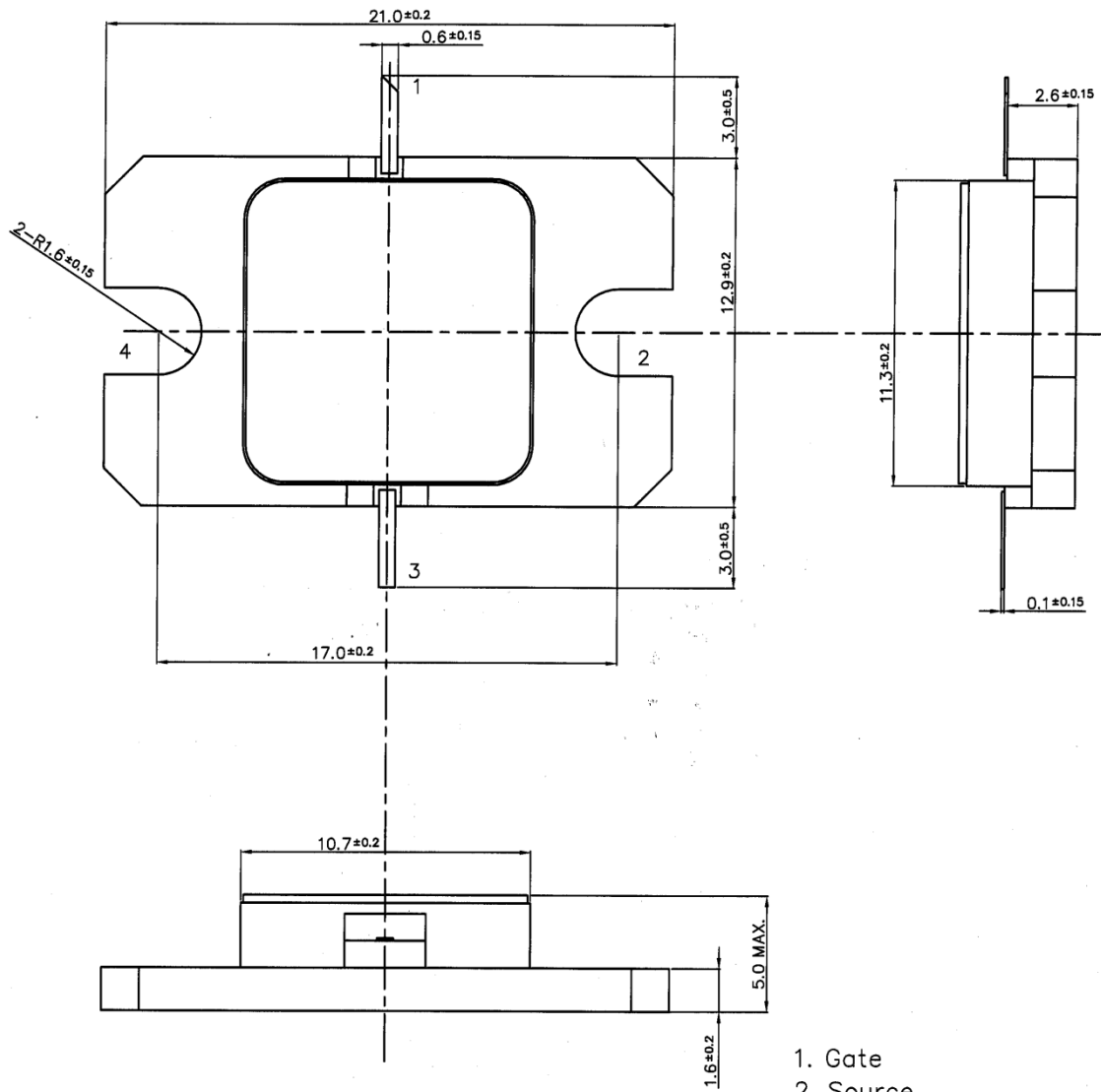
C1	3.0pF
C2	1000pF
C3	0.1uF
C4	1000pF
C5	3.0pF
C6	1000pF
C7	1000pF
C8	0.1uF
R1	51ohm
R2	100ohm
R3	51ohm

 Substrate : Rogers RO4003C  
 h=0.542mm,  $\epsilon_r=3.38$   
 Cu=18um

 C1, C5 : ATC600F(size: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 :  $\pm 0.15$

## **For Safety, Observe the Following Procedures Environmental Management**

- Do not put this product into the mouth.
- Do not alter the form of this product into a gas, powder, or liquid through burning, crushing, or chemical processing as these by-products are dangerous to the human body if inhaled, ingested, or swallowed.
- Respect all applicable laws of the country when discarding this product.  
This product must be disposed in accordance with methods specified by applicable hazardous waste procedures.

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