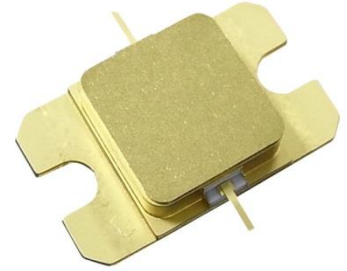


## ■ Features

- High Output Power: P5dB=45.0dBm (Typ.)
- High Linear Gain: GL=12.5dB (Typ.)
- High Power Added Efficiency: PAE=40% (Typ.)
- Broad Band: 6.4 to 7.2GHz
- Impedance Matched Zin/Zout = 50ohm
- Hermetically Sealed Package



## ■ Description

The SGK6472-30A 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>	R <sub>g</sub> =100ohm	<=6.1	mA
Reverse Gate Current	I <sub>GR</sub>	R <sub>g</sub> =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	-1.5	-3	-4.5	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=6.4 to 7.2 GHz V <sub>gs</sub> -constant	44.0	45.0	-	dBm
Linear Gain at Pin=22.5dBm	GL		11.5	12.5	-	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		-	40	-	%
Gain Flatness	ΔG		-	-	1.8	dB
3rd Order Inter Modulation Distortion	IM <sub>3</sub>	f=6.4GHz, 7.2GHz Δf=10MHz, 2-tone Test Pout=29.5dBm (S.C.L.)	-40.0	-45.0	-	dBc
Thermal Resistance	R <sub>th</sub>	Channel to Case (T <sub>c</sub> =25deg.C, P <sub>diss</sub> =96W)	-	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>	-	85	150	deg.C

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

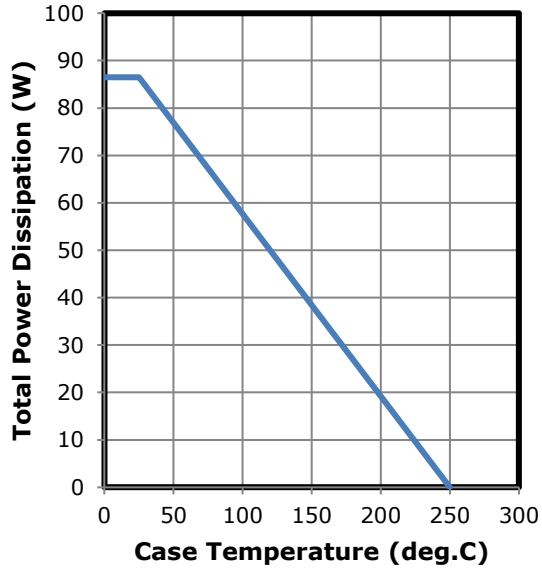
CASE STYLE	IBK
RoHS Compliance	YES
ESD	Class 1C
	1000V to < 2000V

Note : Based on ANSI/ESDA/JEDEC JS-001-2012(C=100pF, R=1.5kohm)

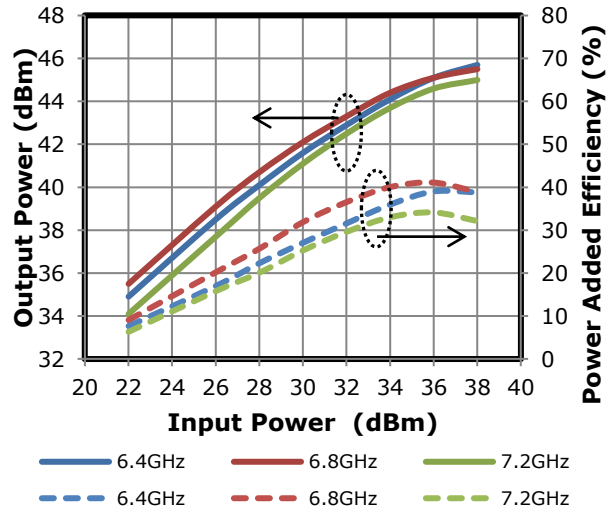


● **RF Characteristics**

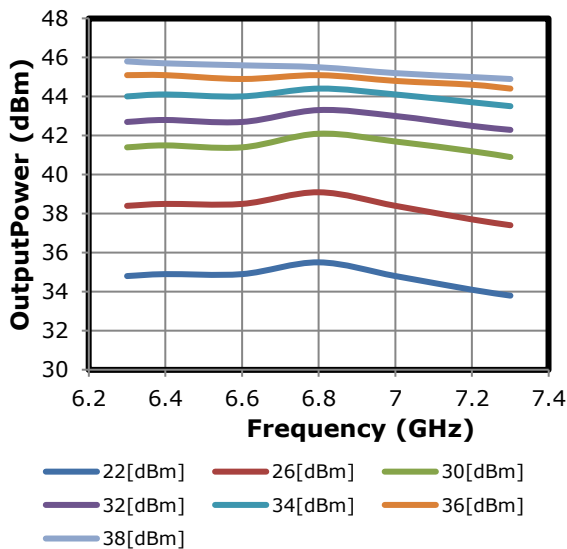
**Power Derating Curve**



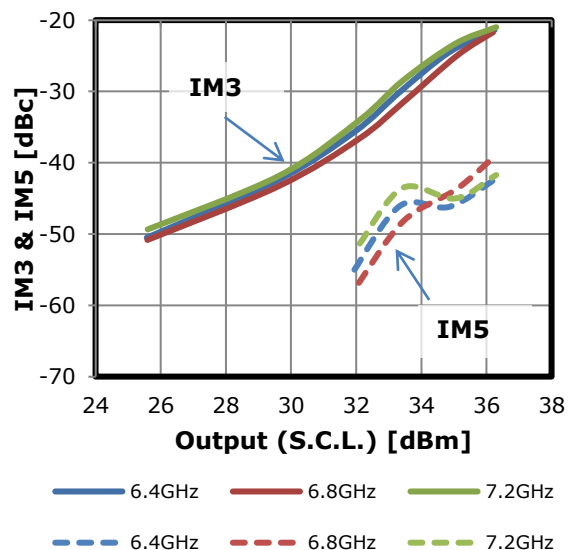
**Output Power & Power Added Efficiency vs. Input Power**  
 $V_{DS}=24V, I_{DS(DC)}=1.75A$



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



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

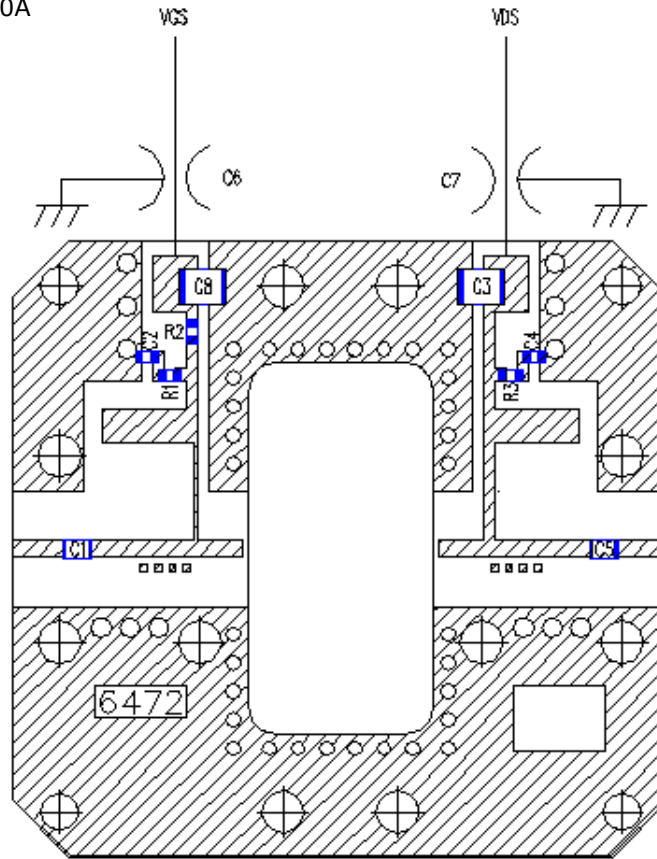


● **S-Parameter**

Freq.	<b>S11</b>		<b>S21</b>		<b>S12</b>		<b>S22</b>	
	MAG	ANG	MAG	ANG	MAG	ANG	MAG	ANG
<b>6200MHz</b>	0.603	14.8	4.461	-58.1	0.086	-132.7	0.154	-135.6
<b>6300MHz</b>	0.573	4.1	4.484	-69.8	0.089	-144.0	0.154	-161.7
<b>6400MHz</b>	0.531	-7.0	4.519	-81.6	0.092	-155.7	0.175	173.6
<b>6500MHz</b>	0.483	-18.4	4.560	-93.9	0.095	-167.5	0.209	152.3
<b>6600MHz</b>	0.424	-30.4	4.603	-106.5	0.097	-179.6	0.253	134.2
<b>6700MHz</b>	0.355	-43.6	4.621	-119.3	0.099	167.5	0.302	118.4
<b>6800MHz</b>	0.279	-58.5	4.635	-132.7	0.101	154.8	0.356	103.5
<b>6900MHz</b>	0.197	-77.6	4.616	-146.5	0.101	141.3	0.41	89.7
<b>7000MHz</b>	0.118	-107.8	4.568	-160.4	0.102	128.1	0.461	76.3
<b>7100MHz</b>	0.079	-173.7	4.461	-174.5	0.101	114.5	0.507	63.0
<b>7200MHz</b>	0.126	128.5	4.307	171.6	0.098	100.8	0.544	49.9
<b>7300MHz</b>	0.198	102.2	4.135	158.0	0.096	87.6	0.569	37.1
<b>7400MHz</b>	0.264	86.0	3.952	145.2	0.092	75.0	0.582	25.3

# ● Amplifier Circuit Outline

SGK6472-30A



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

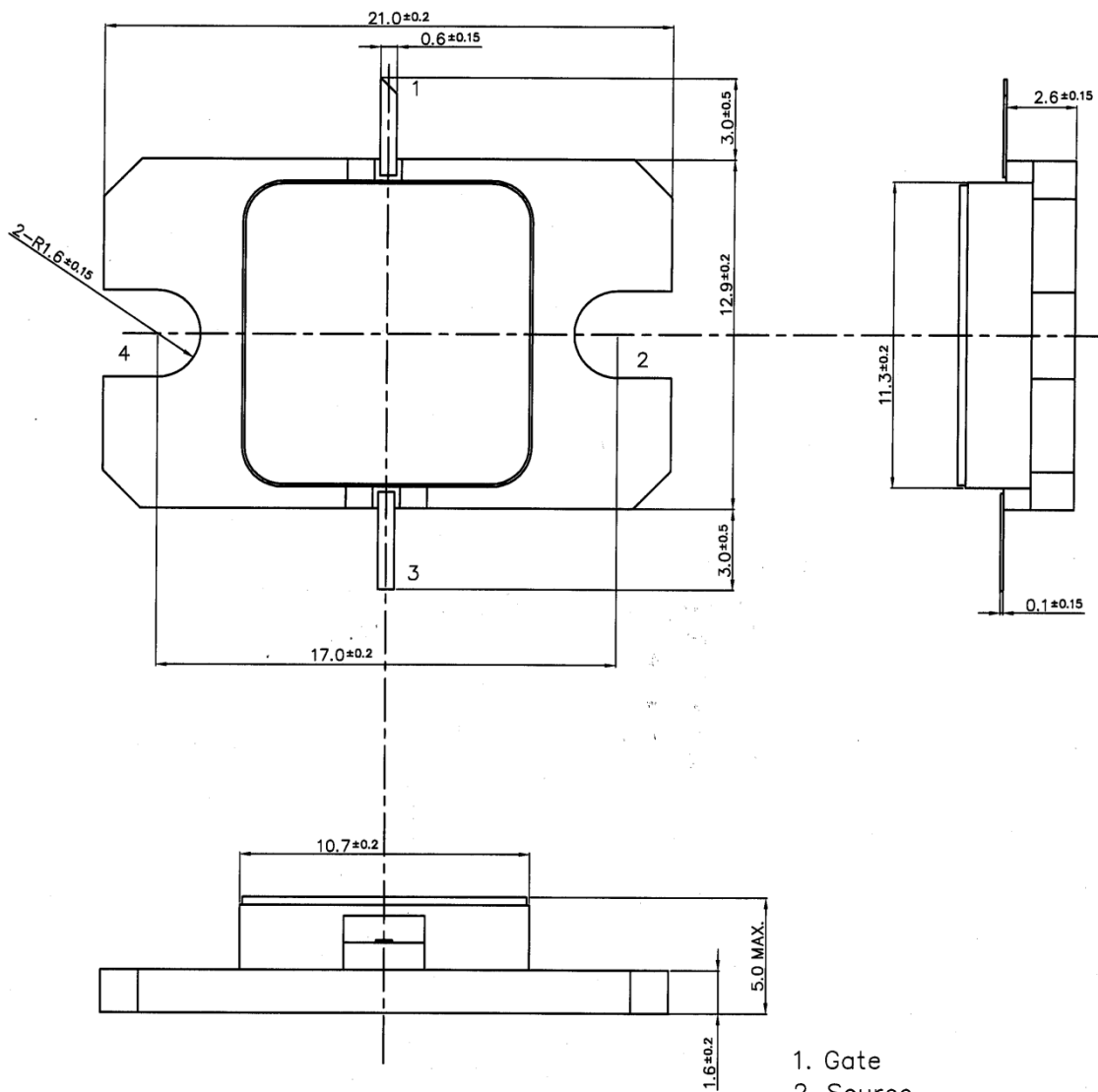
Substrate : Rogers RO4003C  
h=0.542mm,  $\epsilon_r=3.38$   
Cu=18um

C1, C5 : ATC600L(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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