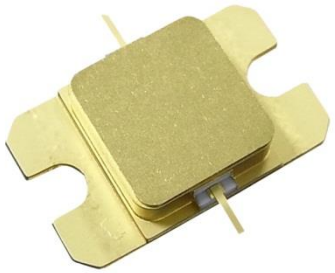
■ Features

- High Output Power: P5dB=48.0dBm (Typ.)
- High Linear Gain: GL=14.0dB (Typ.)
- High Power Added Efficiency: PAE=39% (Typ.)
- Broad Band: 5.85 to 6.75GHz
- Hermetically Sealed Package



■ Description

The SGK5867-60C 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_c=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	150	W
Storage Temperature	T_{stg}	-55 to +125	deg.C
Channel Temperature	T_{ch}	+250	deg.C
Case Temperature	T_c	-40 to +125	deg.C

RECOMMENDED OPERATING CONDITION

Item	Symbol	Condition	Limit	Unit
Drain-Source Voltage	V_{DS}		<=24	V
Forward Gate Current	I_{GF}	Rg=51ohm	<=8.8	mA
Reverse Gate Current	I_{GR}	Rg=51ohm	>=-4.6	mA
Channel Temperature	T_{ch}		<+193	deg.C

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

Item	Symbol	Condition	Limit			Unit
			Min.	Typ.	Max.	
Saturated Drain Current	I_{DSS}	V_{DS}=10V, V_{GS}=0V	-	16.6	-	A
Trans Conductance	G_m	V_{DS}=24V, I_{DS}=1.92A	-	4.4	-	S
Pinch-off Voltage	V_P	V_{DS}=24V, I_{DS}=1.92mA	-2.5	-4.0	-5.5	V
Output Power at 5dB G.C.P.	P_{5dB}	V_{DS}=24V(typ.) $I_{DS(DC)}$=2.6A(typ.) f=5.85 to 6.75 GHz Vgs-constant	47.0	48.0	-	dBm
Linear Gain at Pin=25.5dBm	GL		11.5	14.0	-	dB
Drain Current at 5dB G.C.P.	I_{DSR}		-	6.4	7.0	A
Power Added Efficiency at 3dB G.C.P.	PAE		-	39.0	-	%
Gain Flatness	ΔG		-	-	1.6	dB
3rd Order Inter Modulation Distortion	IM_3	f=5.85GHz, 6.75GHz Δf=10MHz, 2-tone Test Pout=32.0dBm (S.C.L.)	-40.0	-42.0	-	dBc
Thermal Resistance	R_{th}	Channel to Case (T_c=25deg.C, Pdiss=62.4W)	-	1.3	1.5	deg.C/W
Channel Temperature Rise	ΔT_{ch}	(V_{DS} x I_{DSR} – Pout + Pin) x R_{th}	-	100	150	deg.C

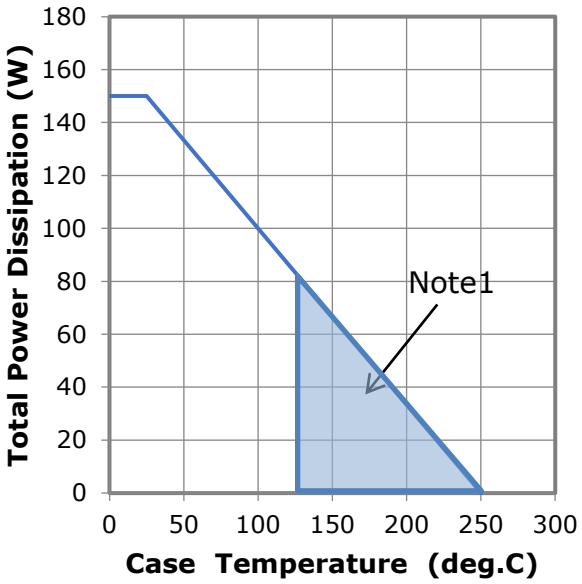
G.C.P. : Gain Compression Point, S.C.L. : Single Carrier Level

CASE STYLE	IBK	
RoHS Compliance	YES	
ESD [*1]	Class 2	2000V to < 4000V

Note : [*1] Based on ANSI/ESDA/JEDEC JS-001-2012(C=100pF, R=1.5kohm)

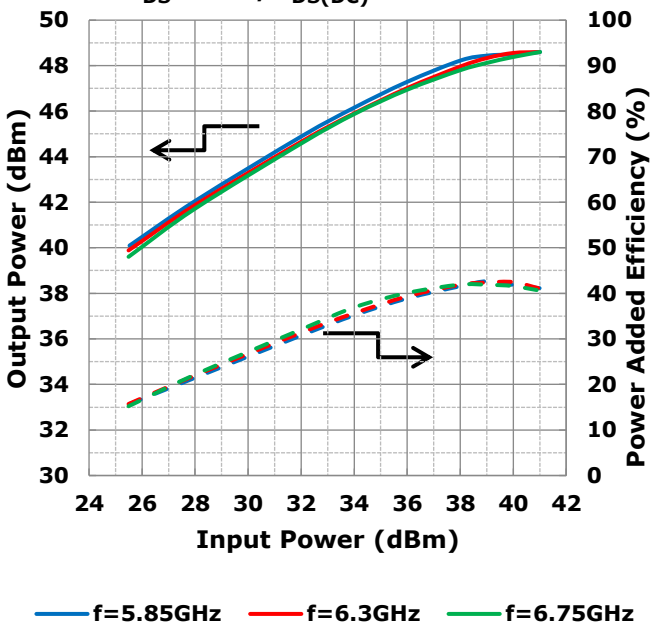
● RF Characteristics

Power Derating Curve

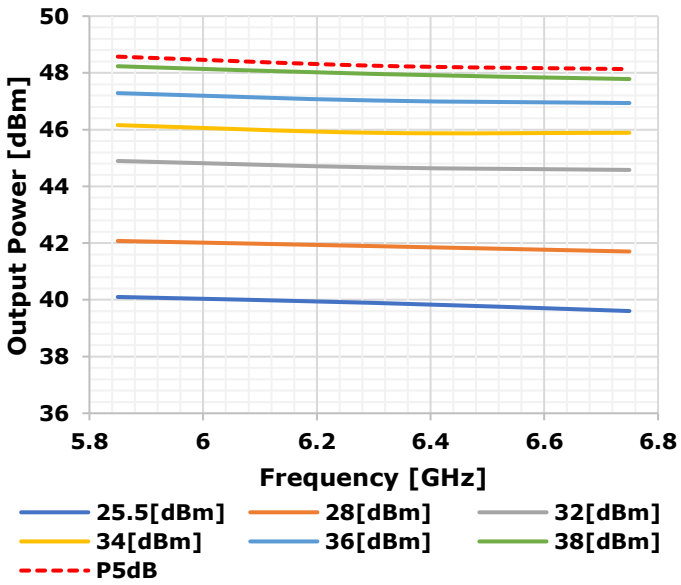


Note 1: Shaded area exceeds Maximum Case Operating Temperature (See Page1)

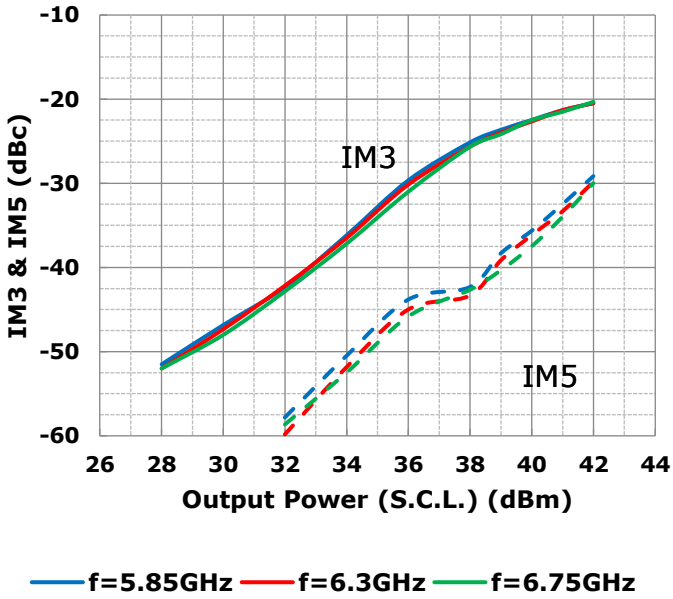
Output Power and Power Added Efficiency vs. Input Power
V_{DS}=24V, $I_{DS(DC)}$=2.6A



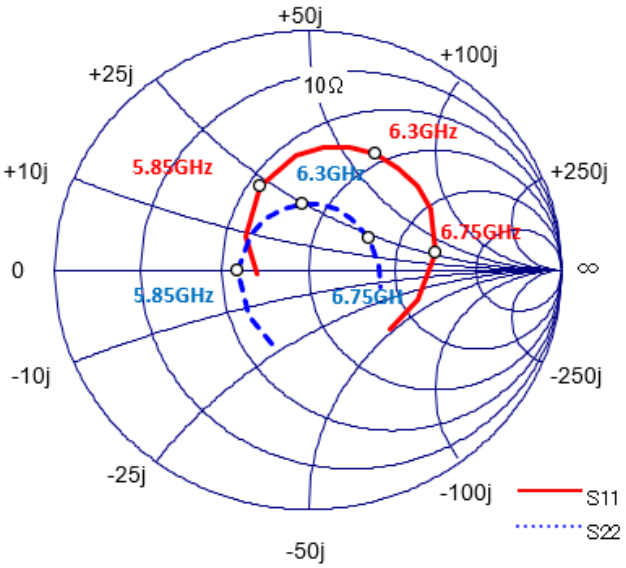
Output Power vs. Frequency
V_{DS}=24V, $I_{DS(DC)}$=2.6A

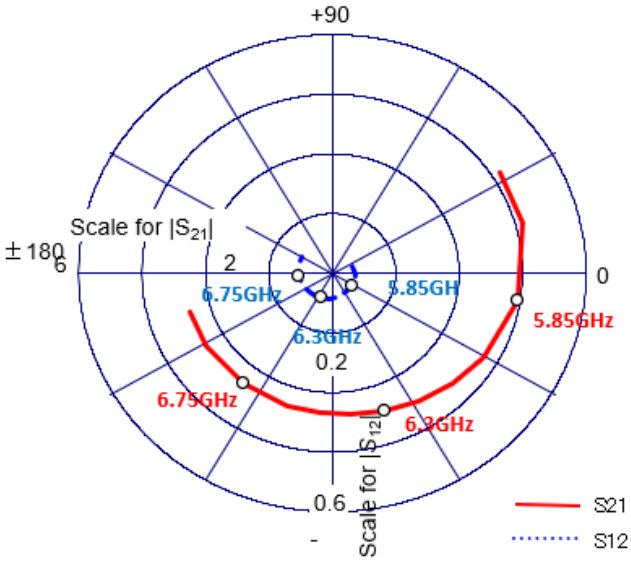


IMD vs. Output Power (S.C.L.)
V_{DS}=24V, $I_{DS(DC)}$=2.6 A ,Δf=10MHz



● S-Parameter



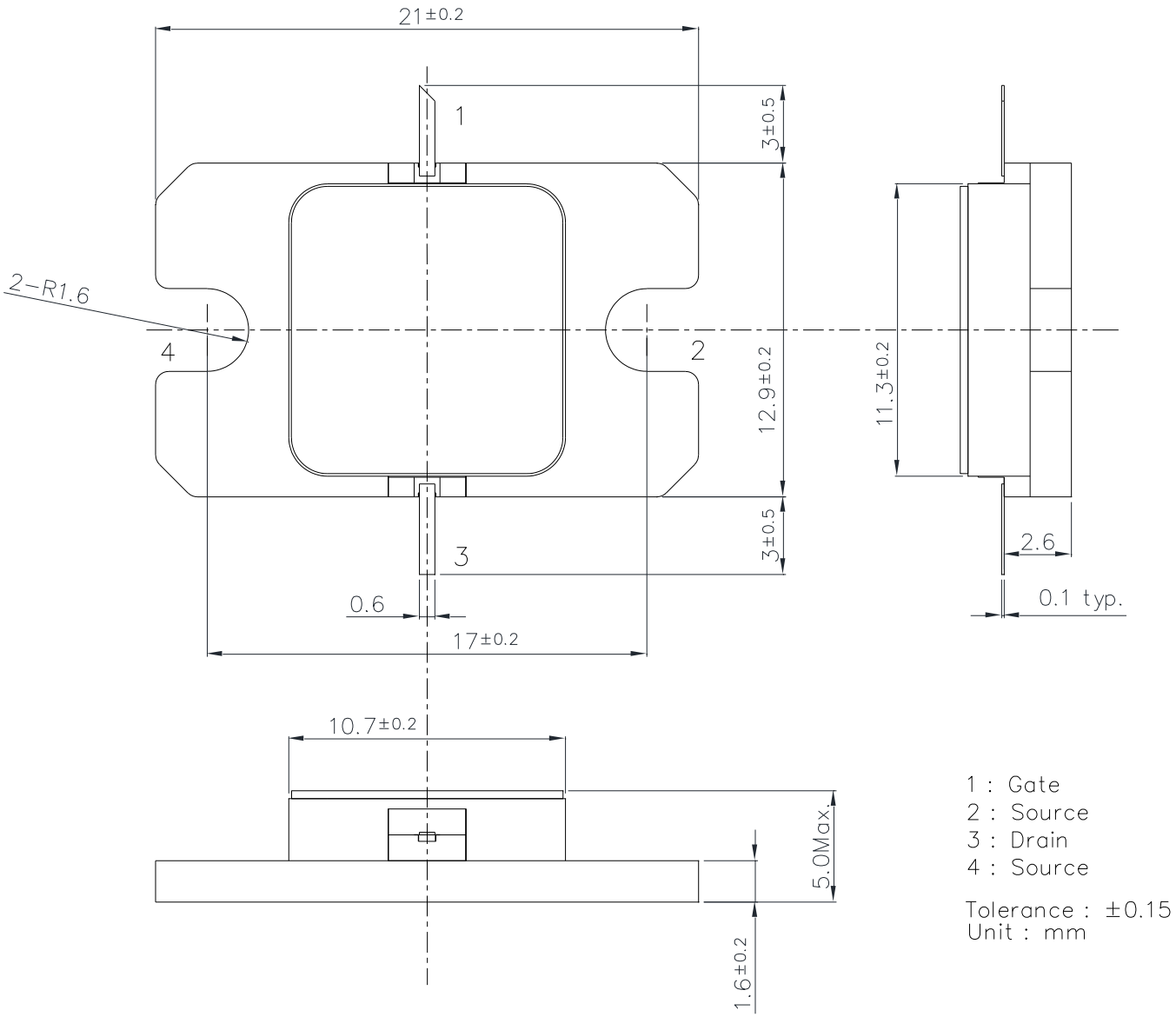


Bias Condition V_{DS}=24V, $I_{DS(DC)}$=2.6A
Rg = 51ohm

Freq.	S11		S21		S12		S22	
	mag	phase	mag	phase	mag	phase	mag	phase
5.6GHz	0.201	-174.8	6.253	32.7	0.035	21.1	0.338	-115.4
5.7GHz	0.282	150.7	6.216	15.7	0.036	-2.2	0.303	-141.0
5.85GHz	0.399	118.4	5.925	-8.7	0.038	-35.5	0.276	-179.5
6.0GHz	0.480	96.1	5.544	-30.8	0.040	-64.4	0.271	146.8
6.1GHz	0.513	83.5	5.281	-44.3	0.042	-81.3	0.273	127.6
6.2GHz	0.537	72.2	5.080	-57.5	0.043	-96.9	0.276	110.7
6.3GHz	0.551	61.2	4.907	-70.0	0.045	-112.0	0.278	95.1
6.4GHz	0.556	50.2	4.769	-82.7	0.047	-126.4	0.278	80.5
6.5GHz	0.554	39.3	4.697	-95.0	0.048	-140.2	0.276	66.1
6.6GHz	0.542	27.8	4.655	-107.5	0.050	-153.7	0.275	51.4
6.75GHz	0.504	8.3	4.633	-127.4	0.052	-174.0	0.273	28.7
6.9GHz	0.448	-16.3	4.656	-148.7	0.054	165.1	0.281	4.1
7.0GHz	0.407	-37.6	4.663	-163.8	0.056	150.6	0.292	-14.2

- **Amplifier Circuit Outline**

Case Style : IBK



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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