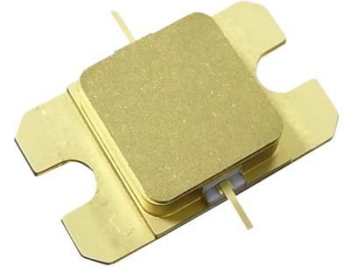


### ■ Features

- 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	$V_{DS}$		$\leq 24$	V
Forward Gate Current	$I_{GF}$	$R_g=51\text{ohm}$	$\leq 8.8$	mA
Reverse Gate Current	$I_{GR}$	$R_g=51\text{ohm}$	$\geq -4.6$	mA
Channel Temperature	$T_{ch}$		$< +193$	deg.C

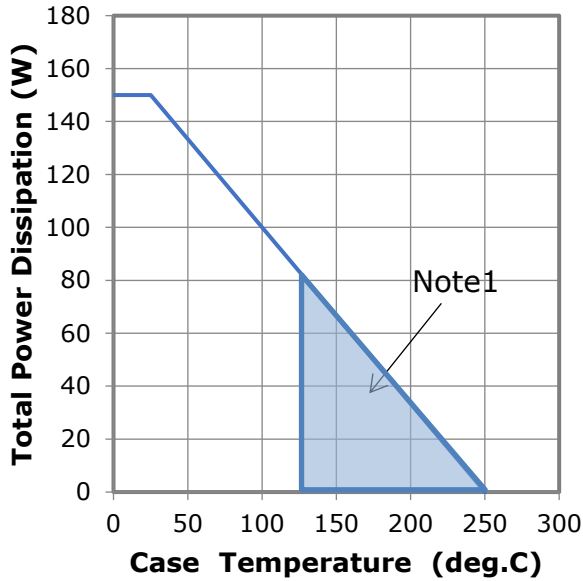
#### ELECTRICAL CHARACTERISTICS (Case Temperature $T_c=25$ deg.C)

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.	$P_{5dB}$	$V_{DS}=24V(\text{typ.})$	47.0	48.0	-	dBm
Linear Gain at Pin=25.5dBm	GL		11.5	14.0	-	dB
Drain Current at 5dB G.C.P.	$I_{DSR}$	$I_{DS(DC)}=2.6A(\text{typ.})$	-	6.4	7.0	A
Power Added Efficiency at 3dB G.C.P.	PAE	$f=5.85$ to $6.75$ GHz	-	39.0	-	%
Gain Flatness	$\Delta G$	Vgs-constant	-	-	1.6	dB
3rd Order Inter Modulation Distortion	$IM_3$	$f=5.85\text{GHz}, 6.75\text{GHz}$ $\Delta f=10\text{MHz}, 2\text{-tone Test}$ $P_{out}=32.0\text{dBm (S.C.L.)}$	-40.0	-42.0	-	dBc
Thermal Resistance	$R_{th}$	Channel to Case ( $T_c=25\text{deg.C}, P_{diss}=62.4W$ )	-	1.3	1.5	deg.C/W
Channel Temperature Rise	$\Delta T_{ch}$	$(V_{DS} \times I_{DSR} - P_{out} + P_{in}) \times R_{th}$	-	100	150	deg.C

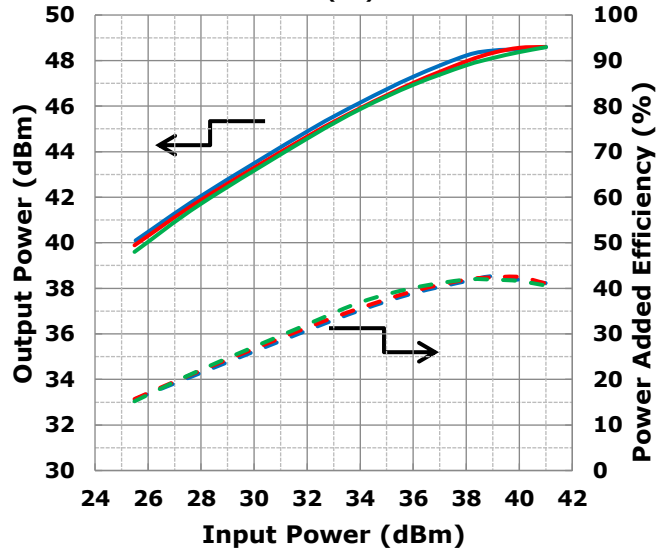
G.C.P. : Gain Compression Point, S.C.L. : Single Carrier Level

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

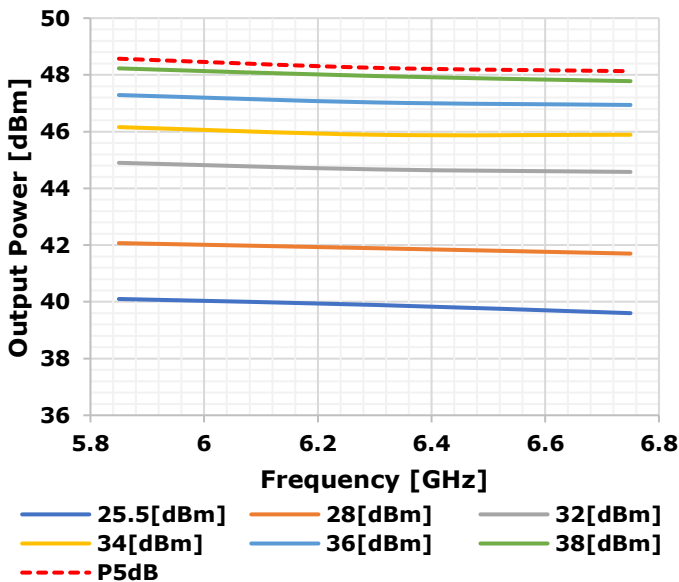
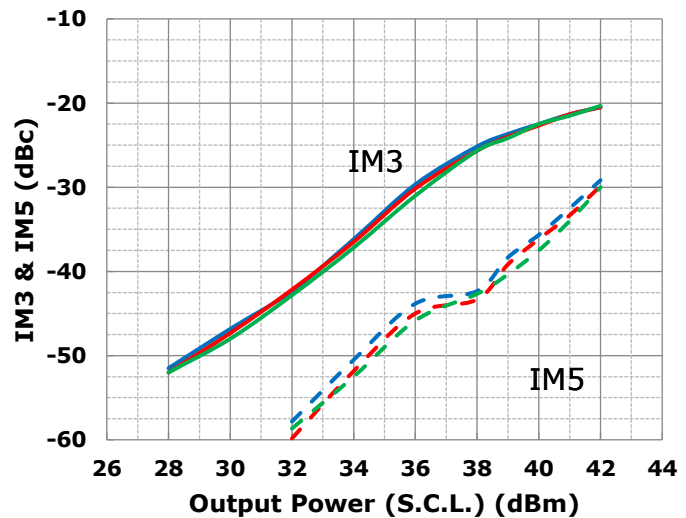
Note : \*1 Based on ANSI/ESDA/JEDEC JS-001-2012(C=100pF, R=1.5kohm)

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


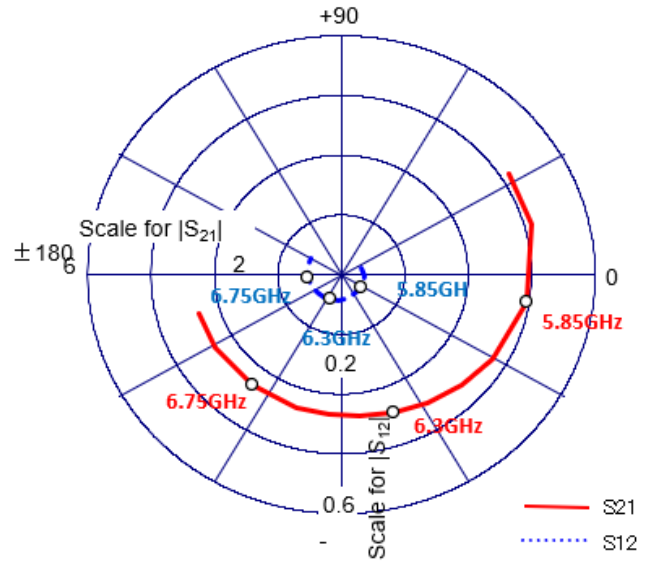
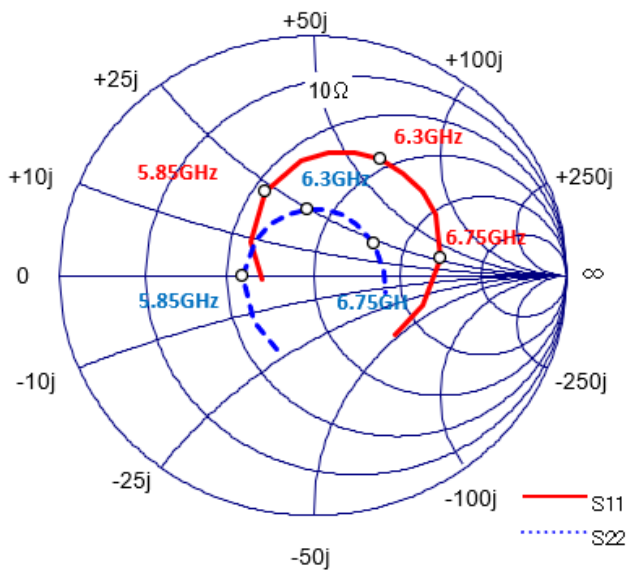
Note 1: Shaded area exceeds Maximum Case Operating Temperature (See Page1)

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


—  $f=5.85GHz$  —  $f=6.3GHz$  —  $f=6.75GHz$

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

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


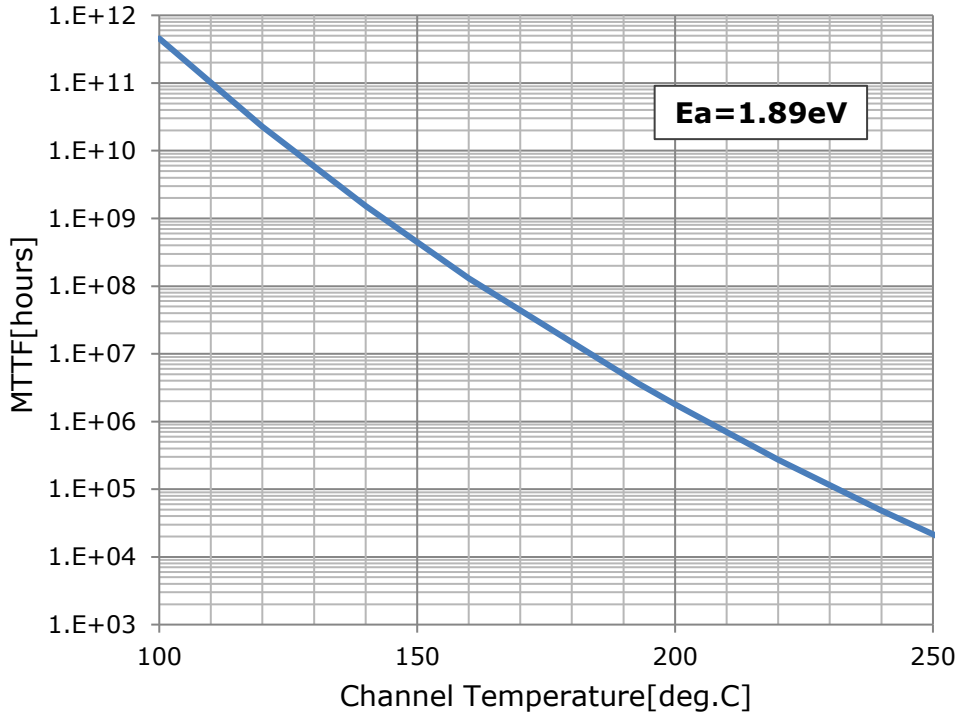
—  $f=5.85GHz$  —  $f=6.3GHz$  —  $f=6.75GHz$

**● S-Parameter**


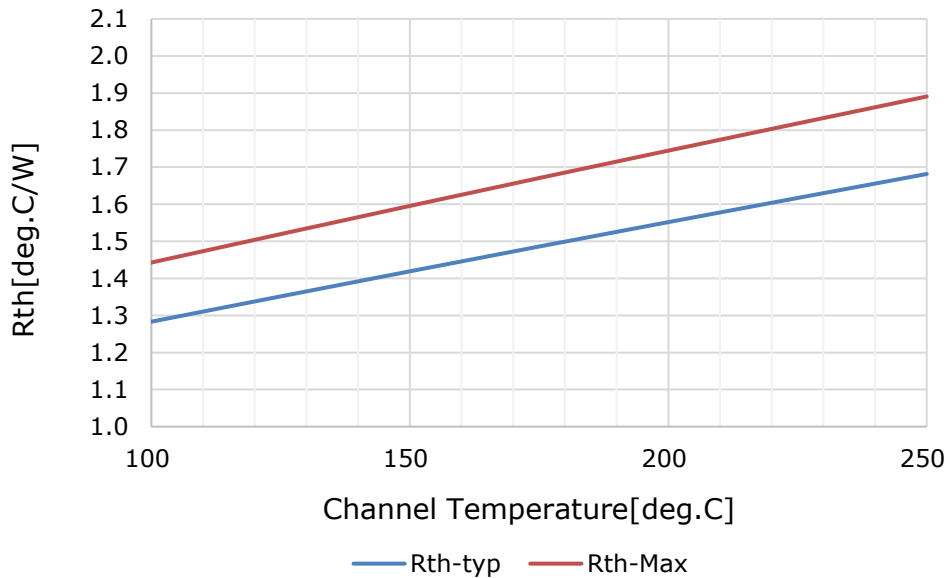
Bias Condition  $V_{DS}=24V$ ,  $I_{DS(DC)}=2.6A$   
 $R_g = 51\Omega$

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

● **MTTF vs. Tch**

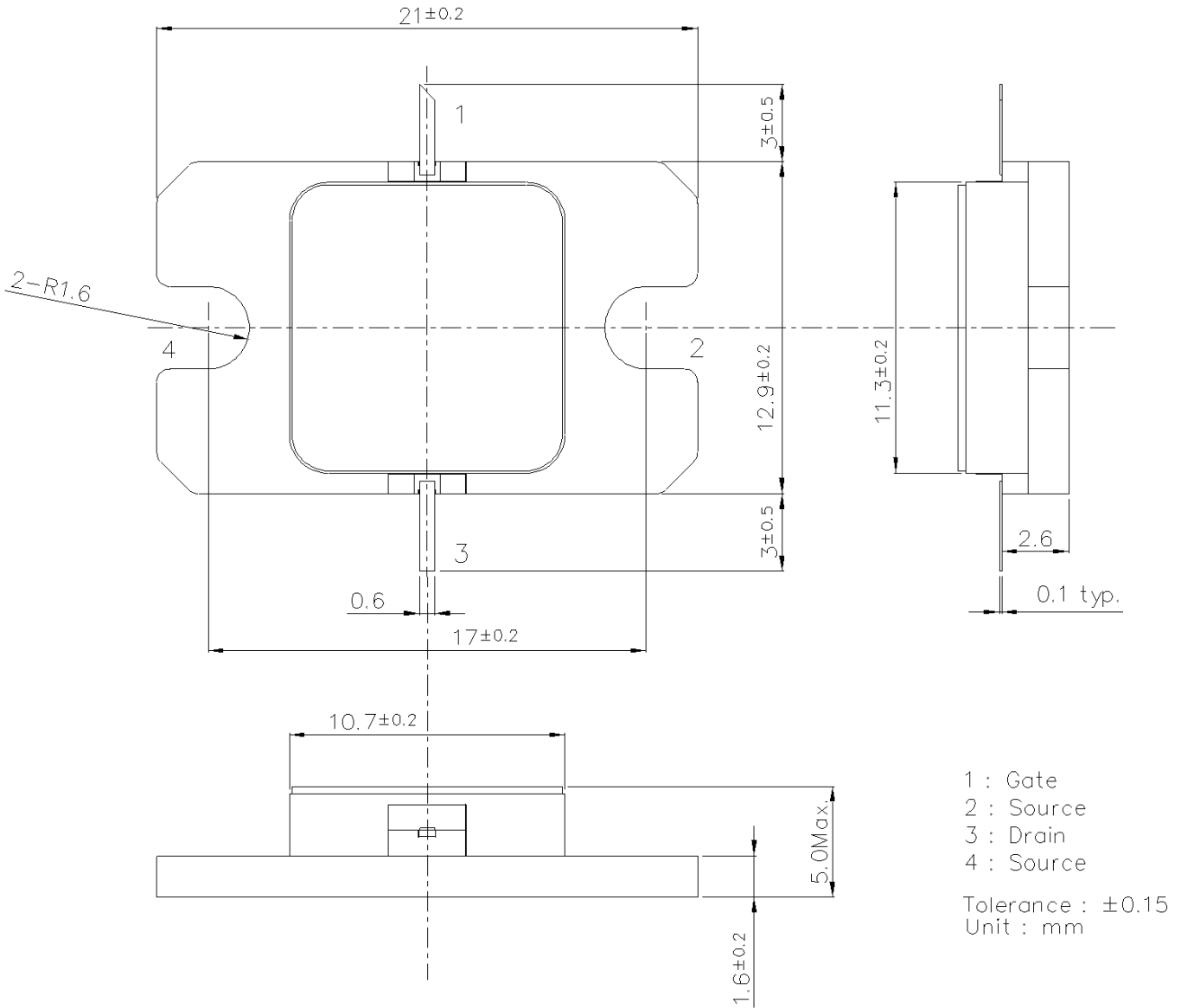


● **Rth vs. Tch**



● Package 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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