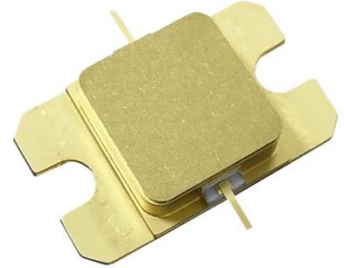


■ Features

- High Output Power: P5dB=48.0dBm (Typ.)
- High Linear Gain: GL=13.0dB (Typ.)
- High Power Added Efficiency: PAE=40% (Typ.)
- Broad Band: 7.7 to 8.5GHz
- Hermetically Sealed Package



■ Description

The SGK7785-60C 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}	R _g =51ohm	≤8.8	mA
Reverse Gate Current	I _{GR}	R _g =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=7.7 to 8.5 GHz V _{gs} -constant	47.0	48.0	-	dBm
Linear Gain at Pin=27dBm	GL		9.5	13.0	-	dB
Drain Current at 5dB G.C.P.	I _{DSR}		-	6.4	7.0	A
Power Added Efficiency at 3dB G.C.P.	PAE		-	40	-	%
Gain Flatness	ΔG		-	-	1.6	dB
3rd Order Inter Modulation Distortion	IM ₃	f=7.7GHz, 8.5GHz Δf=10MHz, 2-tone Test P _{out} =32.0dBm (S.C.L.)	-38.0	-42.0	-	dBc
Thermal Resistance	R _{th}	Channel to Case (T _c =25deg.C, P _{diss} =62.4W)	-	1.3	1.5	deg.C/W
Channel Temperature Rise	ΔT _{ch}	(V _{DS} × I _{DSR} - P _{out} + Pin) × R _{th}	-	110	150	deg.C

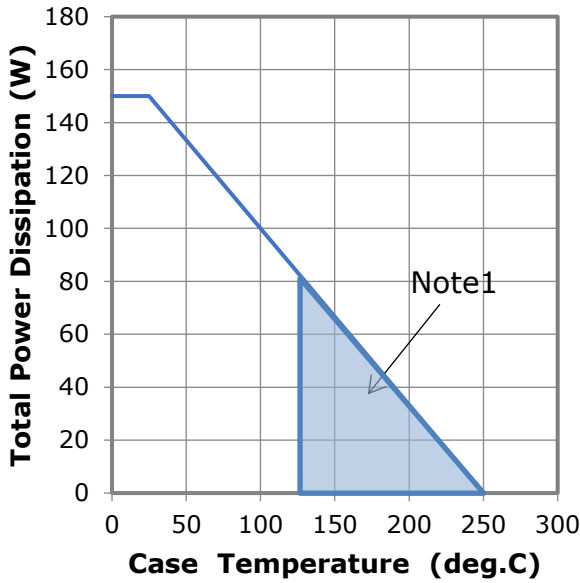
G.C.P. : Gain Compression Point, S.C.L. : Single Carrier Level

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

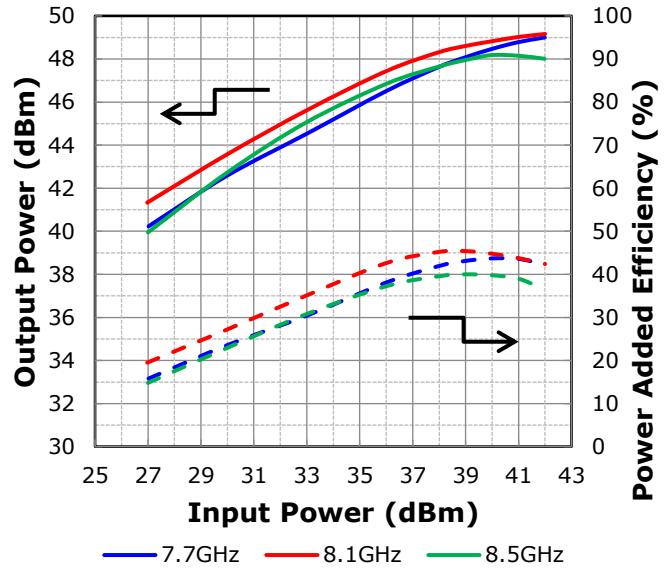
Power Derating Curve



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

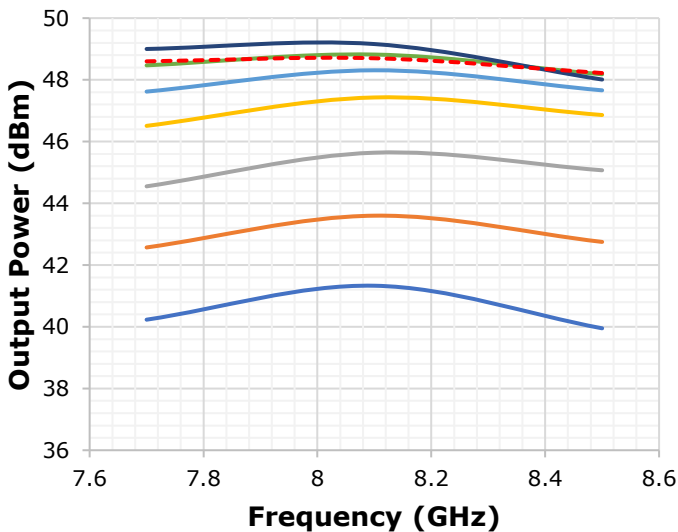
Output Power and Power Added Efficiency vs. Input Power

$V_{DS}=24V, I_{DS(DC)}=2.6A$



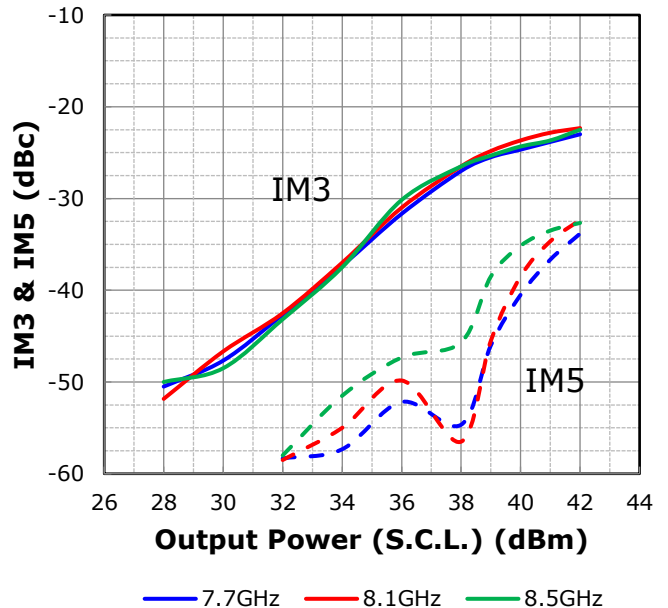
Output Power vs. Frequency

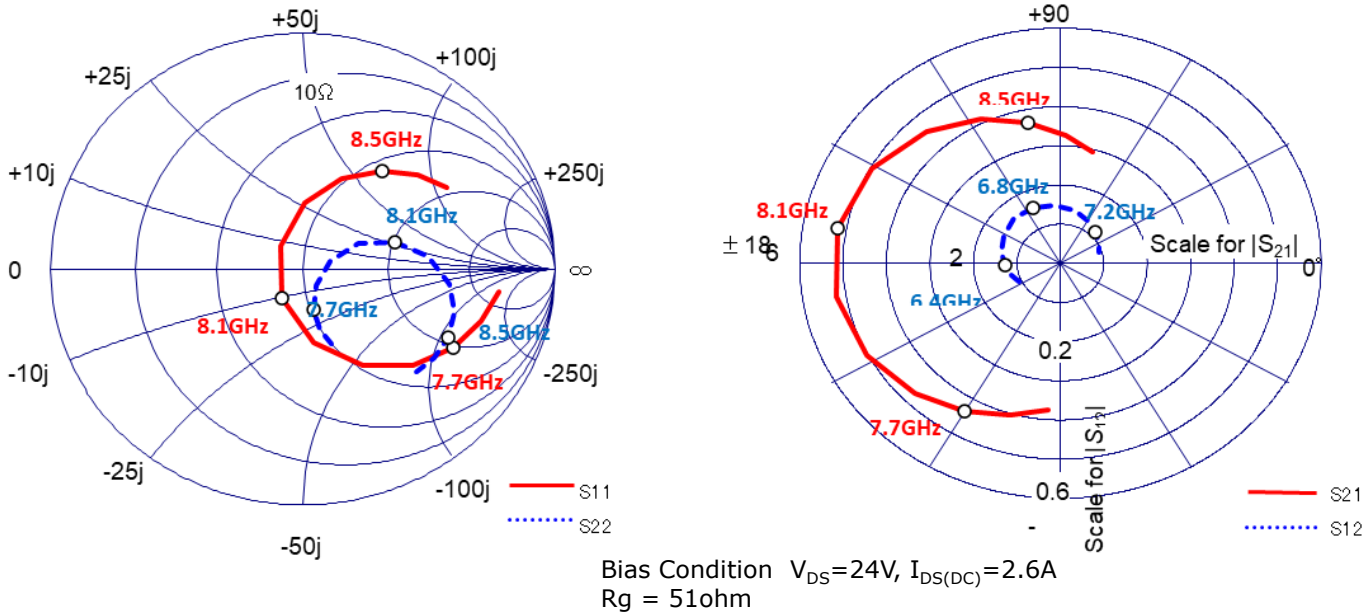
$V_{DS}=24V, I_{DS(DC)}=2.6A$



IMD vs. Output Power (S.C.L.)

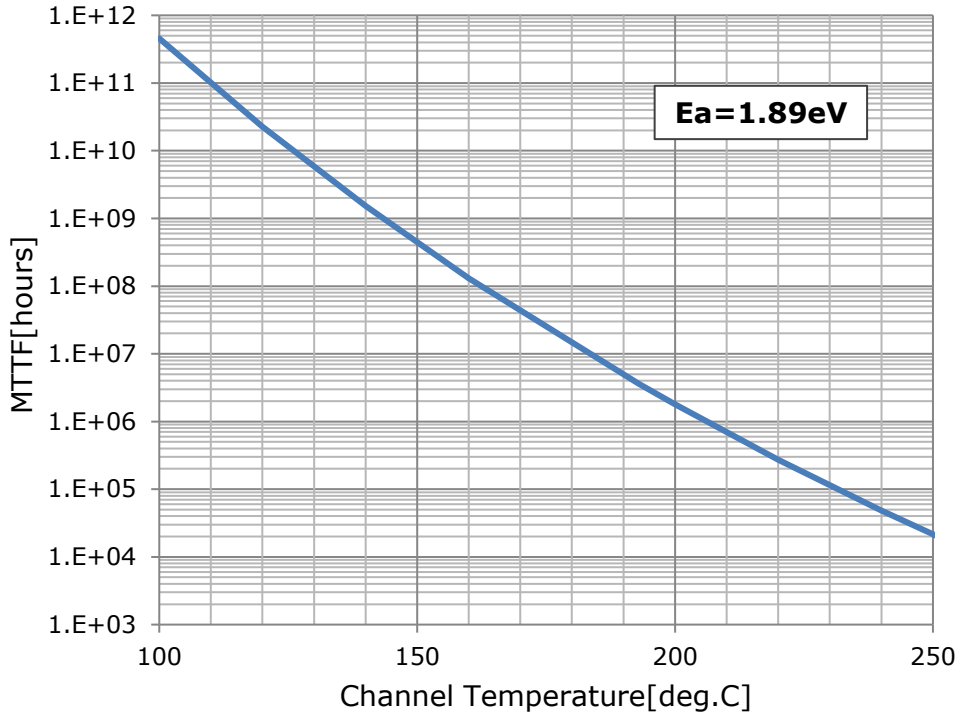
$V_{DS}=24V, I_{DS(DC)}=2.6A, \Delta f=10MHz$



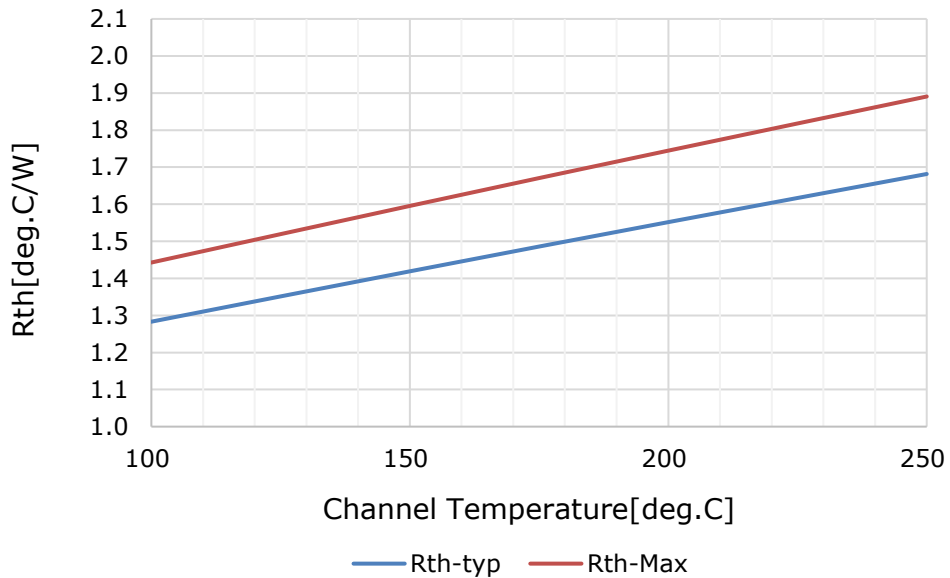
● S-Parameter


Freq.	S11		S21		S12		S22	
	mag	phase	mag	phase	mag	phase	mag	phase
7.5GHz	0.781	-7.0	3.737	-94.4	0.053	-153.3	0.337	-70.1
7.6GHz	0.742	-17.3	4.045	-106.5	0.058	-165.0	0.265	-75.0
7.7GHz	0.685	-29.0	4.357	-120.2	0.063	-177.9	0.178	-75.8
7.8GHz	0.597	-42.9	4.717	-135.3	0.069	167.7	0.088	-54.0
7.9GHz	0.474	-59.7	5.035	-152.2	0.074	151.0	0.114	16.5
8GHz	0.314	-81.9	5.225	-170.5	0.078	133.0	0.246	25.8
8.1GHz	0.145	-123.5	5.209	170.1	0.078	113.7	0.386	17.6
8.2GHz	0.133	131.3	4.979	150.7	0.075	94.7	0.501	6.0
8.3GHz	0.281	88.2	4.559	132.6	0.069	76.5	0.583	-6.0
8.4GHz	0.416	67.8	4.110	116.4	0.063	60.1	0.627	-17.1
8.5GHz	0.521	52.9	3.666	101.5	0.056	44.6	0.644	-26.9
8.6GHz	0.606	41.2	3.271	87.8	0.051	30.7	0.644	-35.9
8.7GHz	0.669	31.4	2.941	75.4	0.046	18.0	0.628	-43.9

● **MTTF vs. Tch**

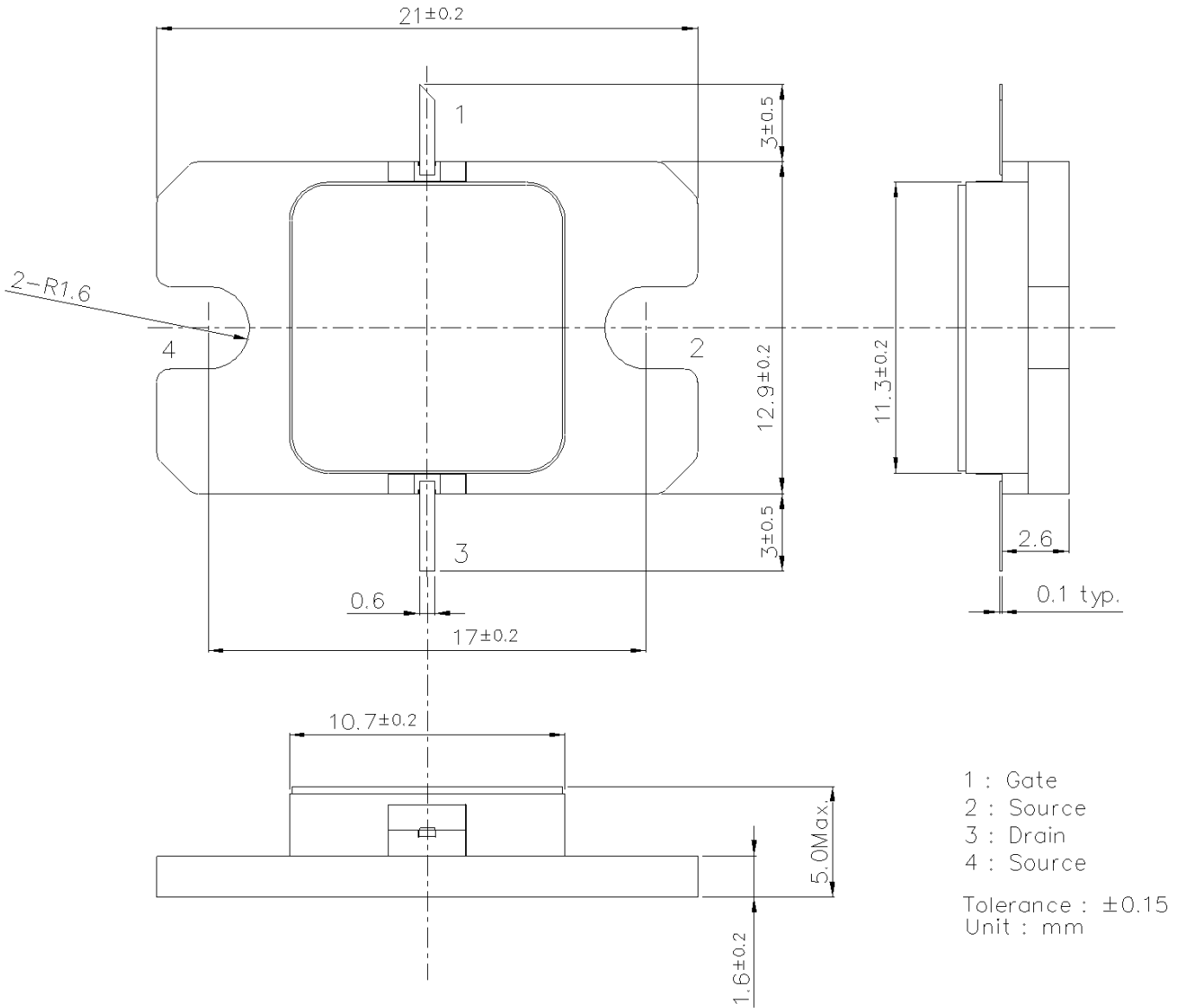


● **Rth vs. Tch**



● 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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