SGK5867-100A

C-Band Internally Matched GaN-HEMT

FEATURES

- High Output Power: P5dB=50.0dBm (Typ.)
- High Gain: GL=13.5dB (Typ.)
- High PAE: ηadd=45% (Typ.)
- Broad Band: 5.85 to 6.75GHz
- Impedance Matched Zin/Zout = 50ohm
- Hermetically Sealed Package

DESCRIPTION

The SGK5867-100A 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 Tc=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	300	W
Storage Temperature	T_{STG}	-55 to +125	deg.C
Channel Temperature	T_{CH}	+250	deg.C

RECOMMENDED OPERATING CONDITION

Item	Symbol	Condition	Limit	Unit
Drain-Source Voltage	V_{DS}		<=24	V
Forward Gate Current	I_{GF}	Rg=25ohm	<=24	mA
Reverse Gate Current	I_{GR}	Rg=25ohm	>=-12	mA
Channel Temperature	T_{CH}		<+192	deg.C

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

Item	Symbol	Condition	Limit			Unit
			Min.	Typ.	Max.	
Saturated Drain Current	Idss	Vds=10V, Vgs=0V	-	26	-	A
Trans Conductance	gm	Vds=24V, Igs=5.3A	-	12	-	S
Pinch-off Voltage	V_P	Vds=24V, Igs=5.3mA	-	-3	-	V
Output Power at 5dB G.C.P.	P_{5dB}	V_{DS}=24V(Typ.) I_{DSDC}=4.0A(Typ.) f=5.85 to 6.75 GHz	49.0	50.0	-	dBm
Linear Gain at Pin=26.5dBm	GL		12.5	13.5	-	dB
Drain Current at 5dB G.C.P.	I_{dsr}		-	10	14	A
Power Added Efficiency at 3dB G.C.P.	η_{add}		-	45	-	%
Gain Flatness	ΔG		-	-	1.6	dB
3rd Order Inter modulation Distortion	IM_3	f=6.75GHz Δf=10MHz, 2-tone Test Pout=44.0dBm (S.C.L.)	-25.0		-	dBc
Thermal Resistance	R_{th}	Channel to Case	-	0.55	0.75	deg.C/W
Channel Temperature Rise	ΔT_{ch}	(V_{DS} x I_{dsr} – P_{out} + P_{in}) x R_{th}	-	85	140	deg.C

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

CASE STYLE	I2F	
RoHS Compliance	YES	
ESD	Class 1C	1000V to 2000V

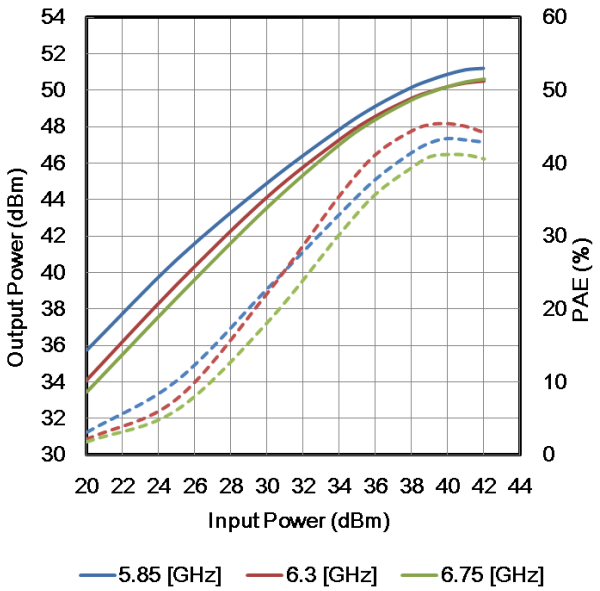
Note : Based on EIAJ ED-4701 C-111A(C=100pF, R=1.5kohm)

● RF Characteristics

Output Power &

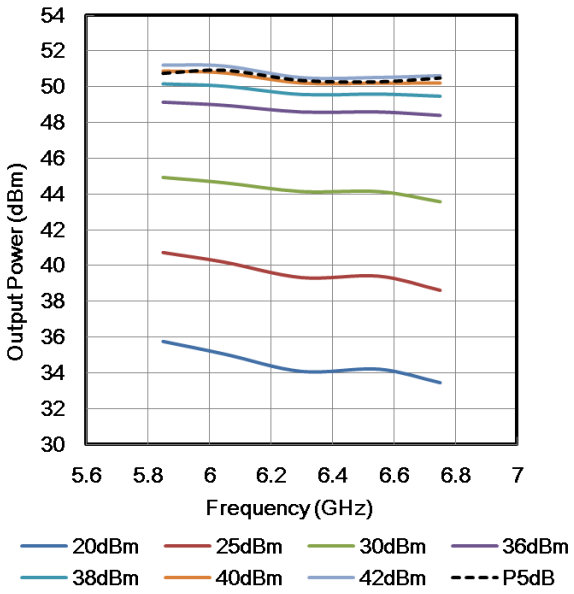
Power Added Efficiency vs. Input Power

V_{DS}=24V, $I_{DS(DC)}$=4.0A



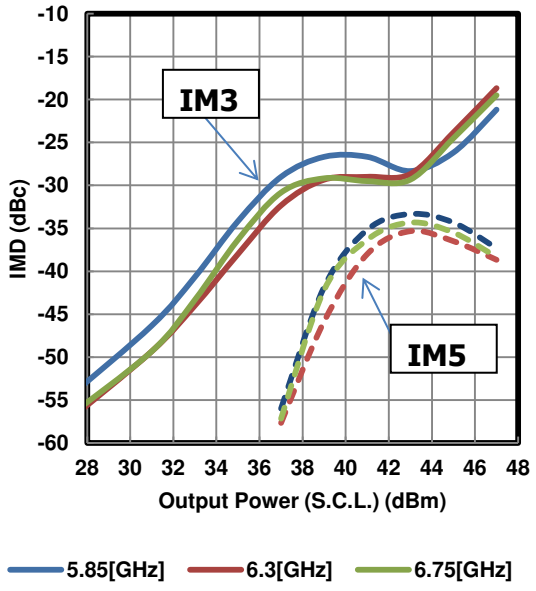
Output Power vs. Frequency

V_{DS}=24V, $I_{DS(DC)}$=4.0A



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

V_{DS}=24V, $I_{DS(DC)}$=4.0A

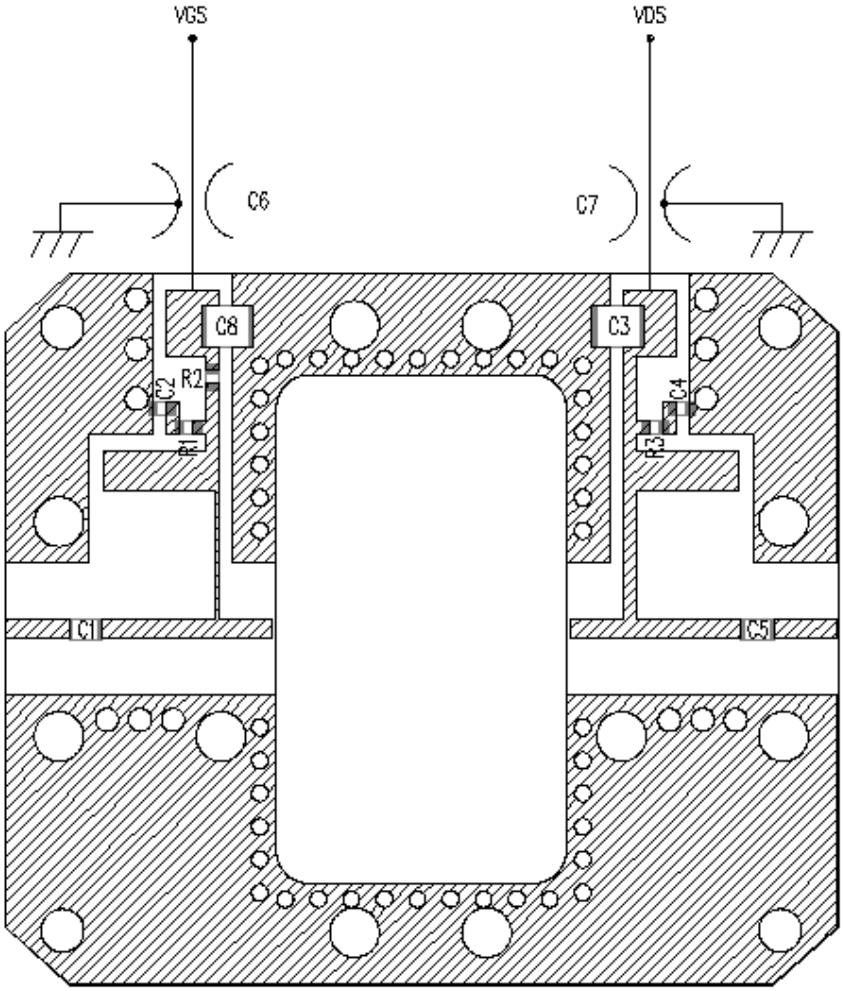


- **S-parameter**

Freq.	S11		S21		S12		S22	
	MAG	ANG	MAG	ANG	MAG	ANG	MAG	ANG
5600 MHz	0.645	-25.9	5.377	-122.9	0.036	150.4	0.047	-12.5
5700 MHz	0.622	-51.7	5.692	-142.0	0.039	129.0	0.053	4.5
5850 MHz	0.611	-96.6	6.015	-174.5	0.044	93.0	0.062	-8.4
6000 MHz	0.617	-138.0	5.964	154.4	0.049	59.8	0.065	-52.4
6100 MHz	0.616	-168.2	5.936	130.5	0.053	34.2	0.082	-86.6
6200 MHz	0.605	169.9	5.939	112.9	0.057	16.6	0.106	-100.1
6300 MHz	0.591	146.9	6.001	95.1	0.062	-1.0	0.137	-113.3
6400 MHz	0.556	113.0	6.081	70.1	0.069	-24.0	0.182	-126.1
6500 MHz	0.524	83.8	5.996	50.1	0.075	-41.9	0.235	-138.2
6600 MHz	0.505	51.3	5.894	29.6	0.079	-59.7	0.284	-154.1
6750 MHz	0.503	-1.6	5.305	-4.6	0.083	-87.4	0.359	-179.2
6900 MHz	0.520	-44.8	4.535	-35.3	0.084	-112.1	0.416	156.6
7000 MHz	0.526	-72.5	3.964	-57.3	0.085	-130.4	0.452	137.8

● Amplifier Circuit Outline

SGK5867-100A



C1	3.0pF
C2	1000pF
C3	0.1uF
C4	1000pF
C5	3.0pF
C6	1000pF
C7	1000pF
C8	0.1uF
R1	51Ω
R2	25Ω
R3	51Ω

Rogers RO4003C

h=0.542mm εr=3.38

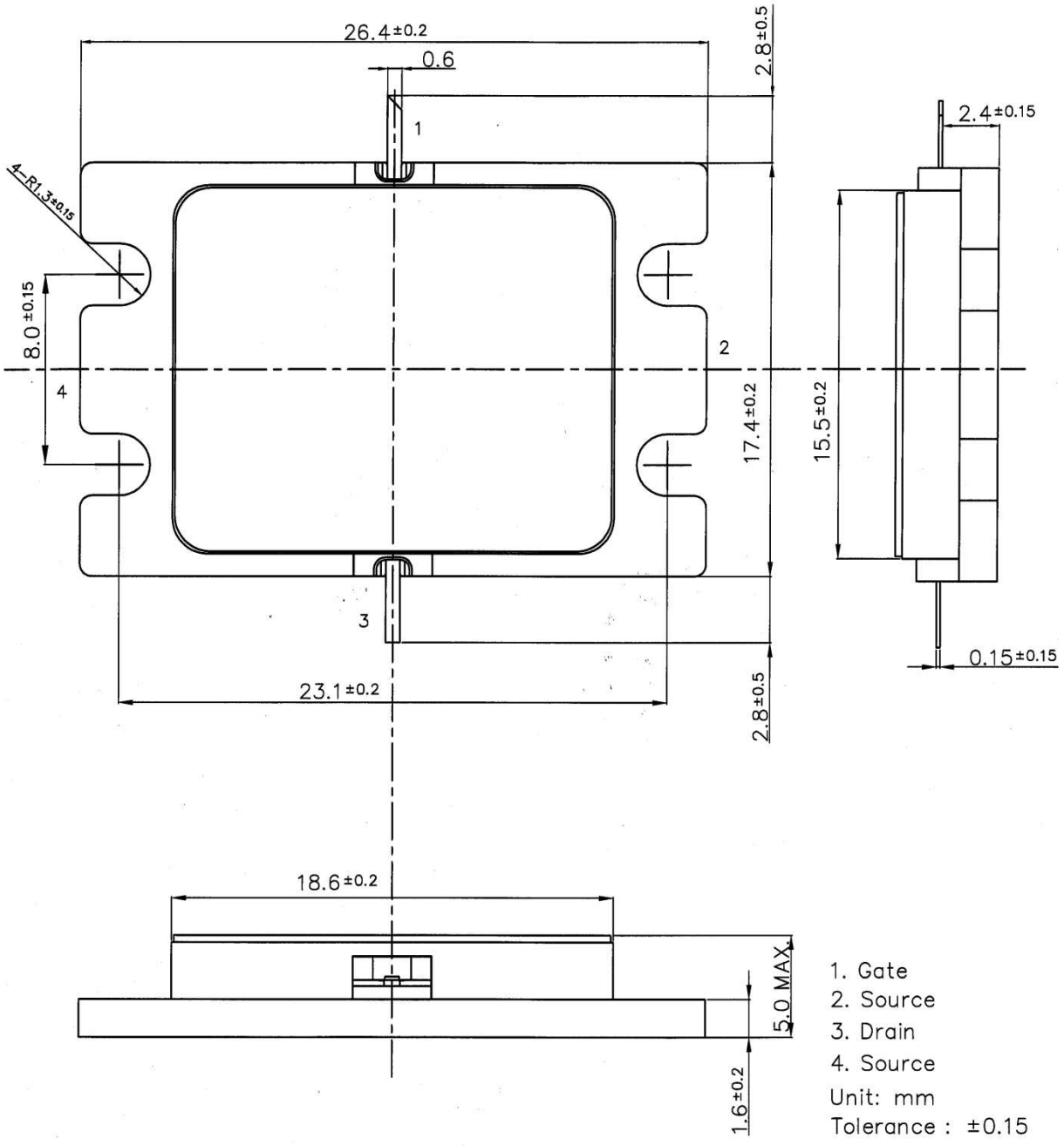
Cu=18um Unit: mm

C1 , C5 : ATC 600F(0805) , +/− 0.1pF

C6 , C7 : EMI FILTER MARUWA (FTA352AR102S−S)

- **Package Out Line**

Case Style: I2F



For further information please contact:

http://global-sei.com/Electro-optic/about/office.html