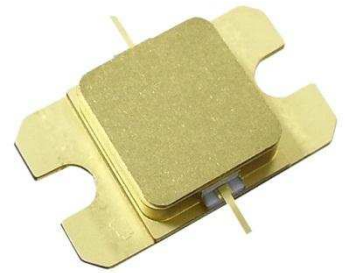


FEATURES

- High Output Power: P_{5dB}=48.0dBm (Typ.)
- High Gain: GL=12.0dB (Typ.)
- High PAE: η_{add}=35% (Typ.)
- Broad Band: 9.2 to 10.0GHz
- Impedance Matched Z_{in}/Z_{out} = 50ohm
- Hermetically Sealed Package



DESCRIPTION

The SGK0910-60A-R is a high power GaN-HEMT that is internally matched for X-band radar 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

RECOMMENDED OPERATING CONDITION

Item	Symbol	Condition	Limit	Unit
DC Input Voltage	V _{DS}		≤24	V
Forward Gate Current	I _{GF}	R _g =50ohm	≤12	mA
Reverse Gate Current	I _{GR}	R _g =50ohm	≥-6	mA
Channel Temperature	T _{CH}		<+192	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		13.0		A
Trans Conductance	gm	V _{ds} =24V, I _{ds} =2.6A	-	6.0	-	S
Pinch-off Voltage	V _p	V _{ds} =10V, I _{ds} =2.6mA	-	-3	-	V
Output Power at 5dB G.C.P.	P _{5dB}	V _{DS} =24V(Typ.)	47.0	48.0	-	dBm
Linear Gain at Pin=26dBm	GL	I _{DSDC} =2.6A(Typ.)	10.5	12.0	-	dB
Drain Current at 5dB G.C.P.	I _{dSr}	Pulse Width=100usec.	-	5.9	7.7	A
Power Added Efficiency at 3dB G.C.P.	η _{add}	Duty=10%	-	35	-	%
Gain Flatness	ΔG	f=9.2 to 10.0 GHz	-	1.0	-	dB
Thermal Resistance	R _{th}	Channel to Case	-	1.1	1.5	deg.C/W

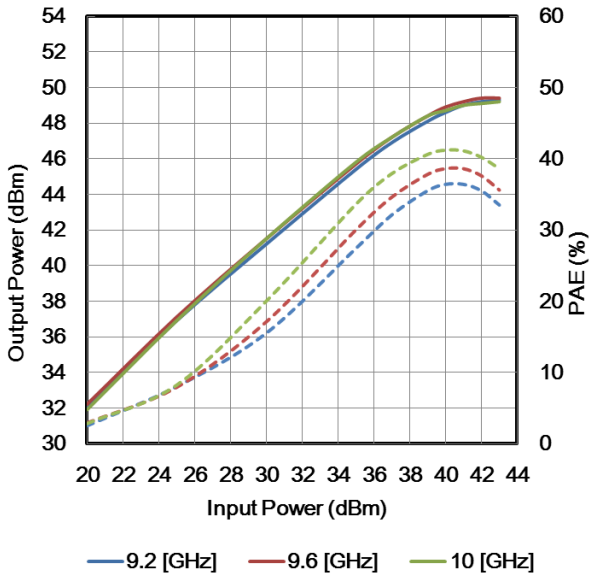
G.C.P. : Gain Compression Point

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

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

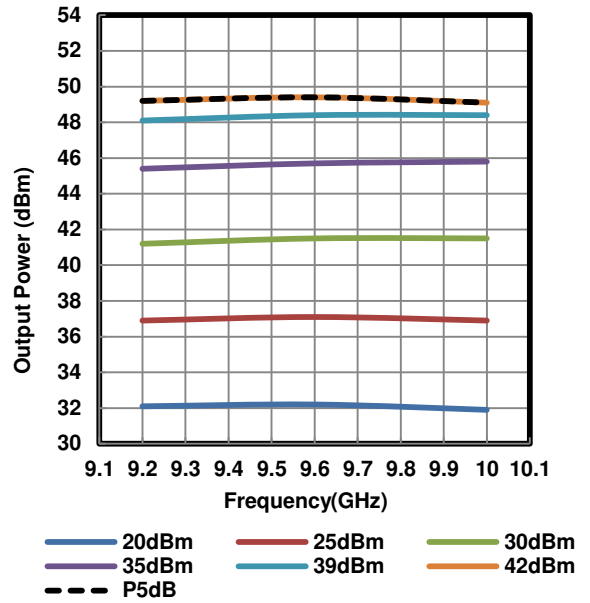
● RF Characteristics

Output Power & Power Added Efficiency vs. Input Power
 $V_{DS}=24V, I_{DS(DC)}=2.6A$
 PW=100usec, Duty 10%



Output Power vs. Frequency

$V_{DS}=24V, I_{DS(DC)}=2.6A$
 PW=100usec, Duty 10%

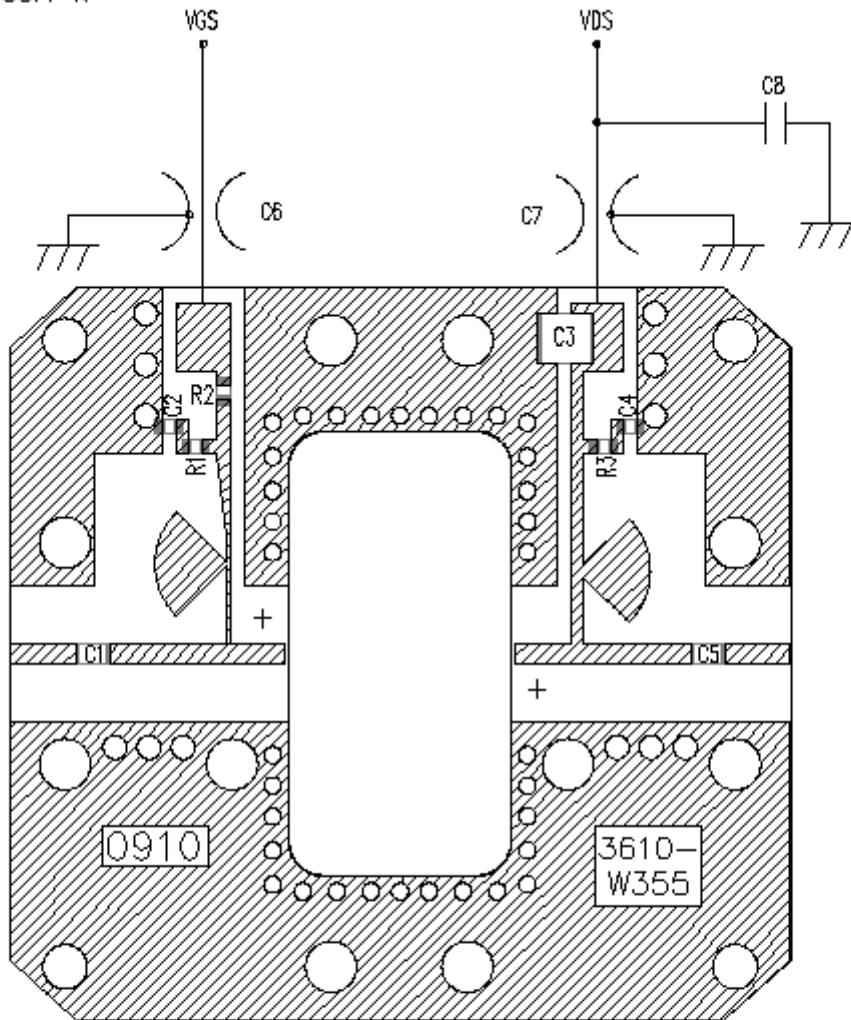


● **S-parameter**

Freq.	S11		S21		S12		S22	
	MAG	ANG	MAG	ANG	MAG	ANG	MAG	ANG
9.0GHz	0.591	-47.9	3.230	-158.2	0.081	140.5	0.060	122.4
9.1GHz	0.549	-57.2	3.318	-168.9	0.084	130.0	0.082	84.5
9.2GHz	0.495	-67.1	3.381	179.7	0.087	119.3	0.109	59.2
9.3GHz	0.439	-78.5	3.477	168.3	0.089	107.9	0.135	38.2
9.4GHz	0.378	-91.9	3.541	156.4	0.091	96.1	0.161	20.0
9.5GHz	0.318	-108.2	3.544	144.0	0.094	83.9	0.185	2.9
9.6GHz	0.259	-127.9	3.553	131.7	0.095	71.9	0.206	-13.4
9.7GHz	0.215	-152.5	3.541	119.3	0.095	59.2	0.223	-28.7
9.8GHz	0.187	177.0	3.496	106.8	0.095	47.4	0.240	-44.2
9.9GHz	0.186	145.1	3.432	94.7	0.094	35.2	0.253	-57.9
10.0GHz	0.208	116.6	3.359	83.0	0.093	23.5	0.263	-70.0
10.1GHz	0.243	92.9	3.273	71.0	0.092	12.0	0.270	-81.5
10.2GHz	0.282	73.7	3.203	59.5	0.091	0.4	0.277	-92.2

● Amplifier Circuit Outline

SGK0910-60A-R



C1	1.5pF
C2	1000pF
C3	4.7uF
C4	1000pF
C5	1.5pF
C6	1000pF
C7	1000pF
C8	1000uF
R1	51Ω
R2	100Ω
R3	51Ω

Rogers R04003C

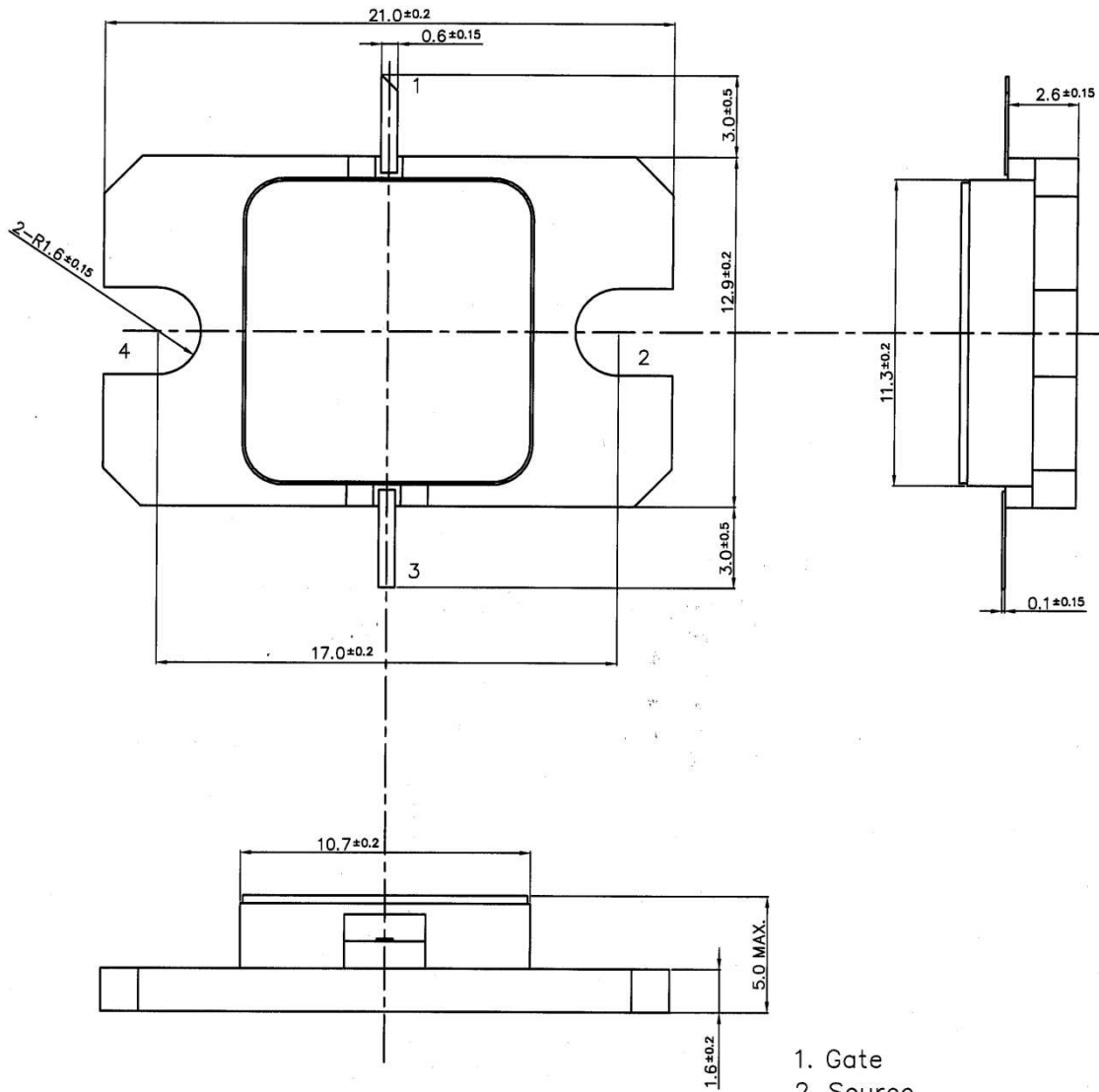
h=0.542mm $\epsilon_r=3.38$

Cu=18um Unit:mm

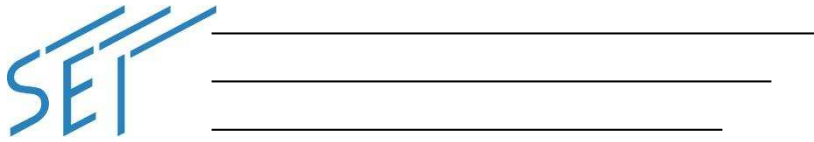
C1, C5 : ATC 600F(0805), +/- 0.05pF

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

● **Package Out Line**
Case Style: IBK



1. Gate
 2. Source
 3. Drain
 4. Source
- Unit: mm
 Tolerance : ± 0.15



SGK0910-60A-R
X-Band Internally Matched GaN-HEMT

For further information please contact:

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