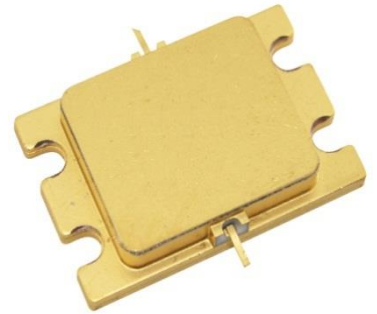


FEATURES

- High Output Power: P5dB=51.0dBm (Typ.)
- High Gain: GL=11.5dB (Typ.)
- High P.A.E.: η_{add} =35% (Typ.)
- Broad Band: 9.2 to 10.0GHz
- Impedance Matched Zin/Zout = 50ohm
- Hermetically Sealed Package

DESCRIPTION

The SGK0910-120A-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 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	265	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 =25ohm	≤30.4	mA
Reverse Gate Current	I _{GR}	R _g =25ohm	≥-12.8	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	I _{DSS}	V _{DS} =10V, V _{GS} =0V	-	26.2	-	A
Trans Conductance	G _m	V _{DS} =24V, I _{DS} =5.3A	-	12.1	-	S
Pinch-off Voltage	V _p	V _{DS} =24V, I _{DS} =5.3mA	-	-3	-	V
Output Power at 5dB G.C.P.	P _{5dB}	V _{DS} =24V(Typ.)	50.0	51.0	-	dBm
Linear Gain at Pin=29.5dBm	GL	I _{DS} (DC)=5.3A(Typ.)	10.0	11.5	-	dB
Drain Current at 5dB G.C.P.	I _{DSR}	Pulse Width=100uSec.	-	11.6	15.1	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	-	0.65	0.85	deg.C/W

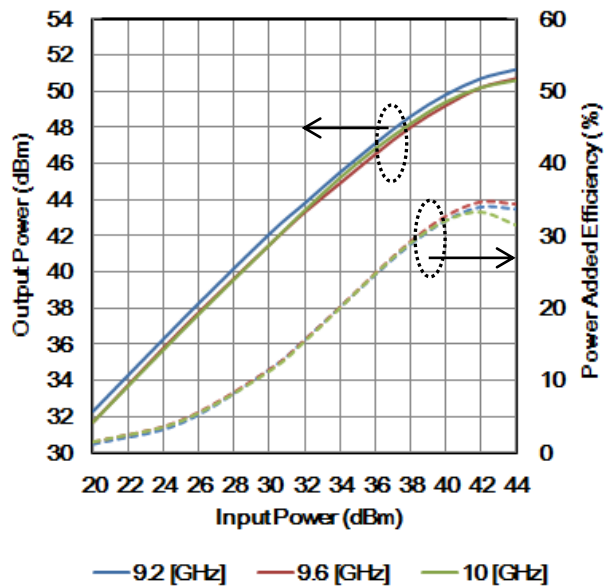
G.C.P. : Gain Compression Point

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

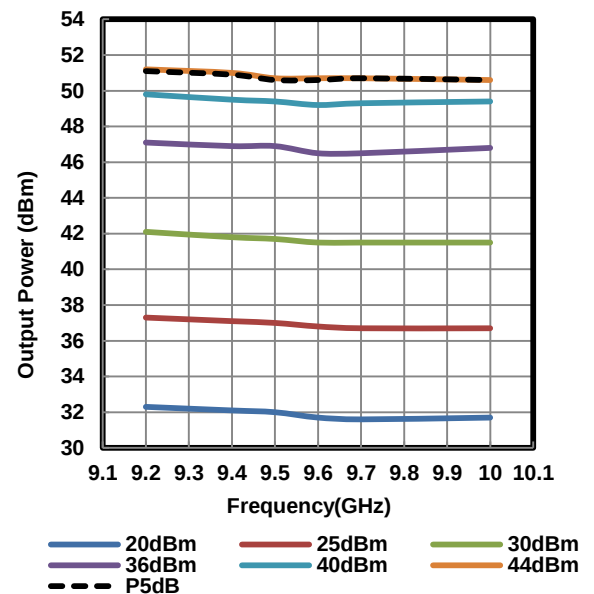
Note : Based on ANSI/ESDA/JEDEC JS-001-2012(C=100pF, R=1.5kohm)

● RF Characteristics

**Output Power &
Power Added Efficiency vs. Input Power**
 $V_{DS}=24V$, $I_{DS(DC)}=5.3A$
 $PW=100\mu sec$, Duty 10%



Output Power vs. Frequency
 $V_{DS}=24V$, $I_{DS(DC)}=5.3A$
 $PW=100\mu sec$, Duty 10%

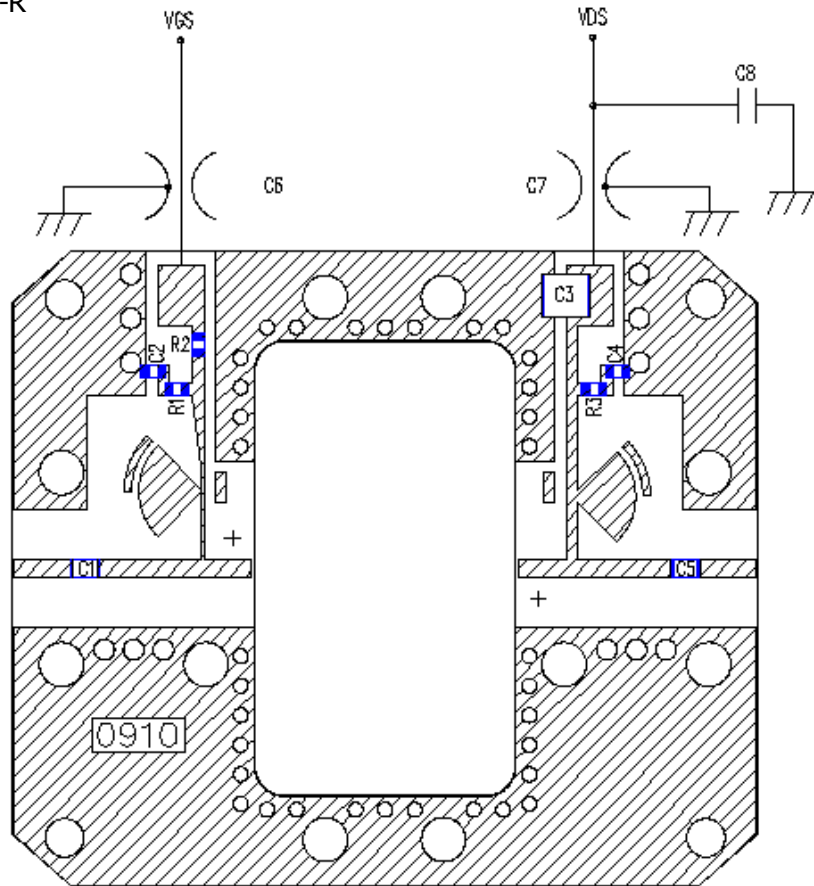


- S-parameter

Freq.	S11		S21		S12		S22	
	MAG	ANG	MAG	ANG	MAG	ANG	MAG	ANG
9.0GHz	0.080	-145.8	3.999	-9.1	0.107	-68.1	0.141	131.3
9.1GHz	0.042	89.6	3.942	-26.8	0.106	-85.2	0.196	97.3
9.2GHz	0.107	47.1	3.846	-43.1	0.103	-101.2	0.235	77.8
9.3GHz	0.147	29.0	3.713	-58.9	0.100	-115.9	0.253	64.7
9.4GHz	0.175	15.2	3.617	-74.0	0.099	-130.6	0.250	53.8
9.5GHz	0.186	-0.9	3.560	-88.9	0.097	-145.2	0.234	43.2
9.6GHz	0.200	-19.0	3.498	-104.3	0.096	-160.2	0.213	31.7
9.7GHz	0.221	-41.7	3.425	-120.6	0.094	-176.4	0.184	14.0
9.8GHz	0.257	-66.0	3.335	-136.8	0.091	167.4	0.157	-12.6
9.9GHz	0.319	-90.1	3.183	-153.4	0.086	150.2	0.153	-50.0
10.0GHz	0.399	-111.5	2.998	-170.1	0.080	133.6	0.186	-85.3
10.1GHz	0.483	-129.7	2.758	174.7	0.073	116.8	0.243	-109.1
10.2GHz	0.568	-145.2	2.555	158.7	0.066	101.4	0.314	-124.1

● Amplifier Circuit Outline

SGK0910-120A-R



C1	1.5pF
C2	1000pF
C3	4.7uF
C4	1000pF
C5	1.5pF
C6	1000pF
C7	1000pF
C8	1000uF
R1	51ohm
R2	25ohm
R3	51ohm

Substrate : Rogers RO4003C

h=0.542mm, $\epsilon_r=3.38$

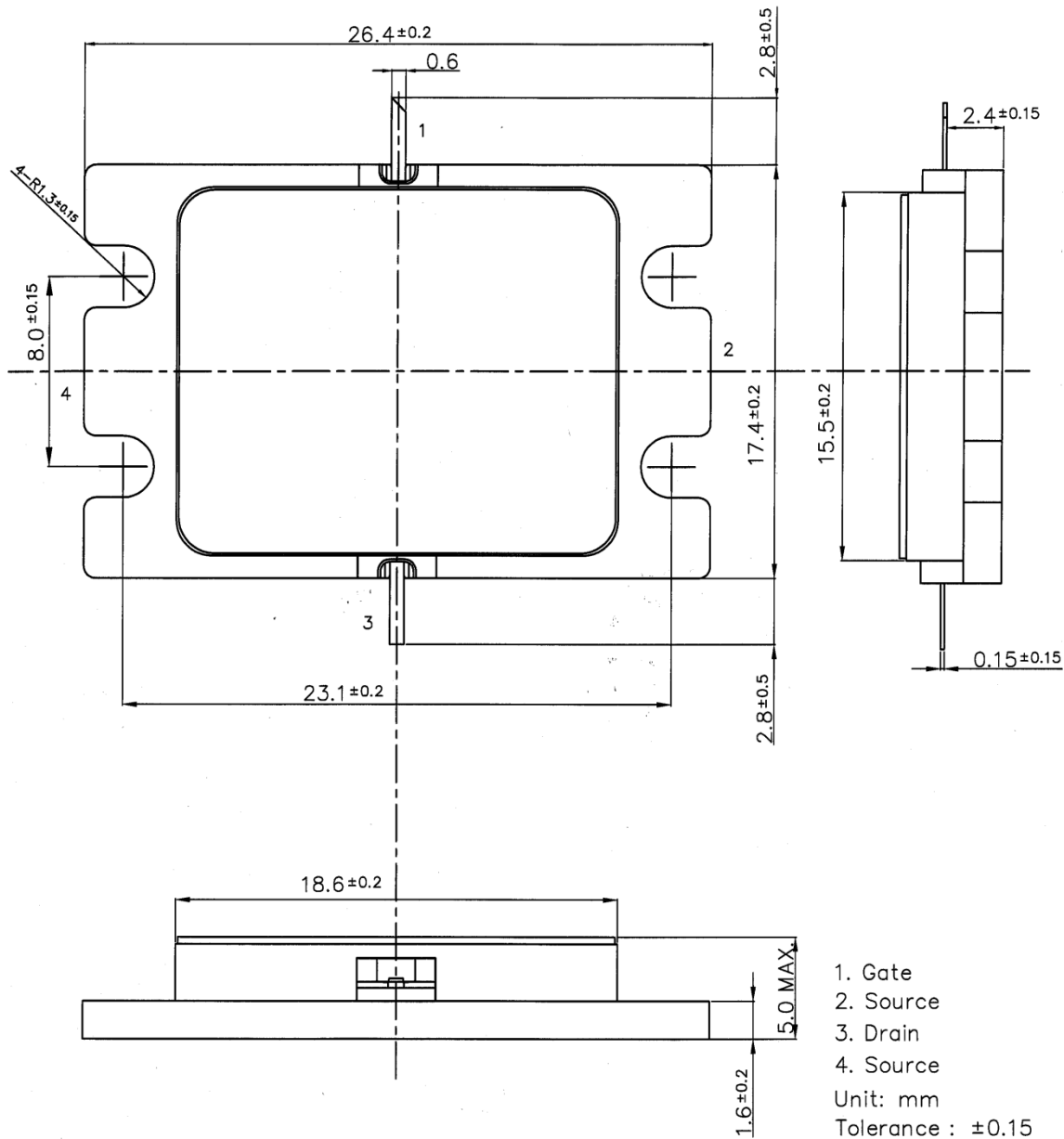
Cu=18um

C1, C5 : ATC600L(size:0805), +/- 0.1pF

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

Package Out Line

Case Style: I2F





SGK0910-120A-R

X-Band Internally Matched GaN-HEMT

For further information please contact:

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