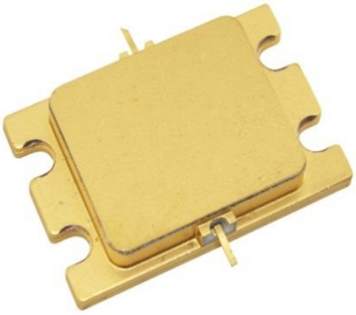
SGK5254-120A-R

C-Band Internally Matched GaN-HEMT



FEATURES

- High Output Power: P5dB=51.5dBm (Typ.)
- High Gain: GL=16.5dB (Typ.)
- High P.A.E.: ηadd=47% (Typ.)
- Broad Band: 5.2 to 5.4GHz
- Impedance Matched Zin/Zout = 50ohm
- Hermetically Sealed Package

DESCRIPTION

The SGK5254-120A-R is a high power GaN-HEMT that is internally matched for C-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	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	<=24.4	**mA**
Reverse Gate Current	I_{GR}	Rg=25ohm	>=-12.8	**mA**
Channel Temperature	T_{ch}		<+192	**deg.C**

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

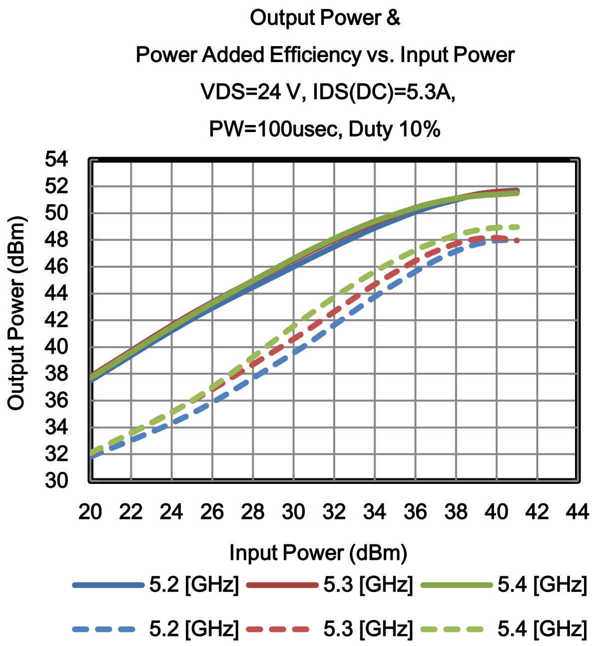
Item	Symbol	Condition	Limit			Unit
			Min.	Typ.	Max.	
Saturated Drain Current	I_{DSS}	Vds=10V, Vgs=0V		26		**A**
Trans Conductance	G_m	Vds=24V, Ids=5.3A	-	12	-	**S**
Pinch-off Voltage	V_P	Vds=10V, Ids=5.3mA	-	-3	-	**V**
Output Power at 5dB G.C.P.	P_{5dB}	V_{DS}=24V(Typ.) I_{DSDC}=5.3A(Typ.) Pulse Width=100usec. Duty=10% f=5.2 to 5.4 GHz	50.0	51.5	-	**dBm**
Linear Gain at Pin=26.0dBm	GL		15.0	16.5	-	**dB**
Drain Current at 5dB G.C.P.	I_{DSR}		-	11.6	16.2	**A**
Power Added Efficiency at 3dB G.C.P.	η_{add}		-	47	-	**%**
Gain Flatness	ΔG		-	1.0	-	**dB**
Thermal Resistance	R_{th}	Channel to Case	-	0.65	0.85	**deg.C/W**

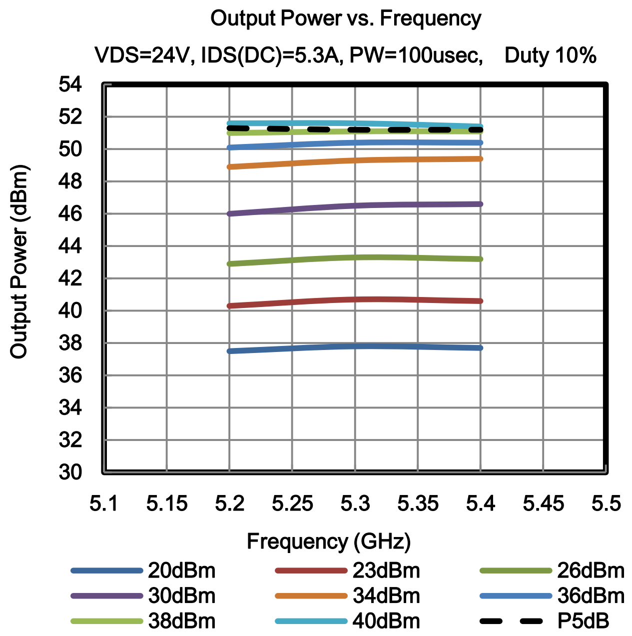
G.C.P. : Gain Compression Point

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





- **S-Parameter**

Freq.	S11		S21		S12		S22	
	MAG	ANG	MAG	ANG	MAG	ANG	MAG	ANG
5100MHz	0.270	-23.1	6.442	-112.0	0.061	176.2	0.219	110.6
5150MHZ	0.221	-48.9	6.523	-124.0	0.063	163.5	0.258	99.9
5200MHZ	0.199	-80.7	6.531	-135.9	0.064	150.7	0.285	89.0
5250MHZ	0.211	-111.7	6.500	-147.4	0.066	138.6	0.298	78.7
5300MHZ	0.243	-137.2	6.452	-159.1	0.067	126.6	0.303	68.1
5350MHZ	0.291	-157.3	6.350	-170.5	0.067	114.6	0.295	57.7
5400MHZ	0.338	-173.2	6.262	178.1	0.067	102.9	0.281	46.6
5450MHZ	0.384	173.2	6.086	167.3	0.068	91.5	0.259	35.1
5500MHZ	0.427	161.2	5.956	156.3	0.068	80.5	0.235	22.9

● Amplifier Circuit Outline

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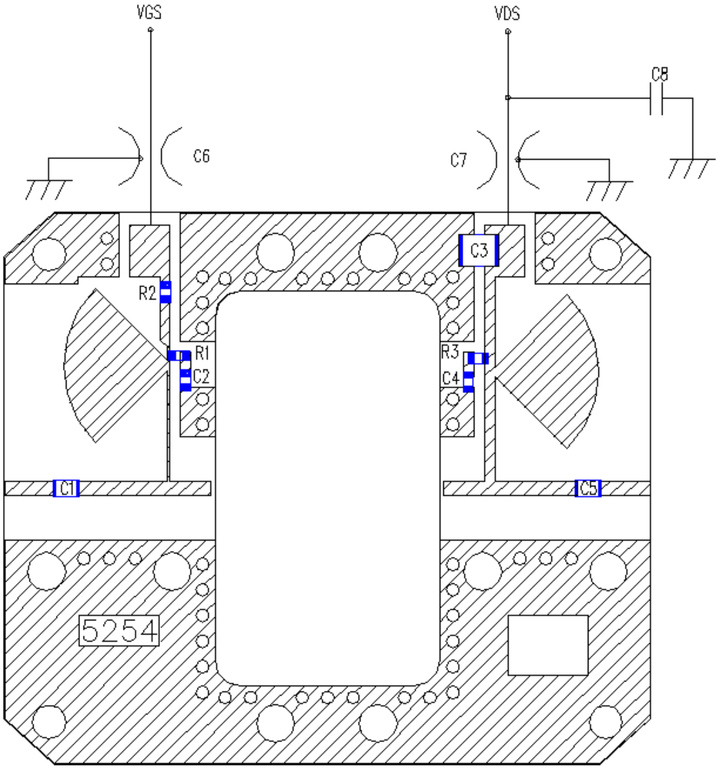


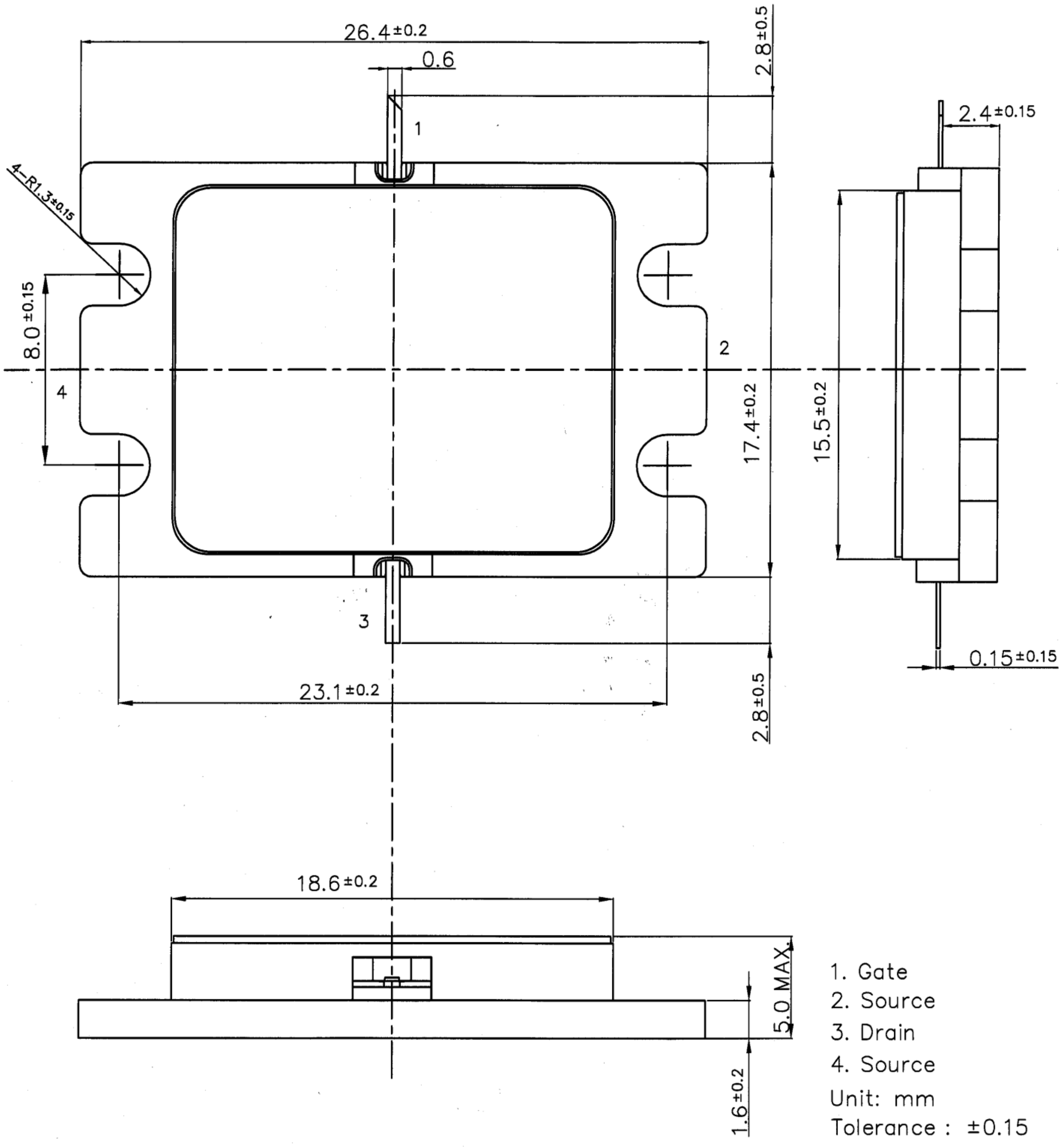
C1	3.0pF
C2	1000pF
C3	0.1uF
C4	1000pF
C5	3.0pF
C6	1000pF
C7	1000pF
C8	1000uF
R1	51ohm
R2	25ohm
R3	51ohm

Substrate : Rogers RO4003C
h=0.542mm, εr=3.38
Cu=18um

C1, C5 : ATC600F(size:0805), +/- 0.1pF
C6, C7 : EMI FILTER MARUWA(FTA352AR102S-S)

- **Package Out line**

Case Style : I2F



1. Gate
2. Source
3. Drain
4. Source

Unit: mm
Tolerance : ±0.15

For further information please contact:

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