

■ Features

- High Output Power: $P_{\text{sat}}=53.5\text{dBm}$ (Typ.)
- High Gain: $G_p=9.5\text{dB}$ (Typ.)
- High Power Added Efficiency: $\text{PAE}=38\%$ (Typ.)
- Broad Band: 9.2 to 10.5GHz
- Impedance Matched $Z_{\text{in}}/Z_{\text{out}} = 50\text{ohm}$
- Hermetically Sealed Package

■ Description

The SGC0910-200A-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 $T_c=25\text{ deg.C}$)

Item	Symbol	Rating	Unit
Drain-Source Voltage	V_{DS}	55	V
Gate-Source Voltage	V_{GS}	-15	V
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}		≤ 50	V
Forward Gate Current	I_{GF}	$R_g=51\text{ohm}$	≤ 12.0	mA
Reverse Gate Current	I_{GR}	$R_g=51\text{ohm}$	≥ -9.0	mA
Channel Temperature	T_{ch}		$< +200$	deg.C

ELECTRICAL CHARACTERISTICS (Case Temperature $T_c=25\text{ deg.C}$)

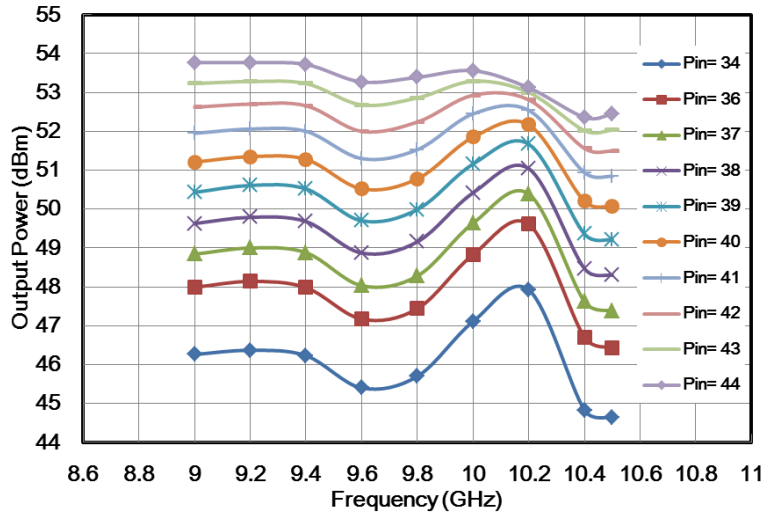
Item	Symbol	Condition	Limit			Unit
			Min.	Typ.	Max.	
Pinch-off Voltage	V_p	$V_{\text{DS}}=50\text{V}$, $I_{\text{DS}}=13.0\text{mA}$	-	-4.5	-	V
Frequency Range	Freq.	$V_{\text{DS}}=50\text{V-typ.}$	9.0	-	10.0	GHz
Output Power *1	P_{sat}	$I_{\text{DS(DC)}}=0.66\text{A-typ.}$ Pulse Width=100μsec. Duty=10% *1: $f=9.2\text{ to }10.1\text{GHz}$ *2: $f=10.1\text{ to }10.5\text{GHz}$ Pin=44dBm	52.5	53.5	-	dBm
Output Power *2	P_{sat}		51.5	52.5	-	dBm
Power Gain *1	G_p		8.5	9.5	-	dB
Power Gain *2	G_p		7.5	8.5	-	dB
Drain Current	I_{DSR}		-	11.8	14.5	A
Power Added Efficiency	PAE		-	38	-	%
Thermal Resistance	R_{th}	Channel to Case ($P_{\text{diss}}=100\text{W}$, CW)	-	0.6	0.8	deg.C/W

CASE STYLE	IK
RoHS Compliance	YES
ESD	Class 2

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

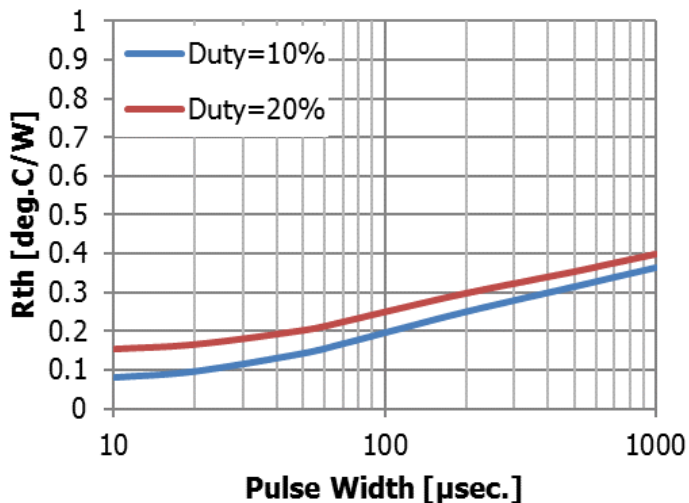
● RF Characteristics

Output Power vs. Frequency
 $V_{DS}=50V$, $I_{DS(DC)}=0.66A$
 $PW=100\mu sec.$, Duty=10%

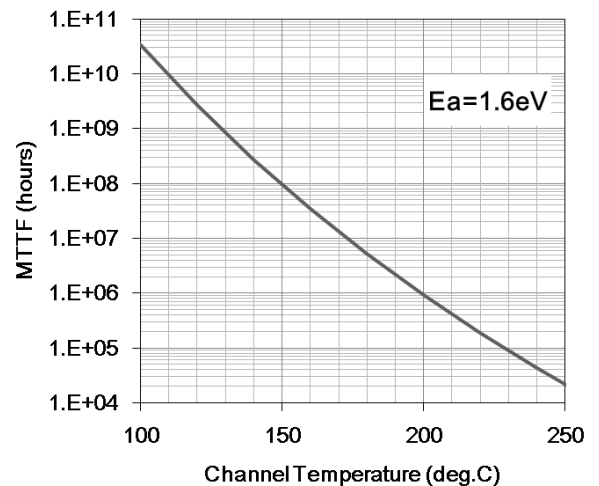


● Thermal Characteristics In Pulsed Operation

Rth vs. Pulse Width
 $T_c=75deg.C$

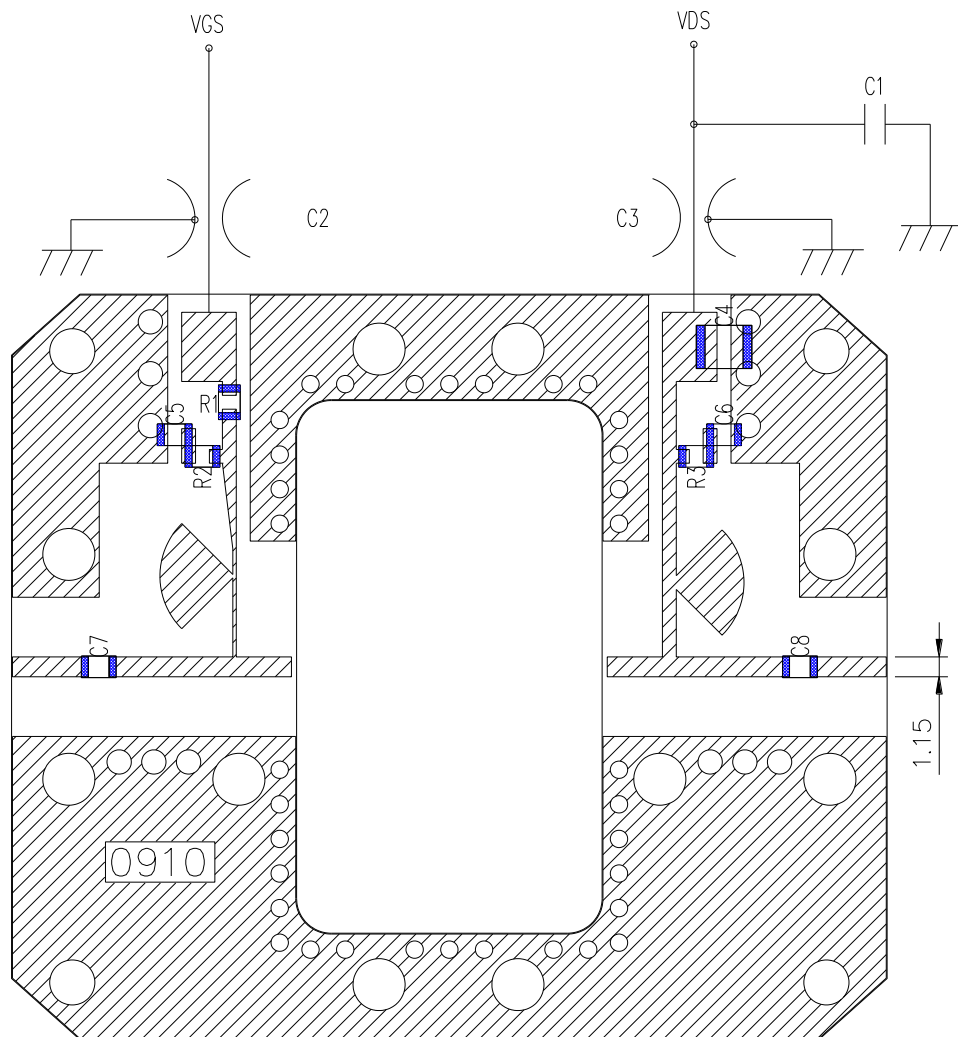


MTTF vs. Tch





● **Evaluation Board**

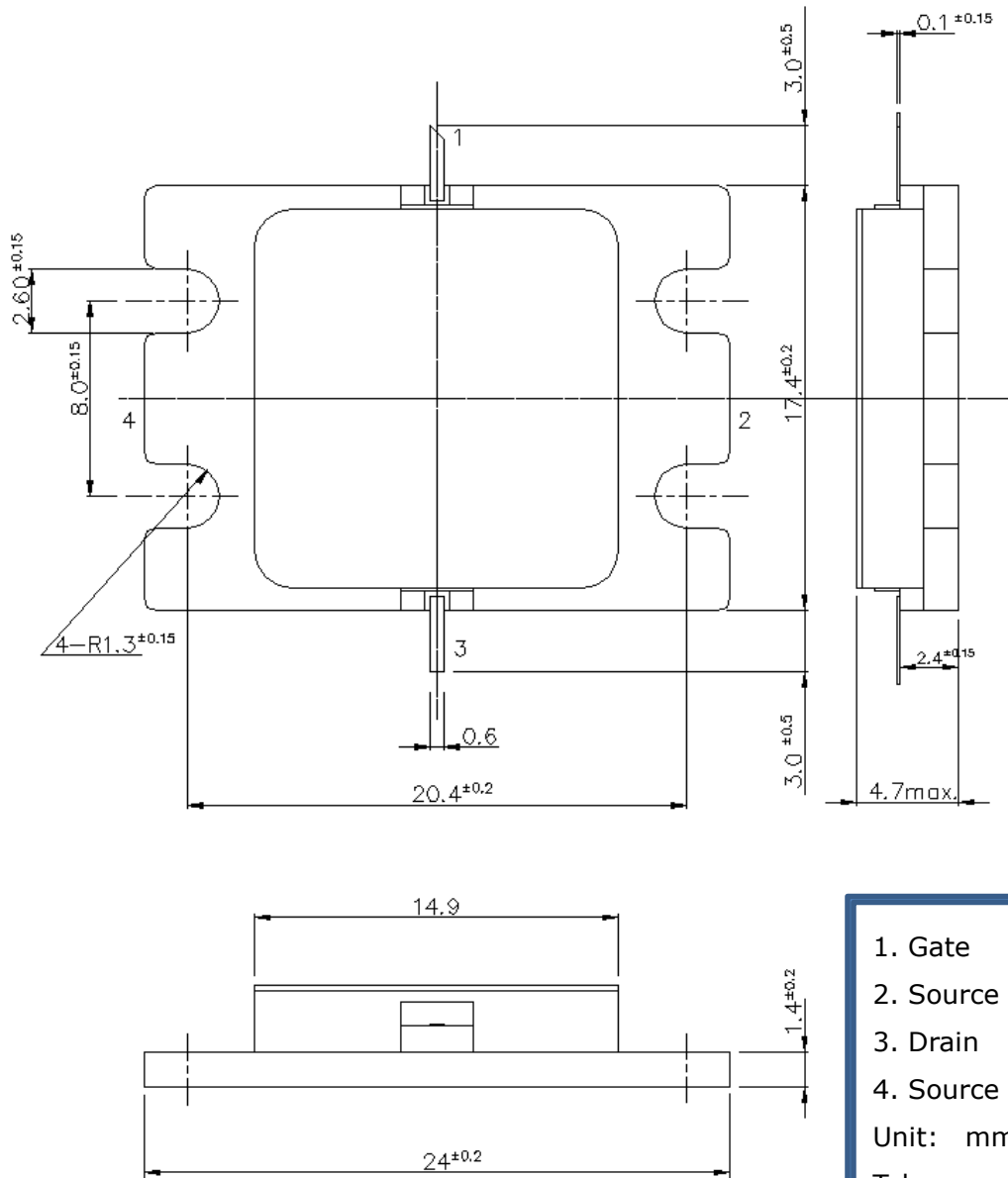


C1	1000uF	Nippon Chemi-Con EKY-800ELL102MMP1S
C2,C3	1000pF	Maruwa FTA352AR102S-S
C4	10uF	Murata GRM55DB31H106KA87L
C5,C6	1000pF	Murata GRM21AR72E102KW01
C7,C8	1.0pF	Murata GQM1875C2E1R0BB12
R1,R2,R3	51ohm	Panasonic ERJ6GEYJ510V
PCB		Rogers RO4003C, 20mil



● **Package Outline**

Case Style : IK



1. Gate
2. Source
3. Drain
4. Source
Unit: mm
Tolerance: \pm 0.15

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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