

**■ Features**

- High Output Power:  $P_{sat}=55.3\text{dBm}$  (Typ.)
- High Gain:  $G_p=9.3\text{dB}$  (Typ.)
- High Power Added Efficiency:  $PAE=35\%$  (Typ.)
- Broad Band: 9.0 to 10.0GHz
- Impedance Matched  $Z_{in}/Z_{out} = 50\text{ohm}$
- Hermetically Sealed Package


**■ Description**

The SGC0910-300A-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	$V_{DS}$	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**

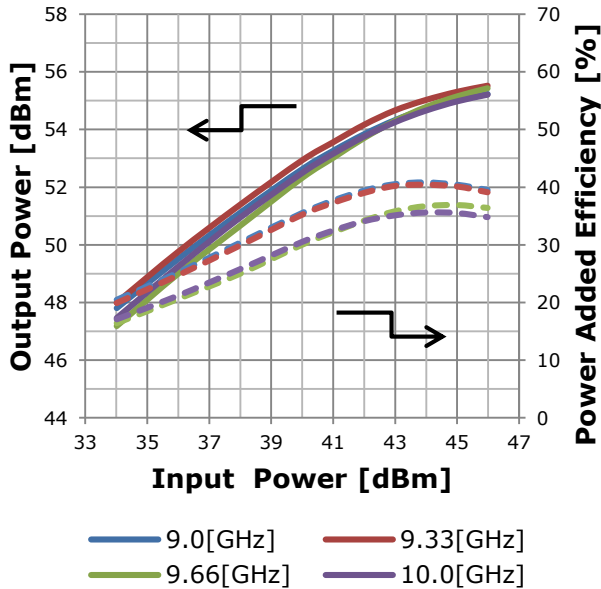
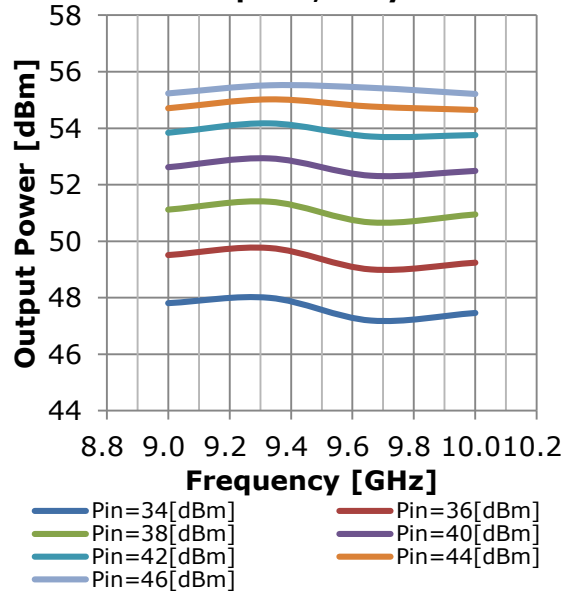
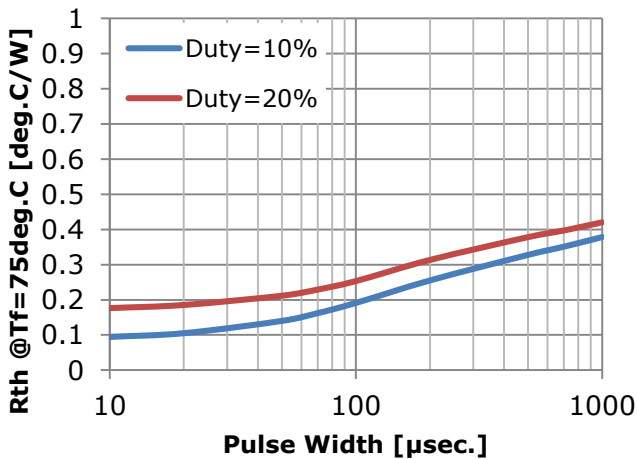
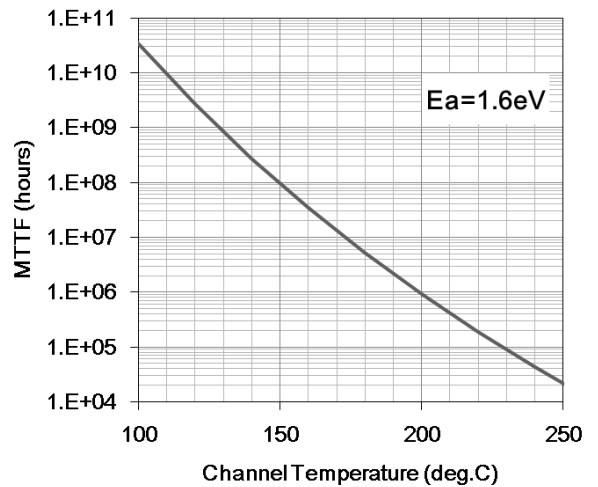
Item	Symbol	Condition	Limit	Unit
Drain-Source Voltage	$V_{DS}$		$\leq 50$	V
Forward Gate Current	$I_{GF}$	$R_g=10\text{ohm}$	$\leq 187.2$	mA
Reverse Gate Current	$I_{GR}$	$R_g=10\text{ohm}$	$\geq -13.6$	mA
Channel Temperature	$T_{ch}$		$< +200$	deg.C

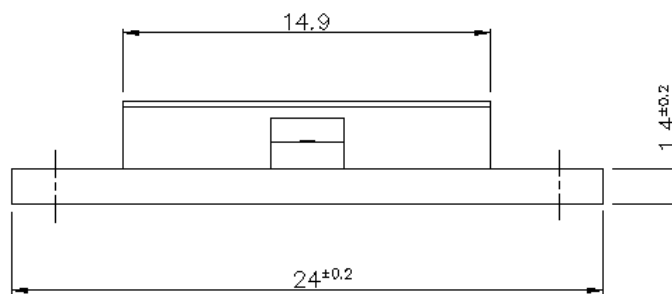
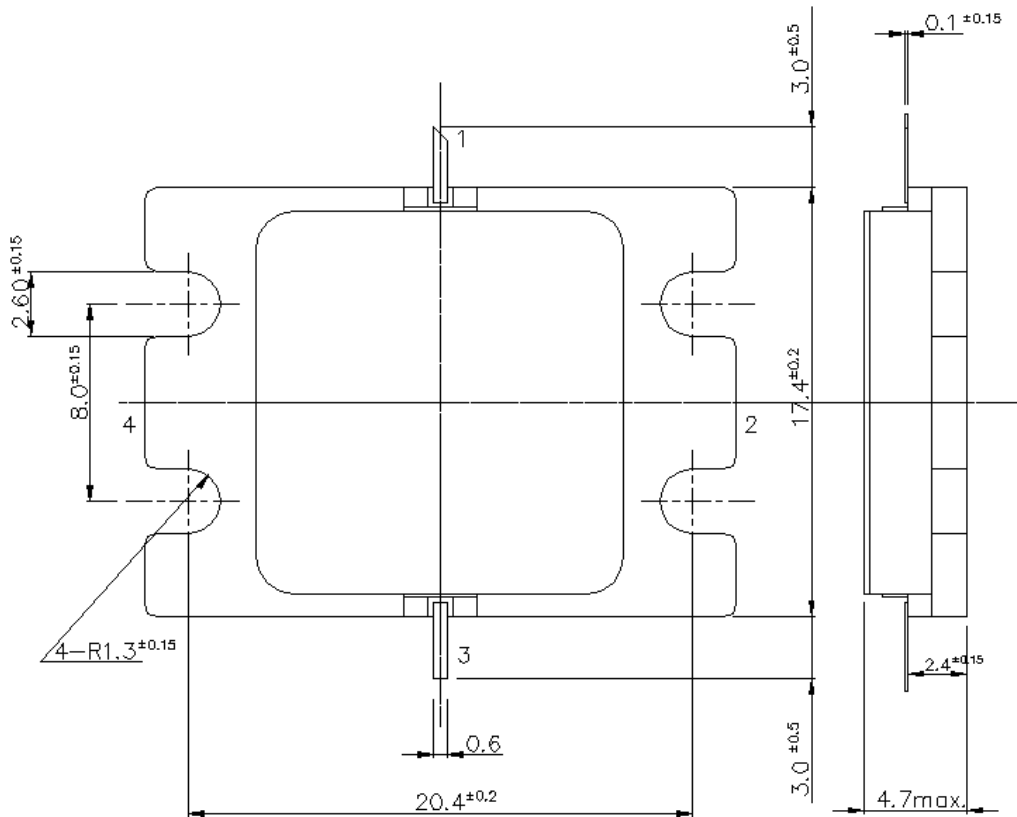
**ELECTRICAL CHARACTERISTICS (Case Temperature  $T_c=25$  deg.C)**

Item	Symbol	Condition	Limit			Unit
			Min.	Typ.	Max.	
Pinch-off Voltage	$V_p$	$V_{DS}=50\text{V}, I_{DS}=20.0\text{mA}$	-	-4.5	-	V
Frequency Range	Freq.	$V_{DS}=50\text{V-typ.}$	9.0	-	10.0	GHz
Output Power *1	$P_{sat}$	$I_{DS(DC)}=1.0\text{A-typ.}$	54.3	55.3	-	dBm
Output Power *2	$P_{sat}$	Pulse Width=100μsec.	53.7	54.7	-	dBm
Power Gain *1	$G_p$	Duty=10%	8.3	9.3	-	dB
Power Gain *2	$G_p$	*1: $f=9.0$ to $9.66\text{GHz}$	7.7	8.7	-	dB
Drain Current	$I_{DSR}$	*2: $f=9.66$ to $10.0\text{GHz}$	-	17.1	19.5	A
Power Added Efficiency	PAE	Pin=46dBm	-	35	-	%
Thermal Resistance	$R_{th}$	Channel to Case ( $P_{diss}=100\text{W, CW}$ )	-	0.7	0.8	deg.C/W

CASE STYLE	IK		
RoHS Compliance	YES		
ESD	Class 2	2000V to <4000V	

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

**● RF Characteristics**
**Output Power & Power Added Efficiency vs. Input Power**
 $V_{DS}=50V, I_{DS(DC)}=1.0A$   
 $PW=100\mu sec., Duty=10\%$ 

**Output Power vs. Frequency**
 $V_{DS}=50V, I_{DS(DC)}=1.0A$   
 $PW=100\mu sec., Duty=10\%$ 

**● Thermal Characteristics In Pulsed Operation**
**Rth vs. Pulse Width**

**MTTF vs. Tch**


**● Package Outline**
**Case Style : IK**


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