

■ Features

- High Output Power: $P_{sat}=55.3\text{dBm}$ (Typ.)
- High Gain: $G_p=9.3\text{dB}$ (Typ.)
- High Power Added Efficiency: $PAE=38\%$ (Typ.)
- Broad Band: 9.0 to 10.0GHz
- Impedance Matched $Z_{in}/Z_{out} = 50\text{ohm}$
- Hermetically Sealed Package
- Long pulse operation *

*Reduced V_{ds} and/or low case temperature are needed to keep T_{ch} below 200 deg.C. Please contact for the detail.



■ Description

The SGC0910-300B-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_{sta}	-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}	$R_g=10\text{ohm}$	≤ 187.2	mA
Reverse Gate Current	I_{GR}	$R_g=10\text{ohm}$	≥ -13.6	mA
Channel Temperature	T_{ch}		$< +200$	deg.C
Output Power	P_{out}		$\leq P5\text{dB}$	dBm

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.	$V_{DS}=50\text{V}$	9.0	-	10.0	GHz
Output Power *1	P_{sat}	$I_{DS(DC)}=1.0\text{A}$ Pulse Width=100μsec. Duty=10%	54.3	55.3	-	dBm
Output Power *2	P_{sat}		53.7	54.7	-	dBm
Power Gain *1	G_p	*1:f=9.0 to 9.6GHz *2:f=9.6 to 10.0GHz	8.3	9.3	-	dB
Power Gain *2	G_p		7.7	8.7	-	dB
Drain Current	I_{DSR}		-	15.8	18.4	A
Power Added Efficiency	PAE	$P_{in}=46\text{dBm}$	-	38	-	%
Thermal Resistance	R_{th}	Channel to Case ($P_{diss}=100\text{W}$, CW)	-	0.7	0.8	deg.C/W

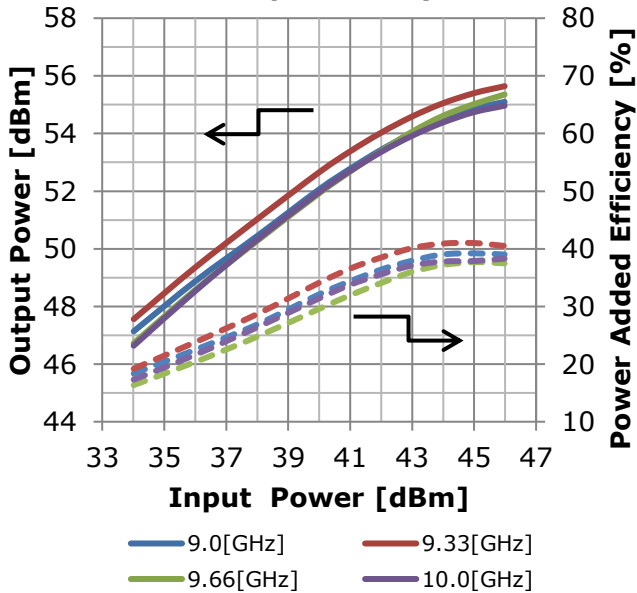
CASE STYLE	IK
RoHS Compliance	YES
ESD	Class 2
	2000V to <4000V

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

● RF Characteristics

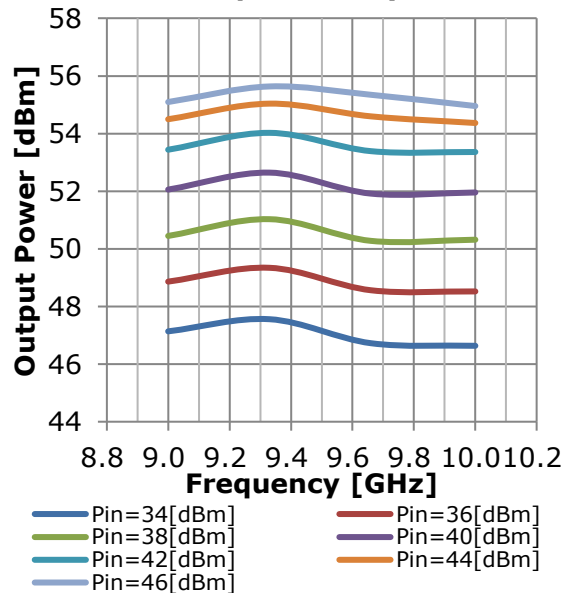
Output Power & Power Added Efficiency vs. Input Power

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



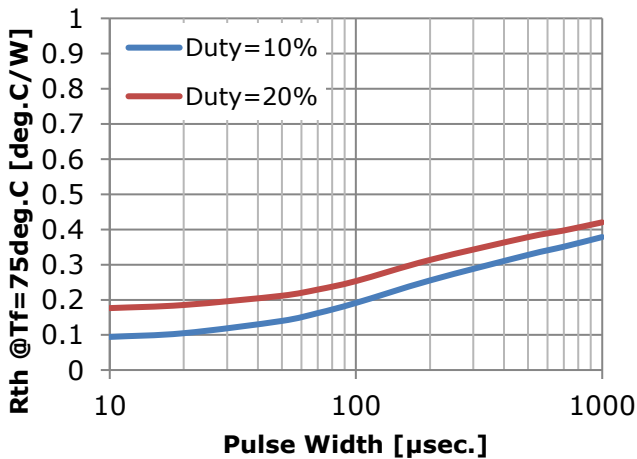
Output Power vs. Frequency

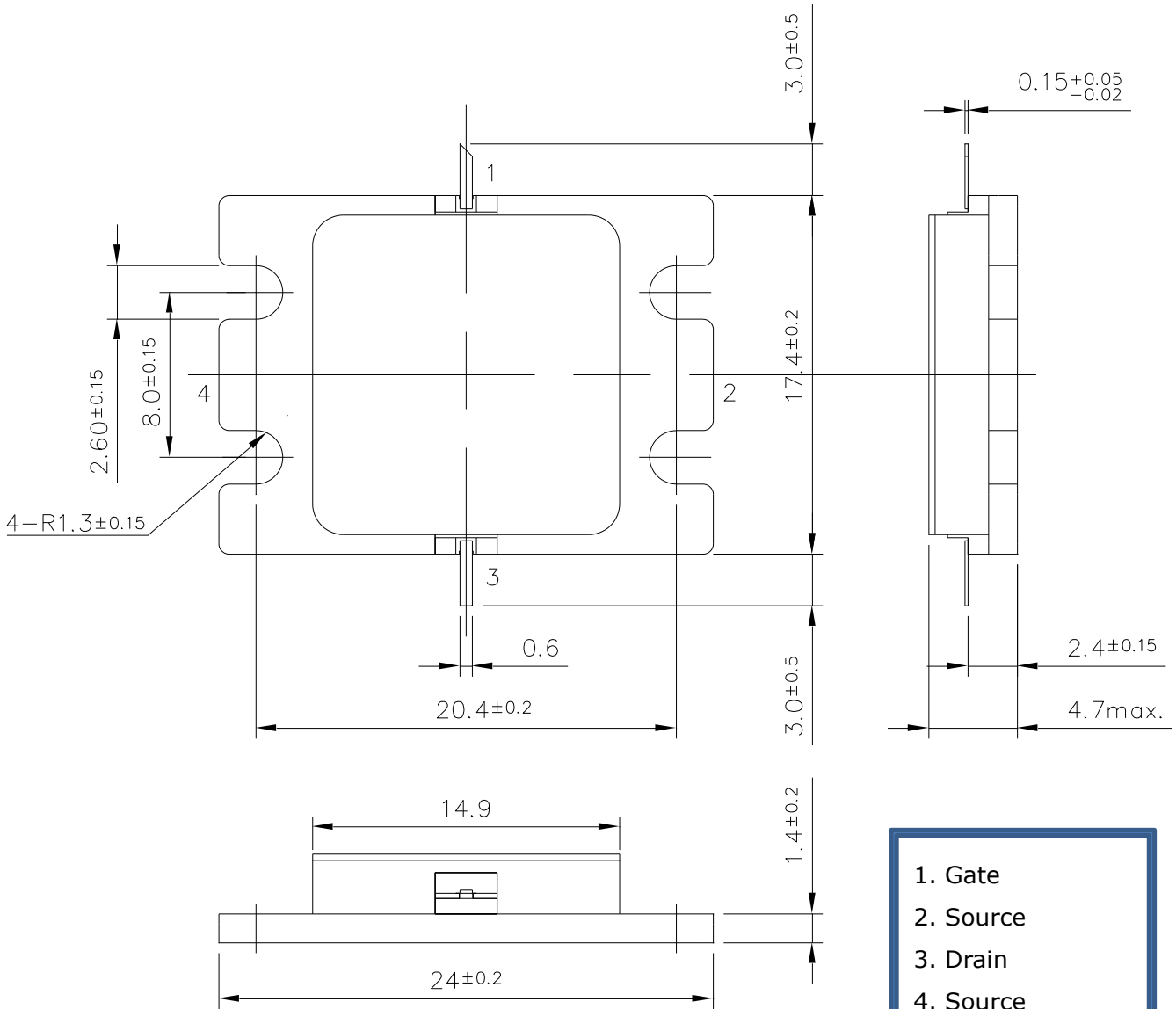
$V_{DS}=50V, I_{DS(DC)}=1.0A$
 $PW=100\mu sec., Duty=10\%$



● Thermal Characteristics In Pulsed Operation

Rth vs. Pulse Width



● 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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