

■ Features

- High Output Power: $P_{sat}=54.0\text{dBm}$ (Typ.)
- High Gain: $G_p=10.0\text{dB}$ (Typ.)
- High Power Added Efficiency: $PAE=39\%$ (Typ.)
- Broad Band: 8.5 to 9.8GHz
- Impedance Matched $Z_{in}/Z_{out} = 50\text{ohm}$
- Hermetically Sealed Package


■ Description

The SGC8598-200B-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

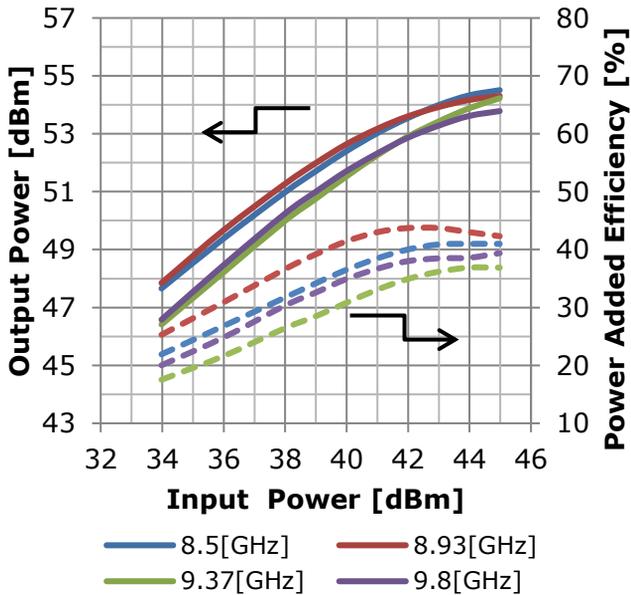
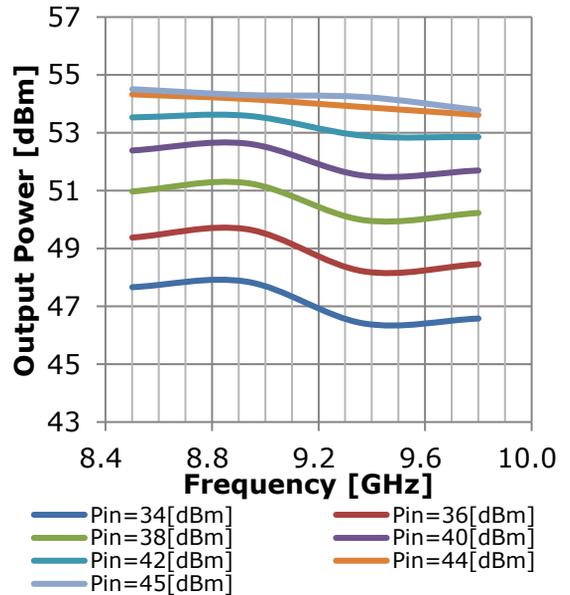
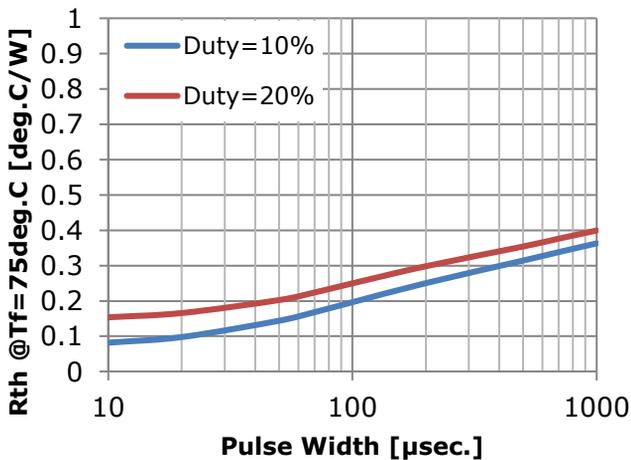
Item	Symbol	Condition	Limit	Unit
Drain-Source Voltage	V_{DS}		≤ 50	V
Forward Gate Current	I_{GF}	$R_g=51\text{ohm}$	≤ 123.3	mA
Reverse Gate Current	I_{GR}	$R_g=51\text{ohm}$	≥ -9.0	mA
Channel Temperature	T_{ch}		$< +200$	deg.C
Output Power	P_{out}		$\leq P5\text{dB}$	dBm

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

Item	Symbol	Condition	Limit			Unit
			Min.	Typ.	Max.	
Pinch-off Voltage	V_p	$V_{DS}=50\text{V}, I_{DS}=13.0\text{mA}$	-	-4.5	-	V
Frequency Range	Freq.	$V_{DS}=50\text{V-typ.}$ $I_{DS(DC)}=0.66\text{A-typ.}$ Pulse Width=100 $\mu\text{sec.}$ Duty=10%	8.5	-	9.8	GHz
Output Power at $P_{in}=44\text{dBm}$	P_{sat}		53.0	54.0	-	dBm
Power Gain at $P_{out}=53\text{dBm}$	G_p		9.0	10.0	-	dB
Drain Current at $P_{in}=44\text{dBm}$	I_{DSR}		-	11.6	14.5	A
Power Added Efficiency at $P_{in}=44\text{dBm}$	PAE		-	39	-	%
Gain Flatness	ΔG		-	1.6	-	dB
Thermal Resistance	R_{th}	Channel to Case ($P_{diss}=100\text{W,CW}$)	-	0.6	0.8	deg.C/W

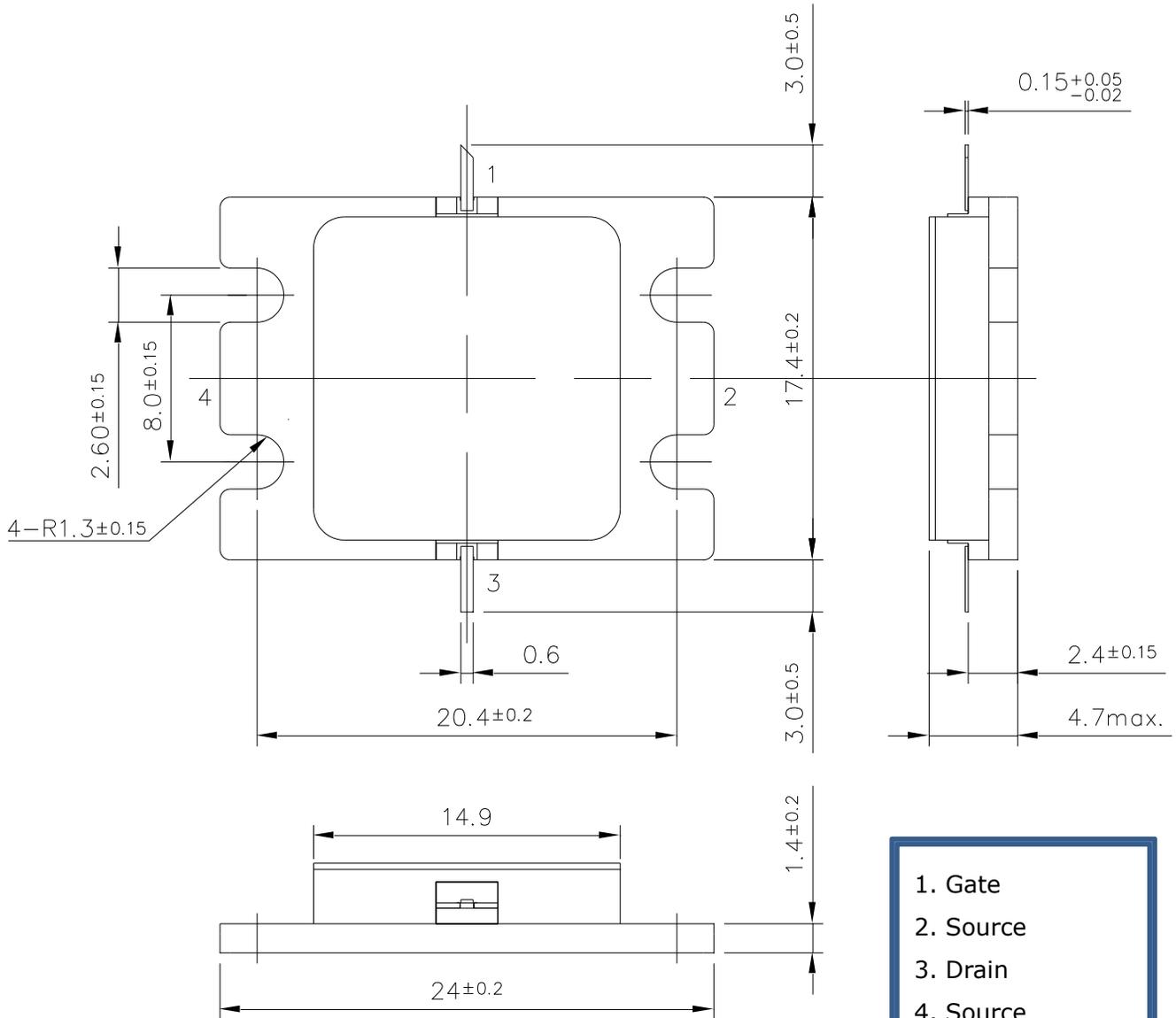
CASE STYLE	IK
RoHS Compliance	YES
ESD	Class 2 2000V to <4000V

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

● RF Characteristics
**Output Power &
Power Added Efficiency vs. Input Power**
 $V_{DS}=50V, I_{DS(DC)}=0.66A$
 $PW=100\mu sec., Duty=10\%$

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


● **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.

Any information, such as descriptions of a function and examples of application circuits, in this document are presented solely as a reference for the purpose to show examples of operations and uses of Sumitomo Electric semiconductor device(s); Sumitomo Electric does not warrant the proper operation of the device(s) with respect to its use based on such information. When the user develops equipment incorporating the device(s) based on such information, they must assume full responsibility arising out of using such information. Sumitomo Electric assumes no liability for any damages whatsoever arising out of the use of the information.

Any information in this document, including descriptions of function and schematic diagrams, shall not be construed as a license for the use or exercise of any intellectual property right, such as patent right or copyright, or any other right of Sumitomo Electric or any third party nor does Sumitomo Electric warrant non-infringement of any third-party's intellectual property right or other right by using such information. Sumitomo Electric assumes no liability for any infringement of the intellectual property rights or other rights of third parties which would result from the use of information contained herein.

The products described in this document are designed, developed and manufactured as contemplated for general use, including, without limitation, ordinary industrial use, general office use, personal use, and household use, but are not designed, developed and manufactured as contemplated (1) for use accompanying fatal risks or dangers that, unless extremely high safety is secured, could have a serious effect to the public, and could lead directly to death, personal injury, severe physical damage or other loss (i.e., nuclear reaction control in nuclear facility, aircraft flight control, air traffic control, mass transport control, medical life support system, missile launch control in weapon system), or (2) for use requiring extremely high reliability (i.e., submersible repeater and artificial satellite). Please note that Sumitomo Electric will not be liable to the user and/or any third party for any claims or damages arising from the aforementioned uses of the products.

Any semiconductor devices have an inherent chance of failure. You must protect against injury, damage or loss from such failures by incorporating safety design measures into your facility and equipment such as redundancy, fire protection, and prevention of excessive current levels and other abnormal operating conditions.

If any products described in this document represent goods or technologies subject to certain restrictions on export under the Foreign Exchange and Foreign Trade Law of Japan, the prior authorization of the Japanese government will be required for export of those products from Japan.

<http://www.sedi.co.jp/>

ATTENTION

Information in this document is subject to change without notice.