

**■ Features**

- High Power: 550W(Typ.) @ Pin=28.2W(44.5dBm)
- High Efficiency: 57%(Typ.) @ Pin=28.2W(44.5dBm)
- Broad Band: 2.7 to 3.1GHz
- Impedance Matched  $Z_{in}/Z_{out} = 50 \text{ ohm}$
- Hermetically Sealed Package


**■ Description**

Sumitomo Electric's GaN-HEMT SGN2731-500L-R offers high power, high efficiency and greater consistency covering 2.7 to 3.1 GHz for S-band radar applications with 50V operation.

**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

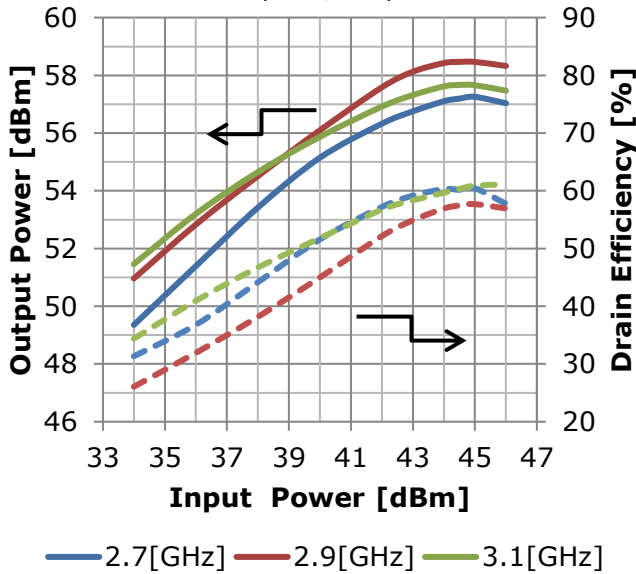
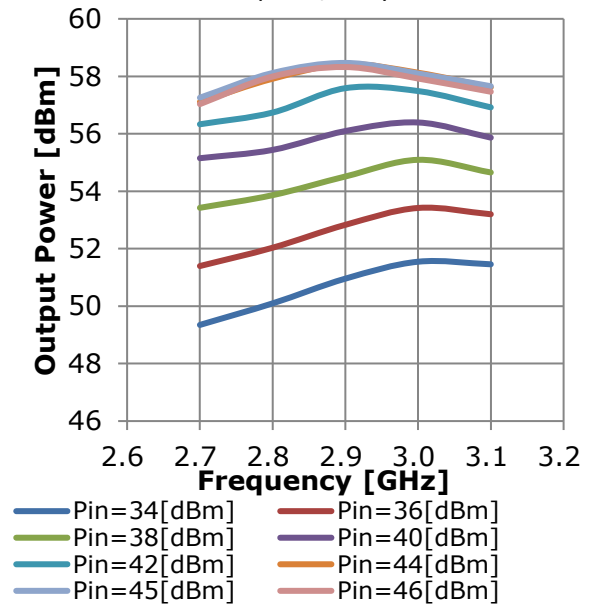
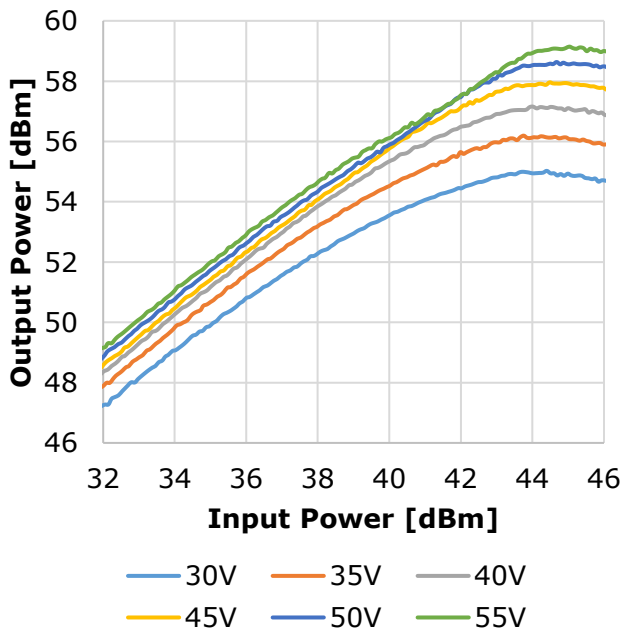
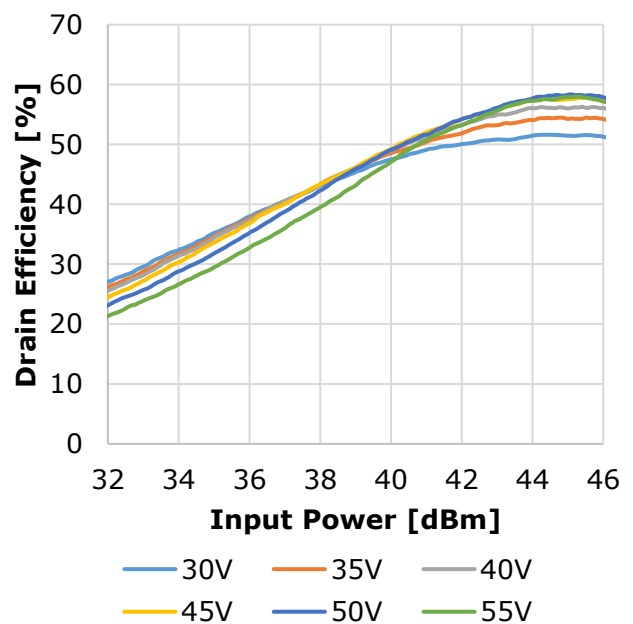
**RECOMMENDED OPERATING CONDITION**

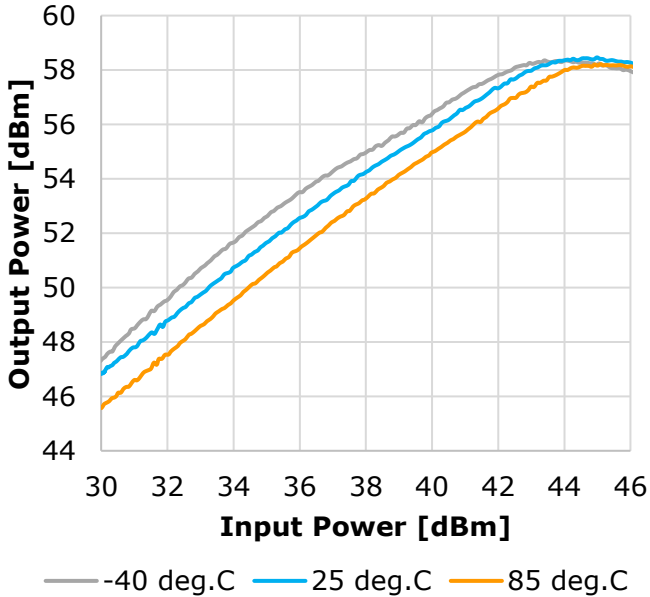
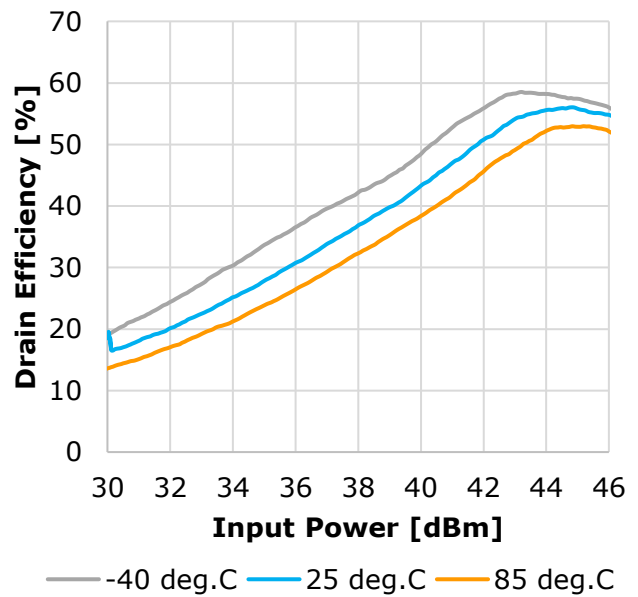
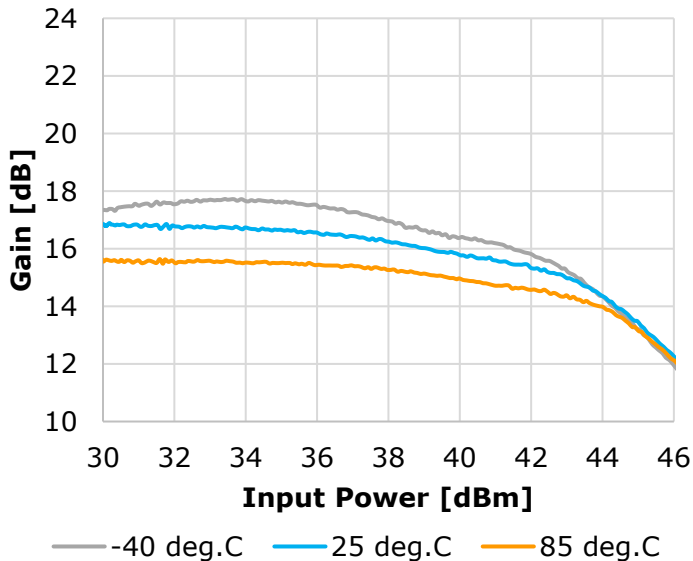
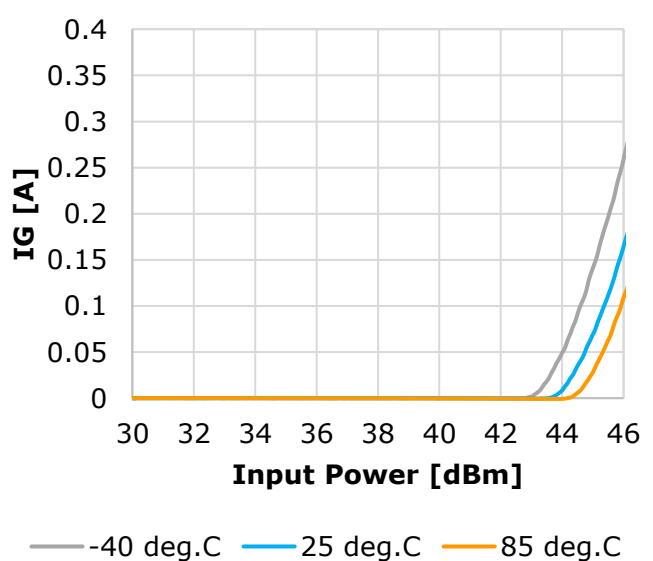
Item	Symbol	Condition	Limit	Unit
Drain-Source Voltage	$V_{DS}$		$\leq 50$	V
Forward Gate Current	$I_{GF}$	$R_g=5.1 \text{ ohm}$	$\leq 304$	mA
Reverse Gate Current	$I_{GR}$	$R_g=5.1 \text{ ohm}$	$\geq -18$	mA
Channel Temperature	$T_{ch}$		$< +200$	deg.C
Output Power	$P_{out}$		$\leq P5 \text{ dB}$	dBm

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

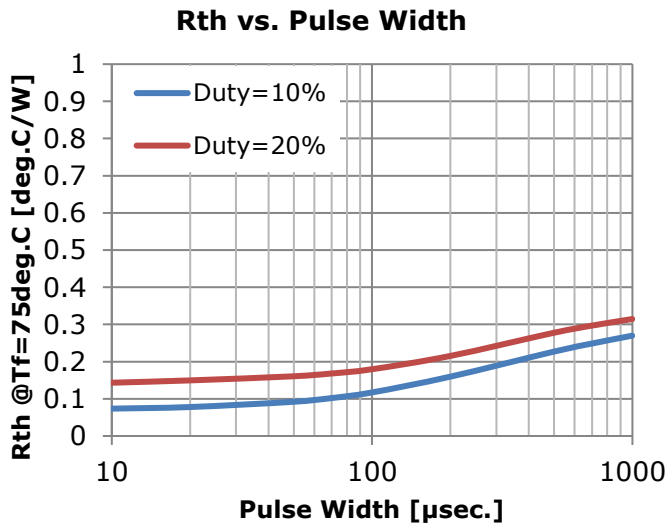
Item	Symbol	Condition	Limit			Unit
			Min.	Typ.	Max.	
Pinch-off Voltage	$V_p$	$V_{DS}=50V, I_{DS}=115mA$	-3.45	-3.00	-2.45	V
Frequency Range	Freq.	$V_{DS}=50V\text{-typ.}$ $I_{DS(DC)}=1.5A\text{-typ.}$ Pulse Width=120 $\mu\text{sec.}$ Duty=10% Pin=44.5dBm	2.7	-	3.1	GHz
Output Power	$P_{sat}$		56.8	57.4	-	dBm
Power Gain	$G_p$		12.3	12.9	-	dB
Gain Flatness	GF		-	1.3	-	dB
Drain Efficiency	DE		-	57	-	%
Load Mismatch Ruggedness	VSWR		-	10:1	-	-
Thermal Resistance	$R_{th}$		Channel to Case at 105W P <sub>DC</sub>	-	0.55	0.7

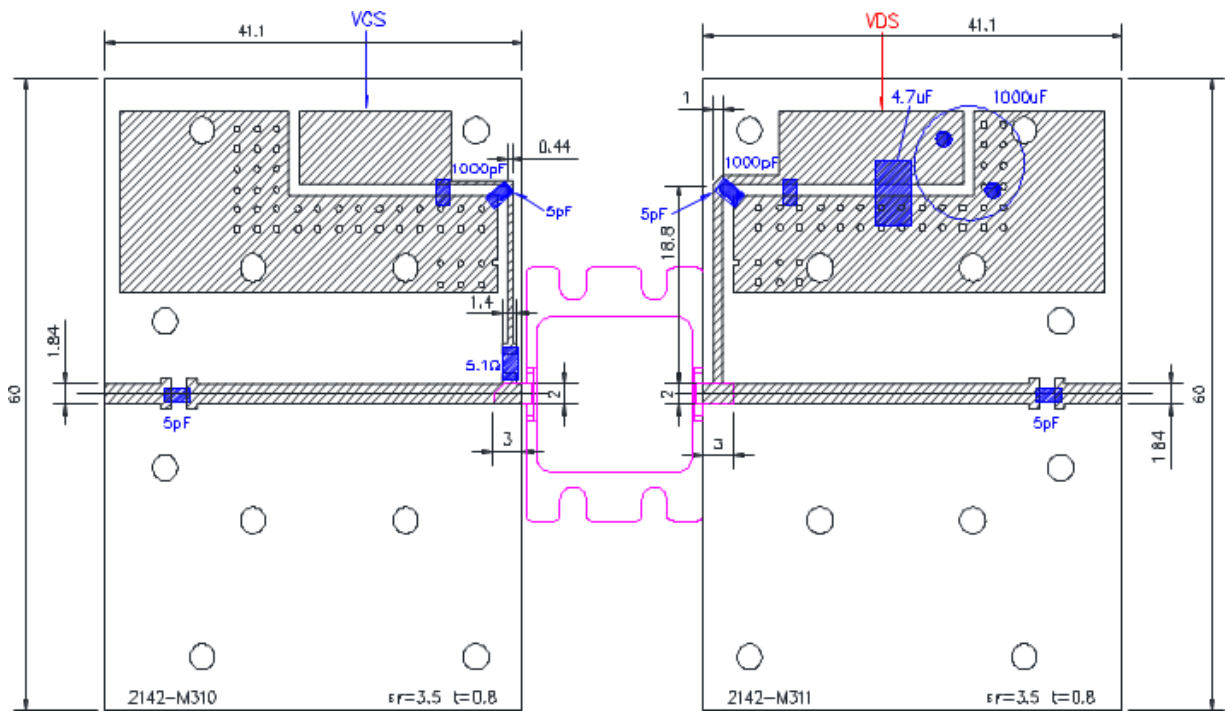
CASE STYLE	IV
RoHS Compliance	YES

**RF Characteristics**
**Output Power & Drain Efficiency vs. Input Power**
 $V_{DS}=50V, I_{DS(DC)}=1.5A$   
 $PW=120\mu sec., Duty=10\%$ 

**Output Power vs. Frequency by Pin**
 $V_{DS}=50V, I_{DS(DC)}=1.5A$   
 $PW=120\mu sec., Duty=10\%$ 

**Output Power vs. Input Power by Drain Voltage**
 $f=2.9GHz, I_{DS(DC)}=1.5A$   
 $PW=120\mu sec., Duty=10\%$ 

**Drain Efficiency vs. Input Power by Drain Voltage**
 $f=2.9GHz, I_{DS(DC)}=1.5A$   
 $PW=120\mu sec., Duty=10\%$ 


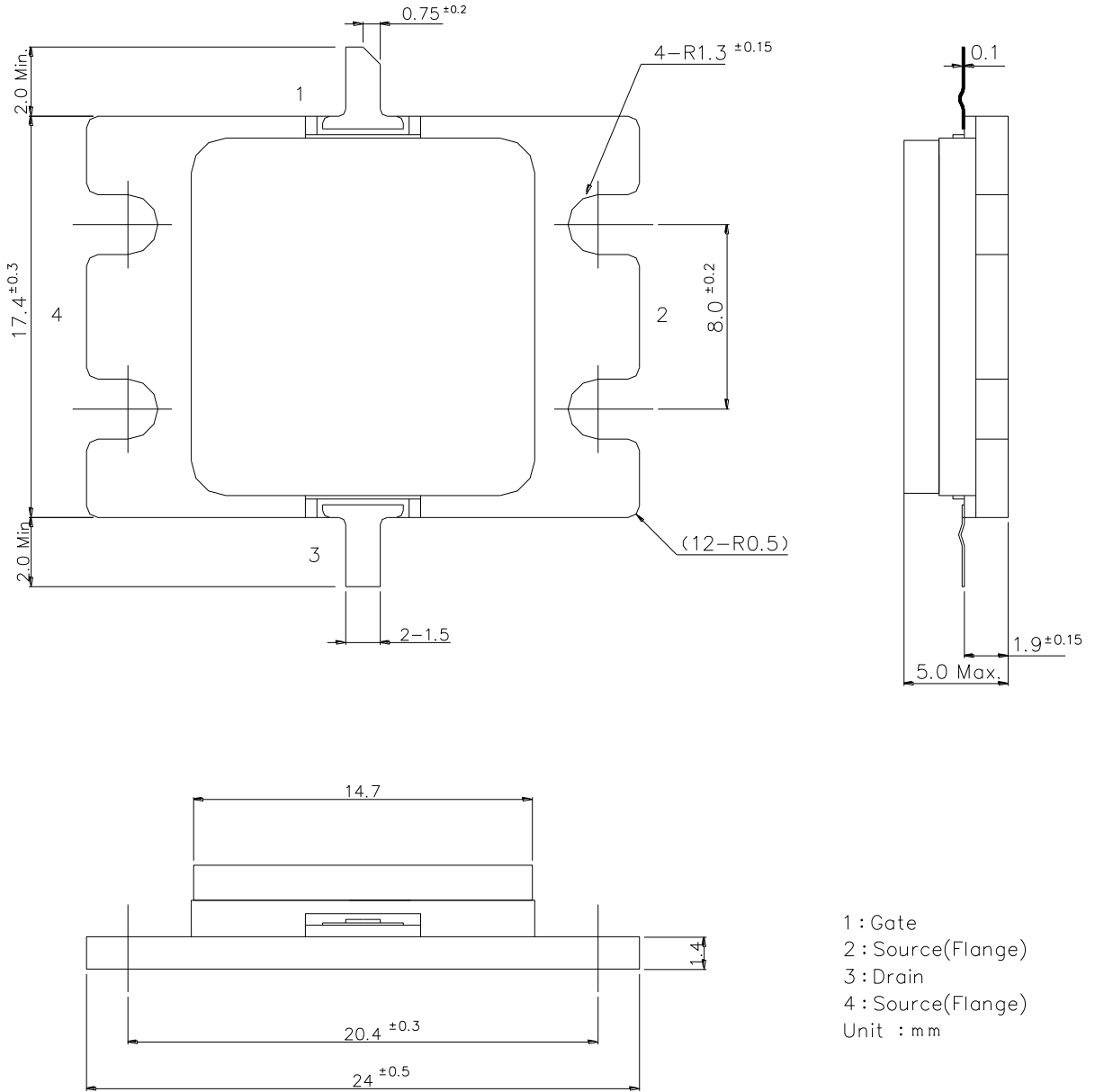
**RF Characteristics**
**Output Power vs. Input Power  
by case temperature**
 $f=2.9\text{GHz}$ ,  $V_{DS}=50\text{V}$ ,  $I_{DS(DC)}=1.5\text{A}$   
 $PW=120\mu\text{sec.}$ ,  $\text{Duty}=10\%$ 

**Drain Efficiency vs. Input Power  
by case temperature**
 $f=2.9\text{GHz}$ ,  $V_{DS}=50\text{V}$ ,  $I_{DS(DC)}=1.5\text{A}$   
 $PW=120\mu\text{sec.}$ ,  $\text{Duty}=10\%$ 

**Gain vs. Input Power  
by case temperature**
 $f=2.9\text{GHz}$ ,  $V_{DS}=50\text{V}$ ,  $I_{DS(DC)}=1.5\text{A}$   
 $PW=120\mu\text{sec.}$ ,  $\text{Duty}=10\%$ 

**IG vs. Input Power  
by case temperature**
 $f=2.9\text{GHz}$ ,  $V_{DS}=50\text{V}$ ,  $I_{DS(DC)}=1.5\text{A}$   
 $PW=120\mu\text{sec.}$ ,  $\text{Duty}=10\%$ 


■ **Thermal Characteristics In Pulsed Operation**



**■ Test Fixture**


PCB :  $h=0.8\text{mm}$ ,  $\epsilon_r=3.5$ ,  $\text{Cu}=18\mu\text{m}$   
 Unit : mm

**■ Package Outline**
**Case Style : IV**


## **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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