

**■ Features**

- High Power: 190W(Typ.) @ Pin=5W(37dBm)
- High Efficiency: 62%(Typ.) @ Pin=5W(37dBm)
- Broad Band: 3.0 to 3.5GHz
- Impedance Matched  $Z_{in}/Z_{out} = 50 \text{ ohm}$
- Hermetically Sealed Package


**■ Description**

Sumitomo Electric's GaN-HEMT SGN3035-150L-R offers high power, high efficiency and greater consistency covering 3.0 to 3.5 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

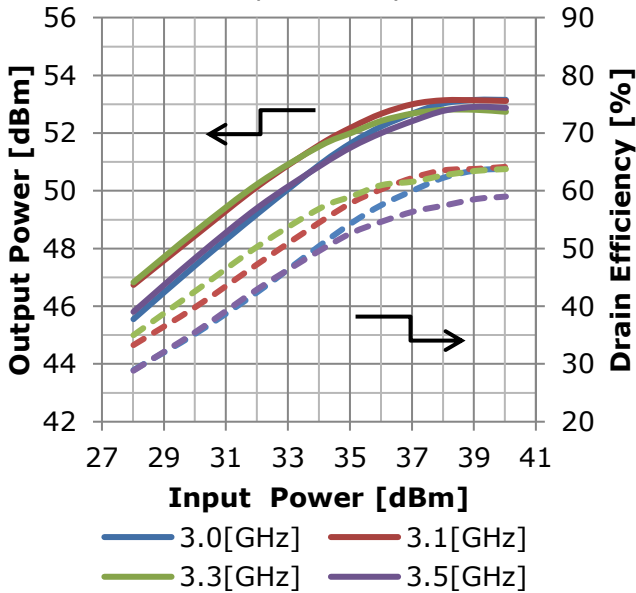
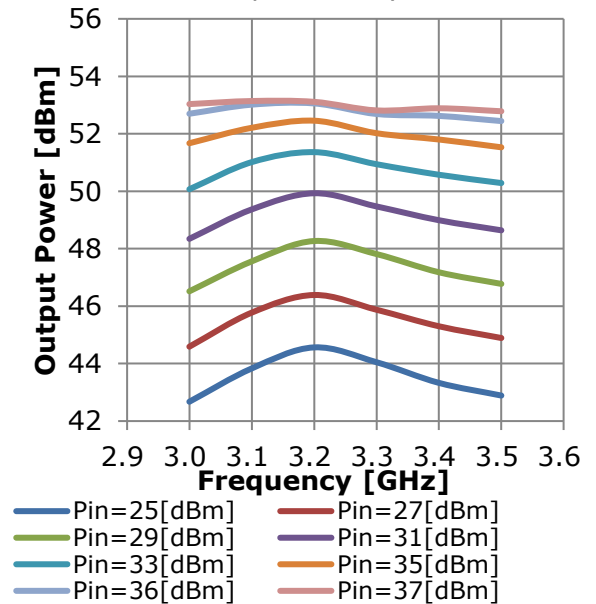
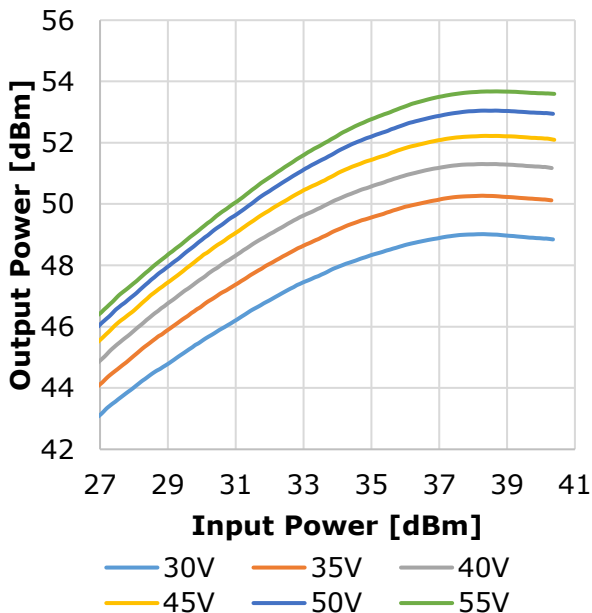
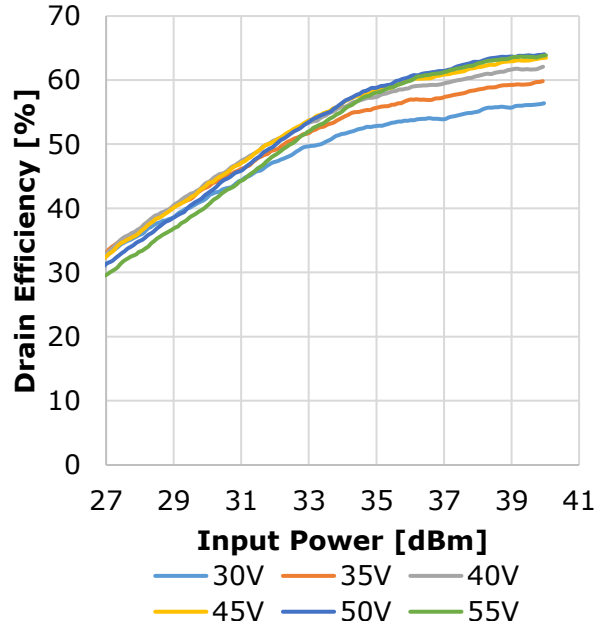
**RECOMMENDED OPERATING CONDITION**

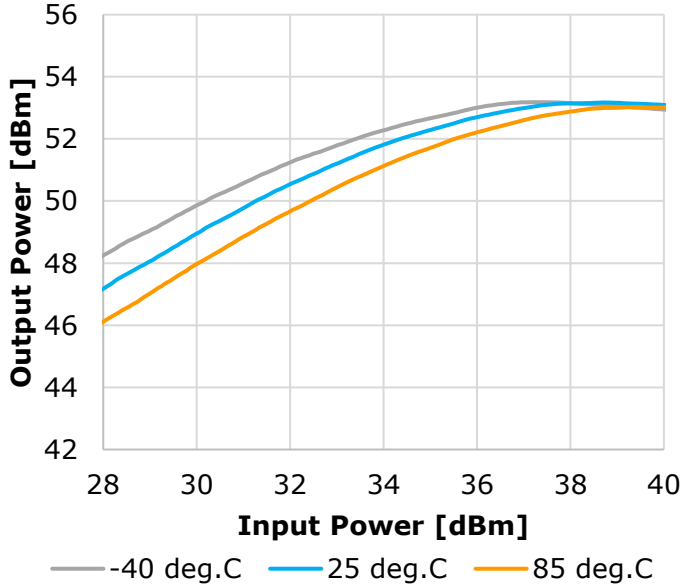
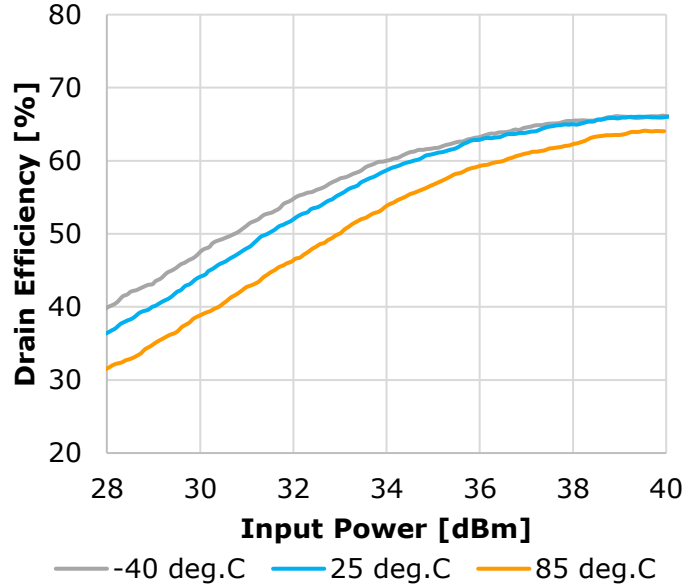
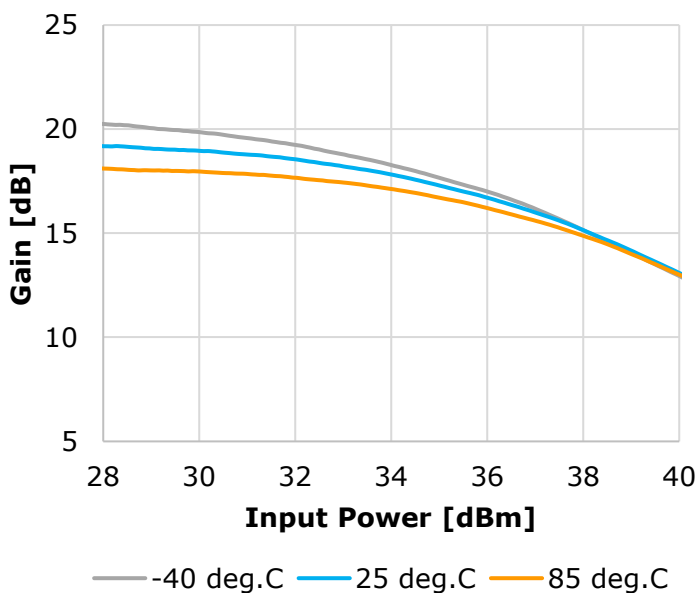
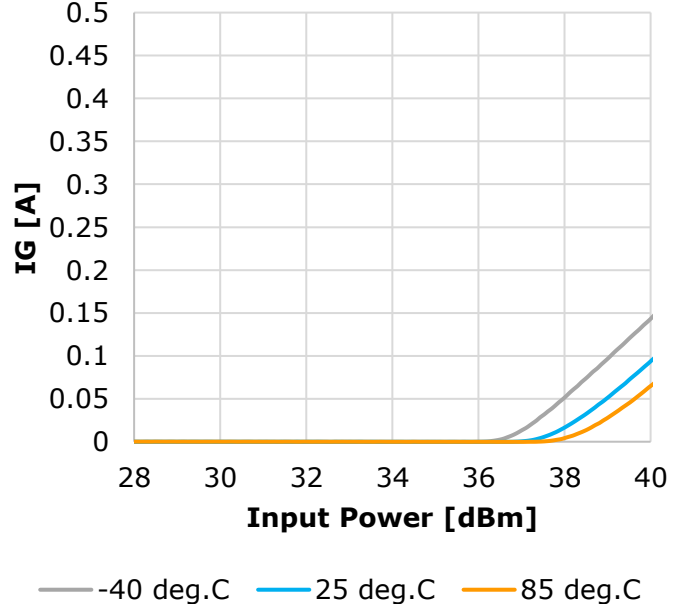
Item	Symbol	Condition	Limit	Unit
Drain-Source Voltage	$V_{DS}$		$\leq 50$	V
Forward Gate Current	$I_{GF}$	$R_g=12\text{ohm}$	$\leq 76$	mA
Reverse Gate Current	$I_{GR}$	$R_g=12\text{ohm}$	$\geq -5.2$	mA
Channel Temperature	$T_{ch}$		$< +200$	deg.C
Output Power	$P_{out}$		$\leq P5dB$	dBm

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

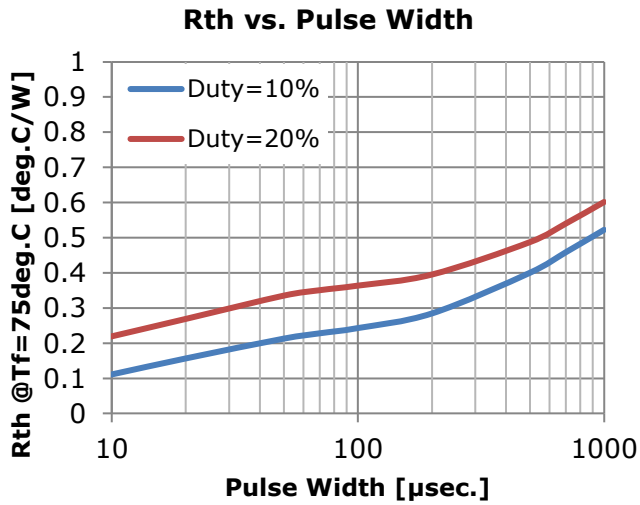
Item	Symbol	Condition	Limit			Unit
			Min.	Typ.	Max.	
Pinch-off Voltage	$V_p$	$V_{DS}=50V, I_{DS}=28mA$	-3.45	-3.00	-2.45	V
Frequency Range	Freq.	$V_{DS}=50V\text{-typ.}$ $I_{DS(DC)}=0.5A\text{-typ.}$ Pulse Width=200μsec. Duty=10% Pin=37dBm	3.0	-	3.5	GHz
Output Power	$P_{sat}$		51.8	52.8	-	dBm
Power Gain	$G_p$		14.8	15.8	-	dB
Gain Flatness	GF		-	0.7	1.5	dB
Drain Efficiency	DE		-	62	-	%
Load Mismatch Ruggedness	VSWR		-	10:1	-	-
Thermal Resistance	$R_{th}$		Channel to Case at 45W $P_{DC}$	-	1.1	1.3

CASE STYLE	IV
RoHS Compliance	YES

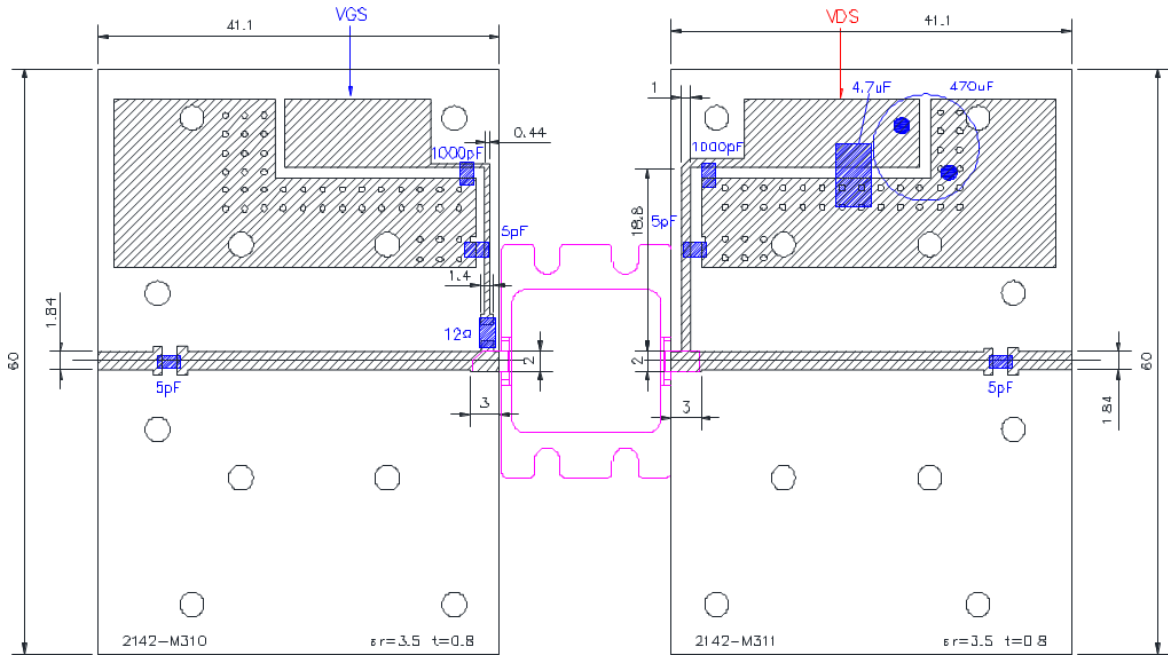
**RF Characteristics**
**Output Power & Drain Efficiency vs. Input Power**
 $V_{DS}=50V, I_{DS(DC)}=0.5A$   
 $PW=200\mu\text{sec.}, \text{Duty}=10\%$ 

**Output Power vs. Frequency by Pin**
 $V_{DS}=50V, I_{DS(DC)}=0.5A$   
 $PW=200\mu\text{sec.}, \text{Duty}=10\%$ 

**Output Power vs. Input Power by Drain Voltage**
 $f=3.3\text{GHz}, I_{DS(DC)}=0.5A$   
 $PW=200\mu\text{sec.}, \text{Duty}=10\%$ 

**Drain Efficiency vs. Input Power by Drain Voltage**
 $f=3.3\text{GHz}, I_{DS(DC)}=0.5A$   
 $PW=200\mu\text{sec.}, \text{Duty}=10\%$ 


**RF Characteristics**
**Output Power vs. Input Power  
by case temperature**
 $f=3.3\text{GHz}$ ,  $V_{DS}=50\text{V}$ ,  $I_{DS(DC)}=0.5\text{A}$   
 $PW=200\mu\text{sec.}$ ,  $\text{Duty}=10\%$ 

**Drain Efficiency vs. Input Power  
by case temperature**
 $f=3.3\text{GHz}$ ,  $V_{DS}=50\text{V}$ ,  $I_{DS(DC)}=0.5\text{A}$   
 $PW=200\mu\text{sec.}$ ,  $\text{Duty}=10\%$ 

**Gain vs. Input Power  
by case temperature**
 $f=3.3\text{GHz}$ ,  $V_{DS}=50\text{V}$ ,  $I_{DS(DC)}=0.5\text{A}$   
 $PW=200\mu\text{sec.}$ ,  $\text{Duty}=10\%$ 

**IG vs. Input Power  
by case temperature**
 $f=3.3\text{GHz}$ ,  $V_{DS}=50\text{V}$ ,  $I_{DS(DC)}=0.5\text{A}$   
 $PW=200\mu\text{sec.}$ ,  $\text{Duty}=10\%$ 


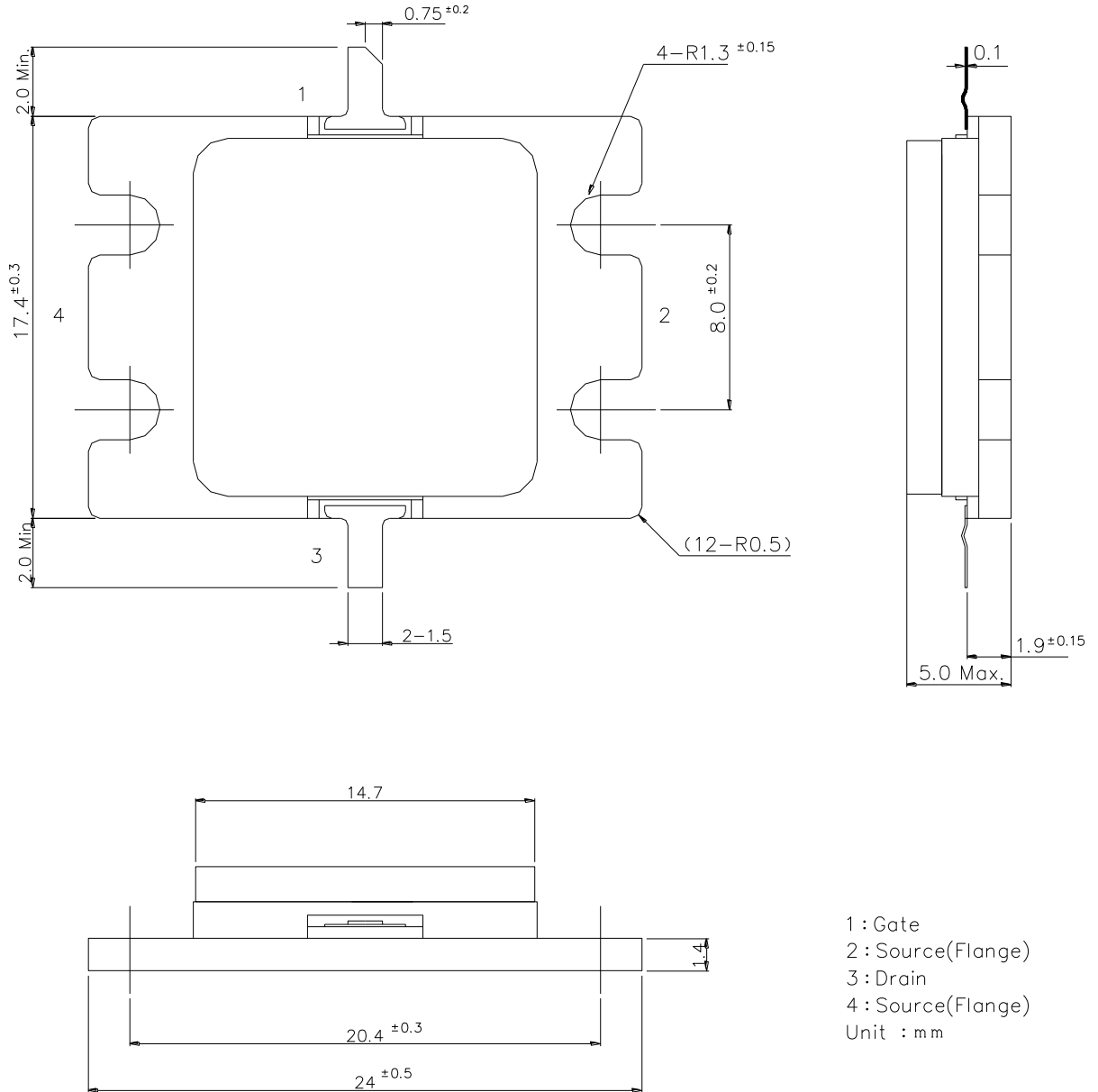
### ■ Thermal Characteristics In Pulsed Operation



■ Test Fixture



PCB : h=0.8mm,  $\epsilon_r=3.5$ , Cu=18um  
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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