

## ■ Features

- High Power : 300W (typ.) @  $V_{DS}=32V$ ,  $P_{in}=22.9W$  (43.6dBm)
- High Efficiency: 57% (typ.) @  $V_{DS}=32V$ ,  $P_{in}=22.9W$  (43.6dBm)
- Impedance Matched  $Z_{in}/Z_{out} = 50\ \text{ohm}$



## ■ Description

Sumitomo Electric's GaN-HEMT SGN3133-260L-R offers high power, high efficiency and greater consistency covering 3.1 to 3.3 GHz for S-band radar applications with 32V operation and pulse condition of up to 300μsec pulse width and duty of up to 10%.

### 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

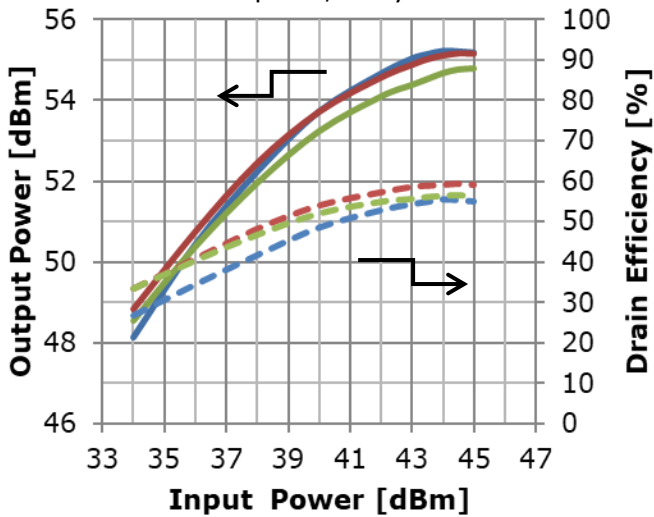
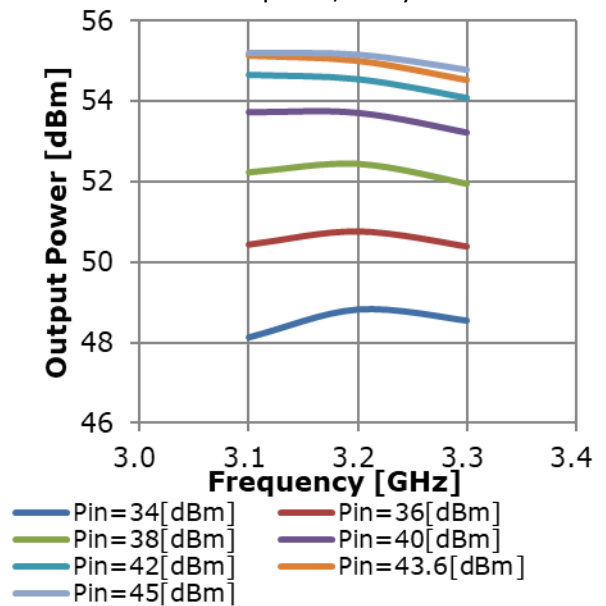
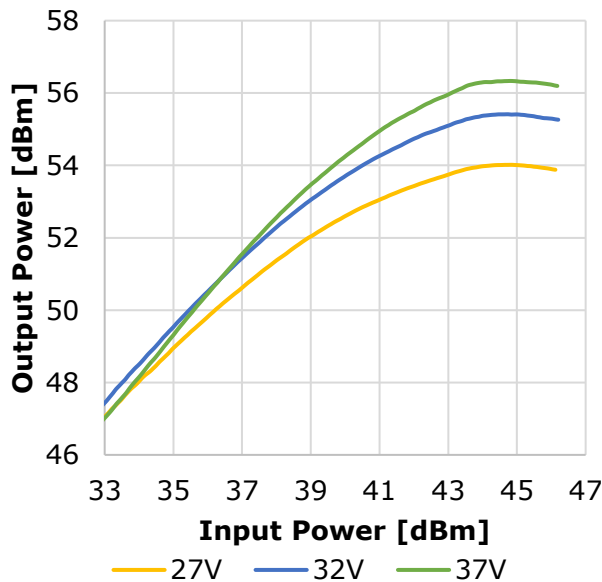
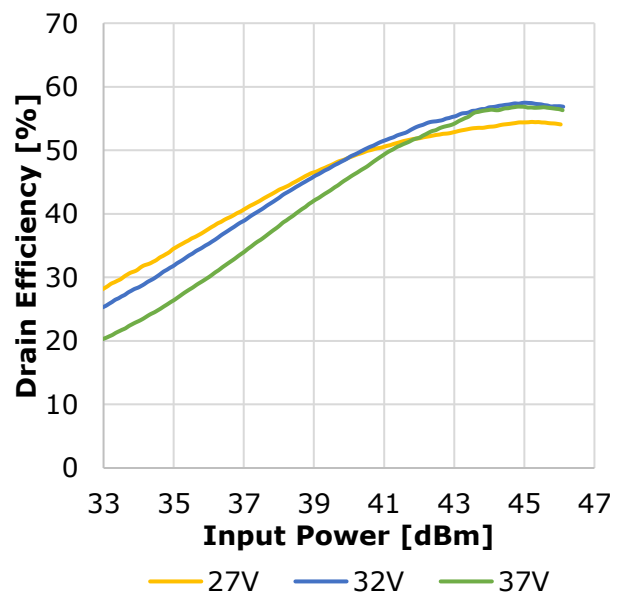
### RECOMMENDED OPERATING CONDITION

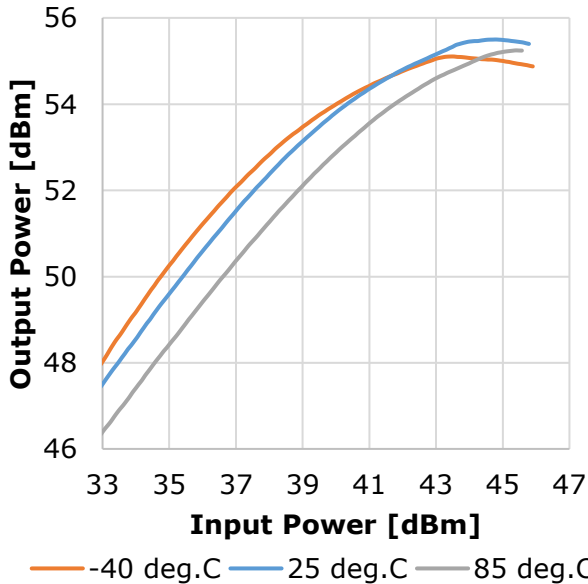
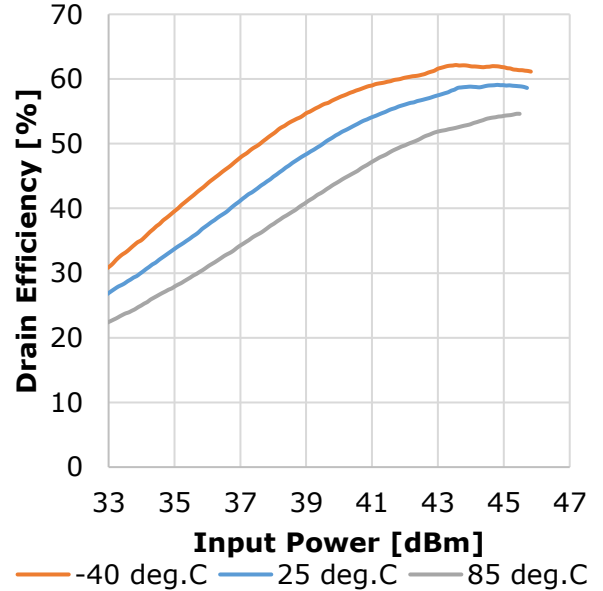
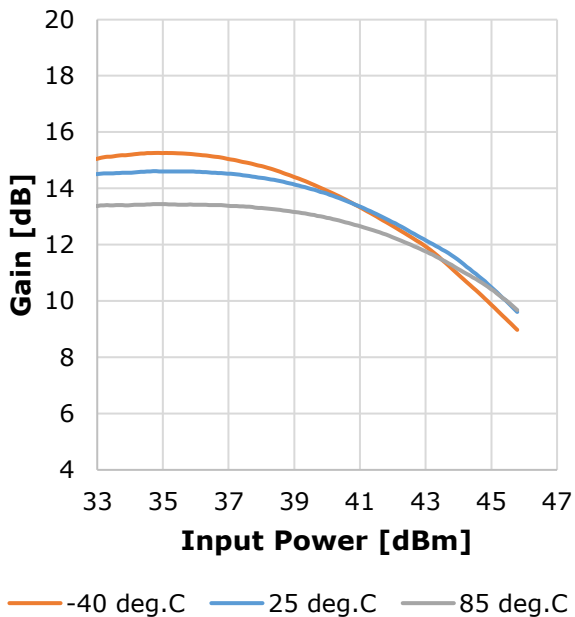
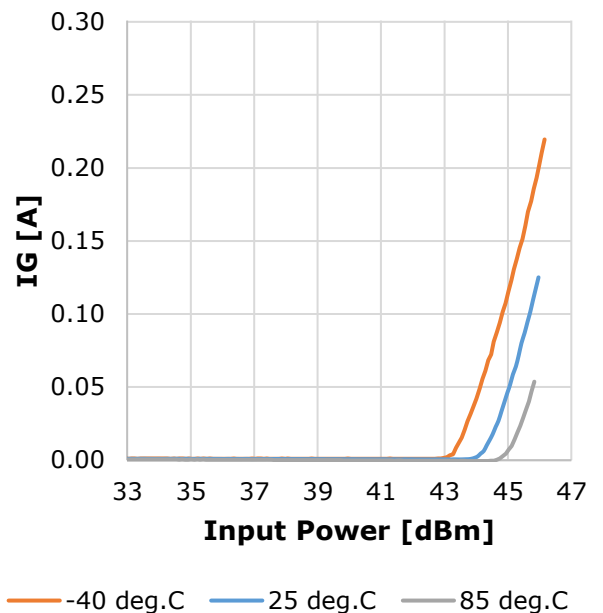
Item	Symbol	Condition	Limit	Unit
Drain-Source Voltage	$V_{DS}$		$\leq 32$	V
Forward Gate Current	$I_{GF}$	$R_g=5.1\ \text{ohm}$	$\leq 304$	mA
Reverse Gate Current	$I_{GR}$	$R_g=5.1\ \text{ohm}$	$\geq -18$	mA
Channel Temperature	$T_{ch}$		$< +200$	deg.C
Output Power	$P_{out}$		$\leq P5dB$	dBm

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

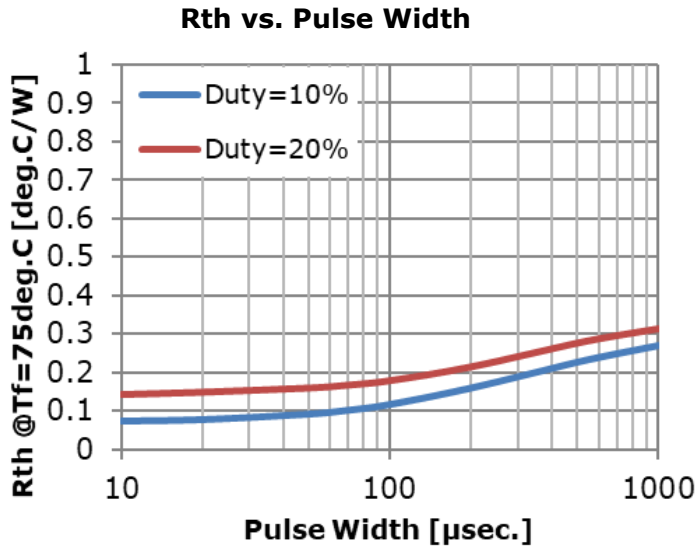
Item	Symbol	Condition	Limit			Unit
			Min.	Typ.	Max.	
Pinch-off Voltage	$V_p$	$V_{DS}=50V$ , $I_{DS}=115mA$	-3.45	-3.00	-2.45	V
Frequency Range	Freq.	$V_{DS}=32V$ -typ. $I_{DS(DC)}=1.0A$ -typ. Pulse Width=200μsec. Duty=10% $P_{in}=22.9W$ (43.6dBm)	3.1	-	3.3	GHz
Output Power	$P_{sat}$		54.15	55.0	-	dBm
Power Gain	$G_p$		10.55	11.4	-	dB
Drain Efficiency	DE		-	57	-	%
Gain Flatness	GF		-	0.5	1.0	dB
Load Mismatch Ruggedness	VSWR		-	10:1	-	-
Thermal Resistance	$R_{th}$		Channel to Case at 105W $P_{DC}$	-	0.55	0.7

CASE STYLE	IV
RoHS Compliance	YES

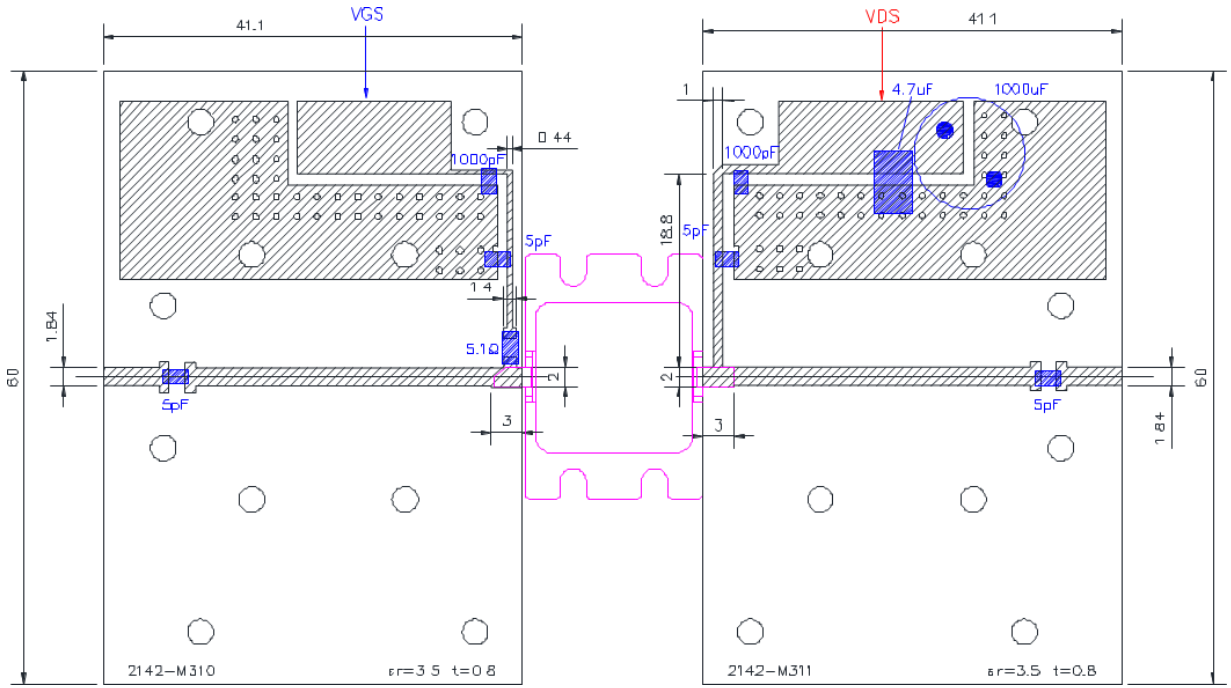
**RF Characteristics**
**Output Power & Drain Efficiency vs. Input Power**
 $V_{DS}=32V, I_{DS(DC)}=1A$   
 $PW=200\mu\text{sec.}, \text{Duty}=10\%$ 

**Output Power vs. Frequency**
 $V_{DS}=32V, I_{DS(DC)}=1A$   
 $PW=200\mu\text{sec.}, \text{Duty}=10\%$ 

**Output Power vs. Input Power by Drain Voltage**
 $f=3.2\text{GHz}, I_{DS(DC)}=1.0A$   
 $PW=200\mu\text{sec.}, \text{Duty}=10\%$ 

**Drain Efficiency vs. Input Power by Drain Voltage**
 $f=3.2\text{GHz}, I_{DS(DC)}=1.0A$   
 $PW=200\mu\text{sec.}, \text{Duty}=10\%$ 


**RF Characteristics**
**Output Power vs. Input Power  
by case temperature**
 $f=3.2\text{GHz}$ ,  $V_{DS}=50\text{V}$ ,  $I_{DS(DC)}=1.0\text{A}$   
 $PW=200\mu\text{sec.}$ , Duty=10%

**Drain Efficiency vs. Input Power  
by case temperature**
 $f=3.2\text{GHz}$ ,  $V_{DS}=50\text{V}$ ,  $I_{DS(DC)}=1.0\text{A}$   
 $PW=200\mu\text{sec.}$ , Duty=10%

**Gain vs. Input Power  
by case temperature**
 $f=3.2\text{GHz}$ ,  $V_{DS}=50\text{V}$ ,  $I_{DS(DC)}=1.0\text{A}$   
 $PW=200\mu\text{sec.}$ , Duty=10%

**IG vs. Input Power  
by case temperature**
 $f=3.2\text{GHz}$ ,  $V_{DS}=50\text{V}$ ,  $I_{DS(DC)}=1.0\text{A}$   
 $PW=200\mu\text{sec.}$ , Duty=10%


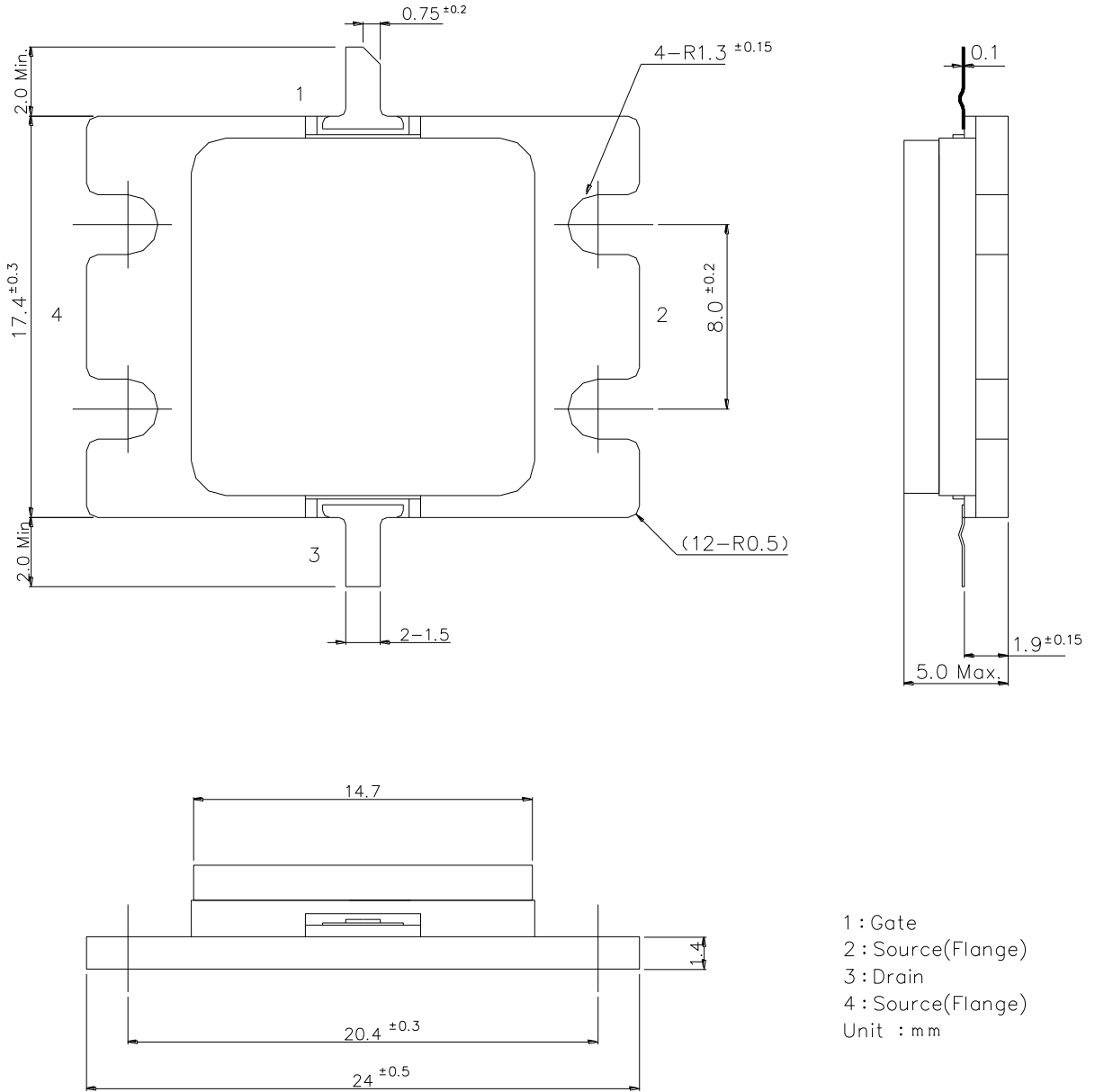
■ Thermal Characteristics In Pulsed Operation



■ Test Fixture



PCB : h=0.8mm, er=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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