

■ Features

- High Power : 260W (min.) @ $V_{DS}=32V$, $P_{in}=22.9W$ (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

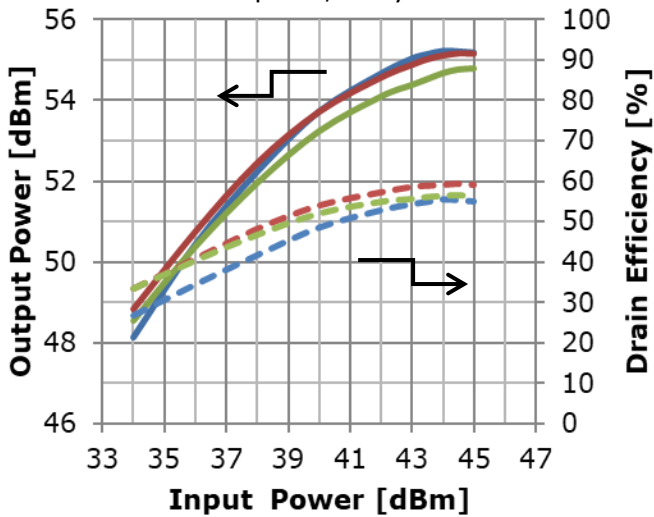
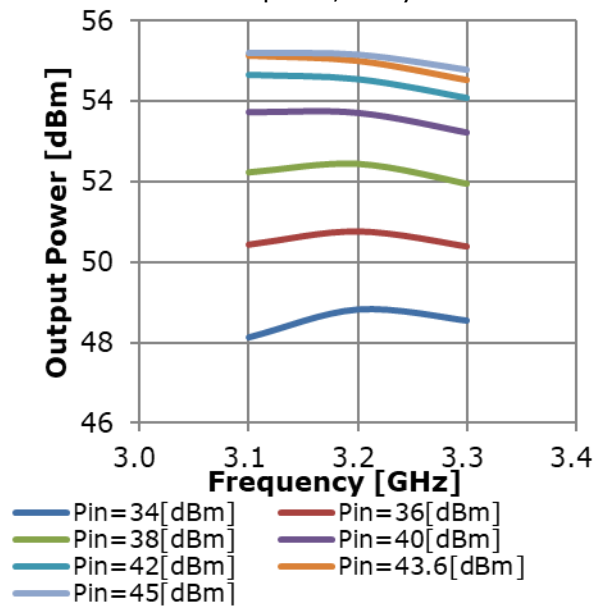
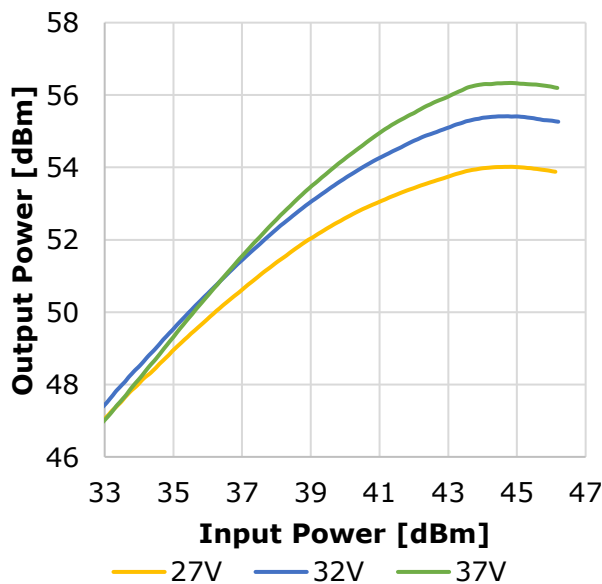
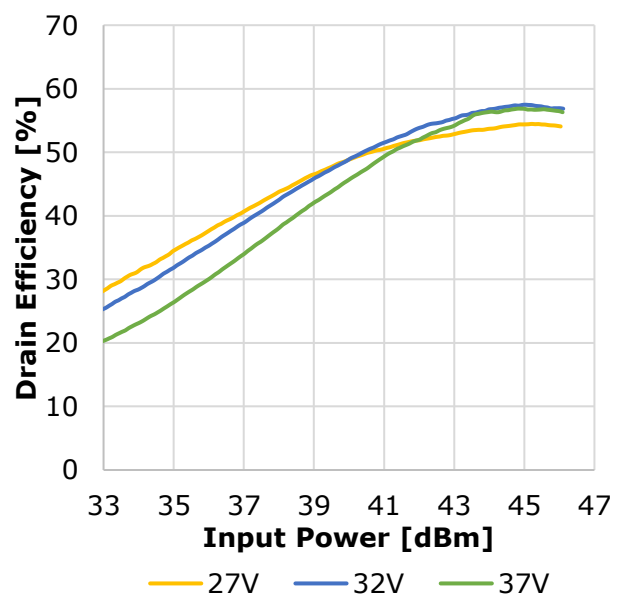
RECOMMENDED OPERATING CONDITION

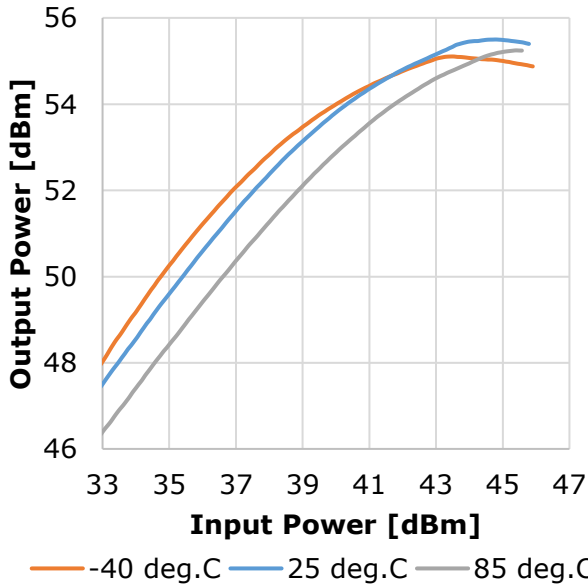
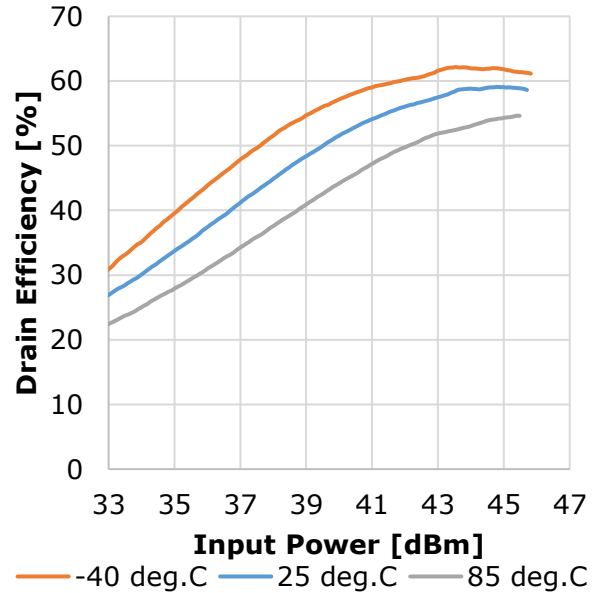
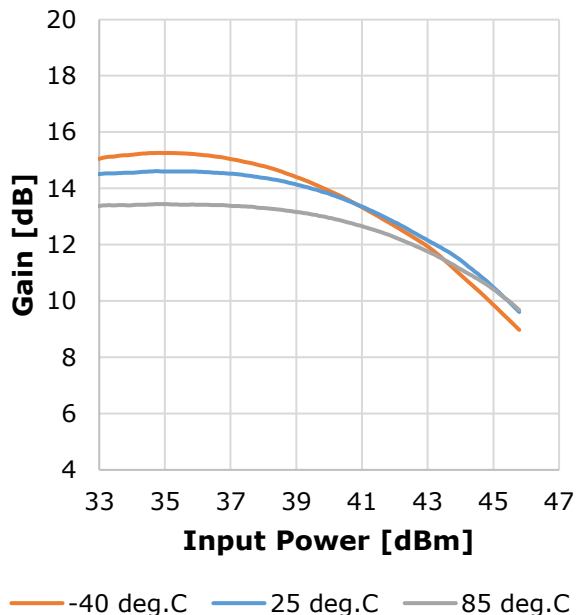
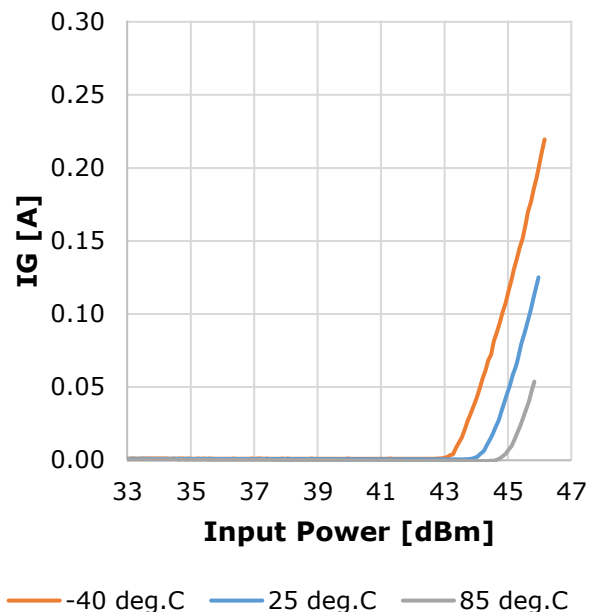
Item	Symbol	Condition	Limit	Unit
Drain-Source Voltage	V_{DS}		≤ 32	V
Forward Gate Current	I_{GF}	$R_g=5.1\ \text{ohm}$	≤ 304	mA
Reverse Gate Current	I_{GR}	$R_g=5.1\ \text{ohm}$	≥ -18	mA
Channel Temperature	T_{ch}		$< +200$	deg.C
Output Power	P_{out}		$\leq P5dB$	dBm

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

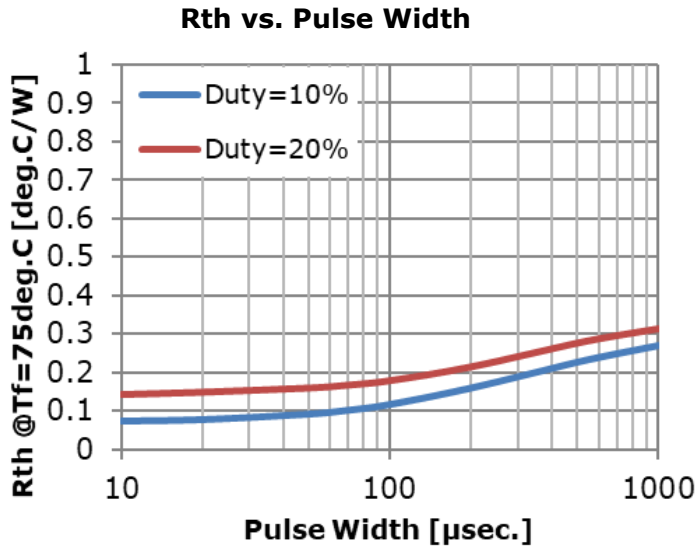
Item	Symbol	Condition	Limit			Unit
			Min.	Typ.	Max.	
Pinch-off Voltage	V_p	$V_{DS}=50V$, $I_{DS}=115mA$	-3.45	-3.00	-2.45	V
Frequency Range	Freq.	$V_{DS}=32V$ -typ. $I_{DS(DC)}=1.0A$ -typ. Pulse Width=200μsec. Duty=10% $P_{in}=22.9W$ (43.6dBm)	3.1	-	3.3	GHz
Output Power	P_{sat}		54.15	55.0	-	dBm
Power 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

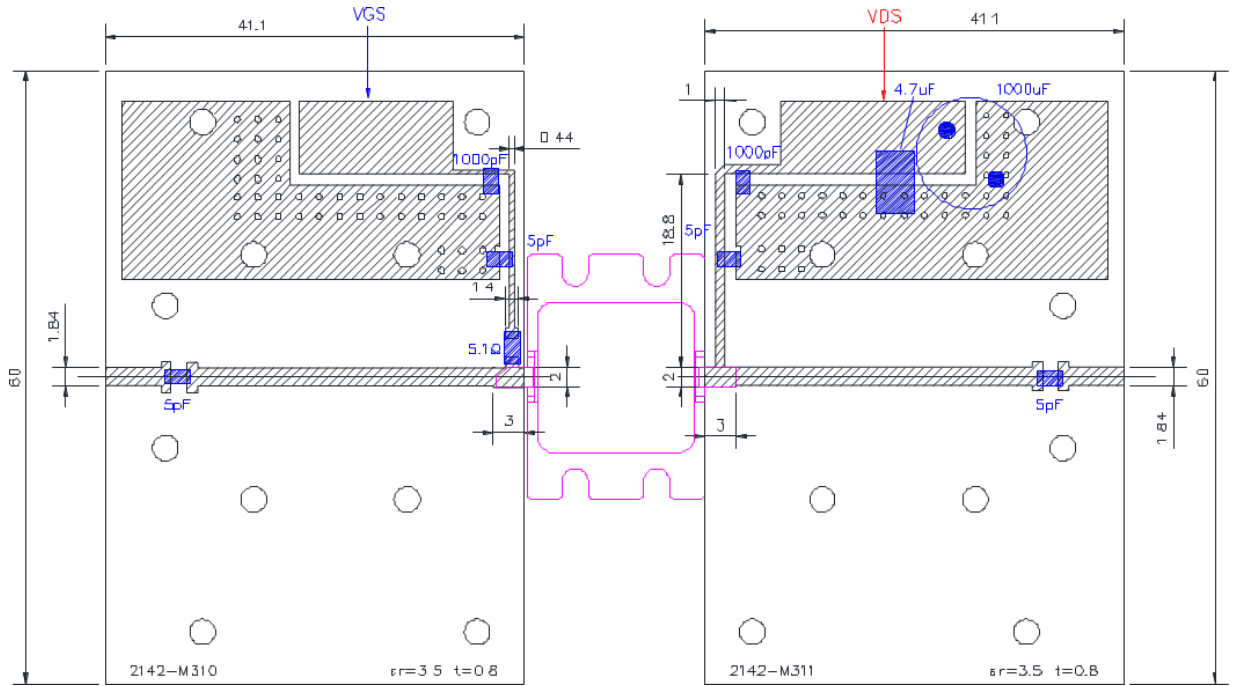
CASE STYLE	IV
RoHS Compliance	YES

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
 $f=3.2\text{GHz}, I_{DS(DC)}=1.0A$
 $PW=200\mu\text{sec.}, \text{Duty}=10\%$


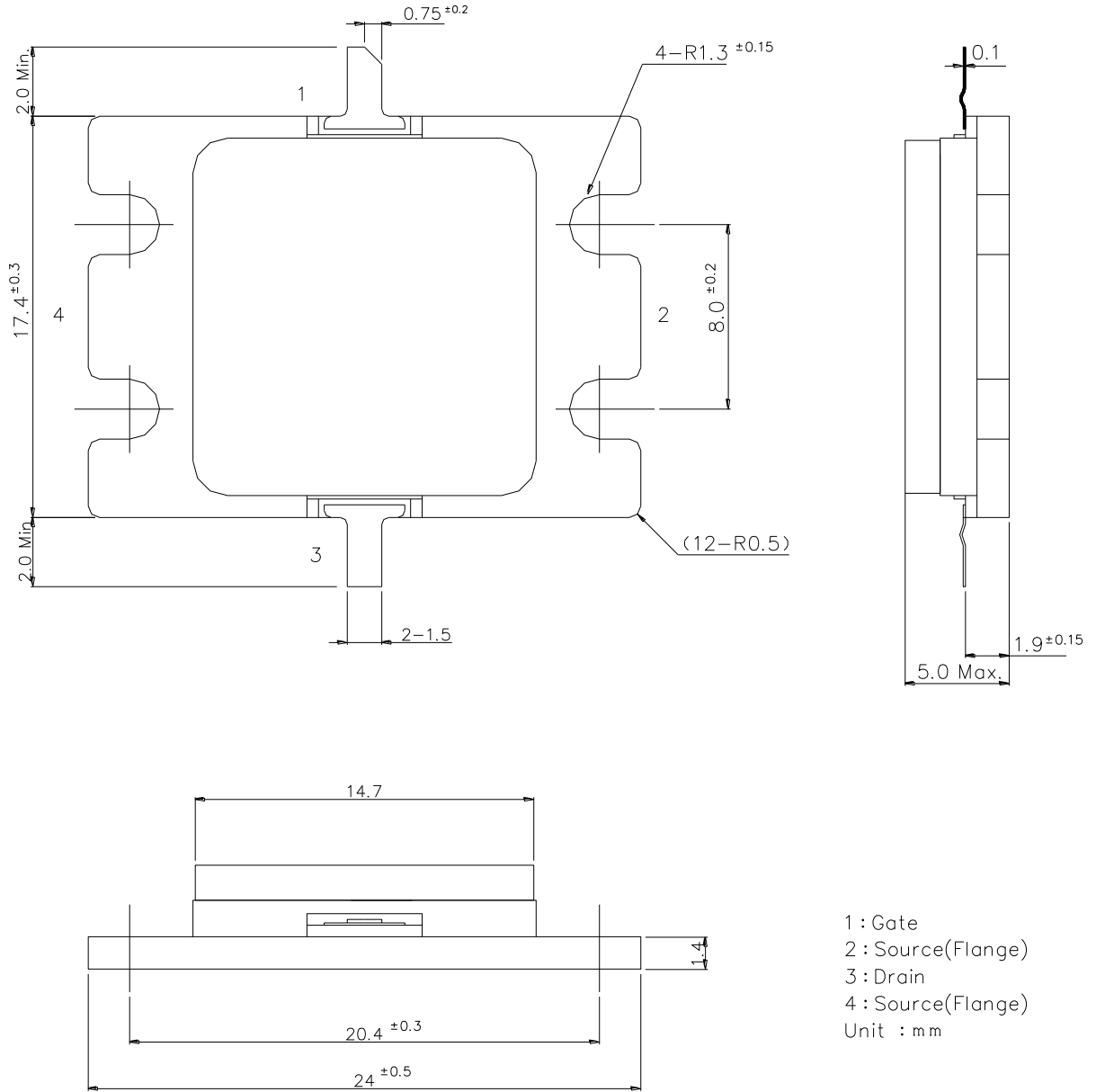
RF Characteristics
**Output Power vs. Input Power
by case temperature**
 $f=3.2\text{GHz}$, $V_{DS}=50\text{V}$, $I_{DS(DC)}=1.0\text{A}$
 $PW=200\mu\text{sec.}$, $\text{Duty}=10\%$

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

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

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


■ 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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