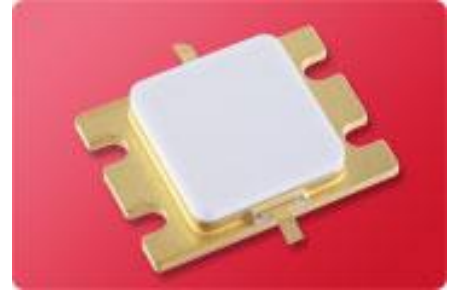


■ Features

- High Power: 570W(Typ.) @ Pin=39.8W(46dBm)
- High Efficiency: 58%(Typ.) @ Pin=39.8W(46dBm)
- Broad Band: 3.1 to 3.5GHz
- Impedance Matched $Z_{in}/Z_{out} = 50 \text{ ohm}$
- Hermetically Sealed Package: IV-Package



■ Description

Sumitomo Electric's GaN-HEMT SGN3135-500H-R offers high power, high efficiency and greater consistency covering 3.1 to 3.5 GHz for S-band radar applications with 50V operation and pulse condition of up to 200µsec pulse width and duty of up to 10%.

ABSOLUTE MAXIMUM RATING (Case Temperature $T_c=25 \text{ deg.C}$)

Item	Symbol	Rating	Unit
Operating Voltage	V_{DS}	55	V
Drain-Source Voltage	V_{DS}	250 @ $V_{GS}=-10V$	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

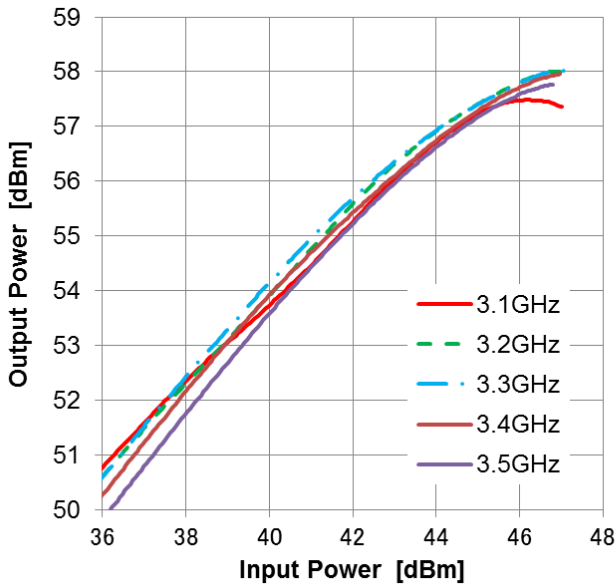
Item	Symbol	Condition	Limit	Unit
Drain-Source Voltage	V_{DS}		≤ 50	V
Forward Gate Current	I_{GF}	$R_g=5.1\text{ohm}$	≤ 508	mA
Reverse Gate Current	I_{GR}	$R_g=5.1\text{ohm}$	≥ -21.3	mA
Peak Channel Temperature	$T_{ch-peak}$		≤ 200	deg.C
Pulse Width	PW	Duty 10%	≤ 200	µsec

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

Item	Symbol	Condition	Limit			Unit
			Min.	Typ.	Max.	
Pinch-off Voltage	V_p	$V_{DS}=50V, I_{DS}=150mA$	-4.0	-3.0	-2.0	V
Output Power	P_{out}	$V_{DS}=50V, I_{DS(DC)}=1500mA,$ $P_{in}=39.8W(46 \text{ dBm}),$ $f=3.1, 3.2, 3.3, 3.4, 3.5GHz,$ $PW=200\mu\text{sec}, \text{Duty}=10\%$	480	570	-	W
Drain Efficiency	DE		-	58	-	%
Power Gain	G_p		10.8	11.6	-	dB
Gain Flatness	GF		-	0.6	1.3	%
Load Mismatch Ruggedness	VSWR		10:1	-	-	dB
Thermal Resistance	R_{th}	Channel to Case at 105W P_{DC}	-	0.55	0.7	deg.C/W

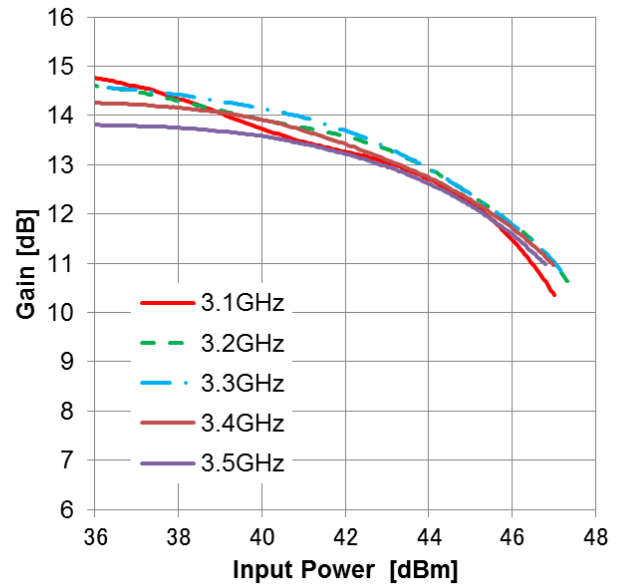
CASE STYLE	IV
RoHS Compliance	YES

■ Typical Performance



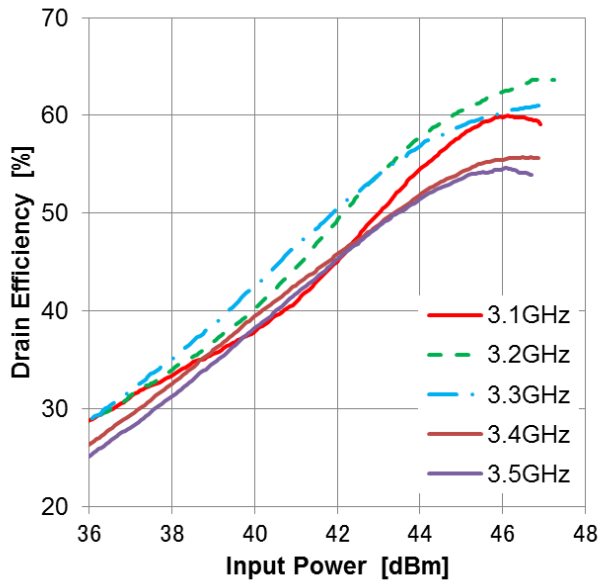
$V_{DS}=50V$, $I_{DS}(DC)=1.5A$, $PW=200msec$, Duty 10%

Figure 1. Output Power vs Input Power



$V_{DS}=50V$, $I_{DS}(DC)=1.5A$, $PW=200msec$, Duty 10%

Figure 2. Gain vs Input Power



$V_{DS}=50V$, $I_{DS}(DC)=1.5A$, $PW=200msec$, Duty 10%

Figure 3. Drain Efficiency vs Input Power

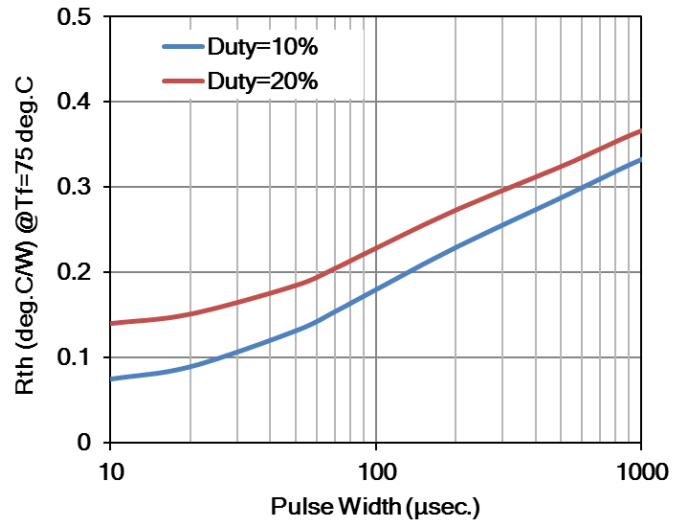
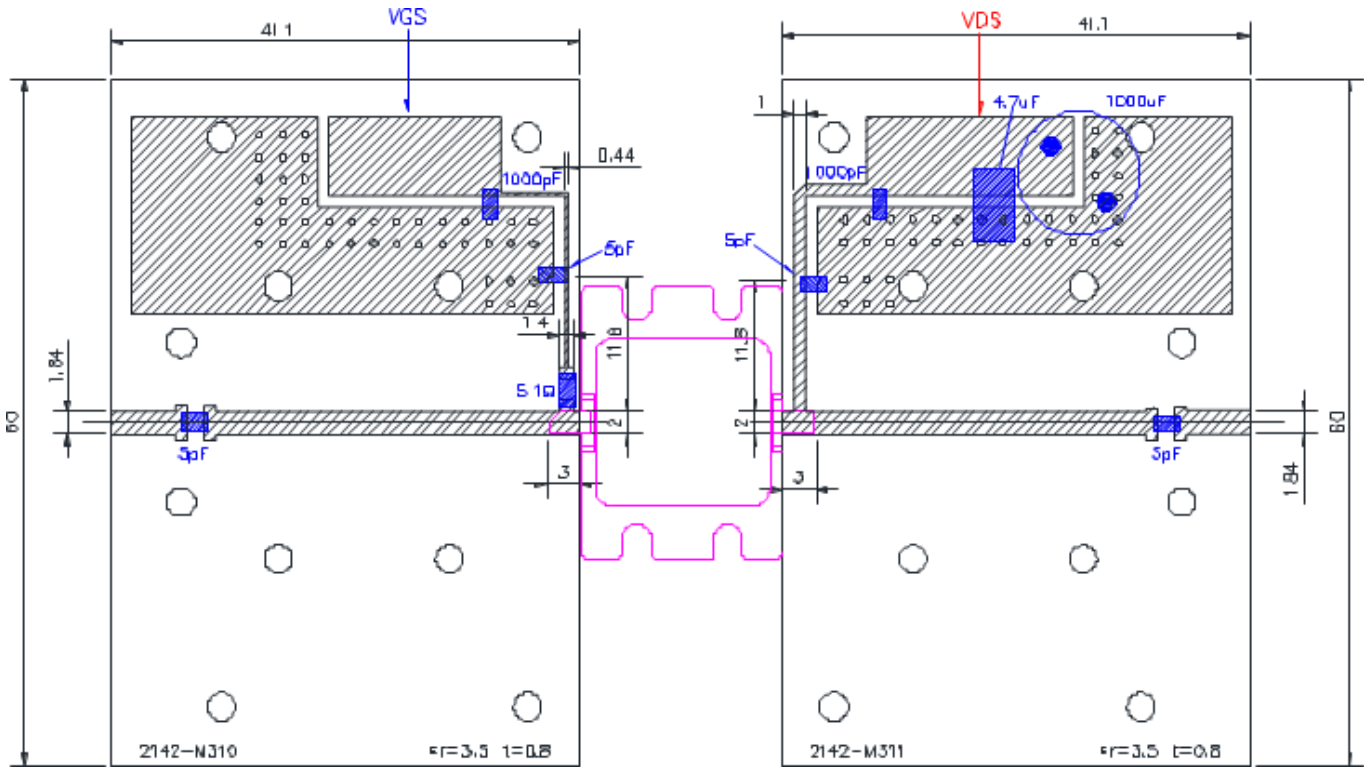


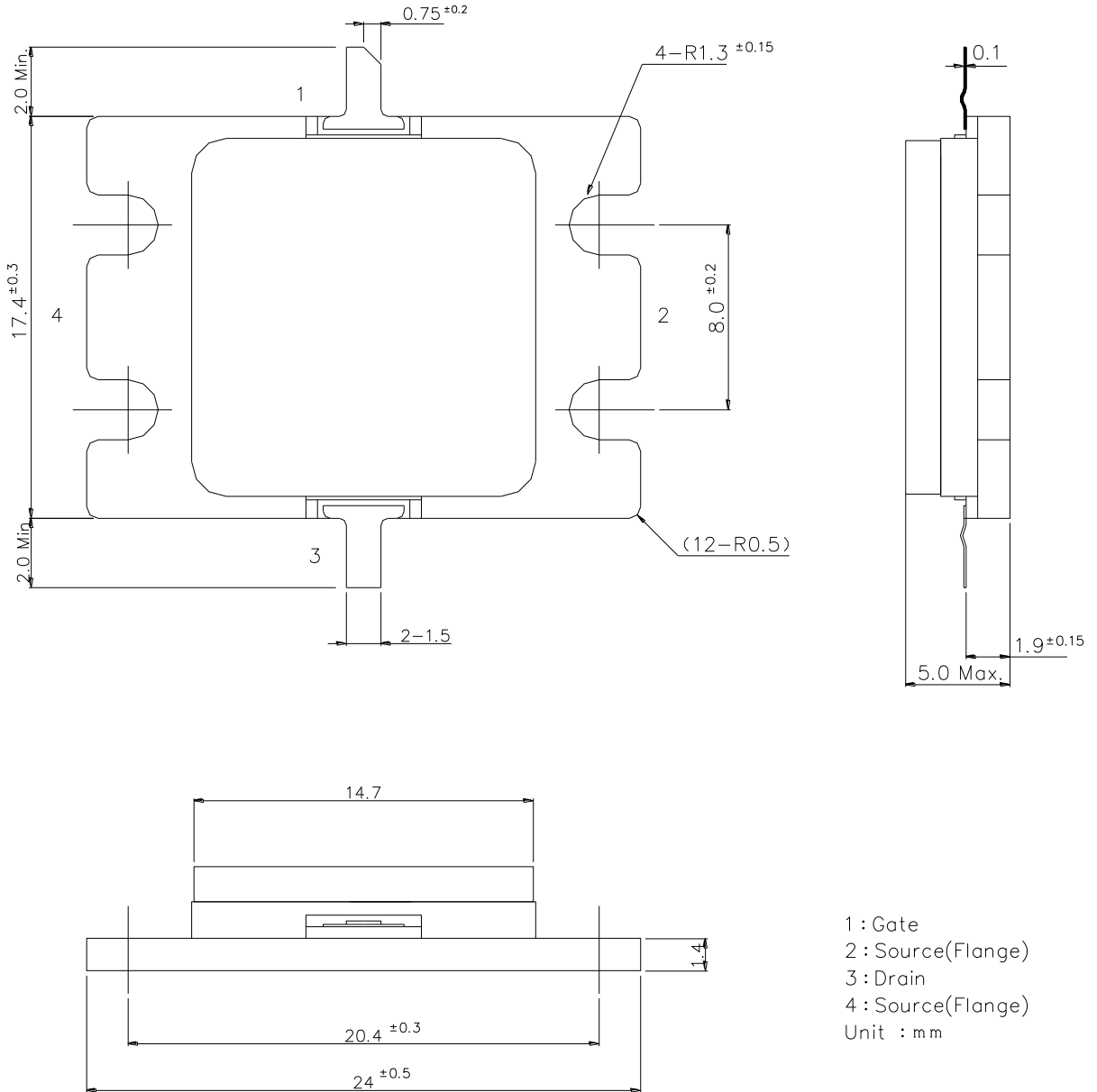
Figure 4. Transient Thermal Resistance

■ Test Fixture

TF/SGN3135-500H-R



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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