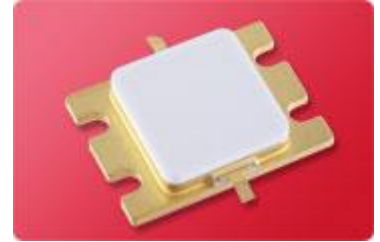


### FEATURES

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

### 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 RATINGS

Item	Symbol	Condition	Rating	Unit
Operating Voltage	$V_{DS}$		55	V
Drain-Source Voltage	$V_{DS}$	$V_{GS}=-10V$	250	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(Case Temperature $T_c=25 \text{ deg.C}$ )

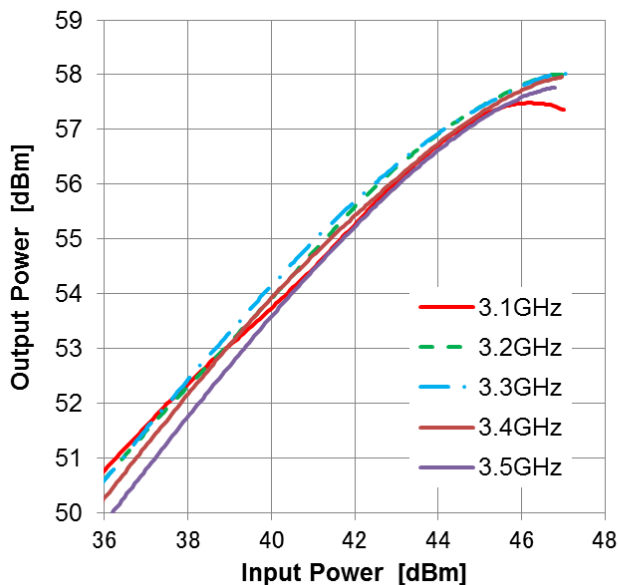
Item	Symbol	Condition	Limit	Unit
DC Input Voltage	$V_{DS}$		$\leq 50$	V
Forward Gate Current	$I_{GF}$	$RG=5.1 \text{ ohm}$	$\leq 508$	mA
Reverse Gate Current	$I_{GR}$	$RG=5.1 \text{ ohm}$	$\geq -21.3$	mA
Pulse Width	PW	Duty 10%	$\leq 200$	µ sec
Channel Temperature	$T_{ch}$		$\leq 200$	deg.C

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

Item	Symbol	Condition	Limit			Unit
			Min.	Typ.	Max.	
Pinch-Off Voltage	$V_p$	$V_{DS}=50V$ $I_{DS}=150 \text{ mA}$	-1.0	-2.0	-3.5	V
Output Power	$P_{out}$	$V_{DS}=50V$	480	570	-	W
Drain Efficiency	DE	$I_{DS(DC)}=1500\text{mA}$	-	58	-	%
Power Gain	$G_p$	$P_{in}=39.8 \text{ W}$ (46 dBm)	10.8	11.6	-	dB
Gain Flatness	GF	$f=3.1, 3.3, 3.5 \text{ GHz}$	-	0.6	1.3	dB
Load Mismatch Ruggedness	VSWR	PW=200µsec, Duty=10%	10:1	-	-	-
Thermal Resistance	$R_{Th}$	Channel to Case at 105W $P_{Dc}$	-	0.55	0.7	deg.C/W

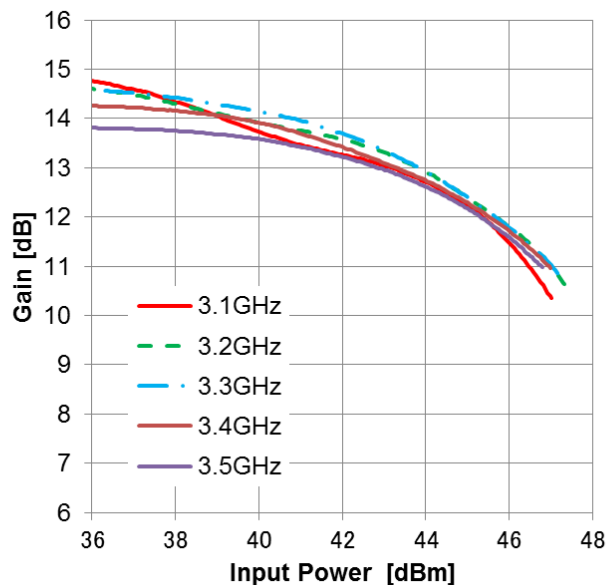
RoHS COMPLIANCE	Yes
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### TYPICAL PERFORMANCE



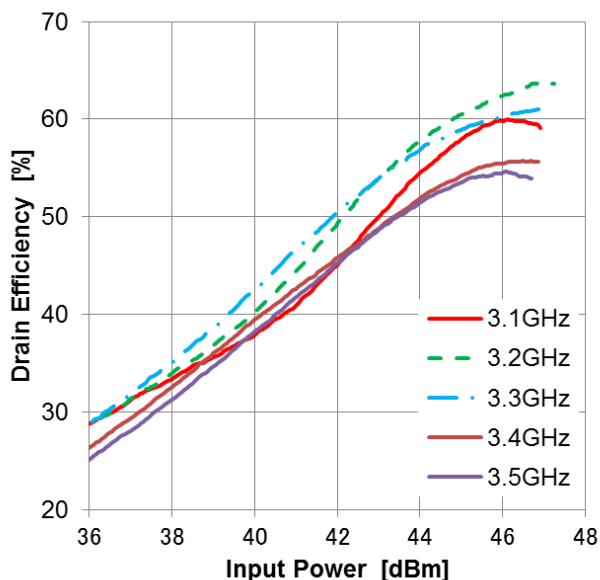
$V_{DS}=50V$ ,  $I_{DS}(DC)=1.5A$ ,  $PW=200\mu sec$ , Duty 10%

**Figure 1. Output Power vs Input Power**



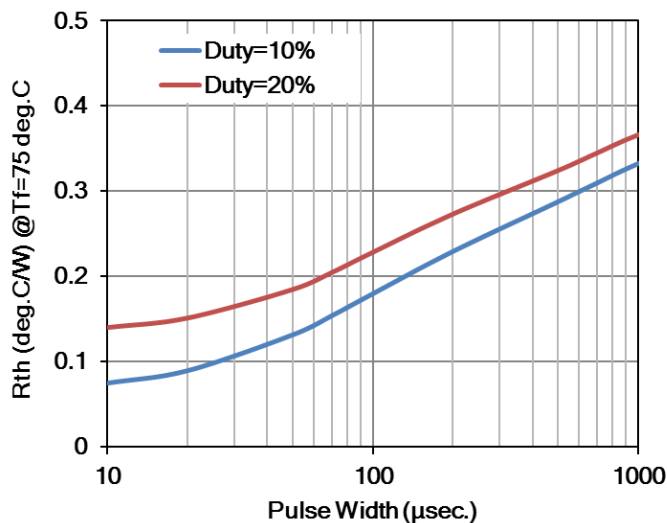
$V_{DS}=50V$ ,  $I_{DS}(DC)=1.5A$ ,  $PW=200\mu sec$ , Duty 10%

**Figure 2. Gain vs Input Power**



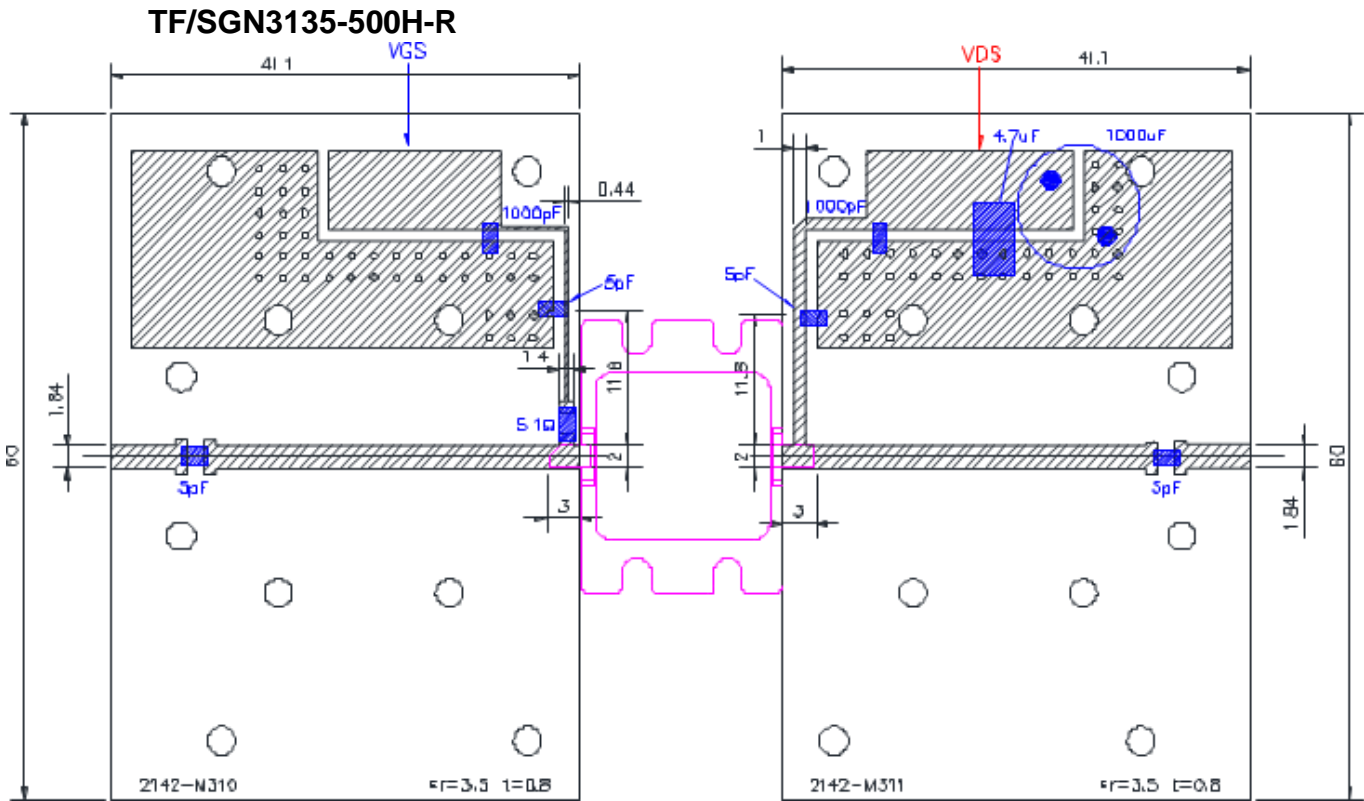
$V_{DS}=50V$ ,  $I_{DS}(DC)=1.5A$ ,  $PW=200\mu sec$ , Duty 10%

**Figure 3. Drain Efficiency vs Input Power**



**Figure 4. TRANSIENT THERMAL RESISTANCE**

## TEST FIXTURE



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

### IV Package Outline Metal Ceramic Hermetic Package

