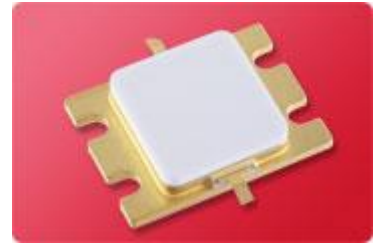


FEATURES

- High Power : 600W (min.) @ $P_{in}=31.6W$ (45dBm)
- High Efficiency: 60% (typ.) @ $P_{in}=31.6W$ (45dBm)
- Broad Band: 2.7 to 2.9 GHz
- Impedance Matched $Z_{in}/Z_{out} = 50 \text{ ohm}$

DESCRIPTION

Sumitomo Electric GaN-HEMT SGN2729-600H-R offers high power, high efficiency and greater consistency covering 2.7 to 2.9 GHz for S-band radar applications with 50V operation and pulse condition of up to 200μsec pulse width and duty of up to 10%.



RoHS COMPLIANCE	Yes
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ABSOLUTE MAXIMUM RATINGS (Case Temperature $T_c=25 \text{ deg.C}$)

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

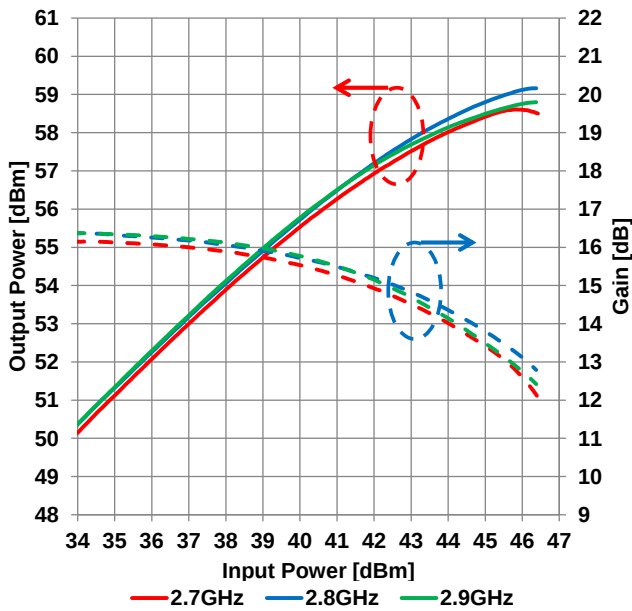
Item	Symbol	Condition	Limit	Unit
DC Input Voltage	V_{DS}		≤ 50	V
Forward Gate Current	I_{GF}	$R_G=5.1 \text{ ohm}$	≤ 508	mA
Reverse Gate Current	I_{GR}	$R_G=5.1 \text{ ohm}$	≥ -21.3	mA
Pulse Width	PW	Duty 10%	≤ 200	μ sec
Channel Temperature	T_{ch}		≤ 200	deg.C

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

Item	Symbol	Condition	Limit			Unit
			Min.	Typ.	Max.	
Pinch-Off Voltage	V_p	$V_{DS}=50V$ $I_{DS}=150 \text{ mA}$	-4.0	-3.0	-2.0	V
Output Power	P_{out}	$V_{DS}=50V$	600	700	-	W
Drain Efficiency	DE	$I_{DS(DC)}=1500\text{mA}$	-	60	-	%
Power Gain	G_p	$P_{in}=31.6 \text{ W}$ (45dBm)	12.8	13.5	-	dB
Gain Flatness	GF	$f=2.7, 2.8, 2.9 \text{ GHz}$	-	0.5	1.0	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

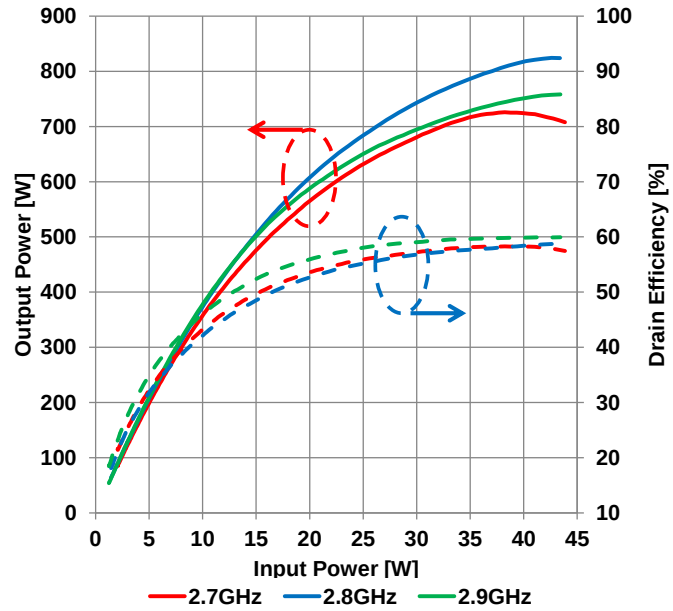
TYPICAL PERFORMANCE

600W GaN HEMT for S-band Radar



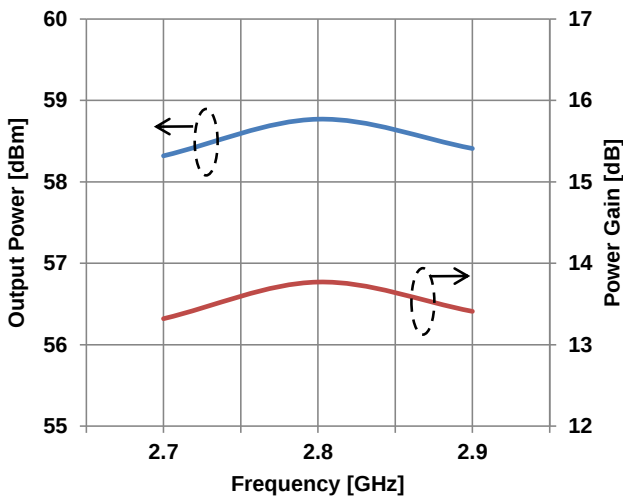
$V_{DS}=50V$, $I_{DS}(DC)=1.5A$, $PW=200\mu sec$, Duty 10%

Figure 1. Output Power and Gain vs Input Power



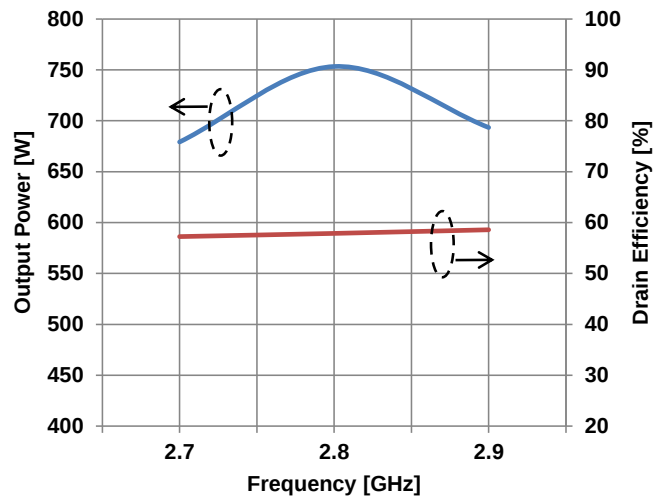
$V_{DS}=50V$, $I_{DS}(DC)=1.5A$, $PW=200\mu sec$, Duty 10%

Figure 2. Output Power and Drain Efficiency vs Input Power



$V_{DS}=50V$, $I_{DS}(DC)=1.5A$, $P_{in}=45dBm(31.6W)$
 $PW=200\mu sec$, Duty 10%

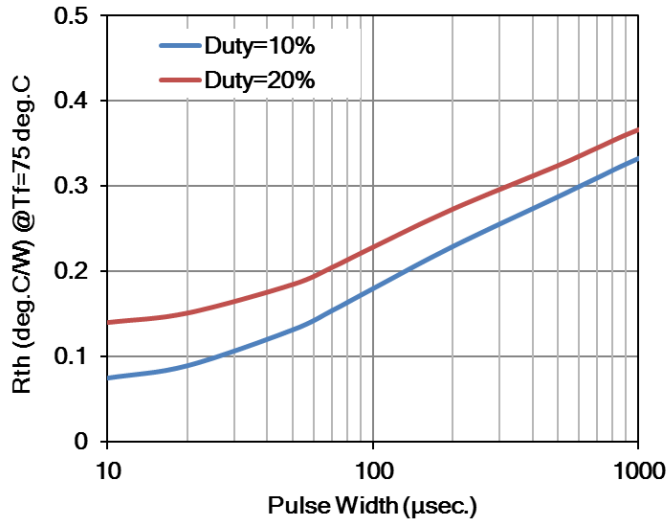
Figure 3. Output Power and Power Gain vs Frequency



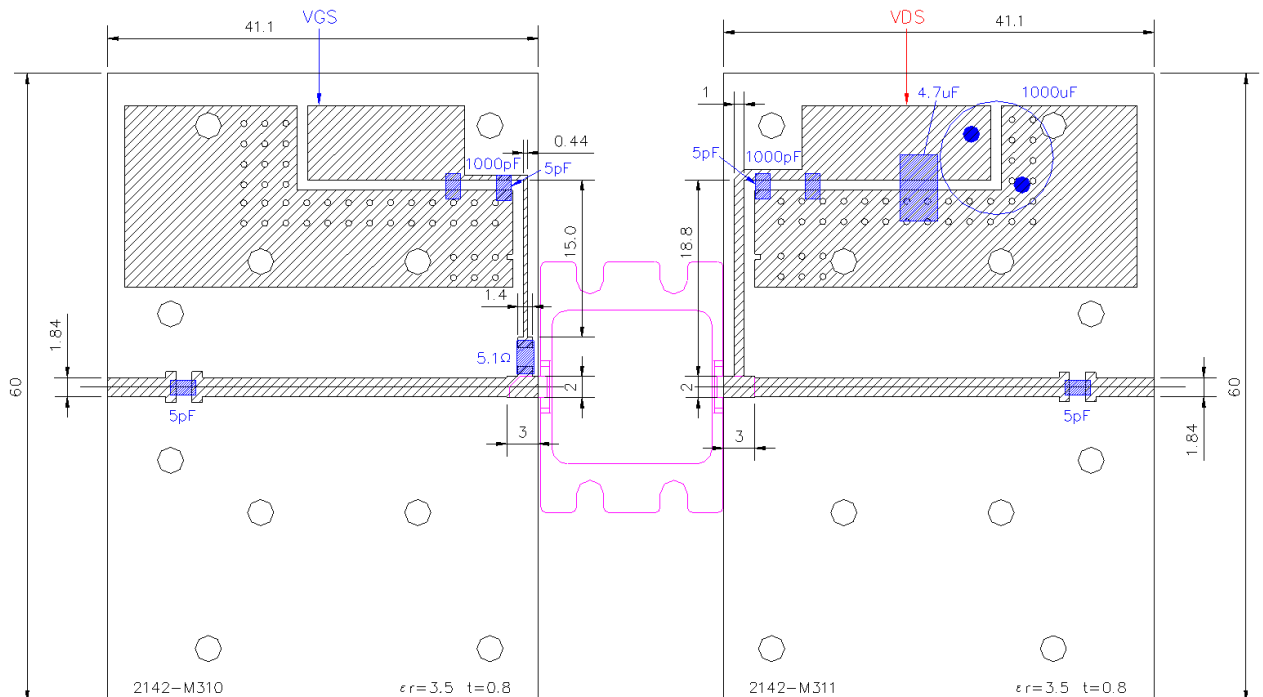
$V_{DS}=50V$, $I_{DS}(DC)=1.5A$, $P_{in}=45dBm(31.6W)$
 $PW=200\mu sec$, Duty 10%

Figure 4. Output Power and Drain Efficiency vs Frequency

TRANSIENT THERMAL RESISTANCE



TEST FIXTURE



PCB : $t = 0.8$ mm, $\epsilon_r = 3.5$, $\text{Cu} = 18 \mu\text{m}$

Unit : mm

IV Package Outline Metal-Ceramic Hermetic Package

