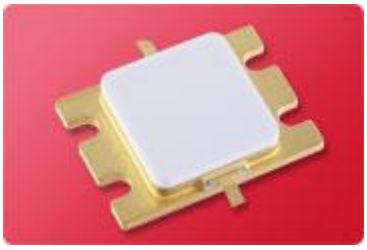
SGN2731-500H-R

500W GaN HEMT for S-band Radar

FEATURES

- High Power : 550W (typ.) @ P_{in}=31.6W (45dBm)
- High Efficiency: 57% (typ.) @ P_{in}=31.6W (45dBm)
- Broad Band: 2.7 to 3.1 GHz
- Impedance Matched Zin/Zout = 50 ohm



RoHS COMPLIANCE	Yes

DESCRIPTION

Sumitomo Electric GaN-HEMT SGN2731-500H-R offers high power, high efficiency and greater consistency covering 2.7 to 3.1 GHz for S-band radar applications with 50V operation and pulse condition of up to 120µsec pulse width and duty of up to 10%.

ABSOLUTE MAXIMUM RATINGS (Case Temperature Tc=25 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

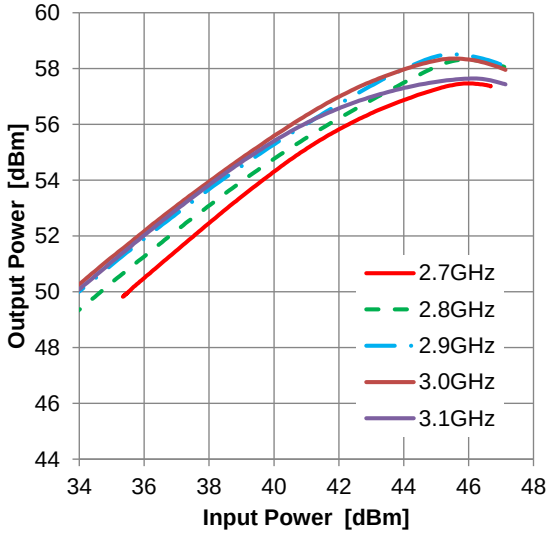
RECOMMENDED OPERATING CONDITION

Item	Symbol	Condition	Limit	Unit
DC Input Voltage	V_{DS}		≤ 50	V
Forward Gate Current	I_{GF}	RG=5.1 ohm	≤ 731	mA
Reverse Gate Current	I_{GR}	RG=5.1 ohm	≥ -18	mA
Pulse Width	PW	Duty 10%	≤ 120	µ sec
Channel Temperature	T_{ch}		200	deg.C

ELECTRICAL CHARACTERISTICS (Case Temperature Tc = 25 deg.C)

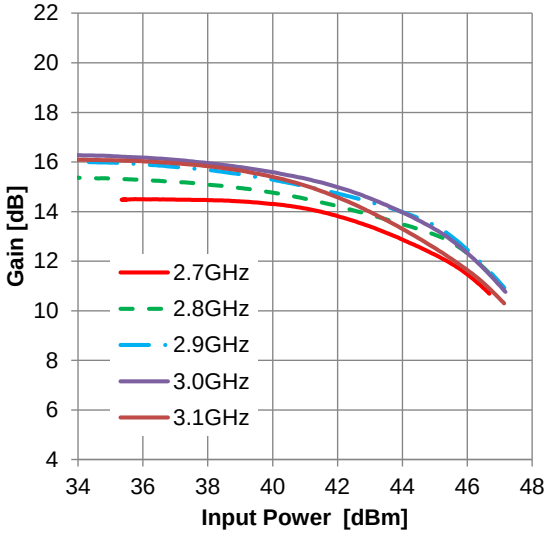
Item	Symbol	Condition	Limit			Unit
			Min.	Typ.	Max.	
Pinch-Off Voltage	V_p	V_{DS}=50V I_{DS}=150 mA	-4.0	-3.0	-2.0	V
Output Power	P_{out}	V_{DS}=50V	480	550	-	W
Drain Efficiency	DE	$I_{DS(DC)}$=1.5A	-	57	-	%
Power Gain	G_p	P_{in}=31.6 W (45dBm)	11.8	12.4	-	dB
Gain Flatness	GF	f=2.7, 2.9, 3.1 GHz	-	1.3	-	dB
Load Mismatch Ruggedness	VSWR	PW=120µsec, Duty=10%	10:1	-	-	-
Thermal Resistance	R_{Th}	Channel to Case at 105W P_{DC}	-	0.55	0.7	deg.C/W

TYPICAL PERFORMANCE



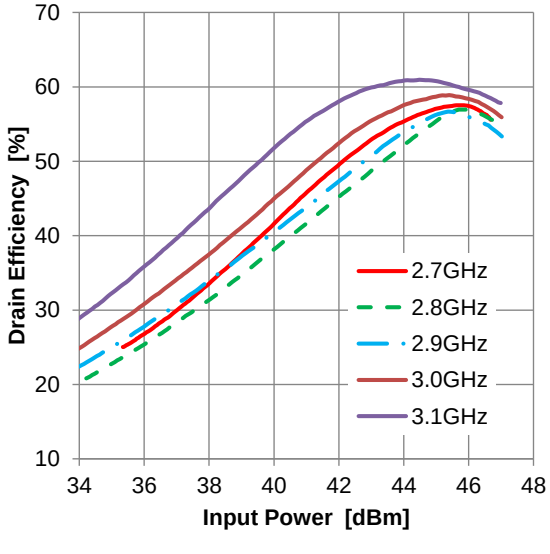
V_{DS}=50V, $I_{DS(DC)}$=1.5A,
PW=120µsec, Duty 10%

Figure 1. Output Power vs Input Power



V_{DS}=50V, $I_{DS(DC)}$=1.5A,
PW=120µsec, Duty 10%

Figure2. Gain vs Input Power



V_{DS}=50V, $I_{DS(DC)}$=1.5A,
PW=120µsec, Duty 10%

Figure3. Drain Efficiency vs Input Power

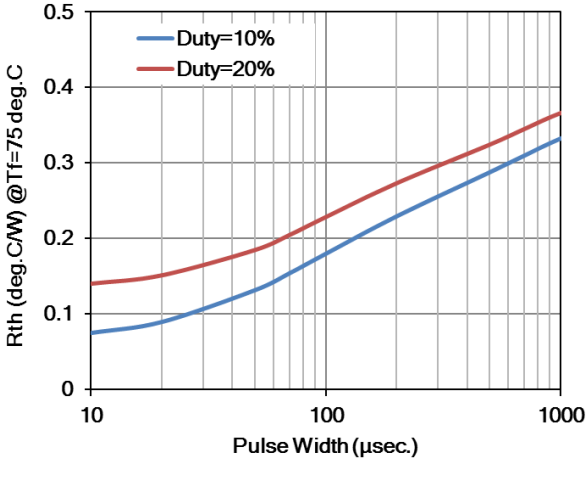


Figure 4. Transient Thermal Resistance

TYPICAL PERFORMANCE

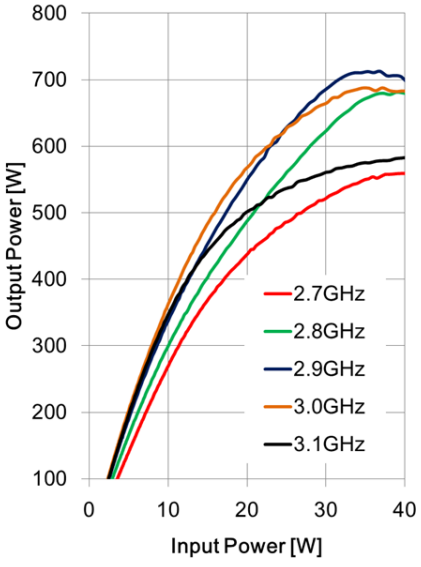


Figure 5. Output Power vs Input Power

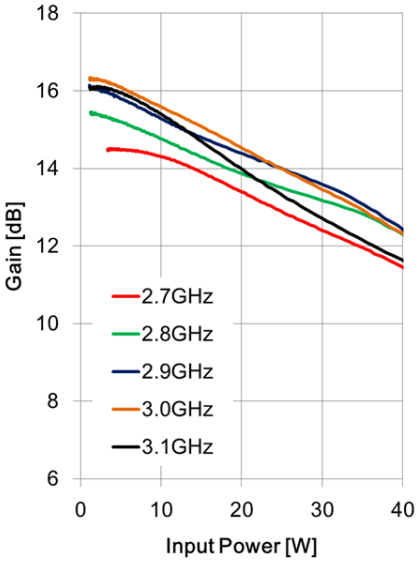


Figure 6. Gain vs Input Power

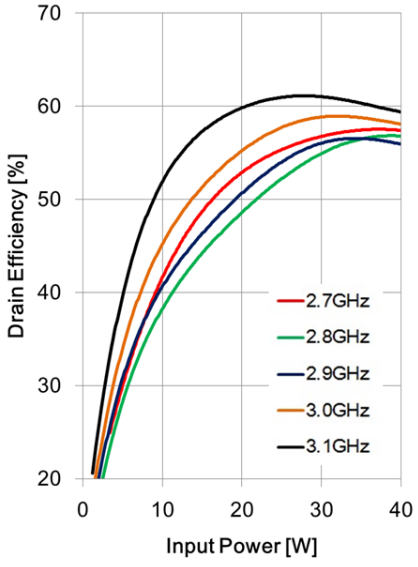
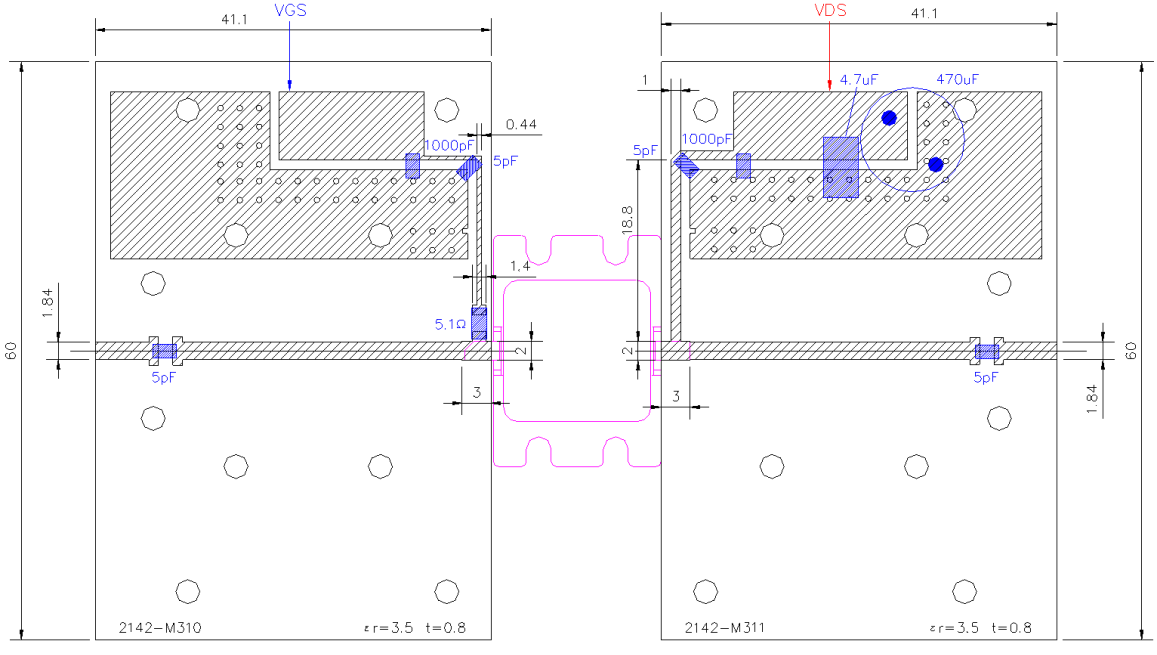


Figure 7. Drain Efficiency vs Input Power

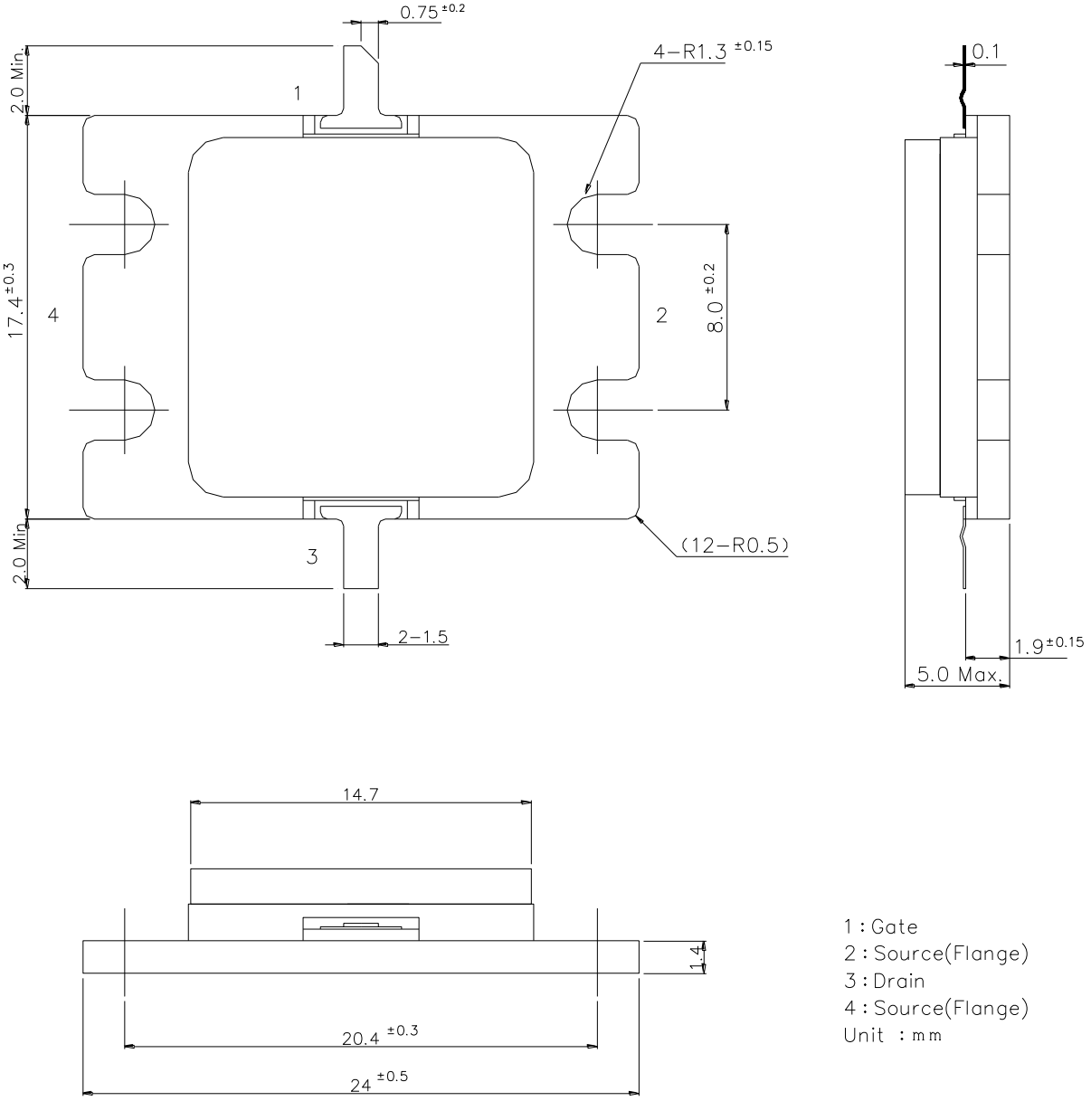
V_{DS}=50V, $I_{DS(DC)}$=1.5A, PW=120µsec, Duty 10%

TEST FIXTURE



PCB : h=0.8mm , εr=3.5 , Cu=18um
Unit : mm

IV Package Outline
Metal-Ceramic Hermetic Package



1 : Gate
2 : Source(Flange)
3 : Drain
4 : Source(Flange)
Unit : mm