SGN2933-600D-R

High Voltage - High Power GaN-HEMT for Radar

FEATURES

- High Voltage Operation : V_{DS}=50V
- High Power : 700W (typ.) @ P_{in}=31.6W (45dBm)
- High Efficiency: 50%(typ.) @ P_{in}=31.6W (45dBm)
- Broad Band: 2.9 to 3.3GHz
- 50 ohm Matched Pair

DESCRIPTION

Sumitomo GaN-HEMT SGN2933-600D-R offers high power, high efficiency and greater consistency covering 2.9 to 3.3GHz for S-band radar applications with 50V operation and pulse condition of up to 300µsec 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}=-8V	160	V
Gate-Source Voltage	V_{GS}		- 15	V
Storage Temperature	T_{stg}		-65 to +175	deg.C
Channel Temperature	T_{ch}		250	deg.C

RECOMMENDED OPERATING CONDITION(Case Temperature Tc=25 deg.C)

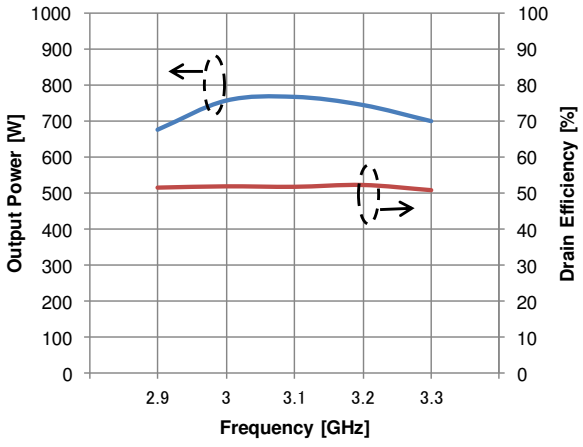
Item	Symbol	Condition	Limit	Unit
DC Input Voltage	V_{DS}		≤ 50	V
Forward Gate Current	I_{GF}	RG=6.2ohm x 2	≤ 408 x 2	mA
Reverse Gate Current	I_{GR}	RG=6.2ohm x 2	≥ -15.6 x 2	mA
Pulse Width	PW	Duty 10%	≤ 300	µ sec
Channel Temperature	T_{ch}		180	deg.C

Sumitomo recommends that the use of a reflective harmonic rejection filter at the device output be avoided. With highly compressed saturation operation, the voltage portion of the RF signal may exceed the device breakdown voltage due to phasor combination of reflected harmonic voltages. Permanent damage may result. If a harmonic rejection filter is necessary, Sumitomo recommends using either a lossy filter or a harmonic isolator in front of a reflective filter.

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

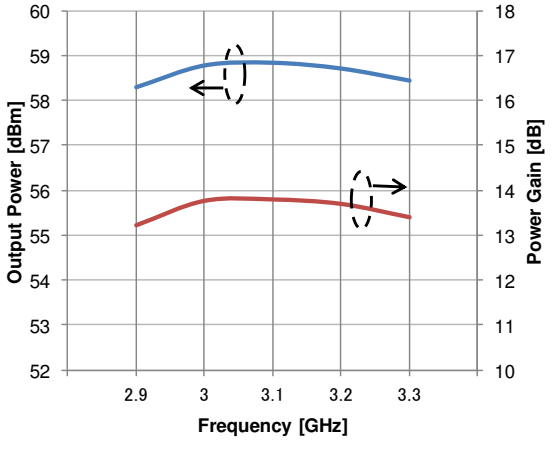
Item	Symbol	Condition	Limit			Unit
			Min.	Typ.	Max.	
Pinch-Off Voltage	V_p	V_{DS}=50V I_{DS}=217.6mA	-1.0	-2.0	-3.5	V
Output Power	P_{out}	V_{DS}=50V	600	700	-	W
Drain Efficiency	η_d	$I_{DS(DC)}$=3000mA	-	50	-	%
Power Gain	G_p	P_{in}=31.6W (45dBm)	12.8	13.5	-	dB
Gain Flatness	GF	f=2.9, 3.1, 3.3GHz	-	0.8	1.3	dB
		PW=200 µ sec, Duty 10%				
Thermal Resistance	R_{th}	Channel to Case	-	0.26	0.36	deg.C/W
		Measured w/CW at 105W P_{DC}				

RoHS COMPLIANCE	Yes



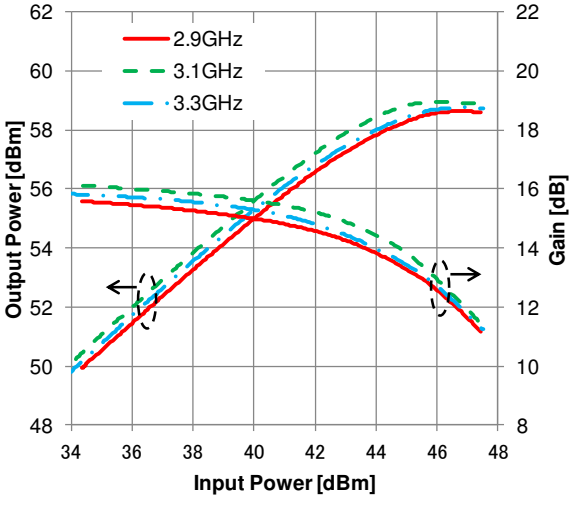
V_{DS}=50V, IDS(DC)=3A, P_{in}=31.6W,
PW=200µsec, Duty 10%

Figure 1. Output Power and Drain Efficiency vs Frequency



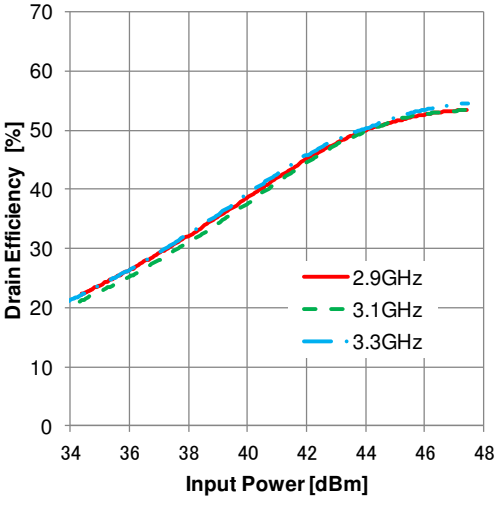
V_{DS}=50V, IDS(DC)=3A, P_{in}=45dBm,
PW=200µsec, Duty 10%

Figure 2. Output Power and Power Gain vs Frequency



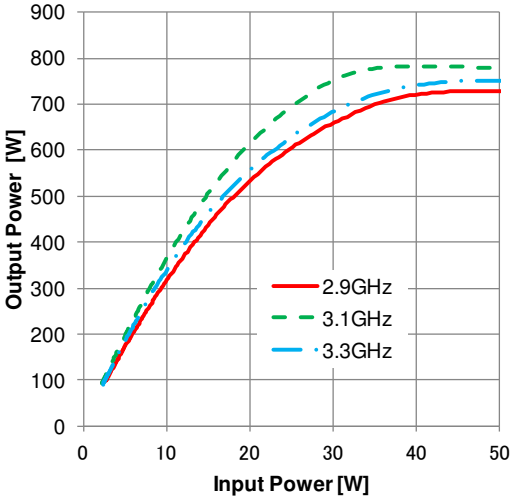
V_{DS}=50V, IDS(DC)=3A,
PW=200µsec, Duty 10%

Figure 3. Output Power and Gain vs Input Power



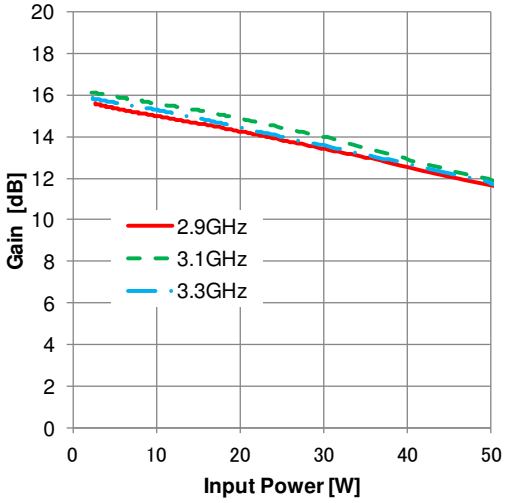
V_{DS}=50V, IDS(DC)=3A,
PW=200µsec, Duty 10%

Figure 4. Drain Efficiency vs Input Power



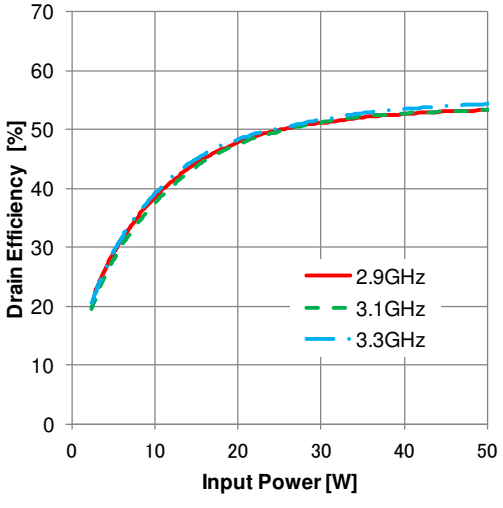
V_{DS}=50V, IDS(DC)=3A,
PW=200µsec, Duty 10%

Figure 5. Output Power vs Input Power



V_{DS}=50V, IDS(DC)=3A,
PW=200µsec, Duty 10%

Figure 6. Gain vs Input Power



V_{DS}=50V, IDS(DC)=3A,
PW=200µsec, Duty 10%

Figure 7. Drain Efficiency vs Input Power

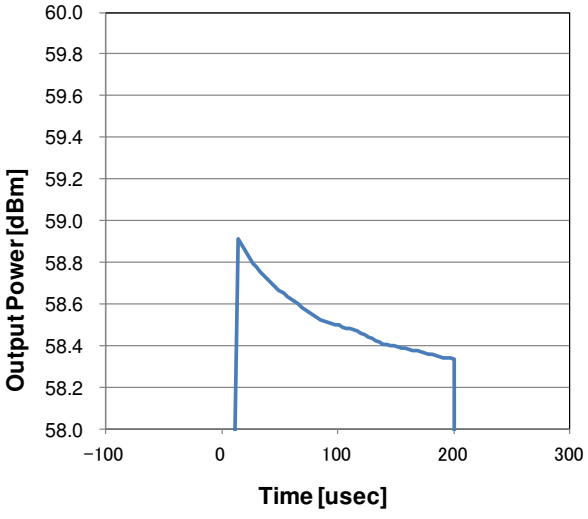


Figure 8. a) f=2.9GHz

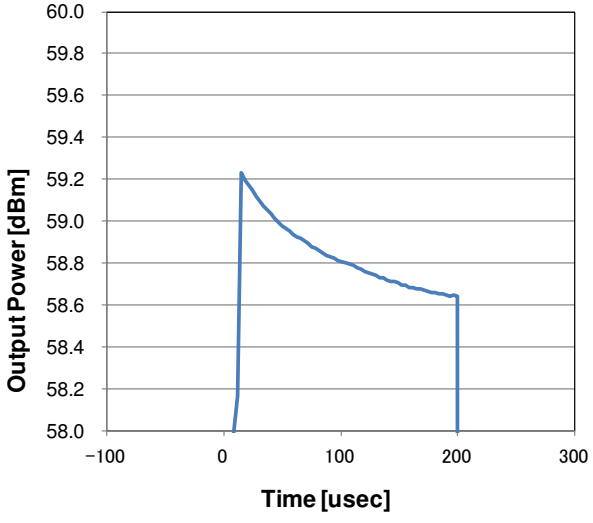


Figure 8. b) f=3.1GHz

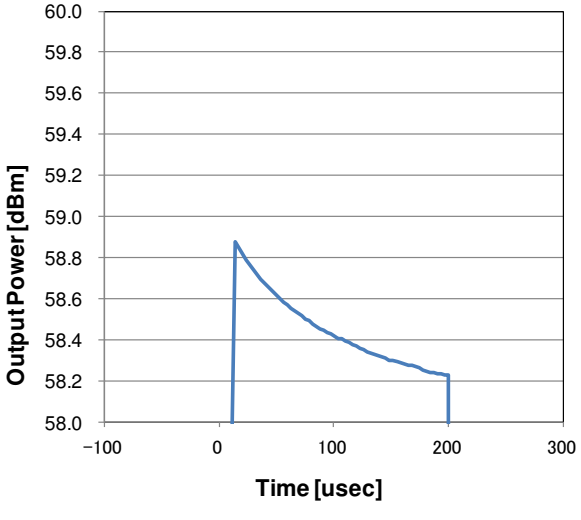
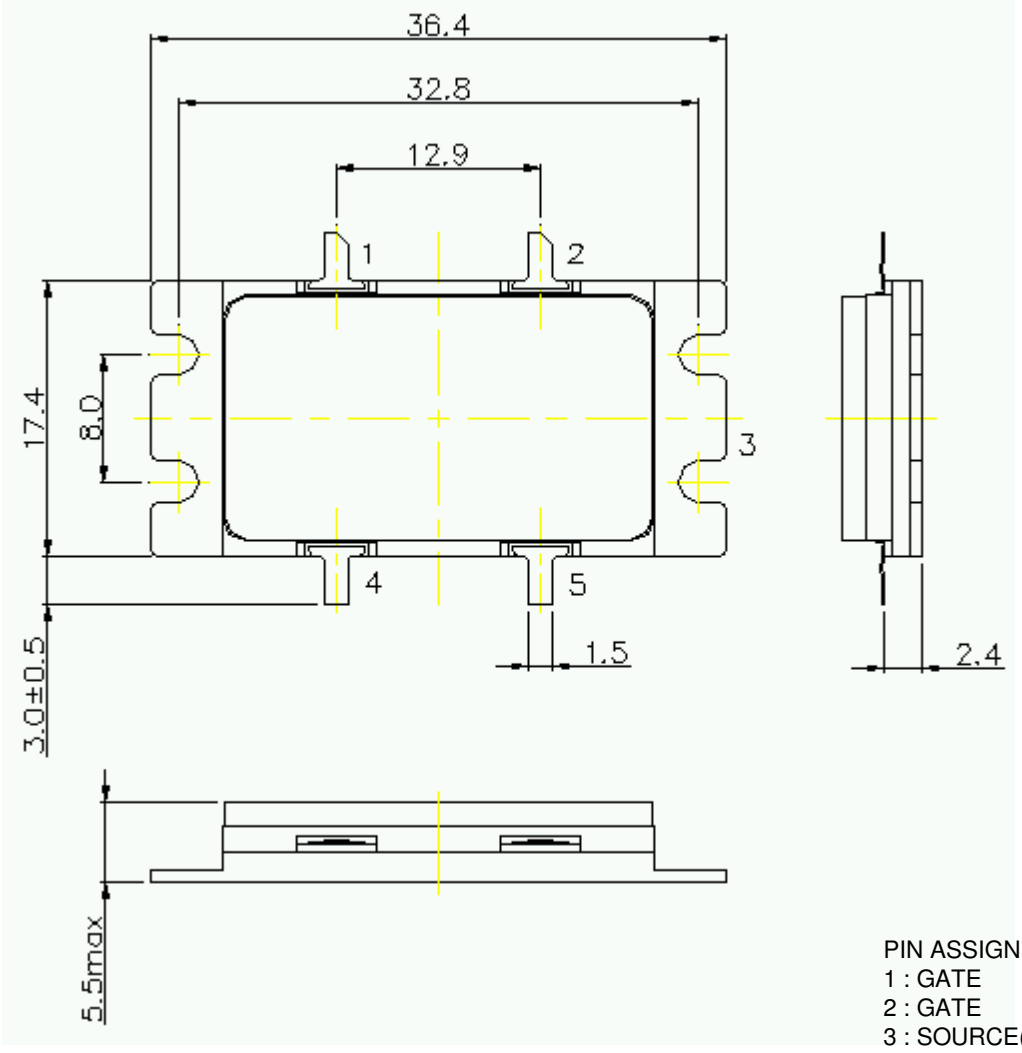


Figure 8. c) f=3.3GHz

V_{DS}=50V, $I_{DS(DC)}$=3A, P_{in}=31.6WPW = 200μsec, Duty 10%

Figure 8. Pulse Performance (Power)

M1B Package Outline
Metal-Ceramic Hermetic Package



PIN ASSIGNMENT
1 : GATE
2 : GATE
3 : SOURCE(Flange)
4 : DRAIN
5 : DRAIN

Unit : mm

For further information please contact:

http://global-sei.com/Electro-optic/about/office.html