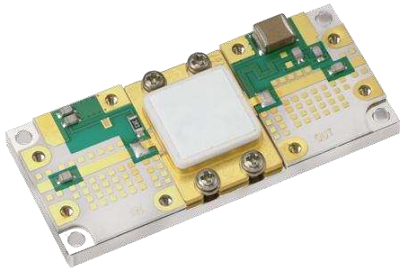
Preliminary

ES/SMC2933L3212R

High Voltage - High Power GaN-HEMT Pallet Amplifier



FEATURES

- High Voltage Operation : V_{DS}=50V
- High Power : 400W (typ.) @ P_{in}=15.8W (42dBm)
- High Efficiency: 50%(typ.) @ P_{in}=15.8W (42dBm)
- Power Gain : 14.0dB(typ.)
- Impedance Matched Zin/Zout = 50 ohm

DESCRIPTION

Sumitomo GaN-HEMT Pallet Amplifier ES/SMC2933L3212R offers high power, high efficiency, ease of matching and greater consistency covering 2.9 to 3.3GHz for S-band pulsed applications with 50V operation and pulse condition of up to 300usec pulse width and duty of up to 10%.

ABSOLUTE MAXIMUM RATINGS (Case Temperature Tc=25deg.C)

Item	Symbol	Condition	Rating	Unit
Operating-Voltage	V_{DS}		55	V
Drain-Source Voltage	V_{DS}	V_{GS}=-8V	100	V
Gate-Source Voltage	V_{GS}		-15	V
Storage Temperature	T_{stg}		-40 to +85	deg.C
Channel Temperature	T_{ch}		250	deg.C

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

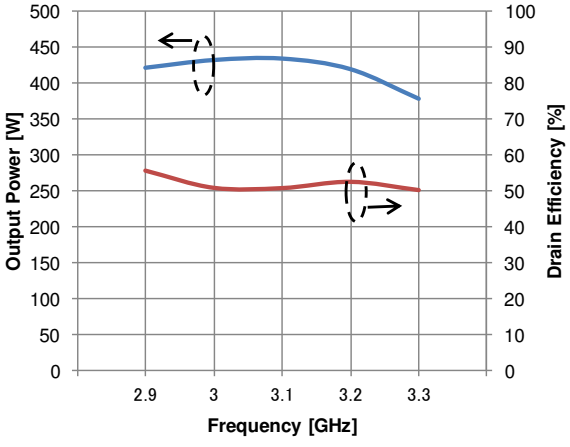
Item	Symbol	Condition	Limit	Unit
Pulse Width	PW		200	usec
Duty Cycle	δ		10	%
DC Input Voltage	V_{DS}		50	V
Forward Gate Current	I_{GF}		<408	mA
Reverse Gate Current	I_{GR}		>-15.6	mA
Channel Temperature	T_{ch}		180	deg.C

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=25deg.C)

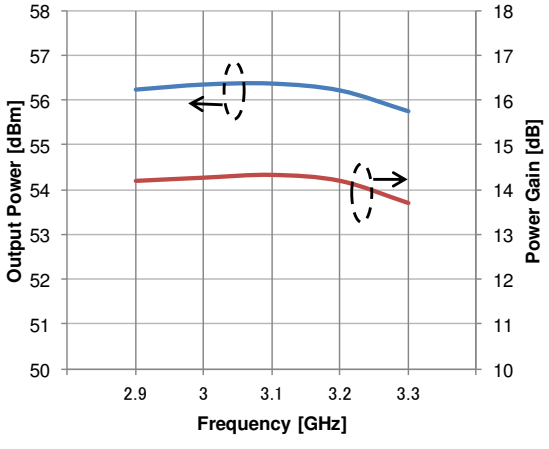
Item	Symbol	Condition	Limit			Unit
			Min.	Typ.	Max.	
Output Power	Pout	VDS=50V	320	400	-	W
Drain Efficiency	hd	IDS(DC)=1500mA	-	50	-	%
Power Gain	Gp	Pin=15.8W (42.0dBm)	13.0	14.0	-	dB
Gain Flatness	GF	f=2.9, 3.1, 3.3GHz	-	0.8	1.5	dB
		PW=200usec,Duty 10%				

RoHS COMPLIANCE	Yes



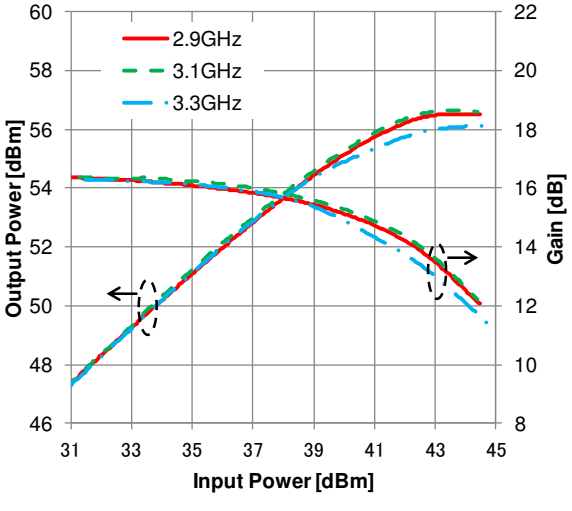
V_{DS}=50V, IDS(DC)=1.5A, P_{in}=15.8W,
PW=200µsec, Duty 10%

Figure 1. Output Power and Drain Efficiency vs Frequency



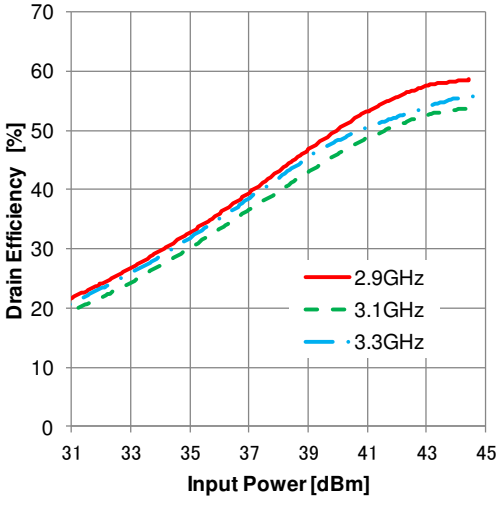
V_{DS}=50V, IDS(DC)=1.5A, P_{in}=42dBm,
PW=200µsec, Duty 10%

Figure 2. Output Power and Power Gain vs Frequency



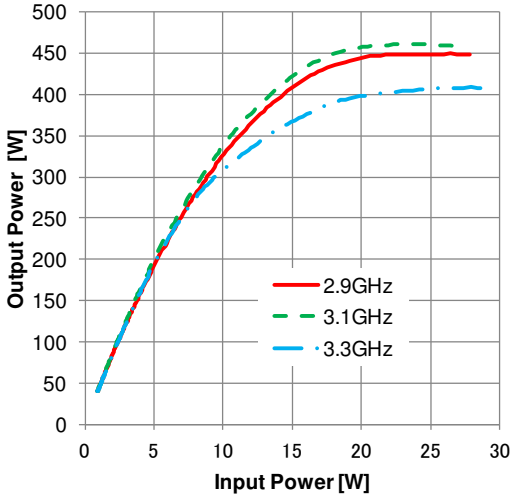
V_{DS}=50V, IDS(DC)=1.5A,
PW=200µsec, Duty 10%

Figure 3. Output Power and Gain vs Input Power



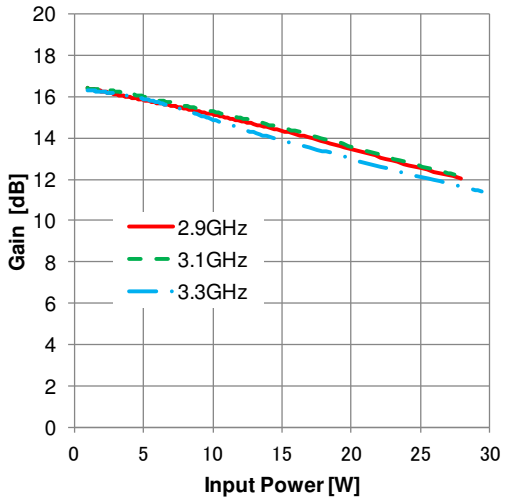
V_{DS}=50V, IDS(DC)=1.5A,
PW=200µsec, Duty 10%

Figure 4. Drain Efficiency vs Input Power



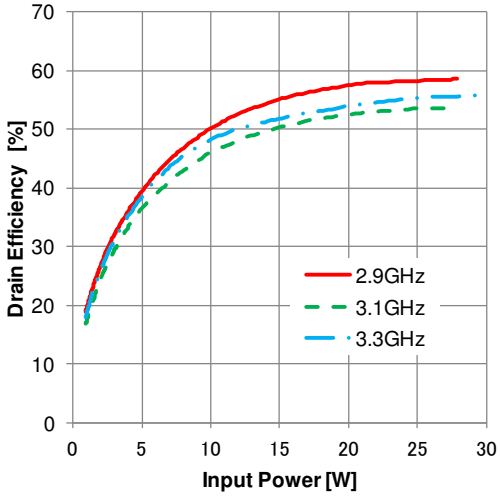
V_{DS}=50V, IDS(DC)=1.5A,
PW=200µsec, Duty 10%

Figure 5. Output Power vs Input Power



V_{DS}=50V, IDS(DC)=1.5A,
PW=200µsec, Duty 10%

Figure 6. Gain vs Input Power



V_{DS}=50V, IDS(DC)=1.5A,
PW=200µsec, Duty 10%

Figure 7. Drain Efficiency vs Input Power

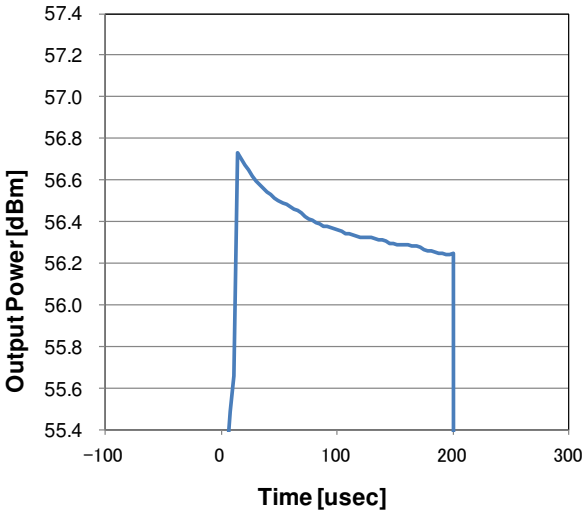


Figure 8. a) f=2.9GHz

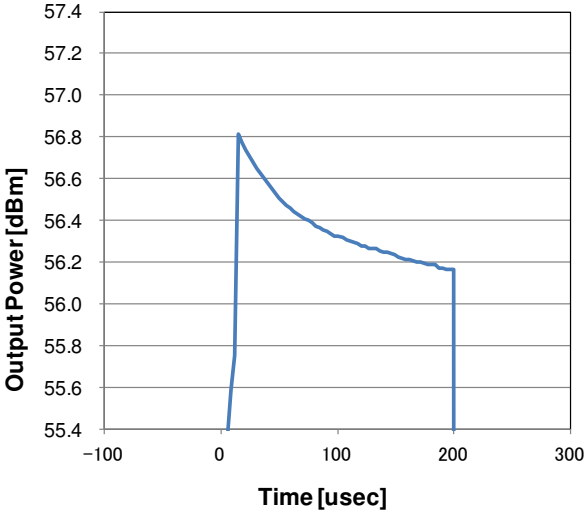


Figure 8. b) f=3.1GHz

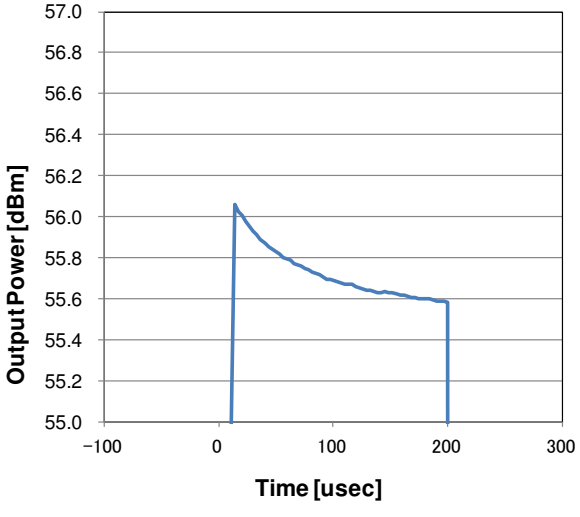
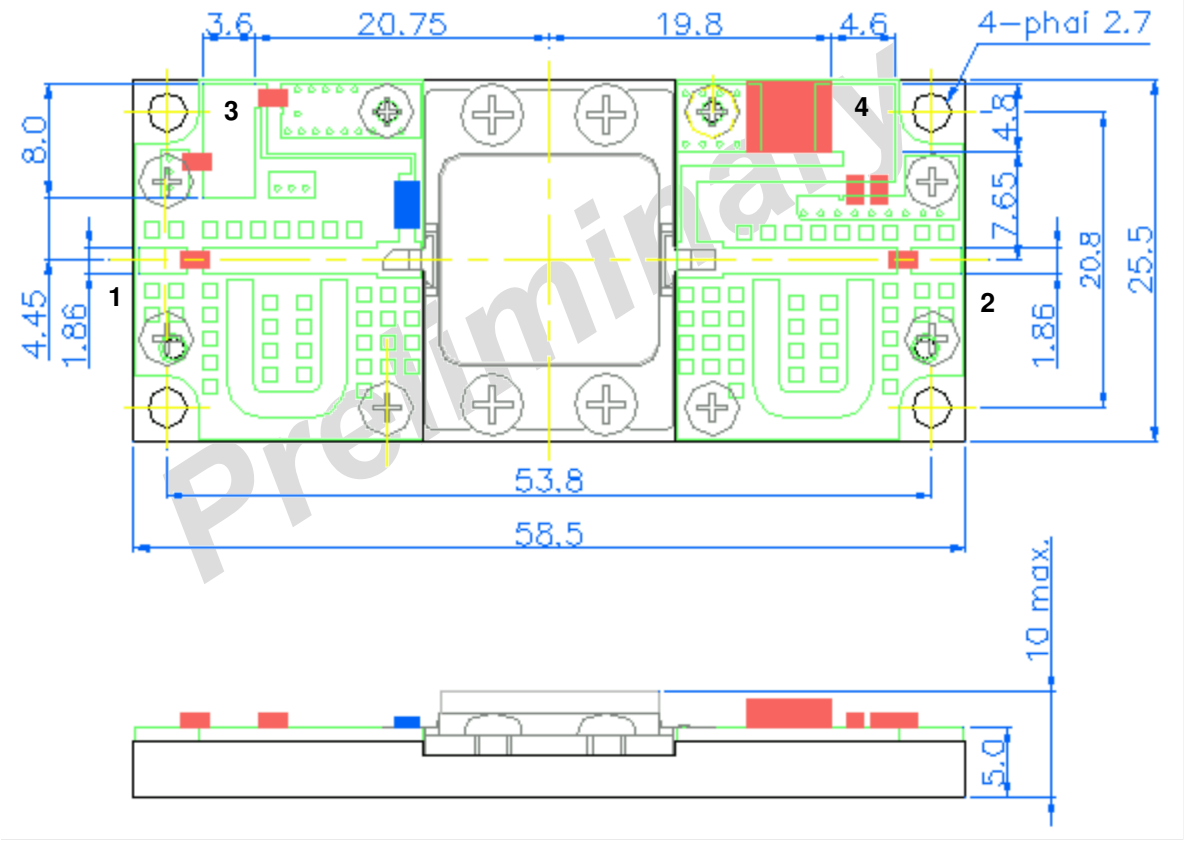


Figure 8. c) f=3.3GHz

V_{DS}=50V, $I_{DS(DC)}$=1.5A, P_{in}=15.8WPW = 200µsec, Duty 10%

Figure 8. Pulse Performance (Power)

Pallet-S Outline



1 : RF in
2 : RF out
3 : Gate
4 : Drain

Unit : mm