

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)
- Power Gain : 13.5dB(typ.)
- Impedance Matched $Z_{in}/Z_{out} = 50 \text{ ohm}$

High Voltage - High Power GaN-HEMT Pallet Amplifier



DESCRIPTION

Sumitomo GaN-HEMT Pallet Amplifier SMC2933L6012R 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 $T_c=25\text{deg.C}$)

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 $T_c= 25\text{deg.C}$)

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}		<816	mA
Reverse Gate Current	I_{GR}		>-31.2	mA
Channel Temperature	T_{ch}		180	deg.C

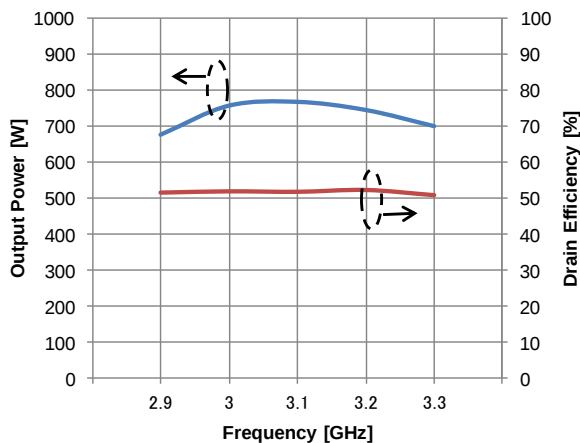
Sumitomo recommends that the use of a reflective harmonic rejection filter at the device output be avoided. With highly compressed saturation operation, the voltage portion of the RF signal may exceed the device breakdown voltage due to phasor combination of reflected harmonic voltages. Permanent damage 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 $T_c=25\text{deg.C}$)

Item	Symbol	Condition	Limit			Unit
			Min.	Typ.	Max.	
Output Power	P_{out}	$V_{DS}=50V$	600	700	-	W
Drain Efficiency	η_d	$I_{DS}(DC)=3.0A$	-	50	-	%
Power Gain	G_p	$P_{in}=31.6W$ (45.0dBm)	12.8	13.5	-	dB
Gain Flatness	GF	$f=2.9, 3.1, 3.3\text{GHz}$ $PW=200\text{usec}, \text{Duty } 10\%$	-	0.8	1.3	dB

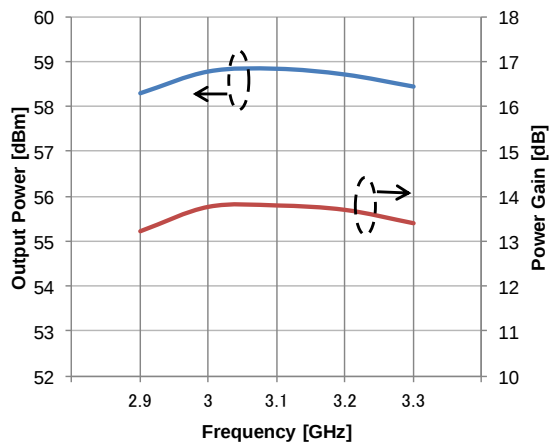
RoHS COMPLIANCE	Yes
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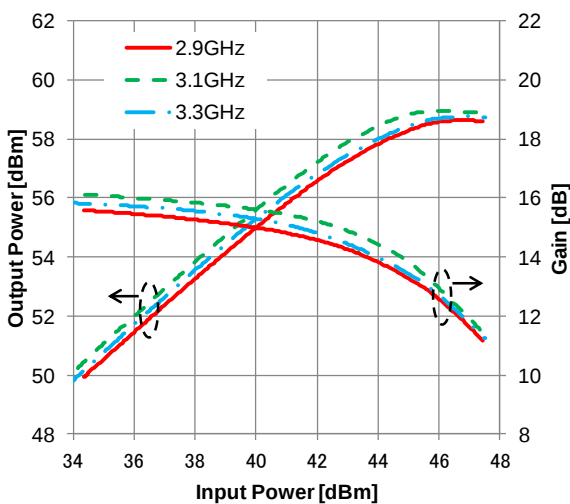
$V_{DS}=50V$, $I_{DS}(DC)=3A$, $P_{in}=31.6W$,
 $PW=200\mu sec$, Duty 10%

**Figure 1. Output Power and Drain Efficiency
vs Frequency**



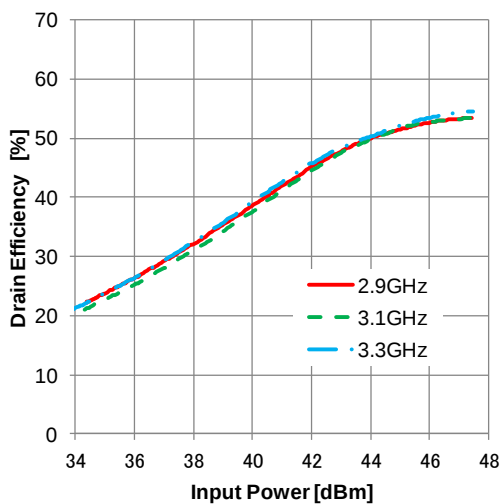
$V_{DS}=50V$, $I_{DS}(DC)=3A$, $P_{in}=45dBm$,
 $PW=200\mu sec$, Duty 10%

**Figure 2. Output Power and Power Gain
vs Frequency**



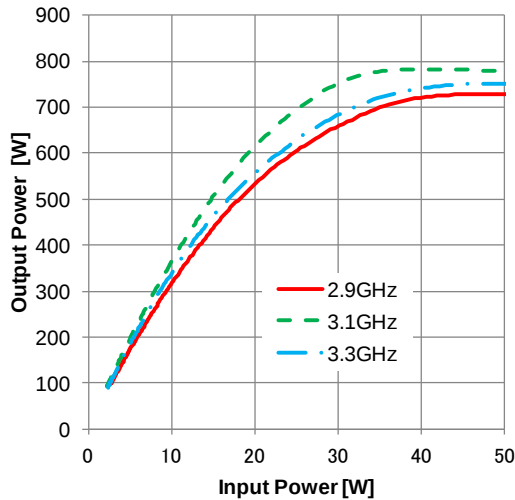
$V_{DS}=50V$, $I_{DS}(DC)=3A$,
 $PW=200\mu sec$, Duty 10%

**Figure 3. Output Power and Gain
vs Input Power**



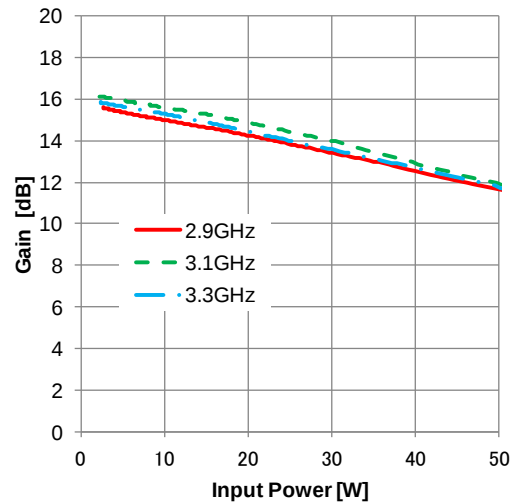
$V_{DS}=50V$, $I_{DS}(DC)=3A$,
 $PW=200\mu sec$, Duty 10%

Figure 4. Drain Efficiency vs Input Power



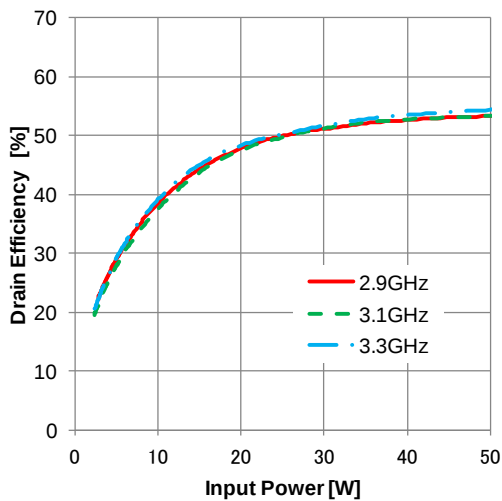
$V_{DS}=50V$, $I_{DS}(DC)=3A$,
PW=200 μ sec, Duty 10%

Figure 5. Output Power vs Input Power



$V_{DS}=50V$, $I_{DS}(DC)=3A$,
PW=200 μ sec, Duty 10%

Figure 6. Gain vs Input Power



$V_{DS}=50V$, $I_{DS}(DC)=3A$,
PW=200 μ sec, Duty 10%

Figure 7. Drain Efficiency vs Input Power

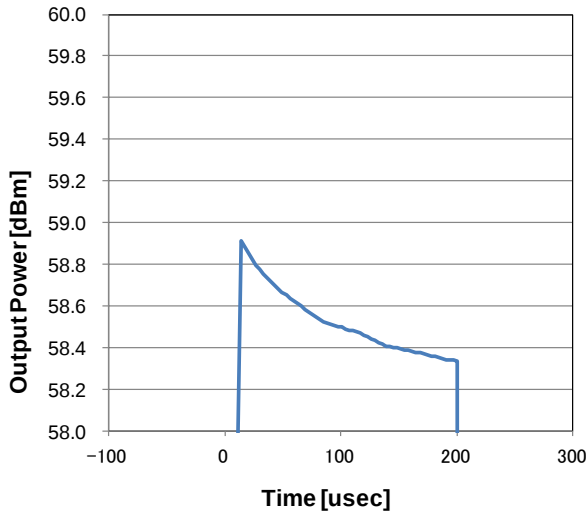


Figure 8. a) f=2.9GHz

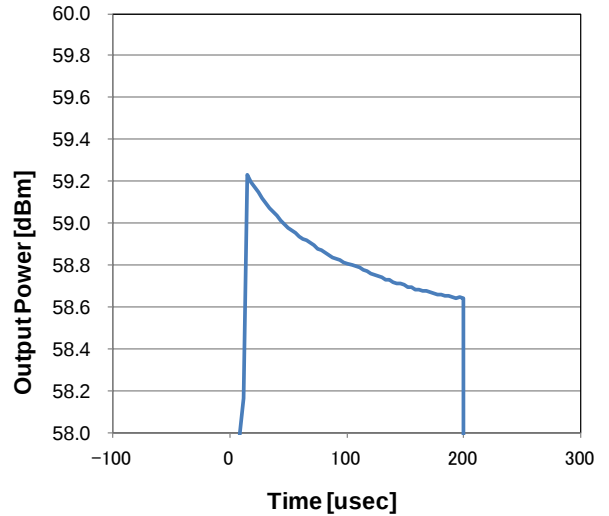


Figure 8. b) f=3.1GHz

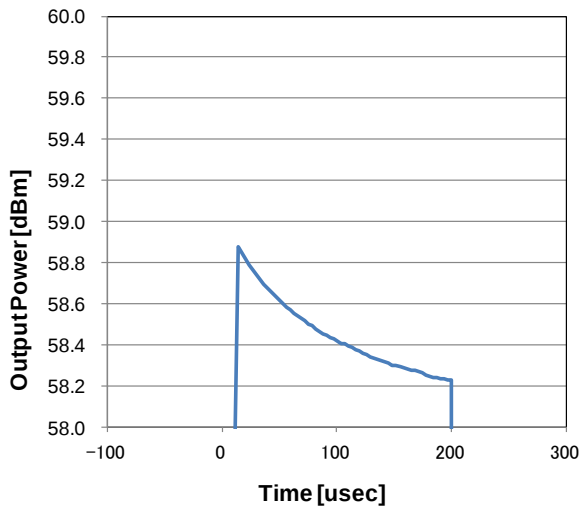
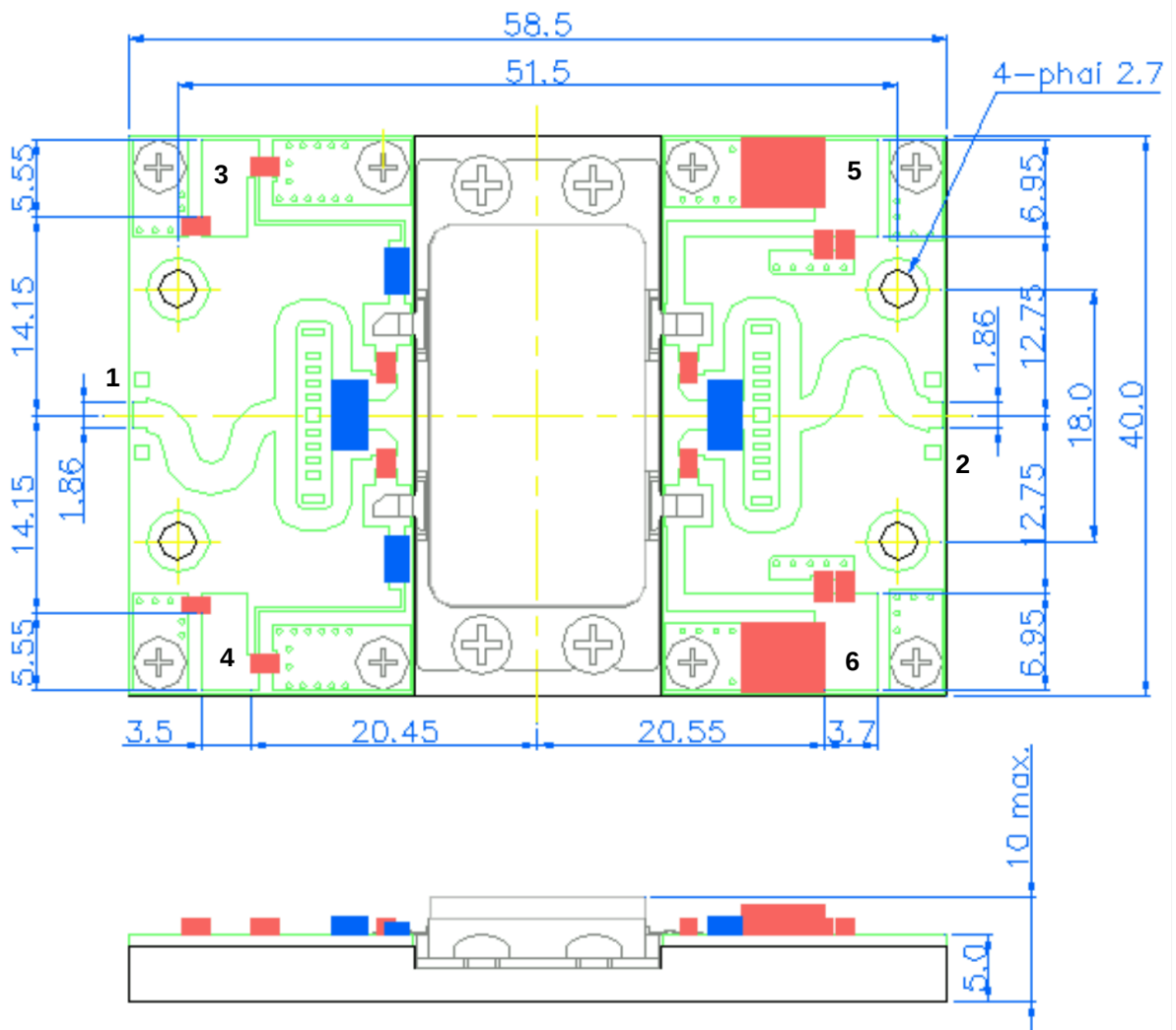


Figure 8. c) f=3.3GHz

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

Figure 8. Pulse Performance (Power)

SMC2933L6012R Outline



- 1 : RF in
- 2 : RF out
- 3, 4 : Gate
- 5, 6 : Drain

Unit : mm



SMC2933L6012R

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For further information please contact:

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