GaN Power Amp Pallet SMPA2731-550V

Product Features

2.7-3.1GHz:>550W, pulsed CW

>62% Drain Efficiency@50V

50ohm in and out, screw down

Device used: STDV31500BY4

Applications

5G Power amplifier

S band communication

ISM

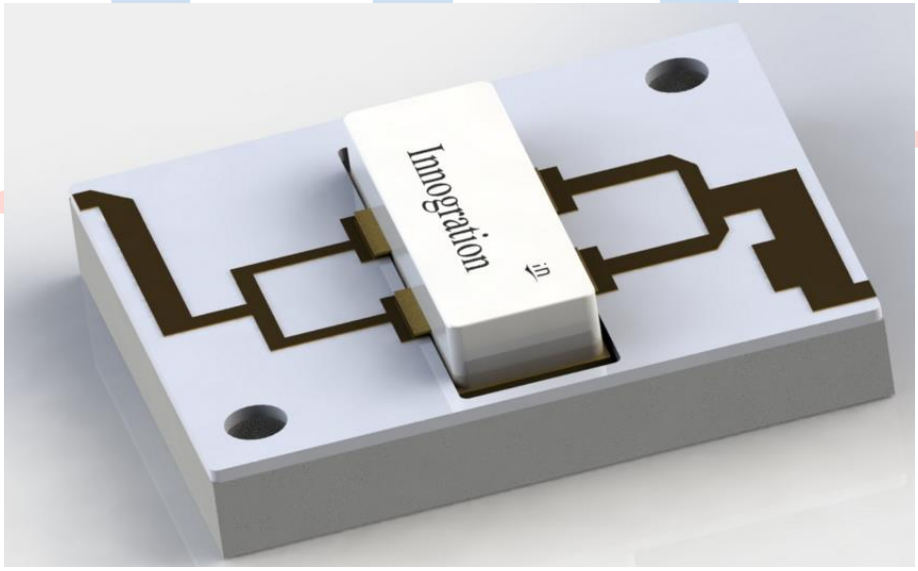
Commercial pulsed CW Power amplifier

Description

The SMPA2731-550V is designed for 5G communication, test and measurement and other ISM applications at 2700-3100MHz. This Amplifier pallet is suitable for use in linear and saturated applications. Featured by 50ohm fully matched at input and output, drop-in placement by screwing it down and 100% RF test, it enables easier power combination to reach higher power with high production yield as part of customer's power amplifier system.

This standard pallet is with typical size 50*90mm, but can be shrunk to much smaller size.

Pallet concept demostration purpose only, Not exactly the design itself



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Electrical Specifications @VCC=50V, T=25℃, 50Ωsystem

PARAMETER	UNIT	MIN	TYP	MAX	SYMBOL
Operating Frequency	MHz	2700	-	3100	fo
Operating Bandwidth	MHz	400		-	OBW
Pulse CW Output Saturated Power	W		550	-	Psat
Power Gain	dB		15	-	G_P
Gain Flatness	dB	-	-	±0.5	G_F
Input Return Loss	dB	-4	-	-10	S_{11}
Operating Voltage	V	48	50	55	V_{DS}
Quiescent Current	mA	-	100	-	I_{DQ}
Efficiency@Psat	%		-60		Eff

Environmental Characteristics

PARAMETER	UNIT	MIN	TYP	MAX	SYMBOL
Operating Case Temperature	℃	-40	-	60	Ta
Storage Temperature	℃	-40		100	Tstg
Relative humidity w/o condensation	%	-	-	95	RH

Mechanical Specifications

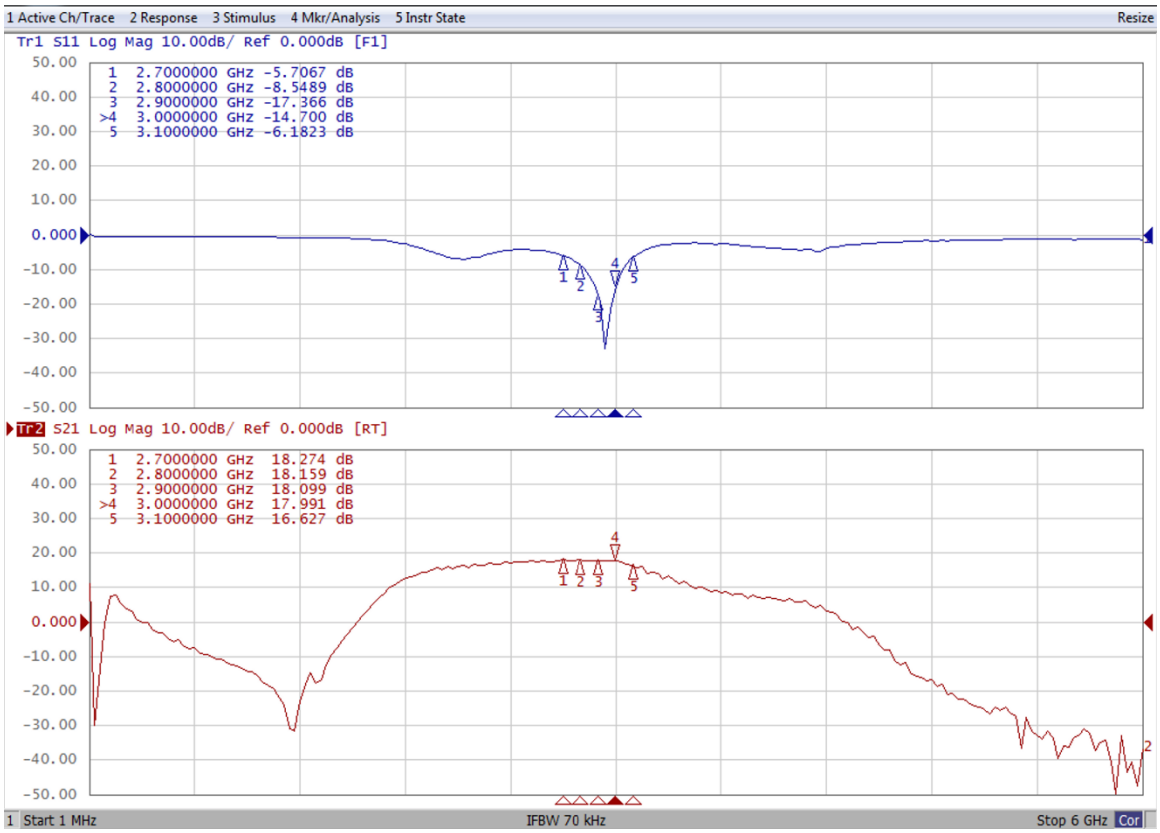
PARAMETER	UNIT	VALUE
Dimensions(L × W × H)	mm	50×90×4
RF Input Connector	-	N/A
RF Output Connector	-	N/A
Cooling	-	External Heat-sink

Typical performance

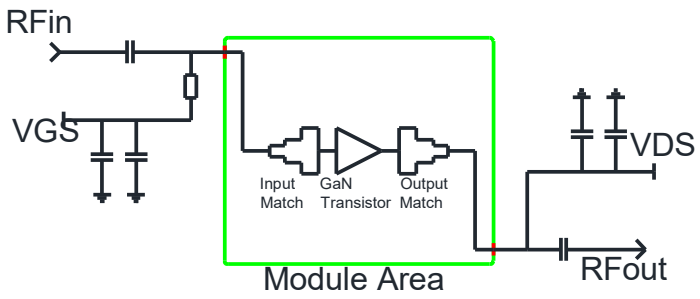
Pulsed CW performance:

Freq (MHz)	P3dB (dBm)	P3dB (W)	P3dB Eff(%)	P1dB Gain(dB)	P4.5dB (dBm)	P4.5dB (W)	P4.5dB Eff(%)
2700	57.51	563.3	68.4	17.19	57.78	599.9	69.5
2800	57.68	586.7	64.6	17.17	57.93	620.4	65.9
2900	57.92	619.0	62.5	17.33	58.19	658.4	64.0
3000	57.86	611.3	62.8	17.11	58.1	646.1	64.4
3100	57.61	576.9	62.9	15.5	57.84	607.9	64.0

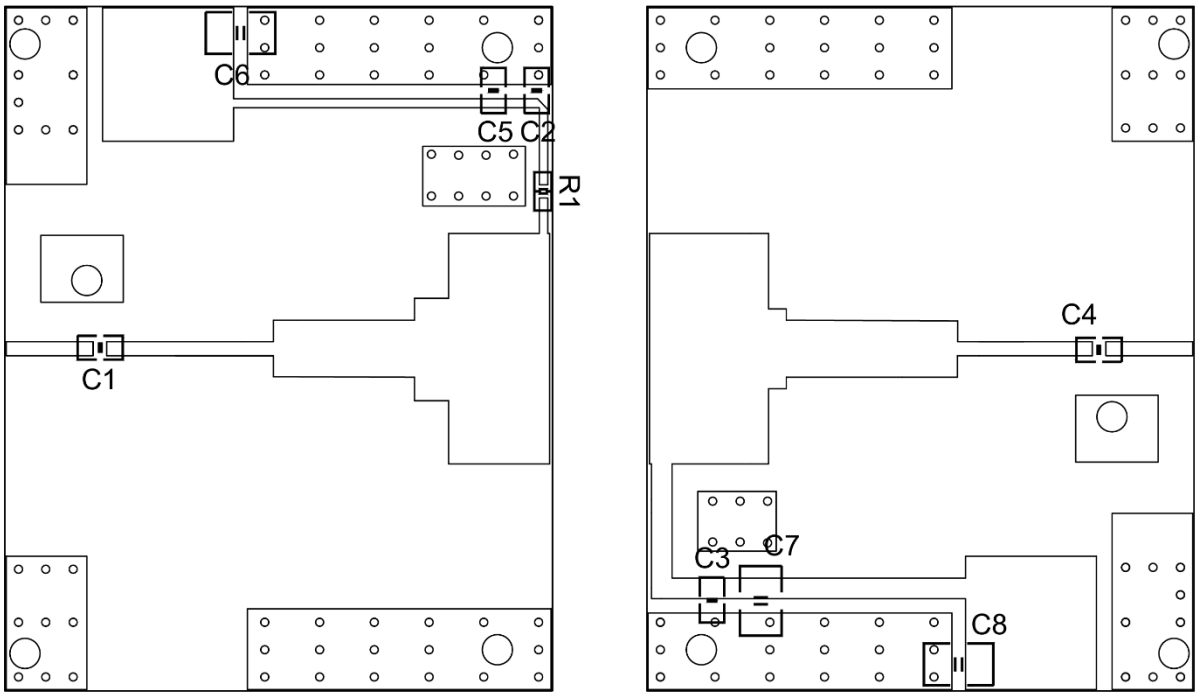
S21/S11 from network analyzer VDS=50V VGS=-3.02V IDQ=500mA



Evaluation board Block Diagram



Evaluation board outline (DUT:STDV31500BY4)



Component	Description	Suggestion
C0	470uF/63V	
C1,C2	10uF	5750
C3,C4	10pF	MQ101111
C5,C6	10pF	MQ301111
R1	Chip Resistor,10Ω	0805
PCB	30 Mil Rogers 4350B	

Revision History

Document revision history

Date	Revision	Datasheet Status
2025/4/21	Rev 1.0	Preliminary Datasheet

Application data based on ZBB-25-14

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