

Product Features

2.7-3.1GHz:>1000W, pulsed CW

>60% Drain Efficiency@50V

50ohm in and out, screw down

Device used: STCV311K0C2

Applications

5G Power amplifier

S band communication

ISM

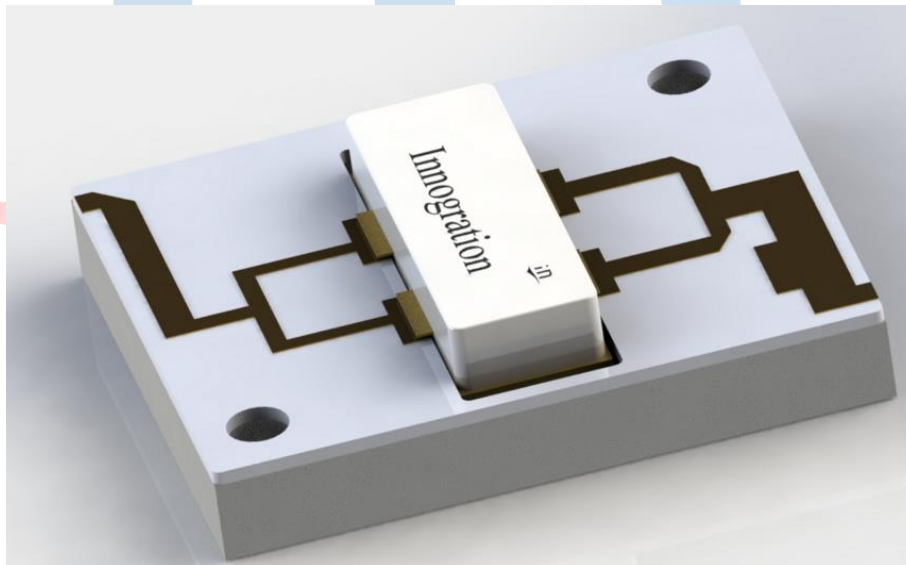
Commercial pulsed CW Power amplifier

Description

The SMPA2731-1000V 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 demonstration purpose only, Not exactly the design itself



Electrical Specifications @VCC=50V, T=25°C, 50Ωsystem

PARAMETER	UNIT	MIN	TYP	MAX	SYMBOL
Operating Frequency	MHz	2700	-	3100	f _o
Operating Bandwidth	MHz	400		-	OBW
Pulse CW Output Saturated Power	W		1000	-	P _{sat}
Power Gain	dB	10	11	-	G _P
Gain Flatness	dB	-	-	±0.5	G _F
Input Return Loss	dB	-3	-	-10	S ₁₁
Operating Voltage	V	-	50	55	V _{DS}
Quiescent Current	mA	-	300	-	I _{DQ}
Efficiency@P _{sat}	%		60	-	Eff

Environmental Characteristics

PARAMETER	UNIT	MIN	TYP	MAX	SYMBOL
Operating Case Temperature	°C	-40	-	60	T _a
Storage Temperature	°C	-40		100	T _{stg}
Relative humidity w/o condensation	%	-	-	95	RH

Mechanical Specifications

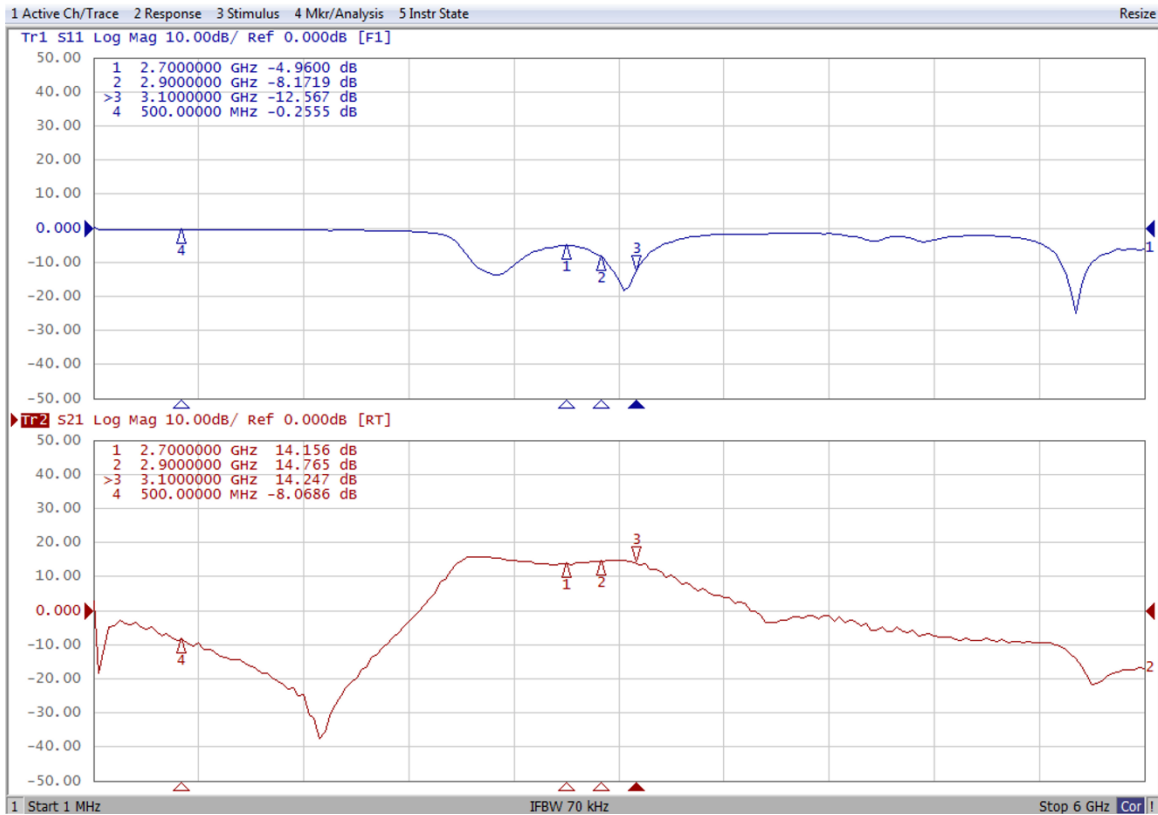
PARAMETER	UNIT	VALUE
Dimensions(L × W × H)	mm	50×90×4
RF Input Connector	-	N/A
RF Output Connector	-	N/A
Cooling	-	External Heat-sink

Typical performance

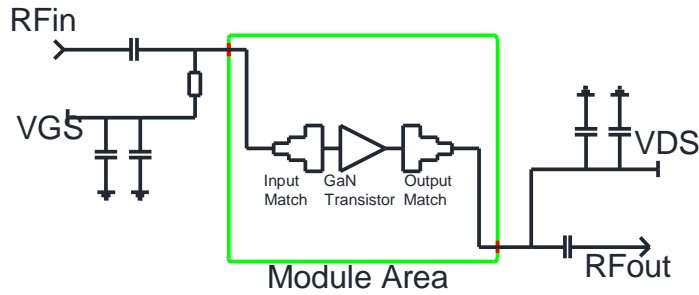
- Pulsed CW performance: 20uS width, 10% duty cycle

Freq (MHz)	P1dB (dBm)	P1dB (W)	P1dB Eff(%)	P1dB Gain(dB)	P4dB (dBm)	P4dB (W)	P4dB Eff(%)
2700	59.2	831.4	54.6	13.66	61.18	1312.7	64.4
2800	58.88	772.2	56.1	14.37	60.86	1220.1	65.8
2900	58.39	690.1	54.9	14.59	60.56	1137.6	64.8
3000	58.36	685.8	53.4	14.49	60.5	1122.3	63.3
3100	57.97	627.3	50.3	13.84	60.45	1107.9	61.4

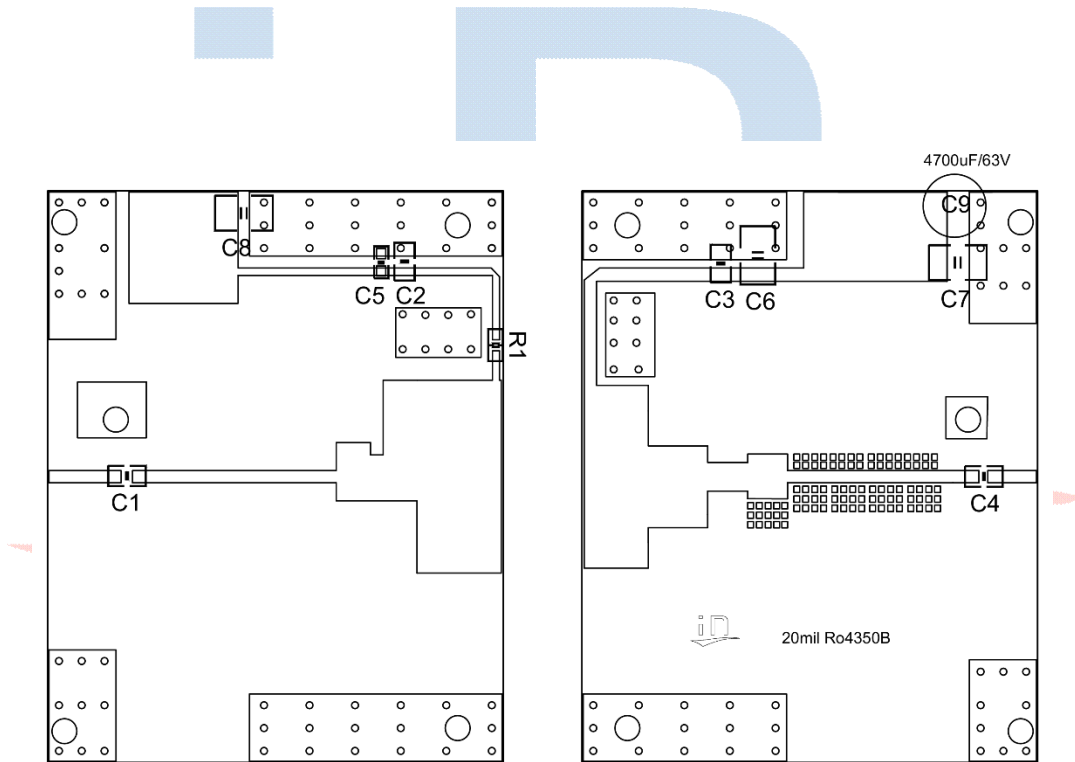
- S21/S11 from network analyzer VDS=50V VGS=-3.02V IDQ=500mA



Evaluation board Block Diagram



Evaluation board outline (DUT:STCV311K0C2)



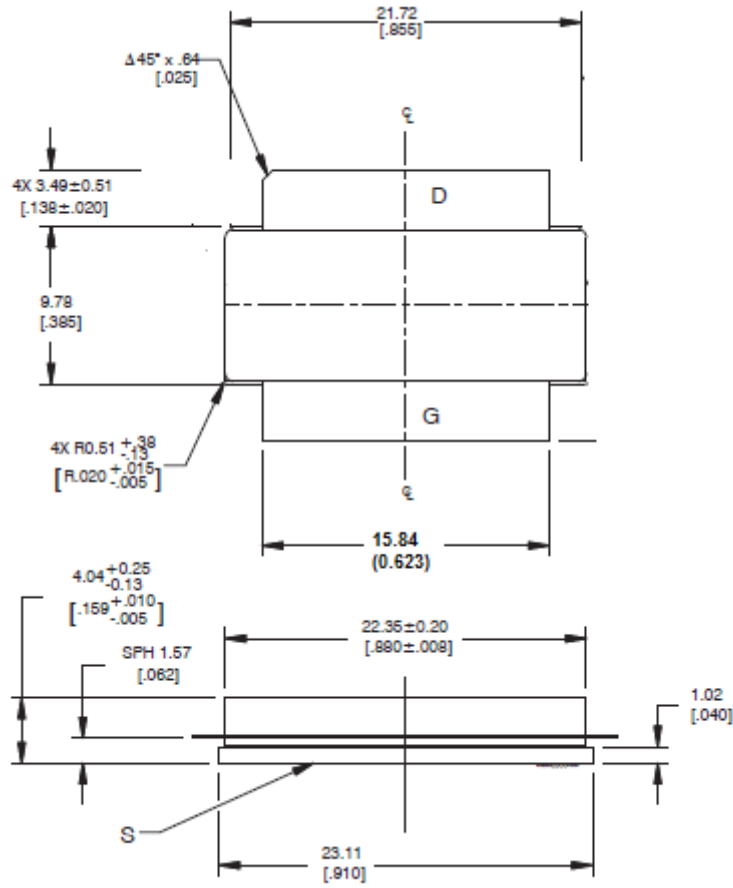
Reference	Footprint	Value	Quantity
C1, C2, C3, C4	0805	10pF/250V	4
C5	0603	4.7nF/50V	1
C6, C7, C8	1210	10uF/100V	3
C9		4700uF/63V	1
R1	0603	10R	1
/	C2	STCV311K0C2 ^{V3}	1

Transistor information: STCV311K0C2



Package Outline

Flangeless ceramic package;



OUTLINE VERSION	REFERENCE			EUROPEAN PROJECTION	ISSUE DATE
	IEC	JEDEC	JEITA		
PKG-C2					09/27/2018



Revision History

Document revision history

Date	Revision	Datasheet Status
2023/7/26	Rev 1.0	Preliminary Datasheet
2024/3/18	Rev 1.1	Generate transistor information, datasheet combined
2024/4/2	Rev 1.2	Modify with improved RF application data
2024/12/4	Rev 1.3	Modify with improvement of gain by V3 version

Application data based on ZBB-23-23/24-09/24-56



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