

Product Features

5.7-5.9GHz:>500W, Pulsed CW

Typically 43% Drain Efficiency@50V

50ohm in and out, 50*56mm, screw down

Device used: STCV58500F4C

Applications

5G Power amplifier

C band communication

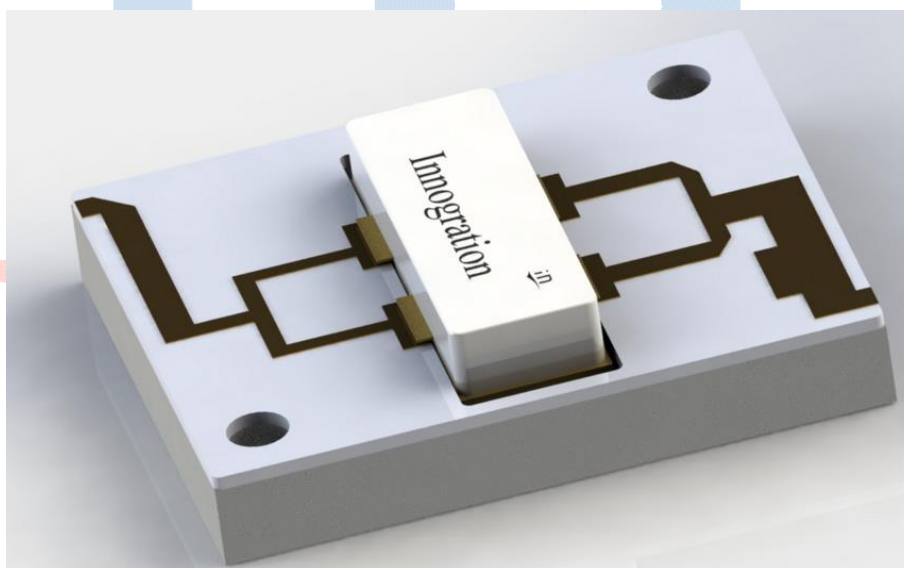
ISM

Commercial pulsed CW Power amplifier

Description

The SMPA5759-500V is designed for 5G communication, test and measurement and other ISM applications at 5700-5900MHz. This Amplifier pallet is suitable for use in linear and saturated applications. Featured by its tiny size 50*56mm, and 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.

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	5700	-	5900	f _o
Operating Bandwidth	MHz		200	-	OBW
Pulse CW Output Power	W		500	-	P _{out}
Power Gain	dB		7	-	G _p
Gain Flatness	dB	-	-±0.5		G _F
Input Return Loss	dB	-	--10		S ₁₁
Operating Voltage	V	-	50	55	V _{DS}
Quiescent Current	mA	-	300	-	I _{DQ}
Efficiency@P _{sat}	%	40	43	-	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

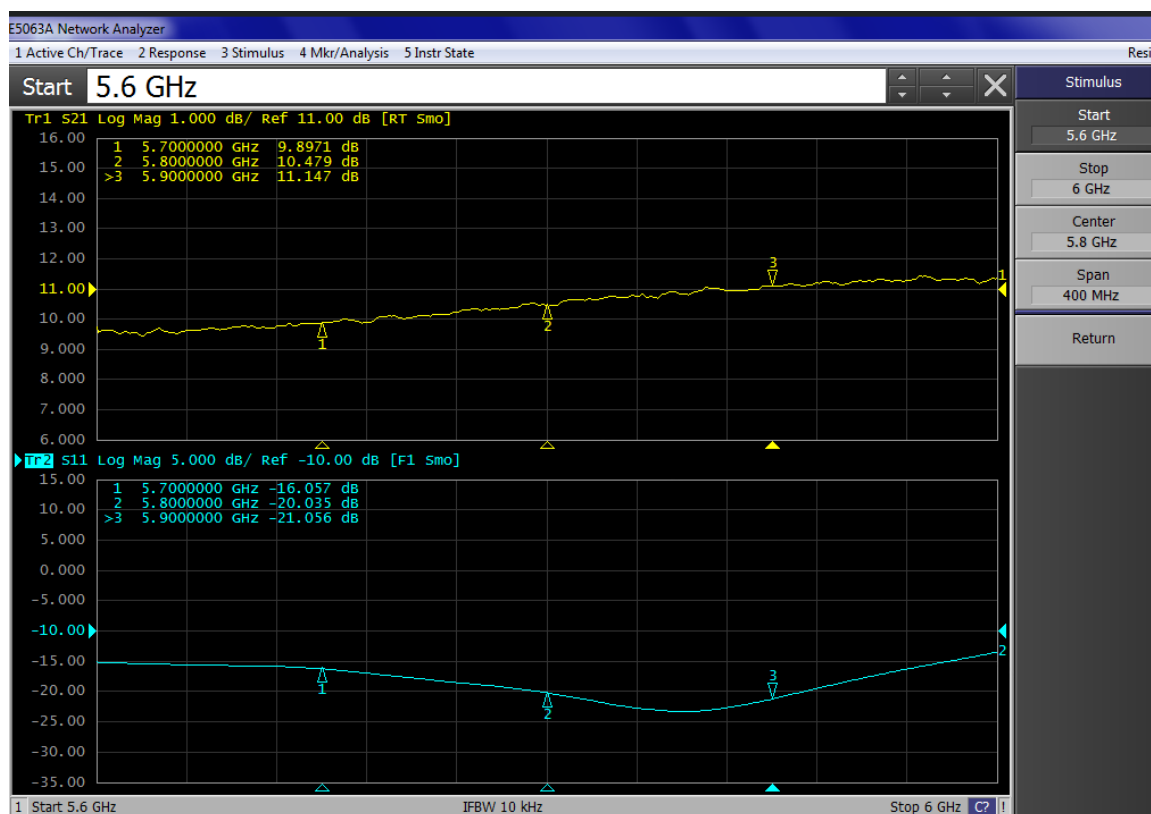
PARAMETER	UNIT	VALUE
Dimensions(L × W × H)	mm	50×56×10
Weight	g	300
RF Input Connector	-	N/A
RF Output Connector	-	N/A
Cooling	-	External Heat-sink

Typical performance

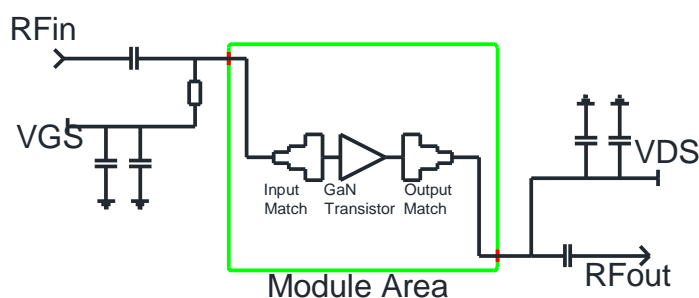
- Pulsed CW performance: $V_{DS}=50V$ $V_{GS}=-3.24V$ $IDQ=300mA$, Pulse: 100uS width, 10%;

Freq(MHz)	Pin(dBm)	Psat(dBm)	Psat(W)	IDS(A)	Gain(dB)	Eff(%)
5700	50	57.36	544.50	2.66	7.36	40.94
5800	49	57.74	594.29	2.74	8.74	43.38
5900	49.4	57.25	530.88	2.55	7.85	41.64

- S21/S11 from network analyzer

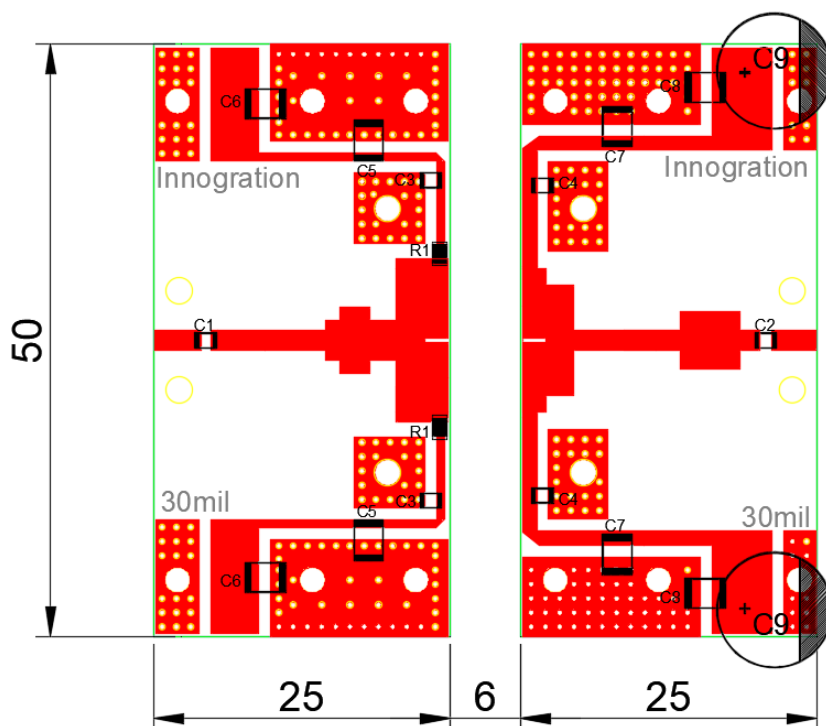


Evaluation board Block Diagram



Evaluation board outline (DUT:STCV58500F4C)

PCB RO4350B 30mils



Designator	Comment	Suggestion
C9	470uF/63V	
C5,C6,C7,C8	10uF	10uF/100V
C1, C3, C2 ,C4	3.9pF(MQ300805)	
R1	Chip Resistor,10Ω	0805

Revision History

Document revision history

Date	Revision	Datasheet Status
2023/9/6	Rev 1.0	Preliminary Datasheet

Application data based on YHG-24-29

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