

X-Band GaN Pulsed Power Amplifier (SSPA)

REV. 3.0_2025.09.02

9.2-9.8GHz/200Watt/Module

Model Number: KNP9500M53A

Model KNP9500M53A is an X-band high power pulsed amplifier operating in the 9.2 to 9.8 GHz frequency range and offering pulsed width up to 300μs with duty cycle up to 5%. The amplifier provides in excess of 200Watts peak output power into a 50 Ohm load. The employment of gallium nitride (GaN) and chip-and-wire technology in manufacturing ensures this module state-of-the-art power performance with excellent power-to-volume ratio. It is ideal for high power pulse applications or radar system.

FEATURES:

- Small Size and light weight
- Power added efficiency > 10%
- Digital interface option
- pulse width/duty cycle protection
- Over voltage, and over current protection

ELECTRICAL SPECIFICATIONS @ +32.0VDC, 25°C, 10μS, 5%, 50Ω

Parameter	Symbol	Min.	Typ.	Max.	Units
Operating Frequency	BW	9.2		9.8	GHz
RF Output Power	PPK		200		Watt
Duty Cycle	Duty Cycle			5	%
Pulse Width	PWIDTH	0.5		300	μS
PRI	PRI	40		1500	μS
Harmonics @ Pout =150W	H		-40		dBc
Spurious Signals	Spur		-55		dBc
RF Input Power @ PSAT	PIN	0		1	dBm
Input Return Loss/ Output Return Loss	S11/ S22		-10		dB
Rise /Fall time (Pulse Performance)	TRISE/FALL/OFF(10-90)		100		nS
Switching Speed	TON/OFF		2	5	μS
Power droop	Droop		1		dB
In/Output Impedance	Impedance		50		Ω
Operating Voltage	VDC	30	32	34	Volt
Peak Current Consumption @ Pout =150W	IDD			20	Amp
Average Current Consumption @ Pout =150W	IDD		8		Amp
Power Added Efficiency	Efficiency		12		%

MECHANICAL SPECIFICATIONS

Parameter	Value	Units	Notes
Dimensions	180x 125 x25 [7.09x4.92x0.98]	mm [inch]	Max
Weight	2[4.4]	kg [lb]	Max
RF Connectors Input	Type-SMA, Female		
RF Connectors Output	Type-SMA, Female		
DC Interface Connector	Hybrid,D-Sub 7-Pin,Male		
Cooling	External Heatsink Required (Optional supplying)		

ENVIRONMENTAL CHARACTERISTICS (Design to Meet)

Parameter	Min	Typical	Max	Units	Notes
Ambient Temperature	-40		60	°C	Operating case temperature up to +85°C
Non-operating Temperature	-45		85	°C	Storage
Relative Humidity (non-condensing)			95	%	

Focus on Your Application

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Specifications subject to change without notice

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Absolute Maximum Rating

Input RF drive level without damage	+5 dBm (Max)
Load VSWR @ Pout =150W	5:1 @ all load phase & amplitude for duration of 1 minute; 3:1 @ all load phase & amplitude continuous
Over Temperature	95°C @ heatsink [restored @ 60°C]

DC INTERFACE CONNECTOR

Pin #	Description	Specifications
A1	GND	Ground
A2	VDD	32VDC
1	RF ON/OFF	RF On: TTL Logic High (2.8-5.5V) Amplifier Radiate / To forbid radiate
2	TX-GATE	TX-GATE On: TTL Logic High (2.8-5.5V) Amplifier Standby /
3	CURRENT SENSE	Analog voltage relative to IDD @ 100mV per Ampere
4	TEMP SENSE	Analog voltage relative to Module's Temperature @ 0.5V+10 mV/°C
5	GND	Ground

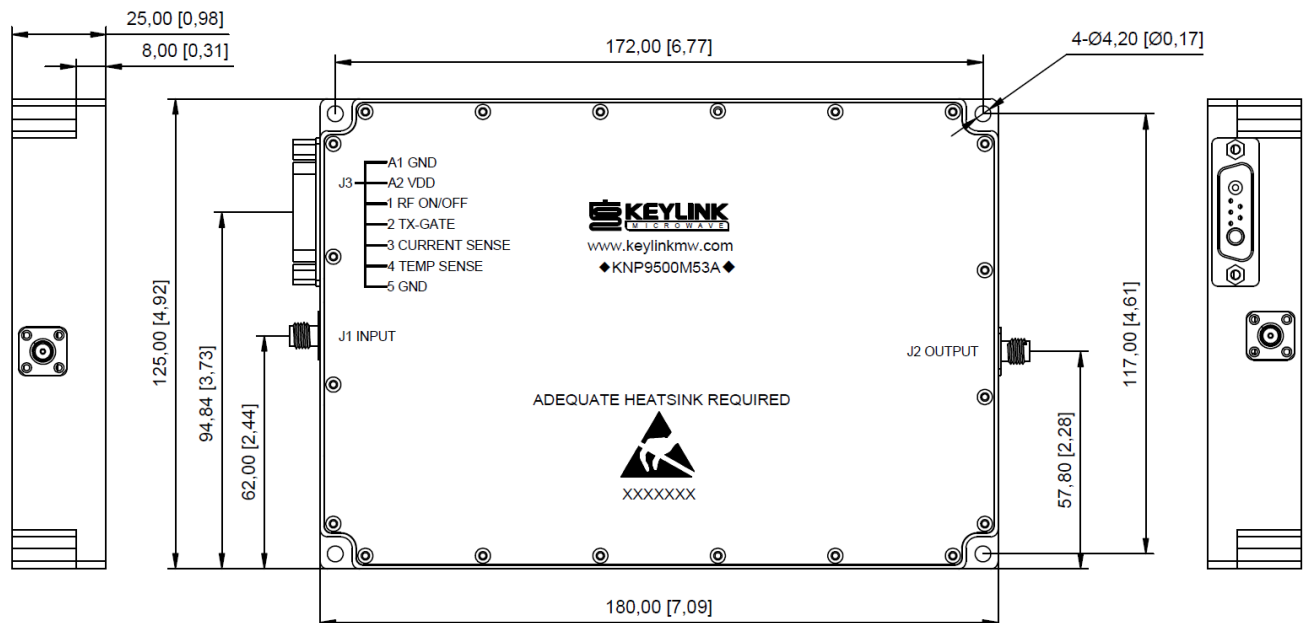
PROTECTION FUNCTION

Over threshold of voltage

Over threshold of current

Over threshold of temperature

OUTLINE DRAWING (All dimensions in mm [inch])



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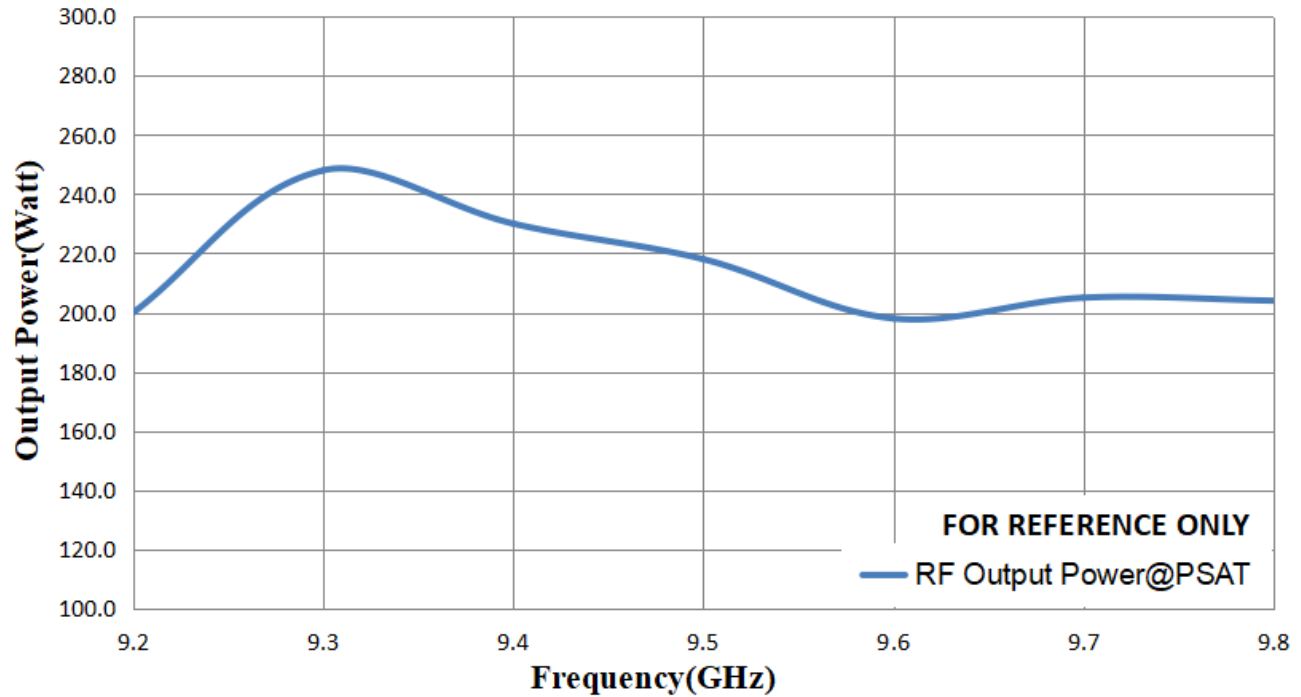
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TYPICAL PERFORMANCE PLOTS(For reference only)(Please contact the sales for special requirements)

Pin=0dBm, Pulse Width=10 μ S, Duty Cycle=5%



Note: Adequate heatsink required.

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