GaN Power Amp Pallet RNP09550-20

Product Features

- 910 ~ 920MHz (ISM band)
- 550W CW Peak Power @ 50V
- 66% Drain Efficiency @ 50V
- Excellent Ruggedness
- Excellent Thermal Stability

Applications

- Industrial Heating and Drying
- Scientific
- Medical
- Plasma Generator

Description

The RNP09550-20 is designed for Industrial, Scientific, Medical (ISM) and Plasma Generator applications at 915MHz. This Amplifier is suitable for use in CW, pulse and linear applications. This high efficiency rugged device is targeted to replace Industrial magnetrons and other vacuum tubes currently powering industrial heating, drying, plasma lighting and medical systems.

Electrical Specifications @ V_{DS} =50V, T=25°C, 50Ω System

PARAMETER		UNIT	MIN	TYP	MAX	SYMBOL
Operating Frequency		MHz	910	-	920	f_O
Operating Bandwidth		MHz	-	10	-	OBW
CW Output Power		dBm	57.4	-	-	Po
Input Power		dBm	-	-2.6	-	P_I
Power Gain		dB	57	60	-	G_P
Gain Flatness		dB	-	-	±0.5	G_F
Input Return Loss		dB	-	-	-20	S_{11}
Operating Voltage		V	V_{DC1}: 5.6±1%			-
			V_{DC2}:50 ±1%			
Current Consumption	5.6V	-	-	0.35	0.4	IDD
	50V		-	16.6	-	
Efficiency @ 57.4dBm		%	63	66	-	Eff

* Custom design available

Environmental Characteristics

PARAMETER	UNIT	MIN	TYP	MAX	SYMBOL
Operating Case Temperature	°C	0	-	60	Ta
Storage Temperature	°C	-40	-	100	Tstg
Relative humidity w/o condensation	%	-	-	95	RH

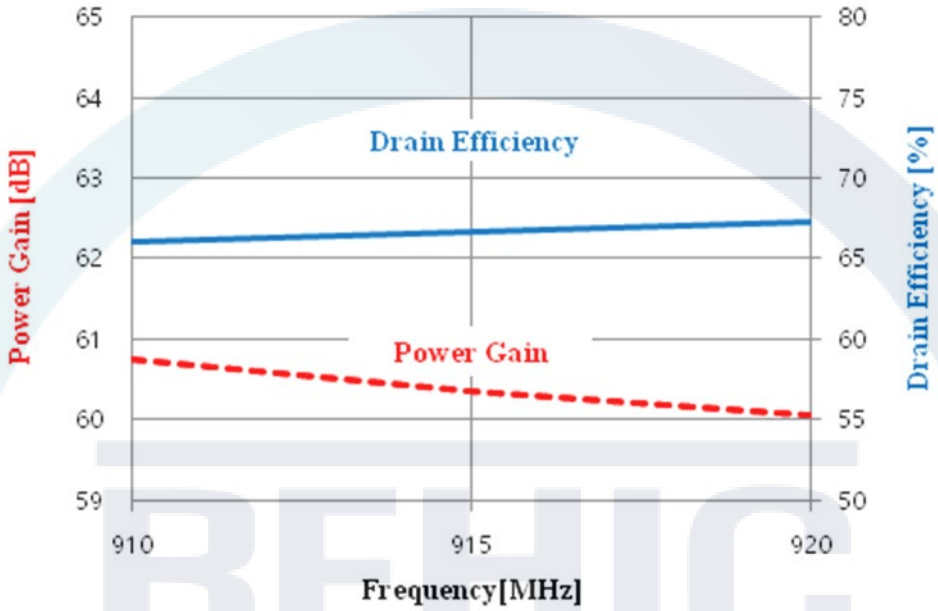
Mechanical Specifications

PARAMETER	UNIT	VALUE
Dimensions (L x W x H)	mm	240 x 198 x 26
Weight	Kg	1.15
RF Input Connector	-	SMA (Female)
RF Output Connector	-	N-type (Female)
I/O Connector	-	DS1016-20MASIBB (SHENZHEN JINLING ELECTRONICS)
Cooling	-	External Heat-sink & Airflow

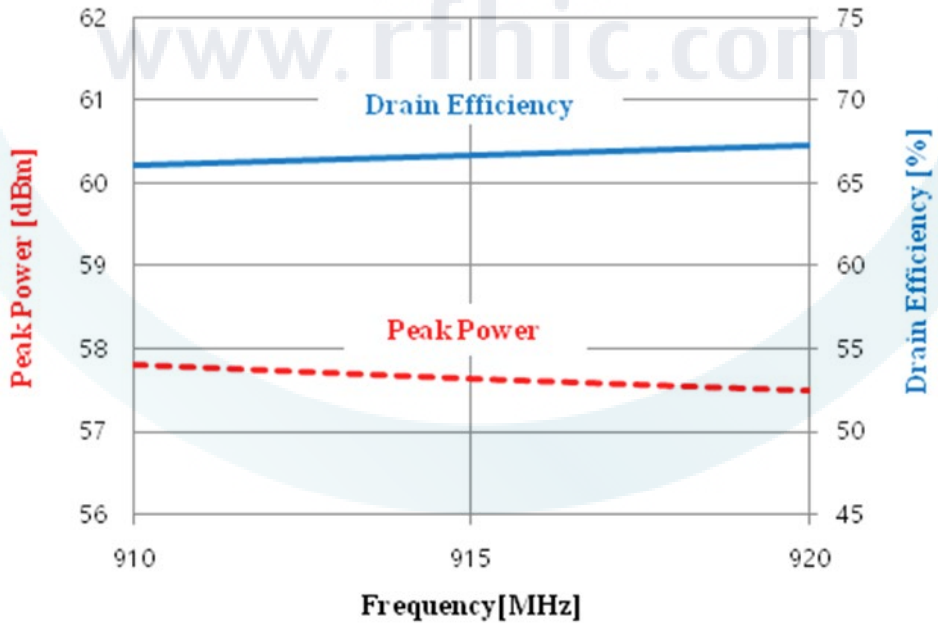
Typical CW Performance Charts

*** Bias condition** (VDS=50V, Tc=25℃)

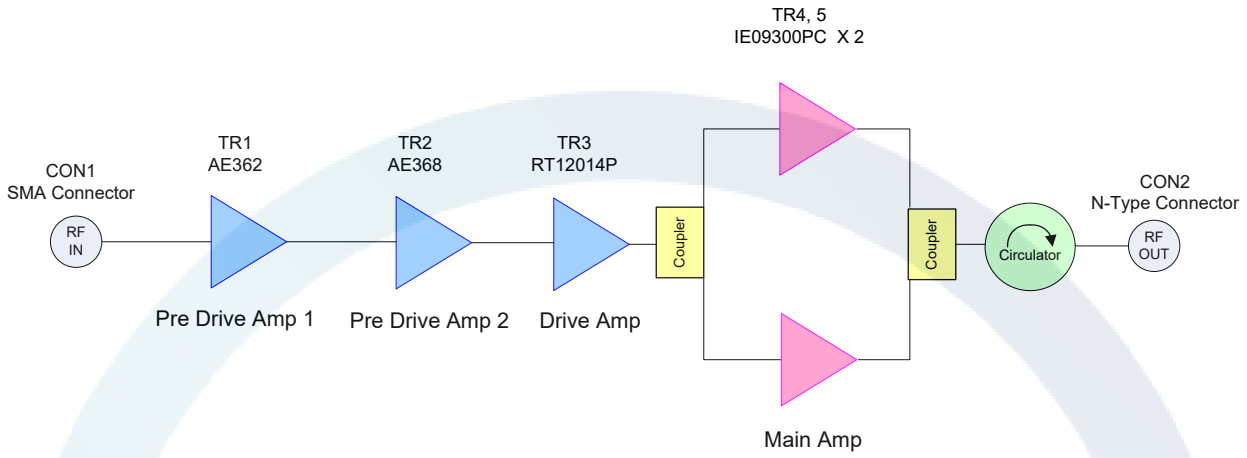
Peak Power, Drain Efficiency vs. Frequency



Power Gain, Drain Efficiency vs. Frequency



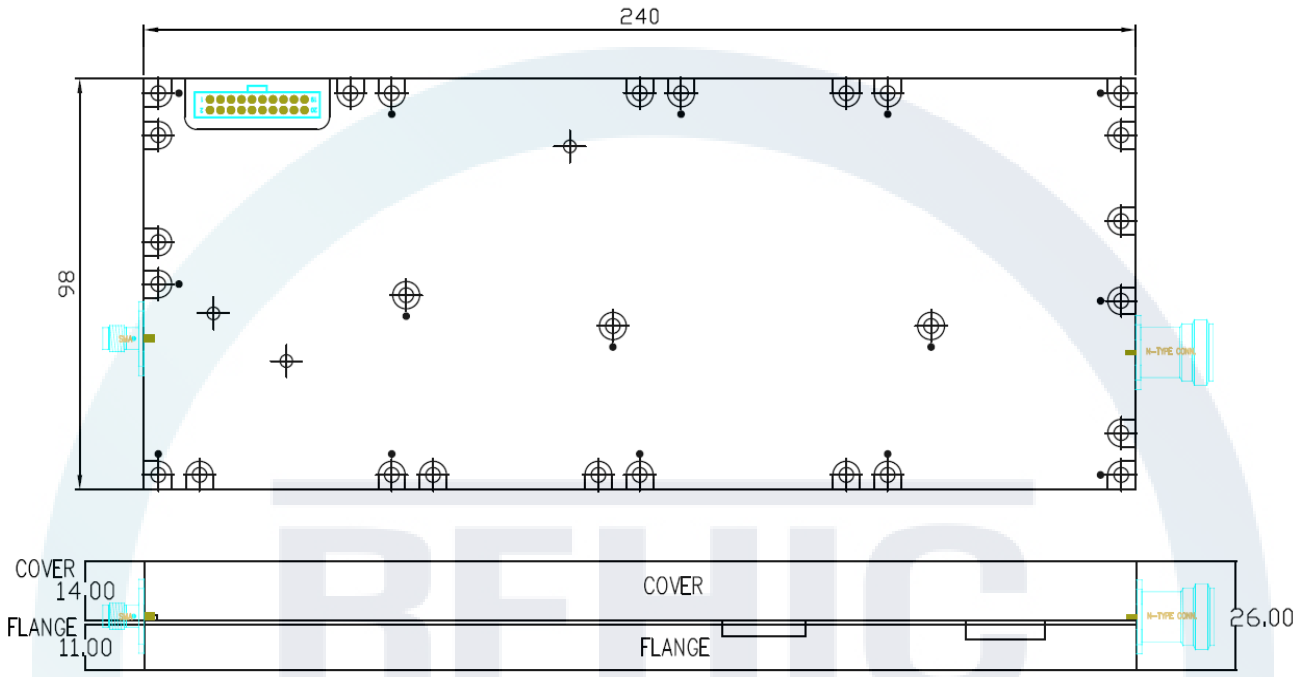
Block Diagram



Characteristic	Unit	RF IN	Attenuator	Pre Driver 1	Pre Driver 2	Driver Amplifier	Main Amplifier	Circulator	RF Out
Pout	dBm	-2.6	-15.1	0.9	18.9	39.9	57.9	57.4	57.4
Power Gain	dB	-	-12.5	16	18	21	18	-0.5	60
Current	A	-	-	-	-	0.5	16.1	-	-
Package	-	-	-	-	-	NS-CS01	NS-AS01	-	-

Outline Drawing

* Unit: mm | Tolerance: ±0.2



Note
Connector positions and module mount holes may be subjected change.

Interface Connector

20 Pin-Control (DS1016-20MASIBB)

Pin No	Description	Pin No	Description
1	+5.6V	11	Ground
2	0 ~+5V (Analog ATT)	12	Vdd (+50V)
3	Reverse power detecting	13	Vdd (+50V)
4	Temperature monitor	14	Vdd (+50V)
5	Forward power detecting	15	Vdd (+50V)
6	Ground	16	Vdd (+50V)
7	Ground	17	Vdd (+50V)
8	Ground	18	Vdd (+50V)
9	Ground	19	Vdd (+50V)
10	Ground	20	Vdd (+50V)

Revision History

Part Number	Release Date	Version	Description	Data Sheet Status
RNP09550-20	Aug, 2017	1.0	Initial release of datasheet	Preliminary