Fairview Microwave
an INFINITE brand

SPA-027-20-100-SMA
DATA SHEET

50 dB Gain High Power Amplifier at 79 Watt Psat Operating from 2.2 GHz to 2.7 GHz with SMA Input, Type N Output

The SPA-027-20-100-SMA is a class AB LDMOS amplifier module that is ideal for both military and commercial applications. The amplifier is capable of supporting any signal type and modulation format, including but not limited to 3-4G telecom, WLAN, OFDM, DVB, and CW/AM/FM. The amplifier produces a Psat of 79 Watts and offers 50 dB typical small signal gain with ±1.5 dB typical, gain flatness. The high gain power coaxial amplifier operates in the 2.2 to 2.7 GHz frequency range. The amplifier has several protection circuits including load VSWR protection, low and high bias protection, reverse bias protection and thermal protection. The connectorized SMA module is unconditionally stable and includes built-in voltage regulation, bias sequencing, and requires typically a +28V DC power supply. The amplifier operates over the temperature range of -40°C and +85°C.

Electrical Specifications

(TA = +25°C, DC Voltage = 28Volts , DC Current = 11A)

Description	Min	Typ	Max	Unit
Frequency Range	2.2		2.7	GHz
Small Signal Gain		50		dB
Gain Flatness		±1.5	±2	dB
Psat	+47	+49		dBm
Linear COFDM Power Output		+40		dBm
Impedance (Input)		50		Ohms
Impedance (Output)		50		Ohms
Input Return Loss	-16	-18		dB
Switching Speed for On/Off Switch Gate		1	2	usec
Operating DC Voltage	27	28	32	Volts
Operating DC Current		11		A
Quiescent Current		2.2		A
Operating Temperature Range	-40		+85	°C

Mechanical Specifications

Size

Length	7.7 in [195.58 mm]
Width	6.7 in [170.18 mm]
Height	0.985 in [25.02 mm]
Weight	3 lbs [1.36 kg]
Input Connector	SMA Female
Output Connector	N Female

Environmental Specifications

Temperature

Operating Range	-40 to +85 deg C
Storage Range	-60 to +100 deg C
Humidity	0-100

Features:

- 2.2 GHz to 2.7 GHz Frequency Range
- Linear Power 40 dBm typ
- Small Signal Gain: 50 dB typ
- Gain Flatness: ±1.5 typical
- 50 Ohms Input and Output Matched
- Unconditionally Stable
- Regulated Supply & Bias Sequencing
- Overvoltage Protection
- Thermal Protection
- Modulation Formats: 3-4 G Telecom, WLAN, OFDM, DVB, and CW/AM/FM

Applications:

- L-band Military Radar
- Commercial Air Traffic Control
- Weather & Earth Observation Satellites
- Radar & Communication Systems
- High Gain Driver Power Amplifier
- High Gain Output Power Amplifier

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Compliance Certifications (see product page for current document)

Plotted and Other Data

Notes:

- Values at 25 °C, sea level
- ESD Sensitive Material, Transport material in Approved ESD bags. Handle only in approved ESD Workstation.
- Heat Sink Required for Proper Operation, Unit is cooled by conduction to heat sink.

Amplifier Power-up Precautions

1.) Confirm that proper ESD precautions and controls are always in place before handling any Amplifier module.

2.) Confirm adequate thermal management is in place to effectively dissipate heat away from the Amplifier package. The Amplifier operational baseplate temperature must be within the operational temperature range stated in the Amplifier datasheet. Depending on the design and thermal requirements, using a heatsink with cooling fan is always recommended for safe reliable operation. A heat sink without a cooling fan may also be used. Damage caused from overheating will void the warranty.

3.) Confirm adequate system grounding is established. The DC power supply and Amplifier must have a common ground in order to operate properly.

4.) Power Amplifiers may require additional DC Current when initially powered-up. Depending on the design, the input current draw could range from an additional 10% to 100% above the maximum rated DC current of the Amplifier. This varies based on product part number.

5.) Confirm the DC power supply, if limited, is set to allow for additional start-up current that's rated for the Power Amplifier.

6.) Confirm the system is designed and calibrated for 50 ohms. Any impedance mismatch may cause performance issues.

7.) Preform a CALIBRATION (if required) with the loads before connecting the Amplifier to the Network Analyzer to ensure proper performance.

8.) Use a fixed attenuator between the signal source and input port of the Amplifier to optimize the input VSWR match.

9.) Confirm the input power level at the input port of the amplifier does not exceed the maximum rated limit for input power (as stated in the Amplifier datasheet).
P_{in} for Small Signal Gain = P1dB-SSG-10 dB
P_{in} for P1dB = P1dB-SSG+1 dB

10.) Confirm the Network Analyzer is always connected to the Amplifier first before DC power is applied to the Amplifier.

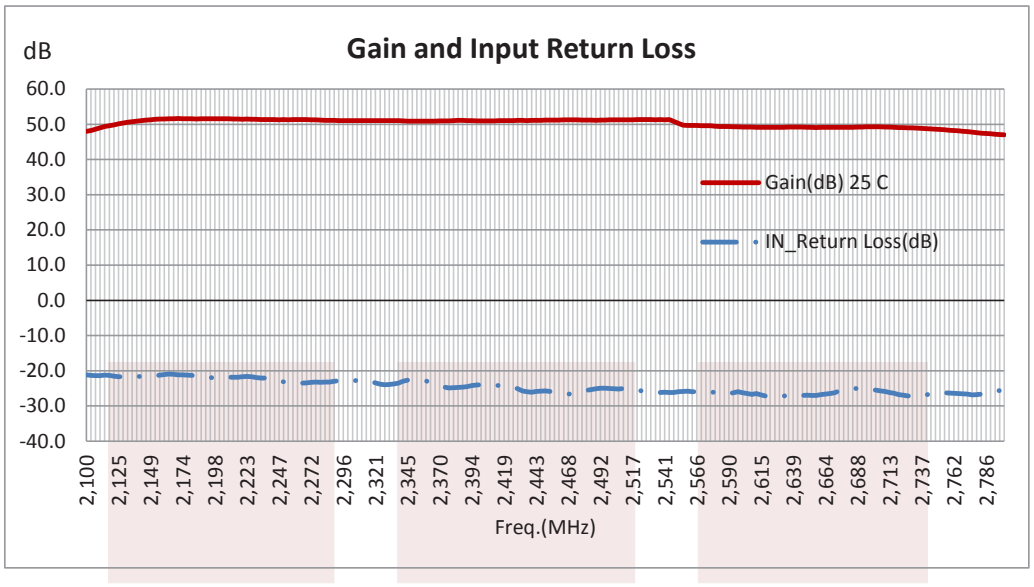
11.) As long as the input and output ports of the amplifier are connected to a 50Ohm load and RF signal power is applied, the Amplifier can be powered up with DC voltage.

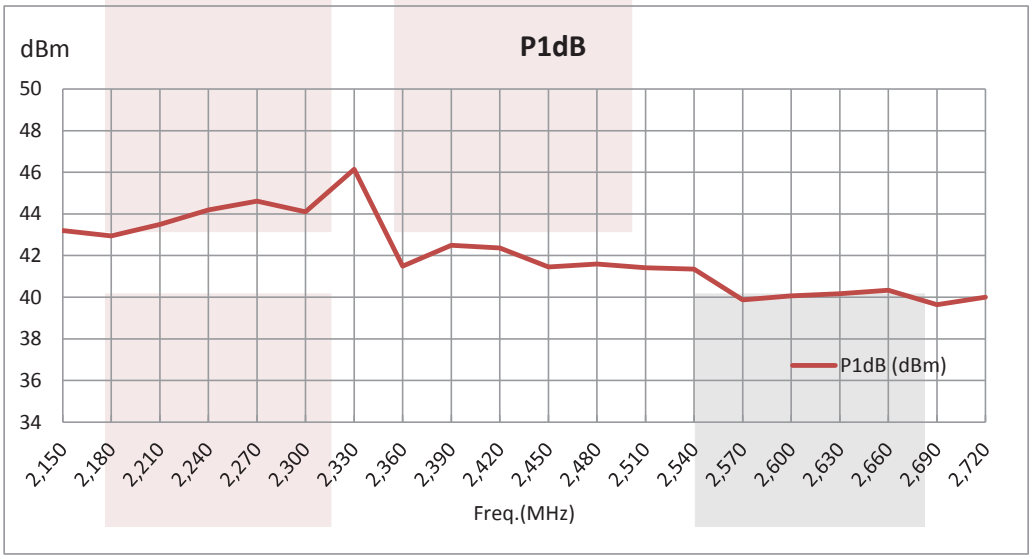
12.) Confirm the Amplifier output load is matched for a 50 Ohm impedance and will not exceed the maximum rated VSWR or Return Loss limit for the Amplifier. Exceeding the maximum rated VSWR or Return Loss limit will result in reflected signal power that could damage the Amplifier and void the warranty.

13.) **Power Amplifier connected to an Antenna for signal transmission** - It's strongly recommended to use a high power fixed attenuator pad or an Isolator between the output port of the Amplifier and input port to the antenna. Any reflected signal power due to impedance mismatch will likely damage the Amplifier and void the warranty.

14.) The attenuator or isolator used at the output port of the Amplifier must be rated to handle the output power level and operational frequency band of the amplifier.

Typical Performance Data





50 dB Gain High Power Amplifier at 79 Watt Psat Operating from 2.2 GHz to 2.7 GHz with SMA Input, Type N Output from Fairview Microwave is in-stock and available to ship same-day. All of our RF/microwave products are available off-the-shelf from our ISO 9001:2008 certified facilities in Allen, Texas. Fairview Microwave is RF on-demand.

For additional information on this product, please click the following link: 50 dB Gain High Power Amplifier at 79 Watt Psat Operating from 2.2 GHz to 2.7 GHz with SMA Input, Type N Output SPA-027-20-100-SMA

URL: https://www.fairviewmicrowave.com/50db-high-power-high-gain-amplifier-79watt-spa-027-20-100-sma-p.aspx

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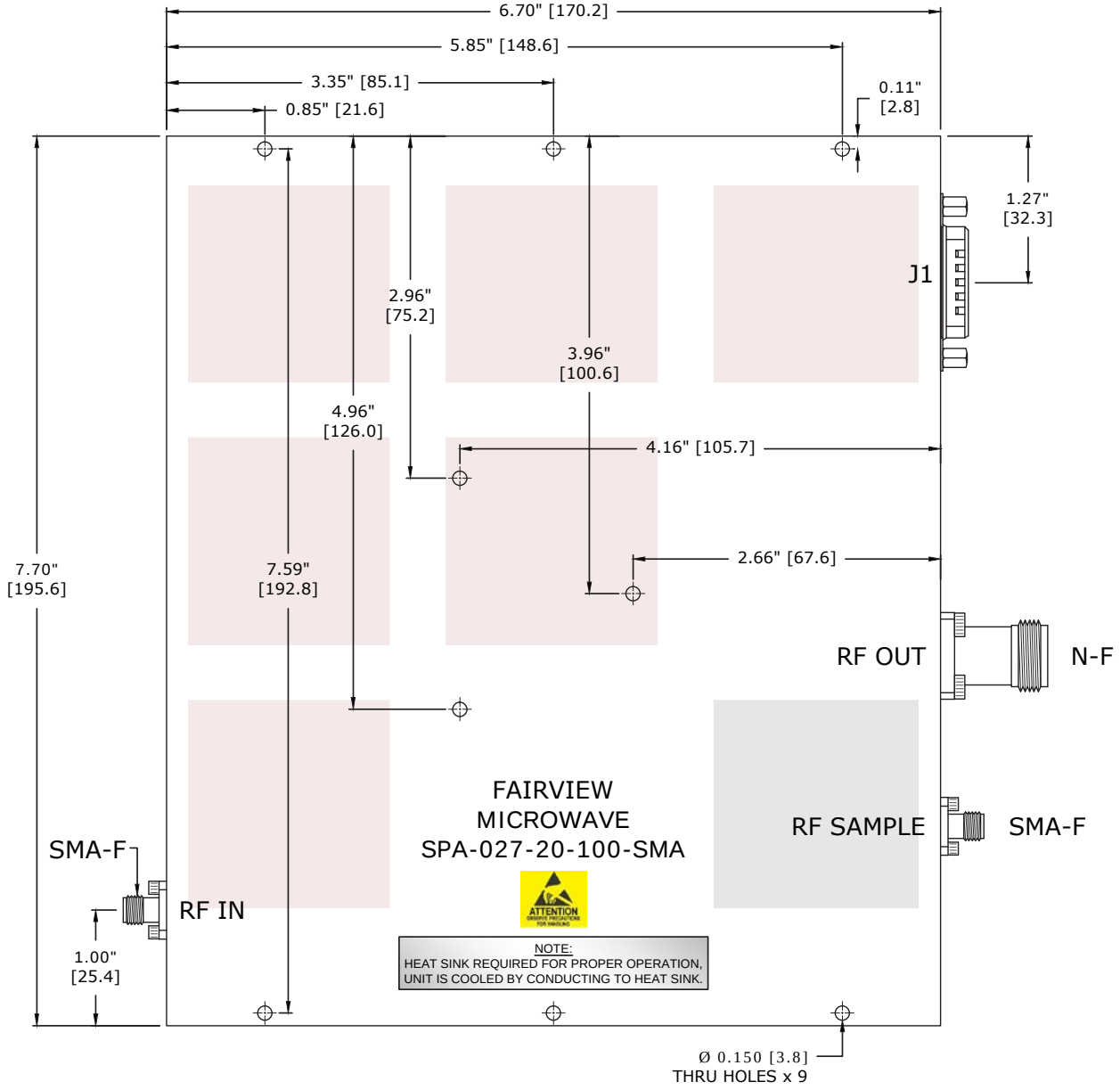

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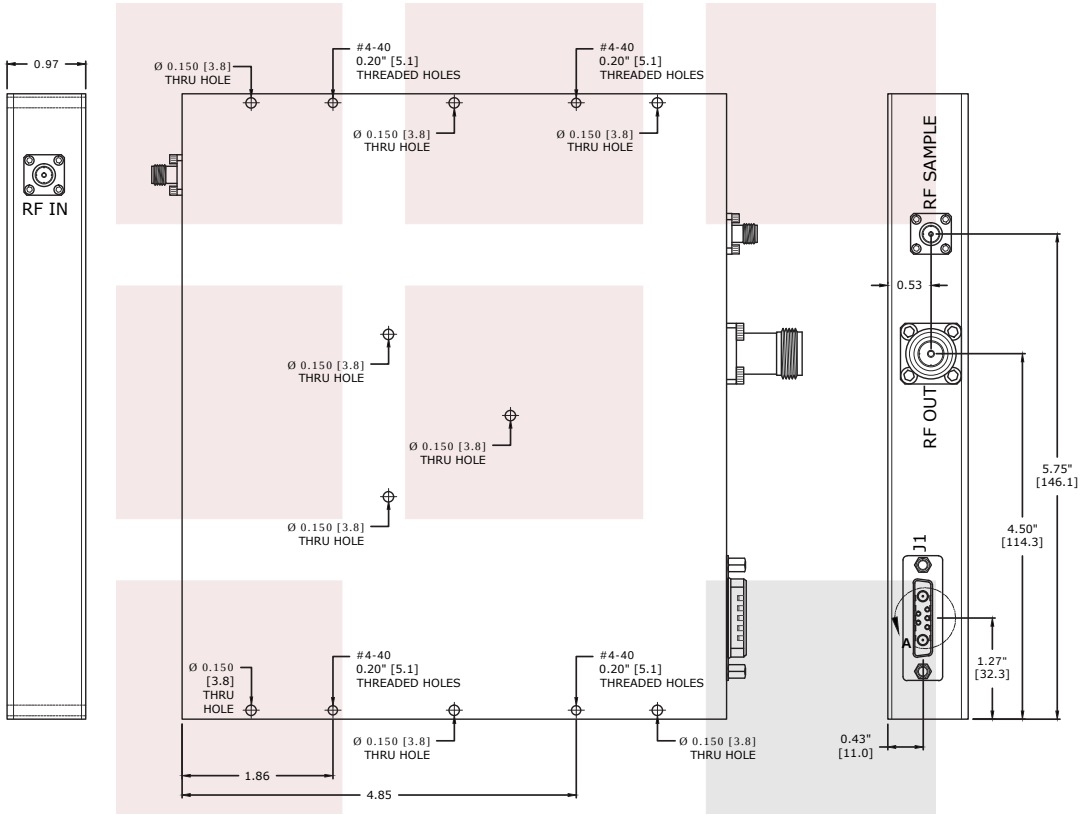
TITLE 50 dB Gain High Power Amplifier at 79 Watt Psat Operating from 2.2 GHz to 2.7 GHz with SMA Input, Type N Output	DWG NO SPA-027-20-100-SMA		CAGE CODE 3FKR5		
	CAD FILE 031115	SHEET	SCALE N/A	SIZE A	5568



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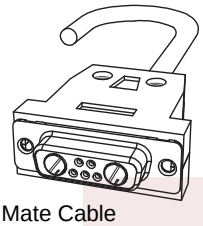
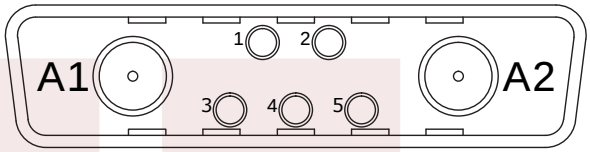


Mate Cable
(Not Included)



View A

CONNECTOR PINOUT		
PIN	DESCRIPTION	NOTES
1	Temperature	Temp. Monitor: Temp. in DegC =(Vout. - 0.5V) /10
2	Amplifier Enable	TTL On/Off Low = Disable, High = Enable
3	NC	Not Connected
4	Ground	Ground
5	FWD	Forward Power Measurement
A1	Ground	Ground
A2	+VDC	Supply Voltage - Range Specified in Datasheet

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