Fairview Microwave
an INFINITE brand

SPA-060-60-10-SMA
DATA SHEET

60 dB Gain High Power Amplifier at 10 Watt Psat Operating from 100 MHz to 6 GHz with SMA Input, SMA Output

SPA-060-60-10-SMA is a 10W high gain coaxial power amplifier operating in the 0.1 to 6 GHz frequency range. The amplifier offers 40 dBm typical of saturated power and 60 dB typical small signal gain with gain flatness of ±1.25 dB typical. This excellent technical performance is achieved through the use of advanced GaN devices. The amplifier requires typically a +28V DC power supply. The connectorized SMA module is unconditionally stable and includes built-in voltage regulation, bias sequencing, DC On/Off TTL Logic control, current shutdown and over temp shutdown at +85°C for added reliability. The amplifier operates over the temperature range of -40°C and +85°C. The RF Input/Output Connectors are SMA Female. Along with a 15 Pin Micro-D Female Control Socket.

Electrical Specifications

(TA = +25°C, DC Voltage = 28Volts , DC Current = 2.2A)

Description	Min	Typ	Max	Unit
Frequency Range	0.1		6	GHz
Small Signal Gain	60			dB
Gain Flatness		±1.25		dB
Input Power (CW)			+20	dBm
Input Power (Peak) 100 µs pulse, 10% duty cycle			+23	dBm
Psat	+39	+40		dBm
Efficiency (PAE)		20		%
Harmonics @10 Watts		-15		dBc
Noise Figure			10	dB
Spurious @10 Watts		-70		dBc
Impedance (Input)		50		Ohms
Impedance (Output)		50		Ohms
Input VSWR		2:1		
Output VSWR		2:1		
TTL Control	"1": Off, "0": On (Blanking), Enable: 0V, Disable: 5V			
Operating DC Voltage		28		Volts
Operating DC Current		2.2		A
Operating Temperature Range	-40		+85	°C

Mechanical Specifications

Size	
Length	2.5 in [63.5 mm]
Width	2.75 in [69.85 mm]
Height	0.45 in [11.43 mm]
Weight	0.2755 lbs [124.96 g]
Input Connector	SMA Female
Output Connector	SMA Female
Cooling	HEATSINK REQUIRED use PE15A5990

Environmental Specifications

Features:

- 0.1 GHz to 6 GHz Frequency Range
- Psat 40 dBm typ
- Small Signal Gain: 60 dB min
- Gain Flatness ±1.25 dB typical
- 50 Ohms Input and Output Matched
- Unconditionally Stable
- Regulated Supply & Bias Sequencing
- Hermetically Sealed Module
- Over Current Shutdown
- Mismatch Handling 5.0:1 max
- Over Temp Shutdown
- Designed to meet MIL-STD-810 Conditions

Applications:

- Military Radio
- Communication Systems
- High Gain Driver Power Amplifier
- High Gain Output Power Amplifier

Fairview Microwave
301 Leora Ln., Suite 100
Lewisville, TX 75056
Tel: 1-800-715-4396 / (972) 649-6678
Fax: (972) 649-6689
www.fairviewmicrowave.com
sales@fairviewmicrowave.com

Temperature	
Operating Range	-40 to +85 deg C
Storage Range	-40 to +85 deg C
Humidity	IAW MIL-STD-810F, up to 95%
Shock	IAW MIL-STD-202G method 214, condition C
Vibration	IAW MIL-STD-810F, Method 514.5, Table
Altitude	up to 30,000 ft
Salt Fog	5%, +35°C 96 hrs IAW MIL-STD- 810G method
Fungus	IAW MIL-STD-810G method 508.6

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.

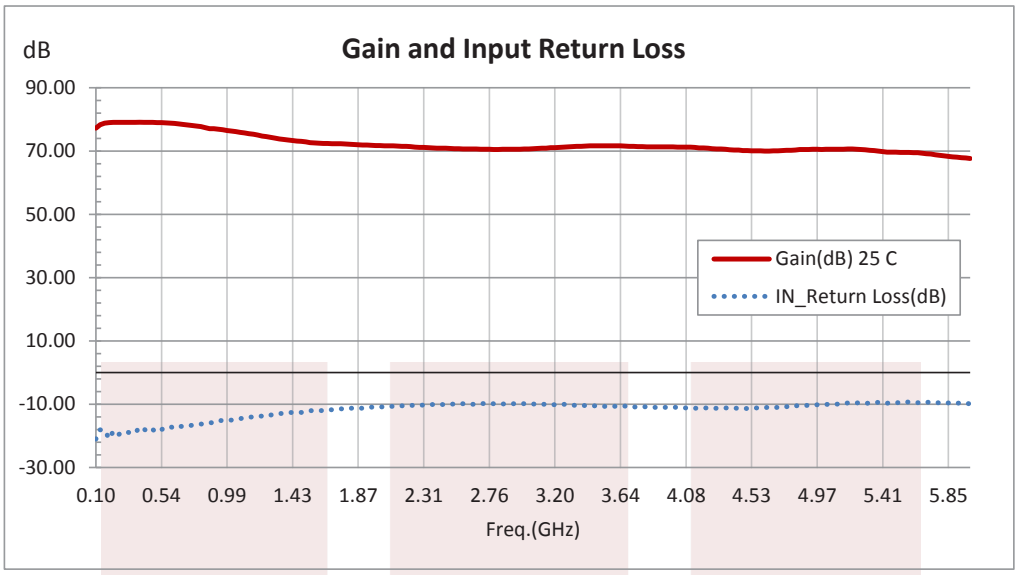
11.) As long as the input and output ports of the amplifier are connected to a 50Ohm load and RF signal power is applied, the Amplifier can be powered up with DC voltage.

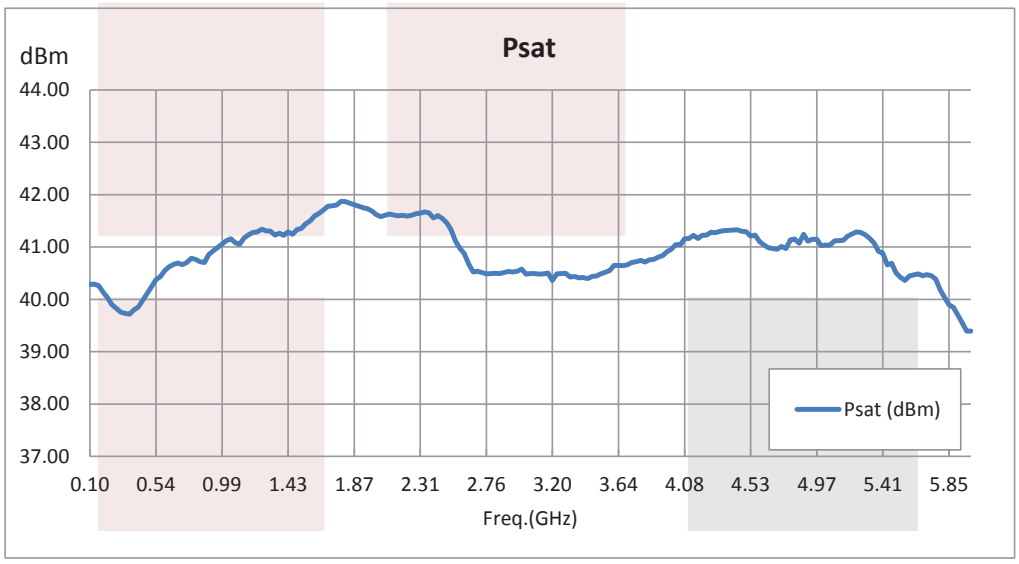
12.) Confirm the Amplifier output load is matched for a 50 Ohm impedance and will not exceed the maximum rated VSWR or Return Loss limit for the Amplifier. Exceeding the maximum rated VSWR or Return Loss limit will result in reflected signal power that could damage the Amplifier and void the warranty.

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

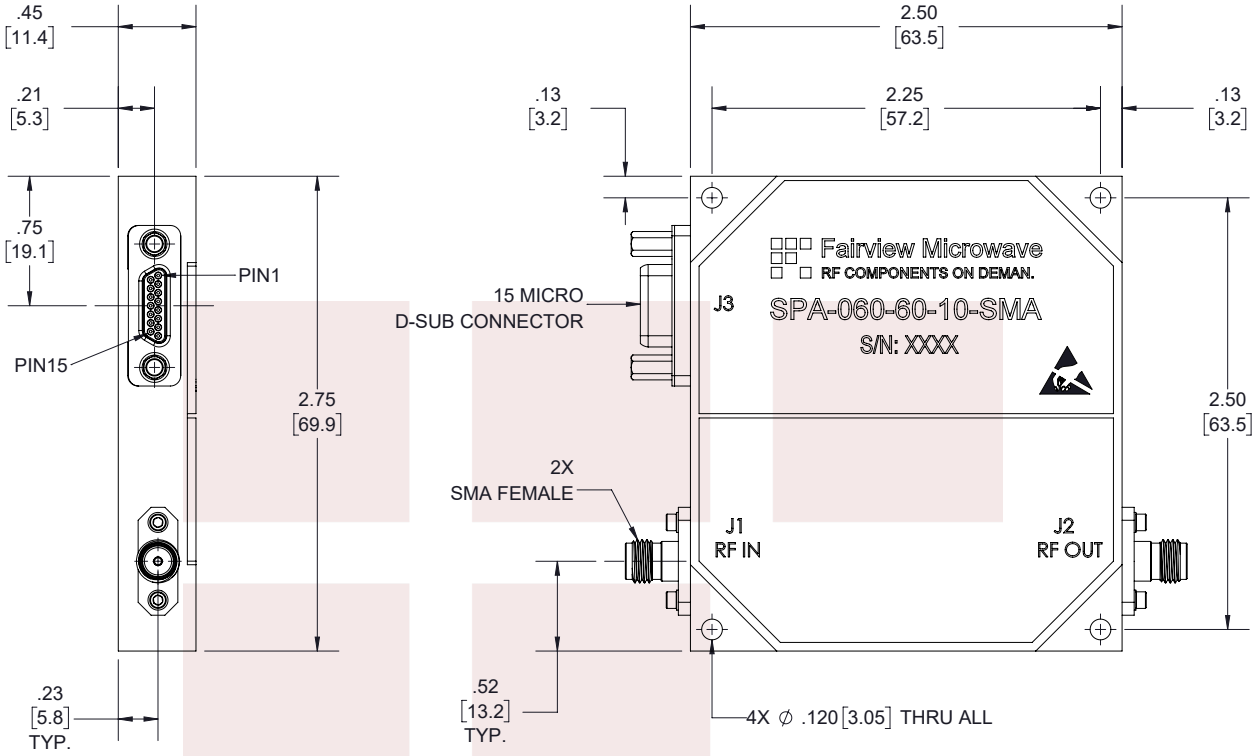


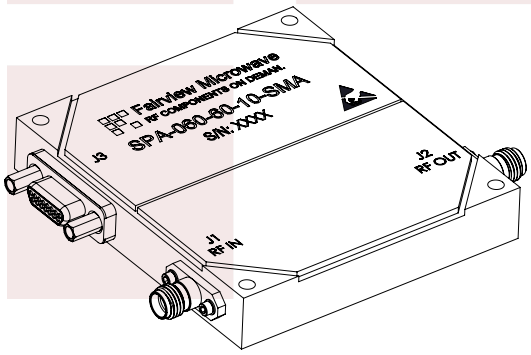


60 dB Gain High Power Amplifier at 10 Watt Psat Operating from 100 MHz to 6 GHz with SMA Input, SMA Output from Fairview Microwave is in-stock and available to ship same-day. All of our RF/microwave products are available off-the-shelf from our ISO 9001:2008 certified facilities in Allen, Texas. Fairview Microwave is RF on-demand.

For additional information on this product, please click the following link: 60 dB Gain High Power Amplifier at 10 Watt Psat Operating from 100 MHz to 6 GHz with SMA Input, SMA Output SPA-060-60-10-SMA

URL: https://www.fairviewmicrowave.com/60db-high-power-high-gain-amplifier-10watt-spa-060-60-10-sma-p.aspx





PIN	DESCRIPTION
1	+28V
2	+28V
3	GND
4	GND
5	N/C
6	N/C
7	OVER-CURRENT BIT
8	BLANKING TTL
9	+28V
10	+28V
11	GND
12	GND
13	N/C
14	N/C
15	OVER-TEMP BIT

STANDARD TOLERANCES
.X ±0.2
.XX ±0.01
.XXX ±0.005

*STANDARD TOLERANCES APPLY ONLY TO DIMENSIONS IN INCHES

NOTE:
- HEAT SINK REQUIRED FOR PROPER OPERATION, UNIT IS COOLED BY CONDUCTING TO HEAT SINK.

Fairview Microwave RF COMPONENTS ON DEMAND. Done!

NOTES:
1. UNLESS OTHERWISE SPECIFIED ALL DIMENSIONS ARE NOMINAL.
2. ALL SPECIFICATIONS ARE SUBJECT TO CHANGE WITHOUT NOTICE AT ANY TIME.
3. DIMENSIONS ARE IN INCHES [mm].

TITLE: 60 dB Gain High Power Amplifier at 10 Watt Psat Operating from 100 MHz to 6 GHz with SMA Input, SMA Output

DWG NO: SPA-060-60-10-SMA
CAGE CODE: 3FKR5

CAD FILE 06/27/18 | SHEET 1 OF 1 | SCALE N/A | SIZE A | 7361

301 Leora Ln., Suite 100, Lewisville, TX 75056 | Tel: 1-800-715-4396 / (972) 649-6678 / Fax: (972) 649-6689