

DESCRIPTION

AM042644SF-3H is an ultra-broadband High Power Amplifier designed for instrumentation, communication and broadband power applications. It operates from 400MHz to 2600MHz and typically delivers more than 20 watts (43dBm) CW output power and 35dB small signal gain. The module has a built-in DC voltage regulator and a negative voltage generator. It can be biased from +24V to +32V single supply. The amplifier module has 4 thru holes for mounting to a heat sink.

FEATURES

- Broadband design from 400 to 2600MHz
- High Gain and High Power, $P_{sat} = 44\text{dBm}$, Gain = 35dB
- +24 to + 32V DC Single Bias.

APPLICATIONS

- Instrumentation
- Broadband communication
- Broadband power

PERFORMANCE ($V_{dd} = +28\text{V}$, $I_{dq} = 2.7\text{A}$, $T_a = 25^\circ\text{C}$)

Parameters	Minimum	Typical	Maximum
Frequency	500 – 2500MHz	300 – 2600MHz	
Gain (Small signal)	32dB	35dB	
Gain Ripple		$\pm 3\text{dB}$	$\pm 4\text{dB}$
P1dB	41dBm	43dBm (20W)	
Psat		44dBm (25W)	
Efficiency @ P1dB		33%	
IP3		50dBm	
2 nd Harmonic @ P1dB		-25dBc	
3 rd Harmonic @ P1dB		-15dBc	
Input VSWR		1.2:1	2:1
Output VSWR		2:1	3:1
TTL ON/OFF control		OFF < 0.5V ON > 2.2V	
TTL ON/OFF Time	50usec	75usec	100usec
Temperature Monitor		10mV x T (°C)	

ABSOLUTE MAXIMUM RATING

Parameters	Symbol	Rating
Supply voltage	V_{dd}	32V
Continuous dissipation at room temperature	P_t	120W
Operating ambient temp	T_a	85°C
Storage temperature	T_{sto}	-60°C to +150°C

Figure 1 shows the small signal gain as a function of frequency. The small signal gain is 35dB from 300MHz to 2600MHz.

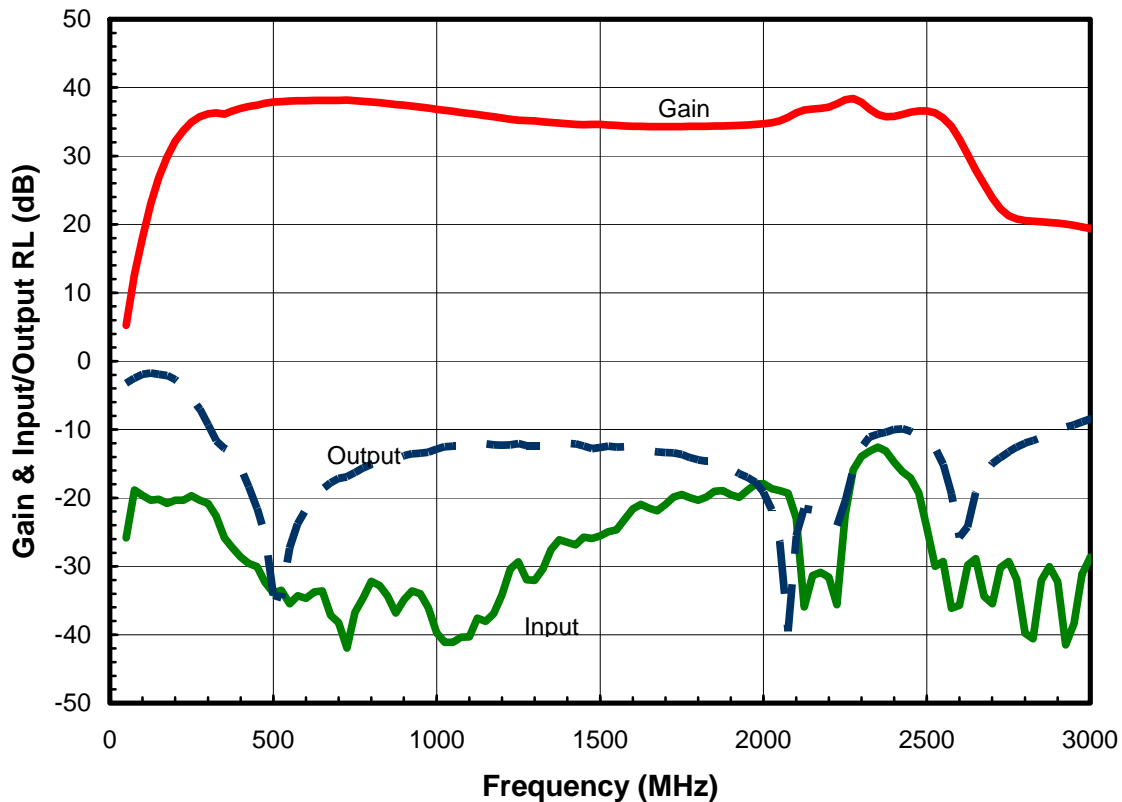


Figure 1: Gain and return loss as a function of frequency. ($V_{dd}= +28V$, $I_{dq}=2.7A$, $T_a=25^{\circ}C$)

Figure 2 shows the output power at 1dB, 3dB compression, and gain as a function of frequency. P1dB is > 42dBm (15.8W) from 400MHz to 2600MHz. P3dB is > 43dBm (20W) from 400MHz to 2600MHz.

Figure 3 shows the efficiency at P1dB as a function of frequency. P1dB Efficiency is > 31% efficiency from 400MHz to 2600MHz. Figure 4 shows IP3 versus frequency and Figure 5 shows 2nd and 3rd harmonics at 1dB compression versus frequency. 2nd Harmonic is better than -24dBc due to the push-pull configuration used in the design.

Figure 6 shows the housing dimension, which is 4.72”(L) x 2.56”(W) x 0.98”(H), and weight approximately 0.6 lb (270 grams). SMA connectors are for RF input and output. A 9-Pin D-Sub connector is used to provide the required DC bias including +28V DC bias, ground connections and a TTL on/off control. One DC pin is provided to monitor the module temperature from 2°C to 150°C.

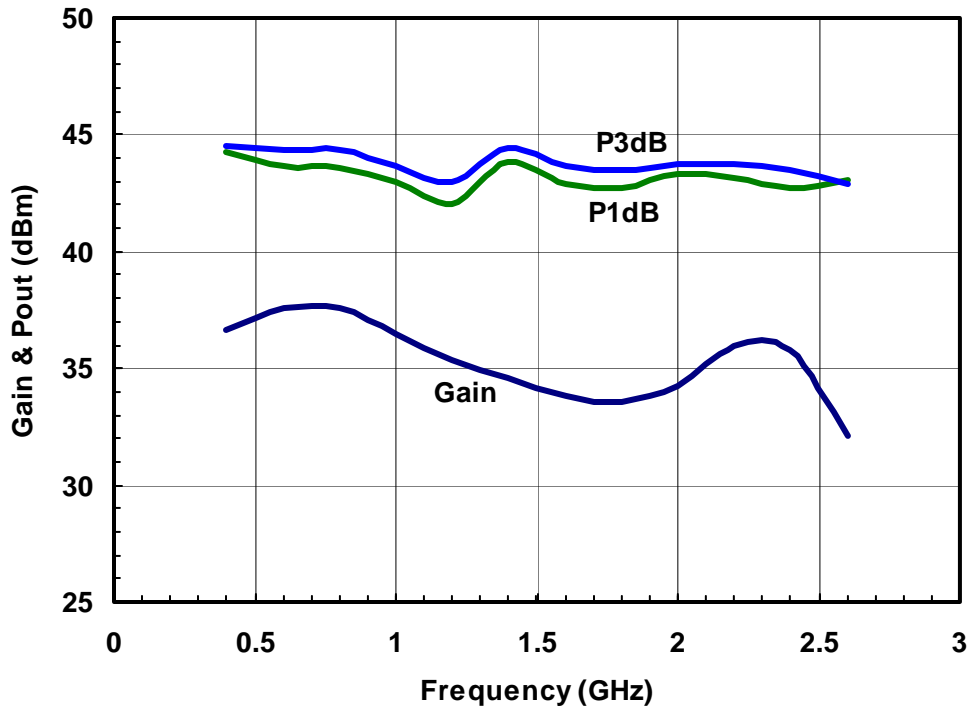


Figure 2: P1dB, P3dB, and Gain versus frequency

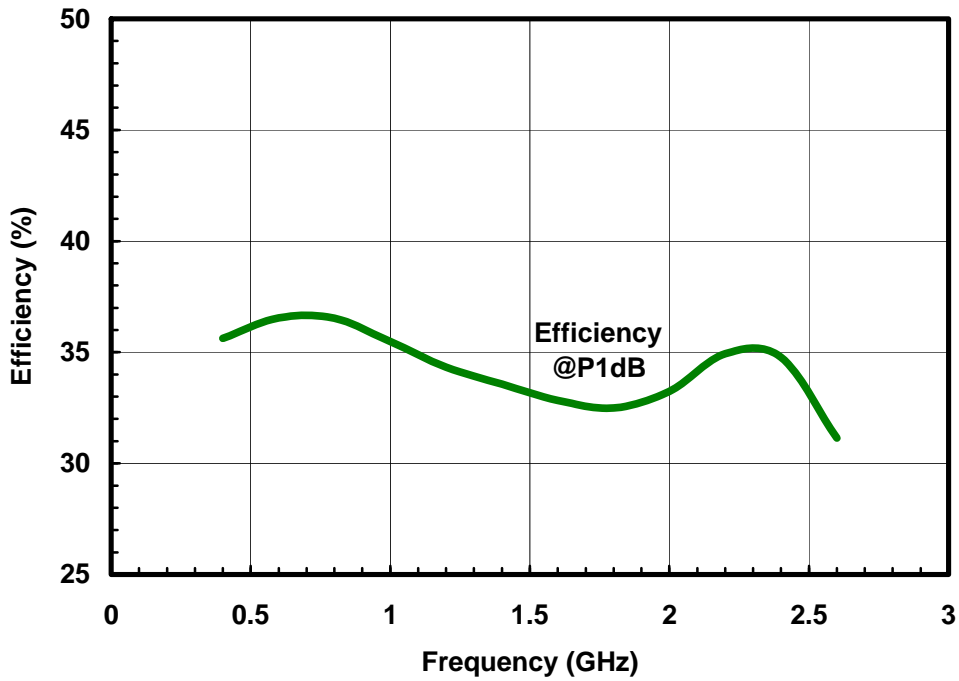


Figure 3: Efficiency versus frequency

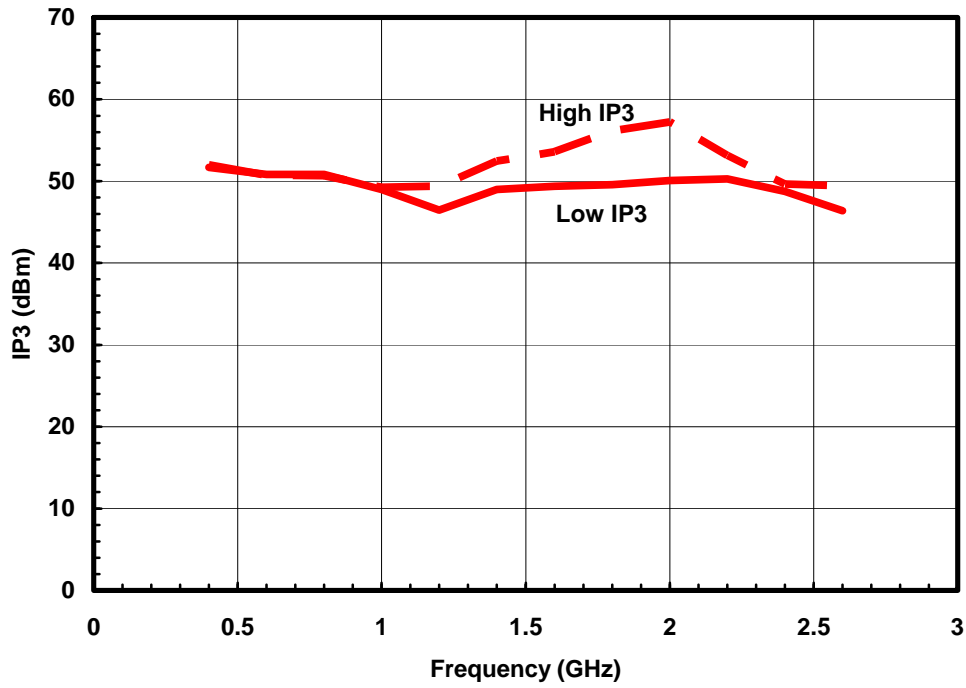


Figure 4: IP3 versus Frequency

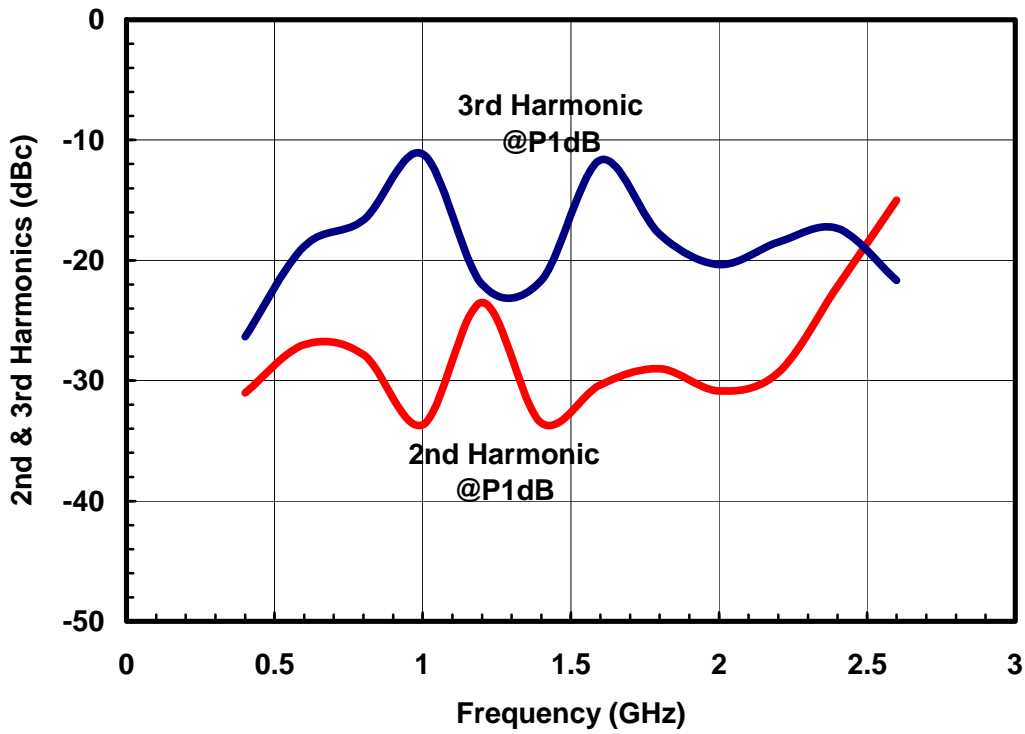


Figure 5: 2nd & 3rd Harmonics versus Frequency

PACKAGE OUTLINE

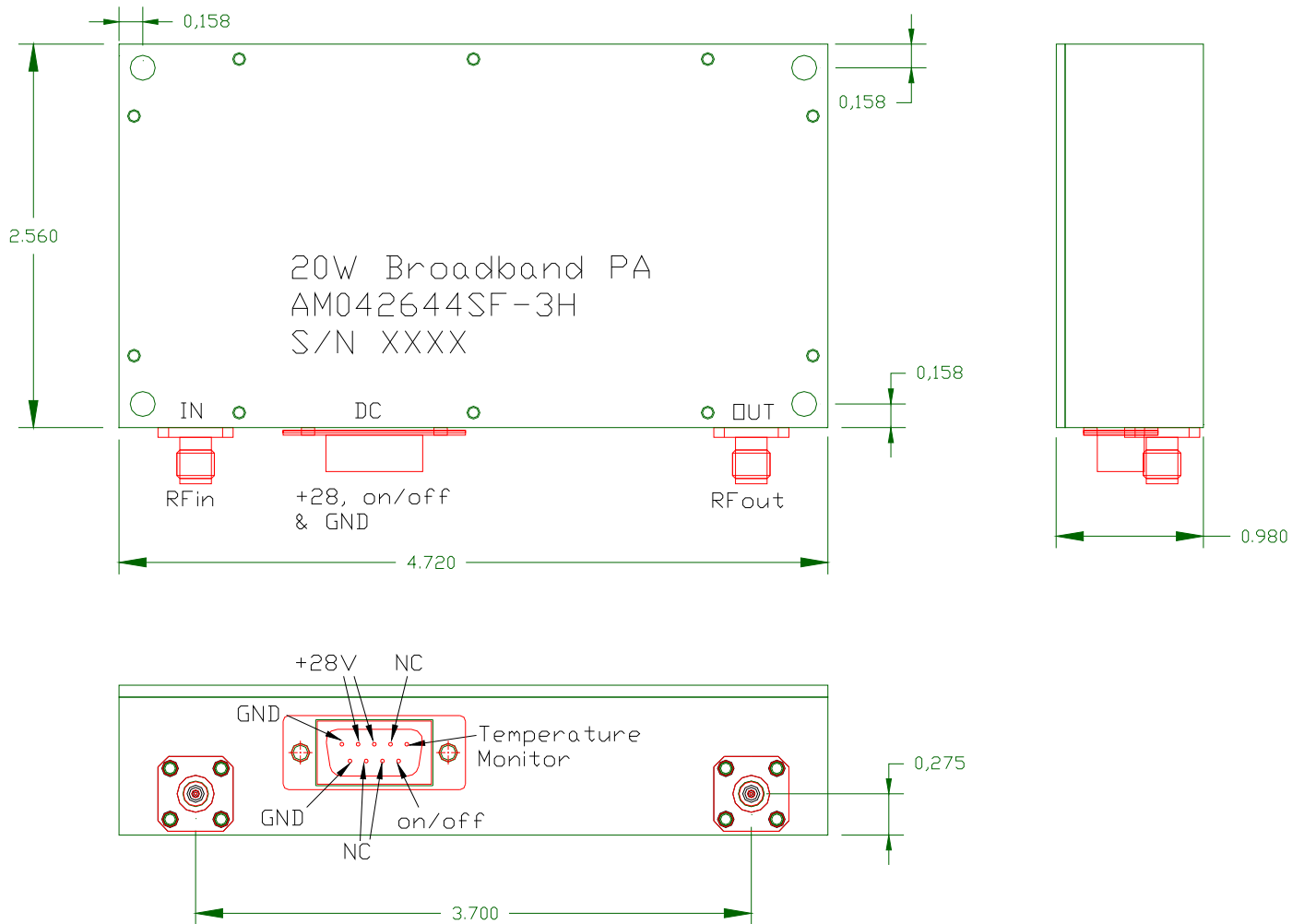


Figure 6: 20W Amplifier Drawing

Bias	Pin No.
Temp. Monitor	1
Not Connected	2
+28V	3
+28V	4
GND	5
On/Off	6
Not Connected	7
Not Connected	8
Ground	9