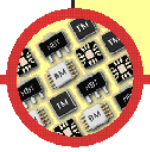
High Power Amplifier Module
100 – 3500MHz, 22dB, 4 Watts

AM003536SF-2H
April 2010
Rev 4



DESCRIPTION

AM003536SF-2H is an ultra-broadband power amplifier designed for instrumentation, very wideband communications, jamming, and general purpose amplifier applications. It operates from 100MHz to 3500MHz and typically delivers more than 4 watts (36dBm) CW output power and 22dB small signal gain. The module has a built-in DC voltage regulator and a negative voltage generator. It can be biased from a +22V to +28V single voltage supply. The amplifier module has 6 screw slots for mounting to a heat sink.

FEATURES

- Broadband design from 100 to 3500 MHz
- High gain and high power, P_{sat} = 37dBm, Gain = 22dB
- +22 to + 28V DC single bias.

APPLICATIONS

- Instrumentation
- Broadband communications
- Broadband jammer

PERFORMANCE (V_{dd} = +22V, I_{dq} = 0.8A, T_a = 25°C)

Parameters	Minimum	Typical	Maximum
Frequency	150 – 3000MHz	100 – 3500MHz	
Gain (Small signal)	20dB	22dB	
Gain Ripple		± 1.5dB	± 3dB
P_{sat}	35dBm	37dBm (5W)	
IP3 at 1GHz		46dBm	
Input VSWR		1.5:1	2:1
Output VSWR		3:1	

ABSOLUTE MAXIMUM RATING

Parameters	Symbol	Rating
Supply voltage	V_{dd}	+28V
Continuous dissipation at room temperature	P_t	30W
Operating ambient temp	T_a	-45°C to +85°C
Storage temperature	T_{sto}	-60°C to +150°C

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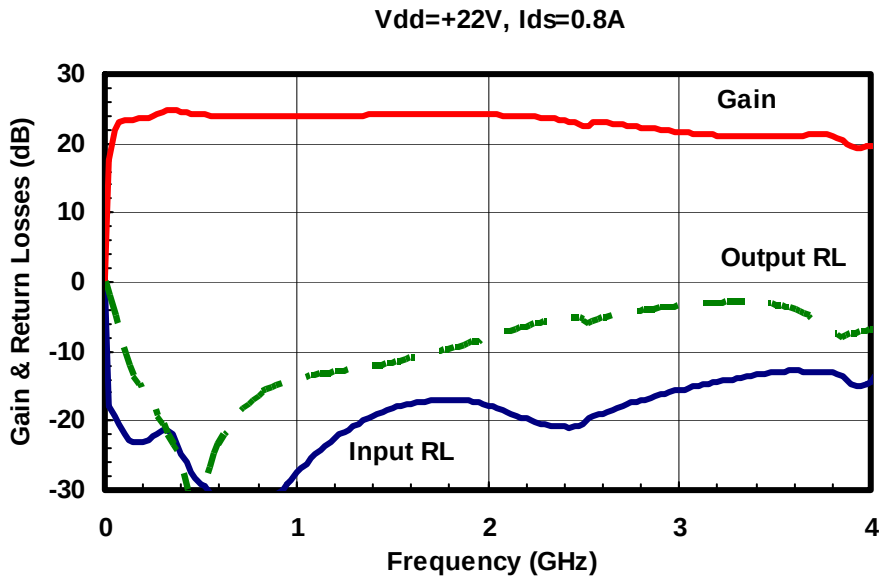
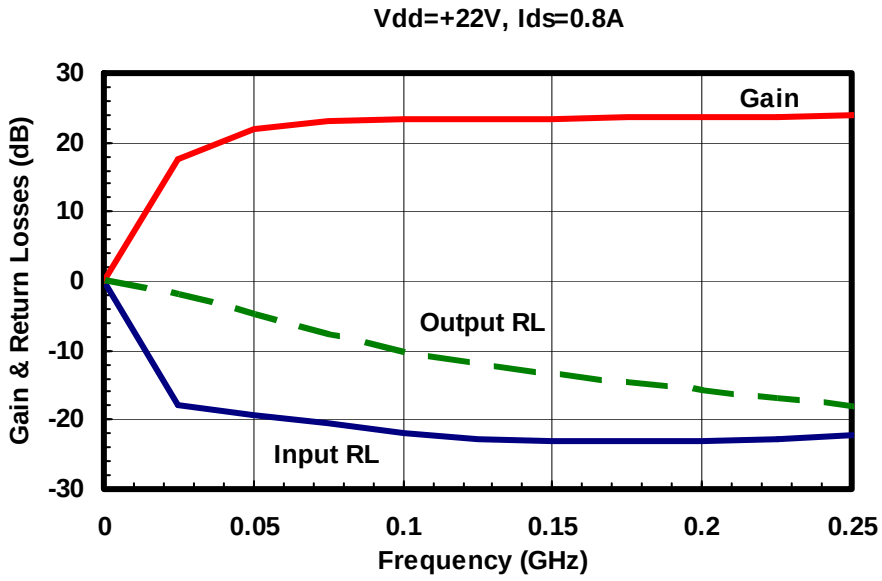
SMALL SIGNAL DATA

Figures 1a & 1b show the small signal gain as a function of frequency. The small signal gain is more than 22dB from 100MHz to 3000MHz, and above 20dB from 3000MHz to 4000MHz. At low frequencies, the PA has gain more than 20dB down to 15MHz.



a) Broadband response



b) Low frequency response

Figure 1: Gain and return loss as a function of frequency. (V_{dd}= +22V, I_{dq}=0.8A, T_a=25°C)

POWER DATA

Figure 2 shows the output power at 1dB compression P_{1dB} and efficiency as a function of frequency. P_{1dB} is 36dBm (4W) up to 1.5GHz, 35dBm (3W) from 1.5GHz to 3.5GHz. The efficiency is 22% up to 1GHz, and about 19% from 1GHz to 3.0GHz.

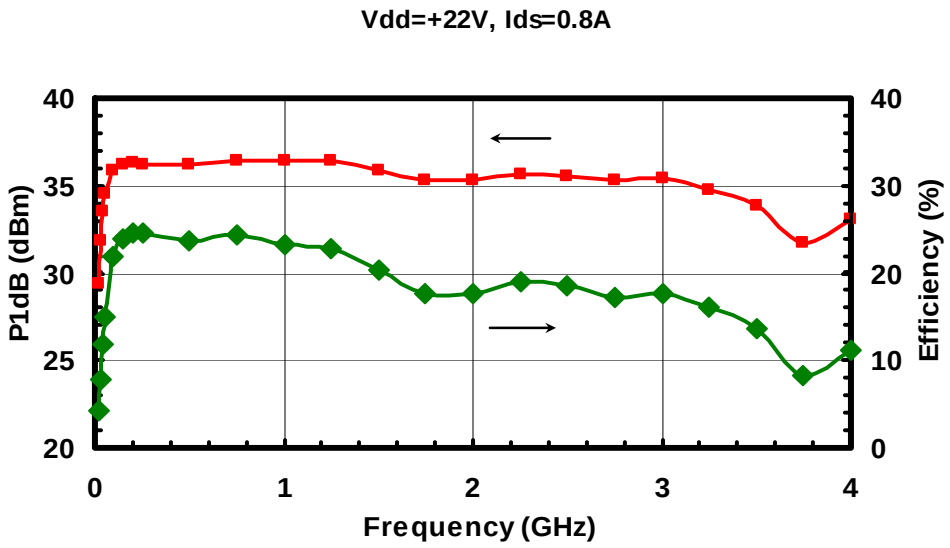


Figure 2: P_{1dB} and Efficiency versus Frequency

Figure 3 shows the output power at 3dB compression P_{3dB} and efficiency as a function of frequency. P_{3dB} is 37dBm (5W) up to 1.5GHz, 36dBm (4W) from 1.5GHz to 3GHz. The efficiency is 22% up to 2.5GHz, and about 19% from 2.5GHz to 3.5GHz.

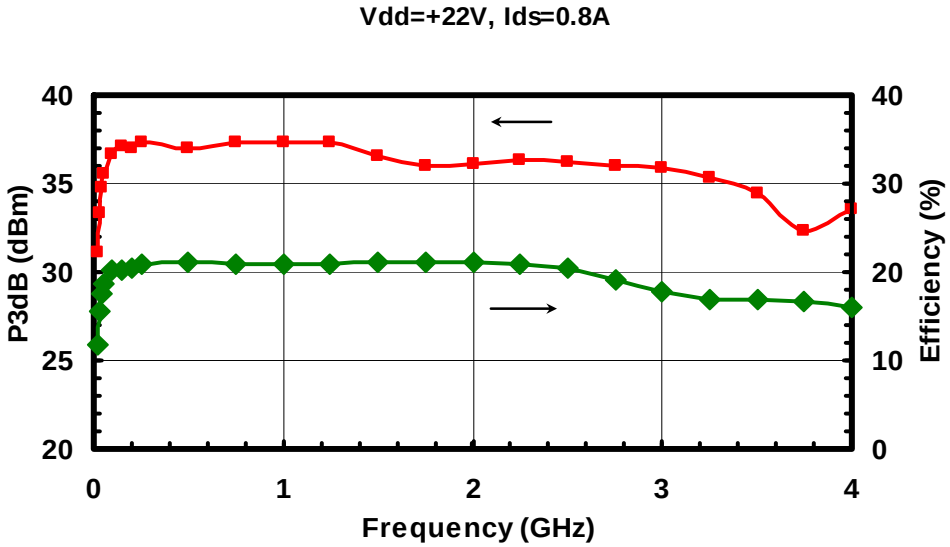


Figure 3: P_{3dB} and Efficiency versus Frequency

Figure 4 shows the 3rd order inter-modulation intercept which is better than 45dBm up to 1GHz and better than 40dBm up to 3GHz.

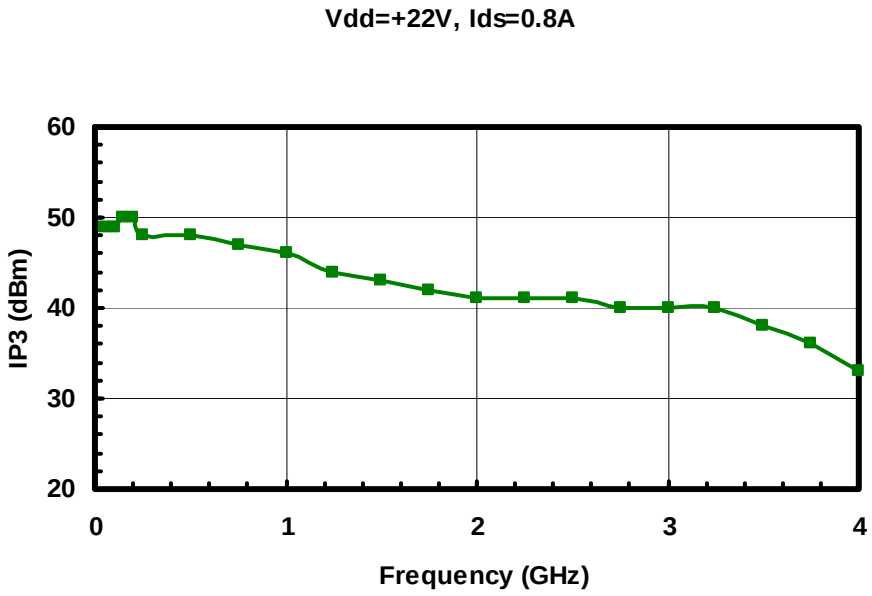


Figure 4: Third order inter-modulation intercept versus Frequency

Figure 5 shows the 2nd harmonic and 3rd harmonic intercept points

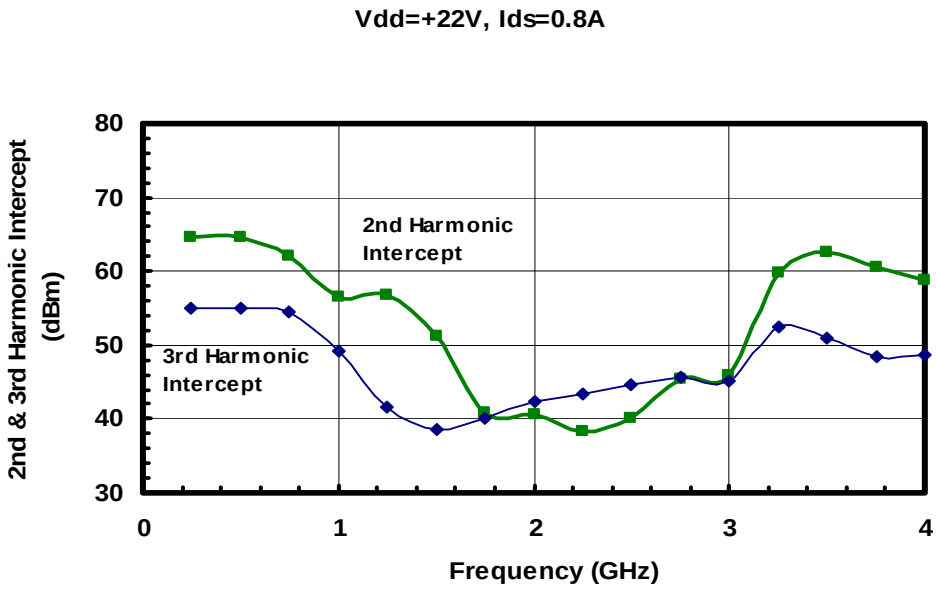


Figure 5: 2nd harmonic and 3rd harmonic intercept versus Frequency

PACKAGE OUTLINE

Figure 6 is the photograph of the housing. Figure 7 shows the package outline. The dimension is 2.8”(L) x 2”(W) x 0.56”(H). The module needs a single +22V x 0.8A DC supply. It has SMA connectors for RF input and output, and DC pins for +22V and ground.

Figure 6: Photograph of PA Module

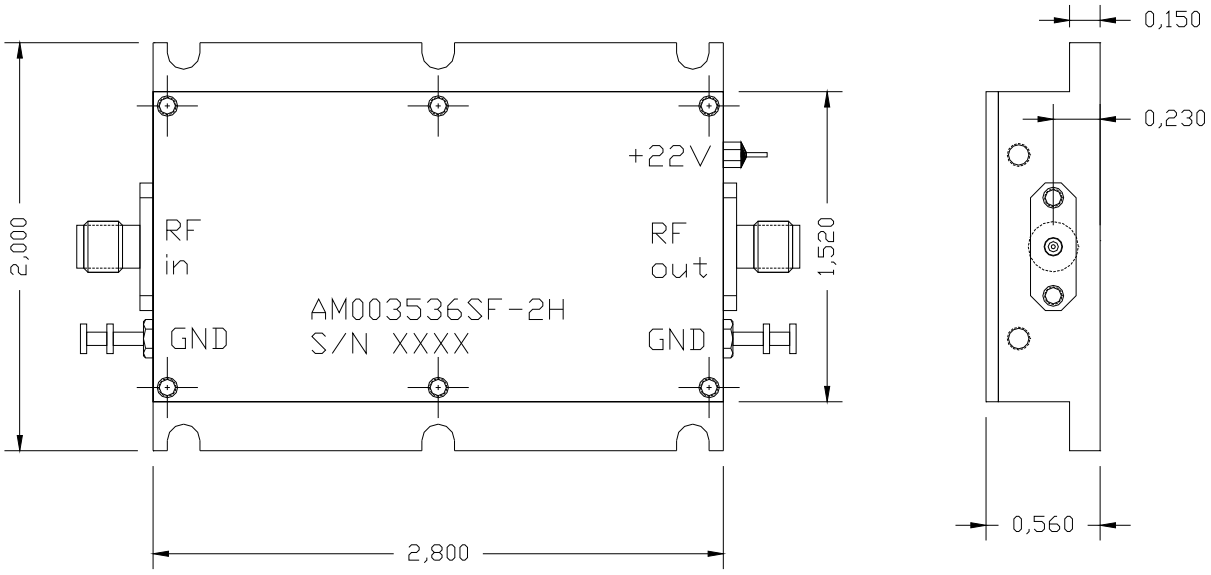


Figure 7: Outline of PA Module. 2.8”(L) x 2”(W) x 0.56”(H)