

DESCRIPTION

AM020336SF-4H is a wideband power amplifier designed for VHF Communications. It operates from 175MHz to 325MHz and typically delivers 7 watts (38.5dBm) CW saturated power and 60dB small signal gain. It could be used in a class B mode for higher efficiency. The module has a built-in negative voltage generator.

FEATURES

- Bandwidth from 175 to 325MHz
- High output power, P1dB = 37.5dBm
- Very High gain, 60dB
- 8V DC single bias.
- Two modes of operation:
 - TTL Low (0V): Class AB → Higher Linearity
 - TTL High (3.3V): Class B → Higher Efficiency

APPLICATIONS

- Short distance terrestrial Communications
- TV Broadcasting
- Search and Rescue

PERFORMANCE ($V_{dd} = +8V$, $I_{dq} = 1.5A$ or $0.5A$ (Class AB or B), $T_a = 25^{\circ}C$)

Parameters	Class AB (TTL=0V)			Class B (TTL=3.3V)			Unit
	Min	Typical	Max	Min	Typical	Max	
Frequency	200-300	175-325		200-300	175-325		MHz
Gain (Small signal)	60	63		57	60		dB
Gain Ripple		±1	±3		±1	±3	dB
P1dB	36	37.5			38.5		dBm
P3dB	37	38.5			39		dBm
Efficiency @ 250 MHz, Pout=36dBm		27			34		%
IP3 @ 250 MHz, Pout=20dBm		46			34		dBm
2nd Harmonic @ 250 MHz, Pout=P1dB		-33			-28		dBc
Noise Figure		6	8		6	8	dB
Input VSWR		1.2:1	1.5:1		1.2:1	1.5:1	ratio
Output VSWR		2:1	4:1		2:1	4:1	ratio

ABSOLUTE MAXIMUM RATING

Parameters	Symbol	Rating
Supply voltage	V_{dd}	10V
Continuous dissipation at room temperature	P_t	15W
Operating ambient temp	T_a	-45°C to +85°C
Storage temperature	T_{sto}	-60°C to +150°C

SMALL SIGNAL DATA

Figure 1 shows the small signal gain as a function of frequency.

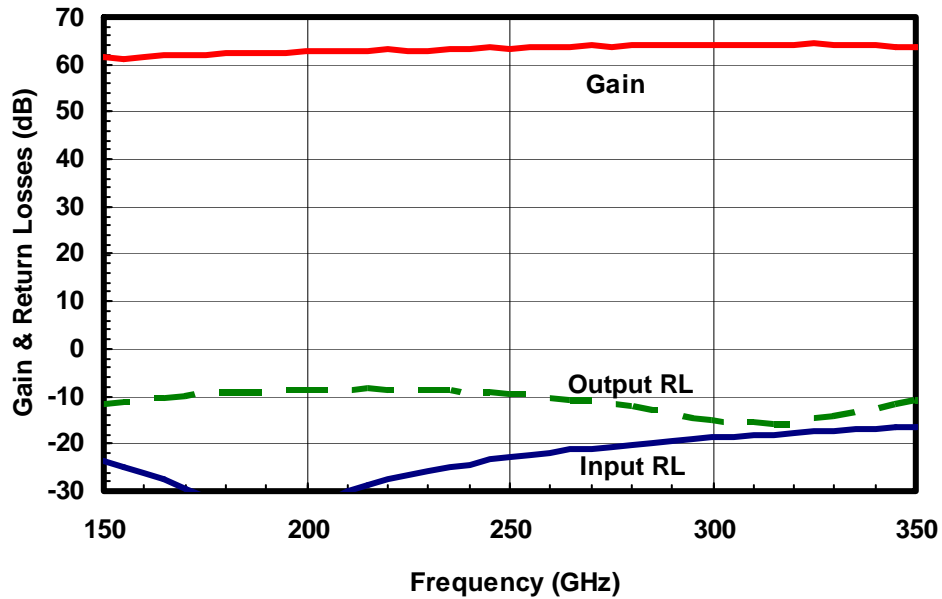


Figure 1a: Gain and return loss vs. frequency. (Class AB, $V_{dd} = +8V$, $I_{dq} = 1.5A$, $T_a = 25^\circ C$)

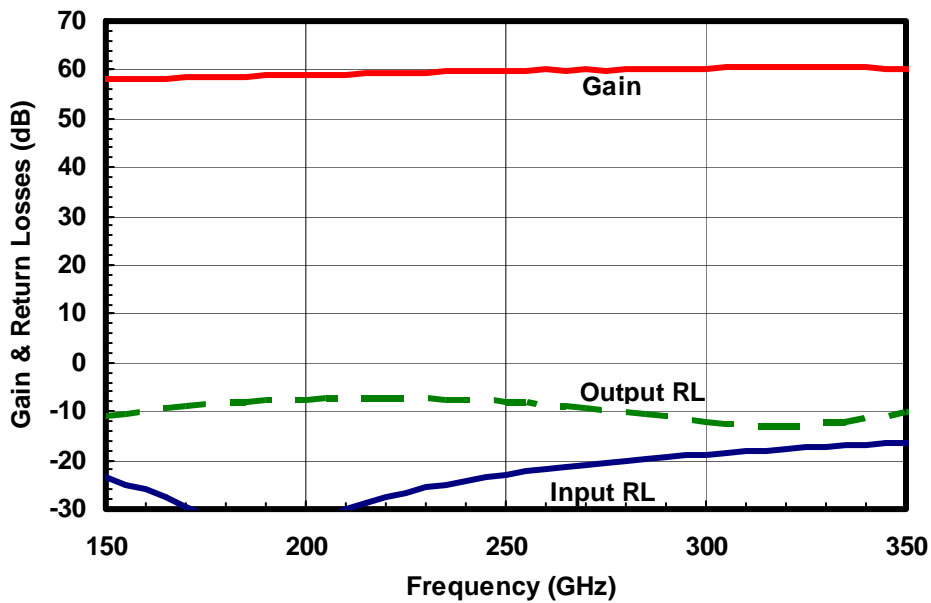


Figure 1b: Gain and return loss vs. frequency. (Class B, $V_{dd} = +8V$, $I_{dq} = 0.5A$, $T_a = 25^\circ C$)

POWER DATA

Figure 2 shows the output power at 1dB compression P_{1dB} and efficiency as a function of frequency.

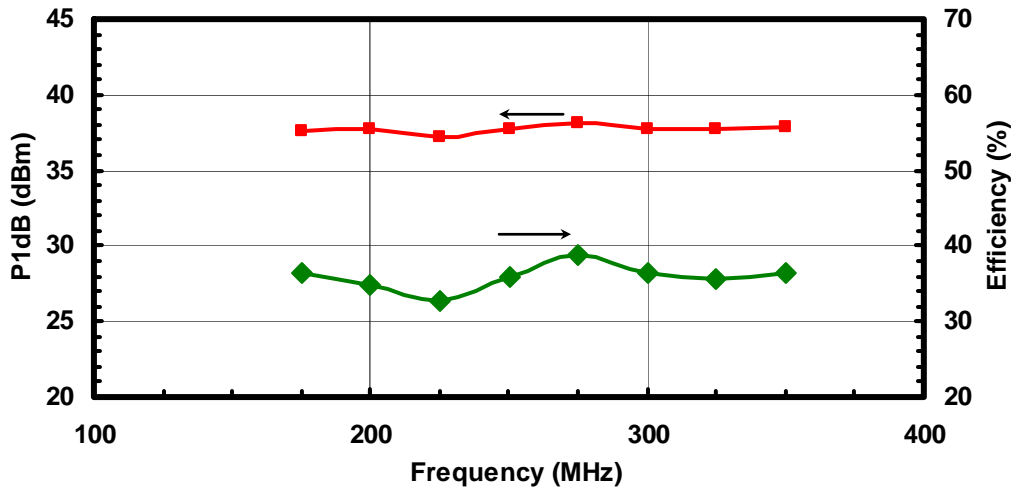


Figure 2a: P_{1dB} and Efficiency vs. Frequency. (Class AB, $V_{dd}= +8V$, $I_{dq}=1.5A$, $T_a=25^{\circ}C$)

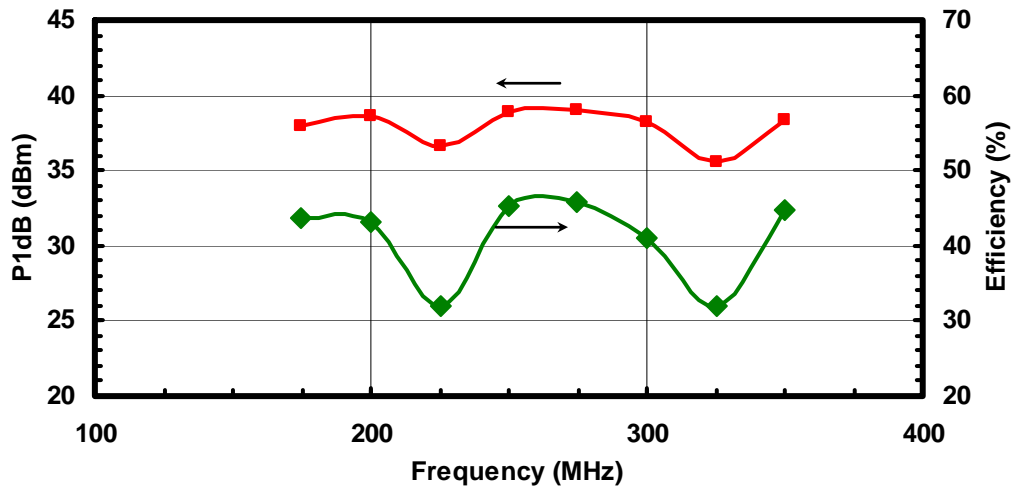


Figure 2b: P_{1dB} and Efficiency vs. Frequency. (Class B, $V_{dd}= +8V$, $I_{dq}=0.5A$, $T_a=25^{\circ}C$)

Figure 3 shows the output power at 3dB compression P_{3dB} and efficiency as a function of frequency.

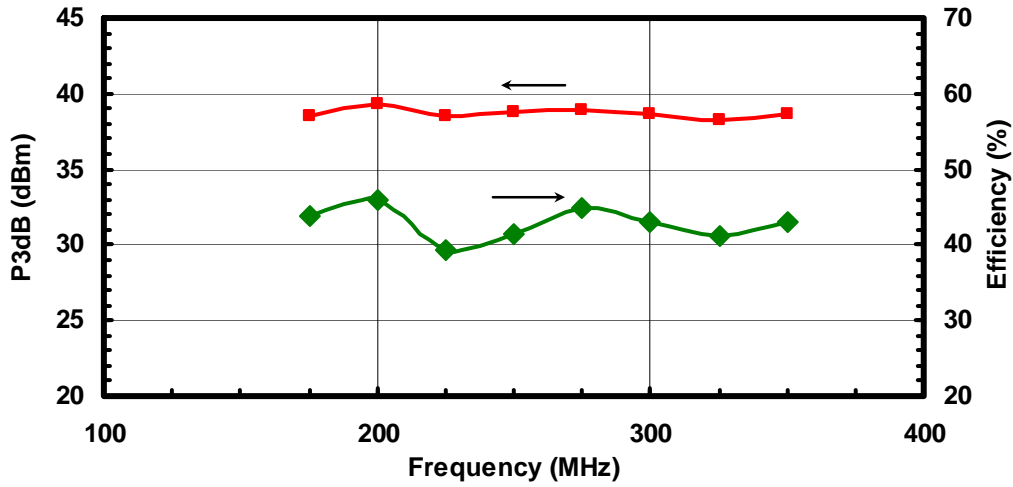


Figure 3a: P_{3dB} and Efficiency vs. Frequency. (Class AB, $V_{dd}= +8V$, $I_{dq}=1.5A$, $T_a=25^{\circ}C$)

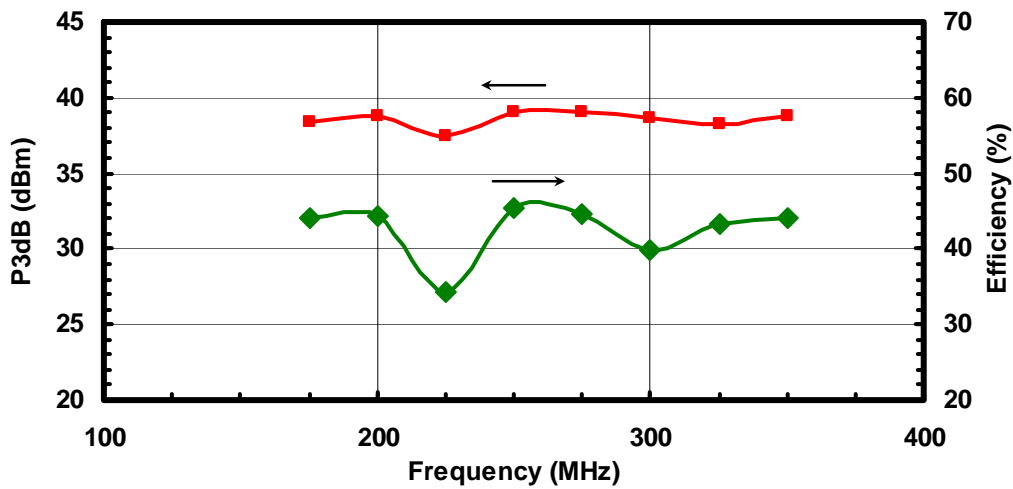


Figure 3b: P_{3dB} and Efficiency vs. Frequency. (Class B, $V_{dd}= +8V$, $I_{dq}=0.5A$, $T_a=25^{\circ}C$)

Figure 4 shows the 3rd order inter-modulation intercept.

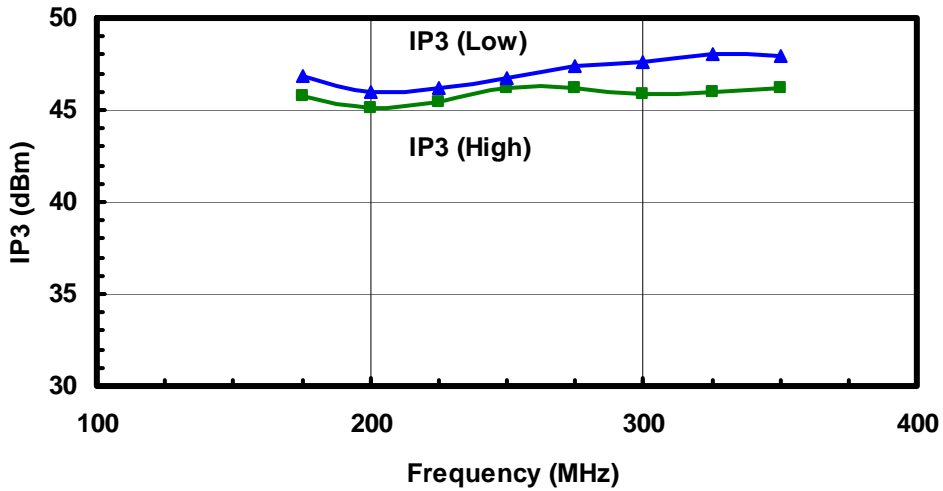


Figure 4a: Third order inter-modulation intercept vs. Frequency. (Class AB, $V_{dd}= +8V$, $I_{dq}=1.5A$, $T_a=25^{\circ}C$)

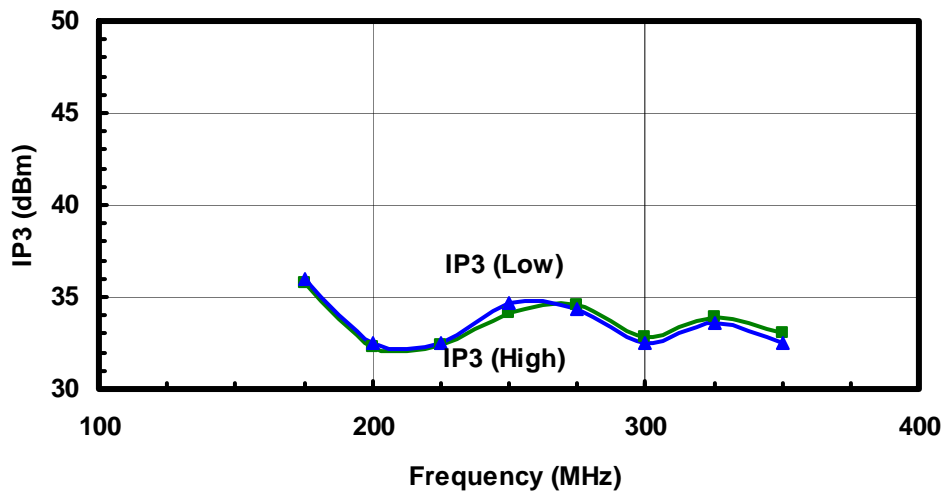


Figure 4b: Third order inter-modulation intercept vs. Frequency. (Class B, $V_{dd}= +8V$, $I_{dq}=0.5A$, $T_a=25^{\circ}C$)

Figure 5 shows the 2nd and 3rd output harmonics relative to fundamental output tone in dBc.

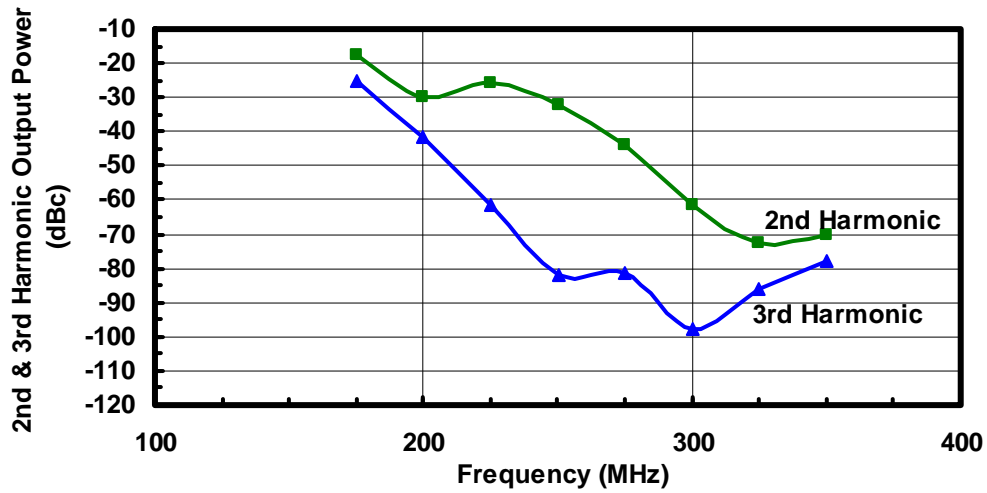


Figure 5a: 2nd and 3rd Harmonic output power vs. Frequency. (Class AB, V_{dd}= +8V, I_{dq}=1.5A, T_a=25°C)

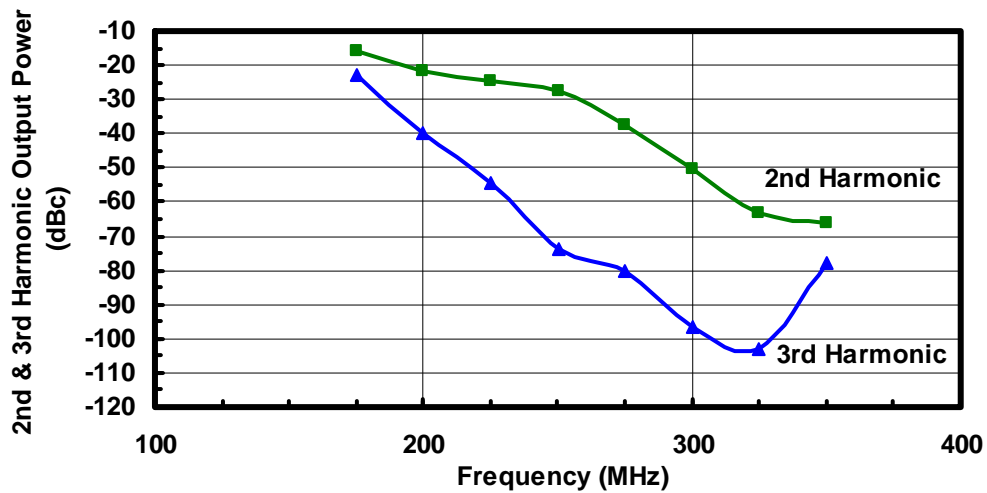


Figure 5b: 2nd and 3rd Harmonic output power vs. Frequency. (Class B, V_{dd}= +8V, I_{dq}=0.5A, T_a=25°C)

Figure 6 shows the output power and efficiency with input power at $F_{in} = 250\text{MHz}$.

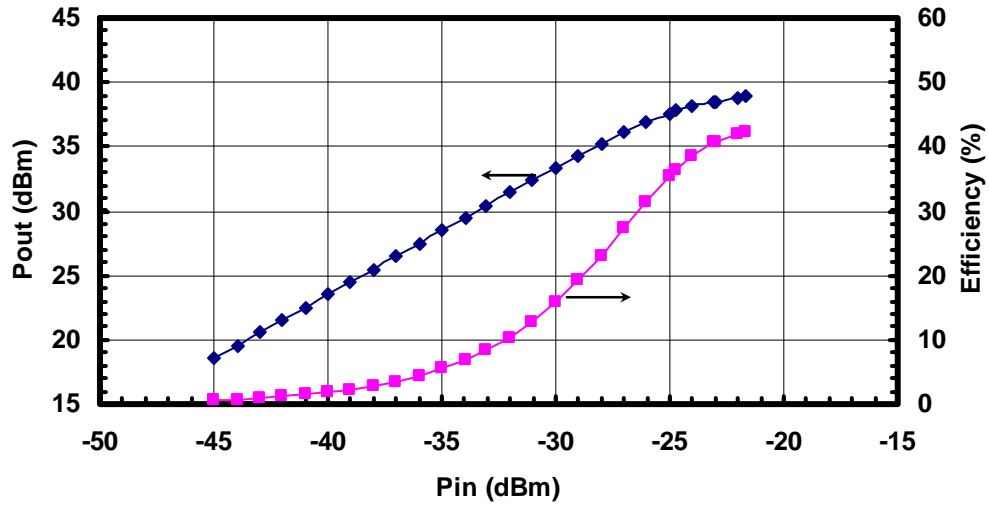


Figure 6a: Pout and Efficiency vs. Pin. (Class AB, $V_{dd} = +8\text{V}$, $I_{dq} = 1.5\text{A}$, $T_a = 25^\circ\text{C}$, $F_{in} = 250\text{MHz}$)

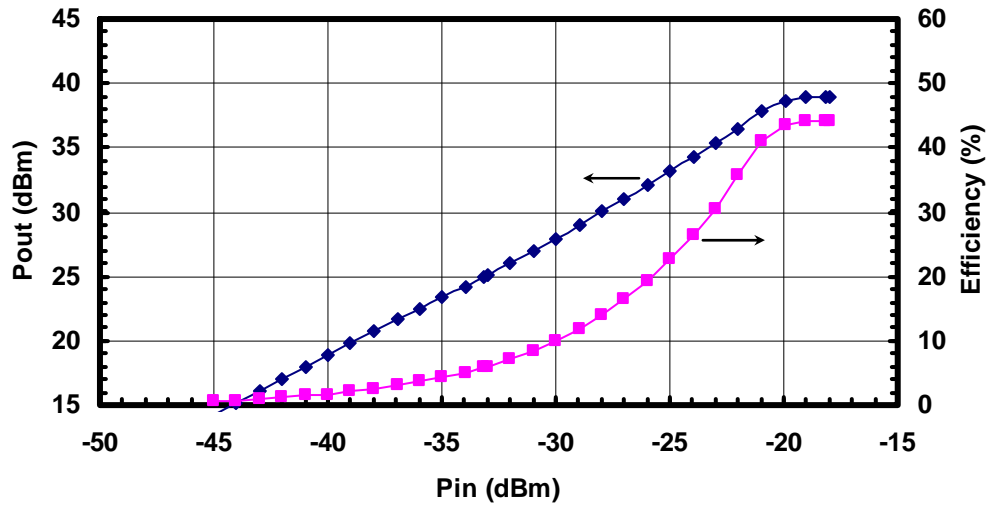


Figure 6b: Pout and Efficiency vs. Pin. (Class B, $V_{dd} = +8\text{V}$, $I_{dq} = 0.5\text{A}$, $T_a = 25^\circ\text{C}$, $F_{in} = 250\text{MHz}$)

PACKAGE OUTLINE

Figure 7 is the photograph of the housing. Figure 8 shows the package outline. The dimensions are 3.15" (L) x 2.15" (W) x 0.49" (H). The module needs a single +8V x 1.5A DC supply. It has SMA connectors for RF input and output, and DC pins for +8V, ground and TTL control (0V or 3.3V).



Figure 6: Photograph of PA Module

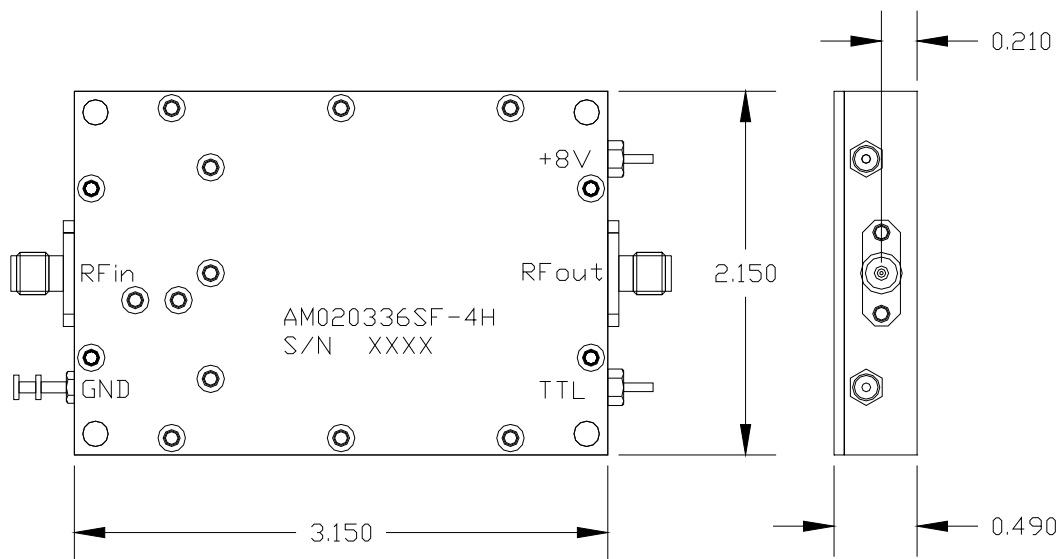


Figure 7: Outline of PA Module. 3.15"(L) x 2.15"(W) x 0.49"(H)