

### 20-512MHz 50W Class A High Performance Amplifier

- ❖ Class A 50W linear amplifier
- ❖ 20-512MHz ultra-broadband
- ❖ 50dB typical gain
- ❖ +/- 0.5dB typical gain flatness
- ❖ Temperature-compensated bias
- ❖ 50 ohms input/output
- ❖ Available with disable, heatsink and fan, or as a Mini-System



The HD31342 is a Class A high performance amplifier module, perfect as a laboratory amplifier, or as a driver stage in military, industrial, medical, scientific or FM/TV broadcast systems. It exhibits excellent full power and back-off linearity, and utilizes a combination of three active device technologies for optimum performance and maximum ruggedness.

#### Specifications

$V_{supply} = +28VDC$ ,  $I_{DQ} = 6.9A$ ,  $P_{out} = 50W$ ,  $T_{base} = 25^{\circ}C$ ,  $Z_{load} = 50\Omega$

Parameter	Min	Typ	Max	Units
Freq. Range	20		512	MHz
$P_{1dB}$		>75		W
Input Power		-3	0	dBm
Gain	47	50		dB
Gain Flatness		+/-0.5	+/-1.5	dB
Drain Current		7.2	7.7	A
Efficiency	23	25		%
IRL		-21	-14	dB
$f_2$		-36	-26	dBc
$f_3$		-33	-23	dBc
IMD <sub>3</sub> 50W PEP, $\Delta f=10kHz$ and $\Delta f=100kHz$ . See Fig. 2 for 25W PEP.		-37	-30	dBc
Dimensions	3.10 X 5.90 X 1.20 (78.74 X 149.86 X 30.48)			inch (mm)

#### Maximum Ratings

Operation beyond these ratings may damage amplifier.

Parameter	Value
$V_{supply}$	24-28VDC
Bias Current	6.9A
Drain Current	8.0A
Load Mismatch*	5:1
Housing Base Temperature	65°C
Storage Temperature	-40°C to 85°C

\*All phase angles, 50W forward power, current limited to 8.0A.

#### Option Ordering Info

Disable	HD31342-DIS
Heatsink and fan	HD31342-HSF
Mini-System	HD31342-MINI

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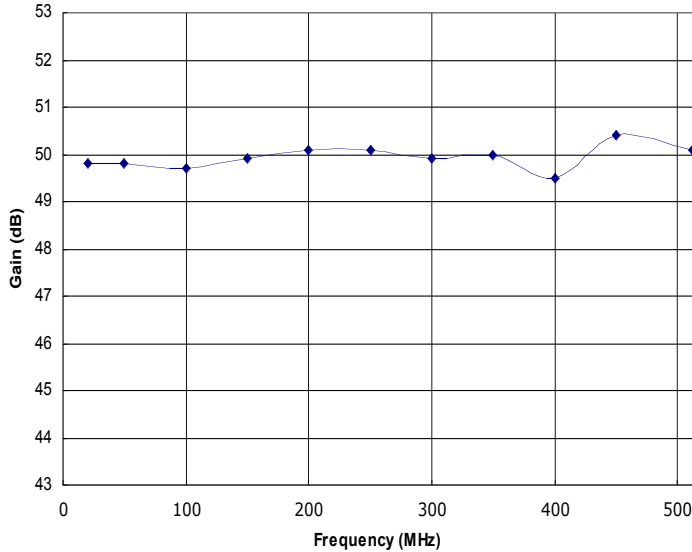


Figure 1: HD31342 Typical Gain @  $P_{out}=50W$ .

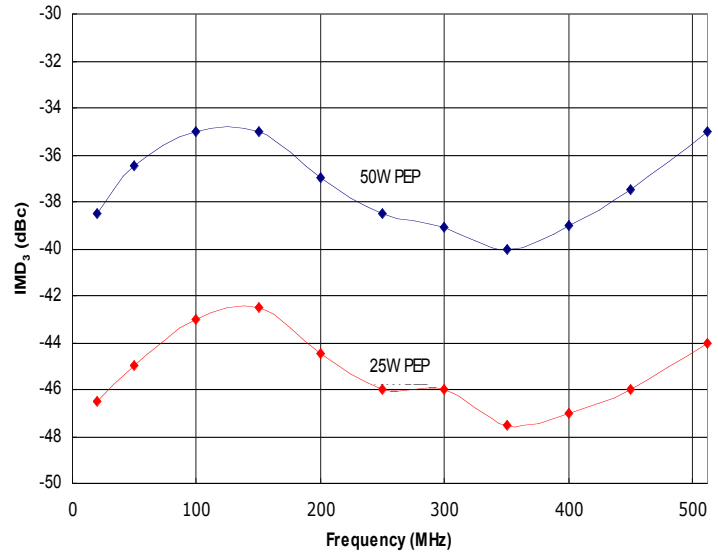


Figure 2: HD31342 Typical  $IMD_3$  @ 50W and 25W PEP,  $\Delta f=10kHz$  and  $\Delta f=100kHz$ .

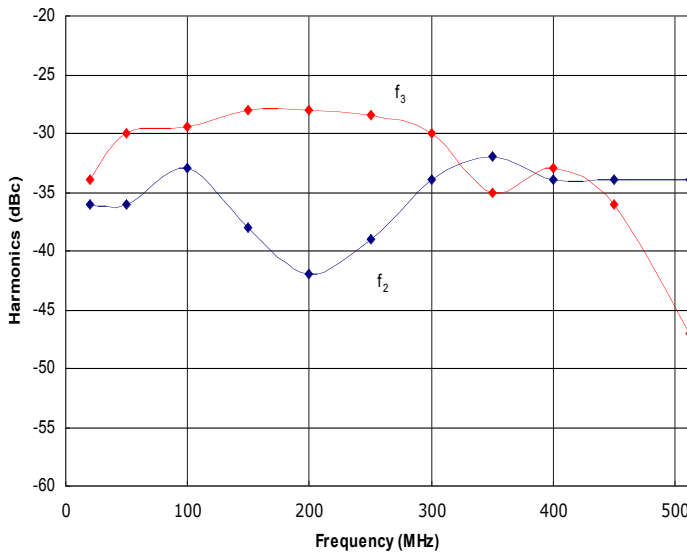


Figure 3: HD31342 Typical  $f_2$  and  $f_3$  @  $P_{out}=50W$ .

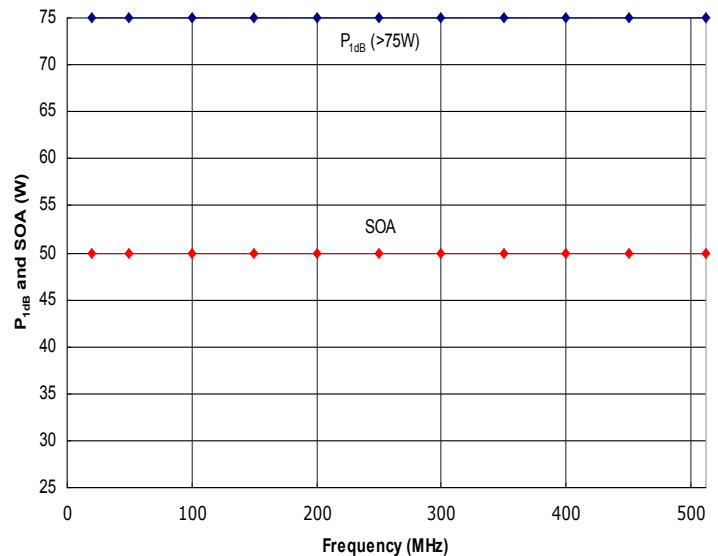
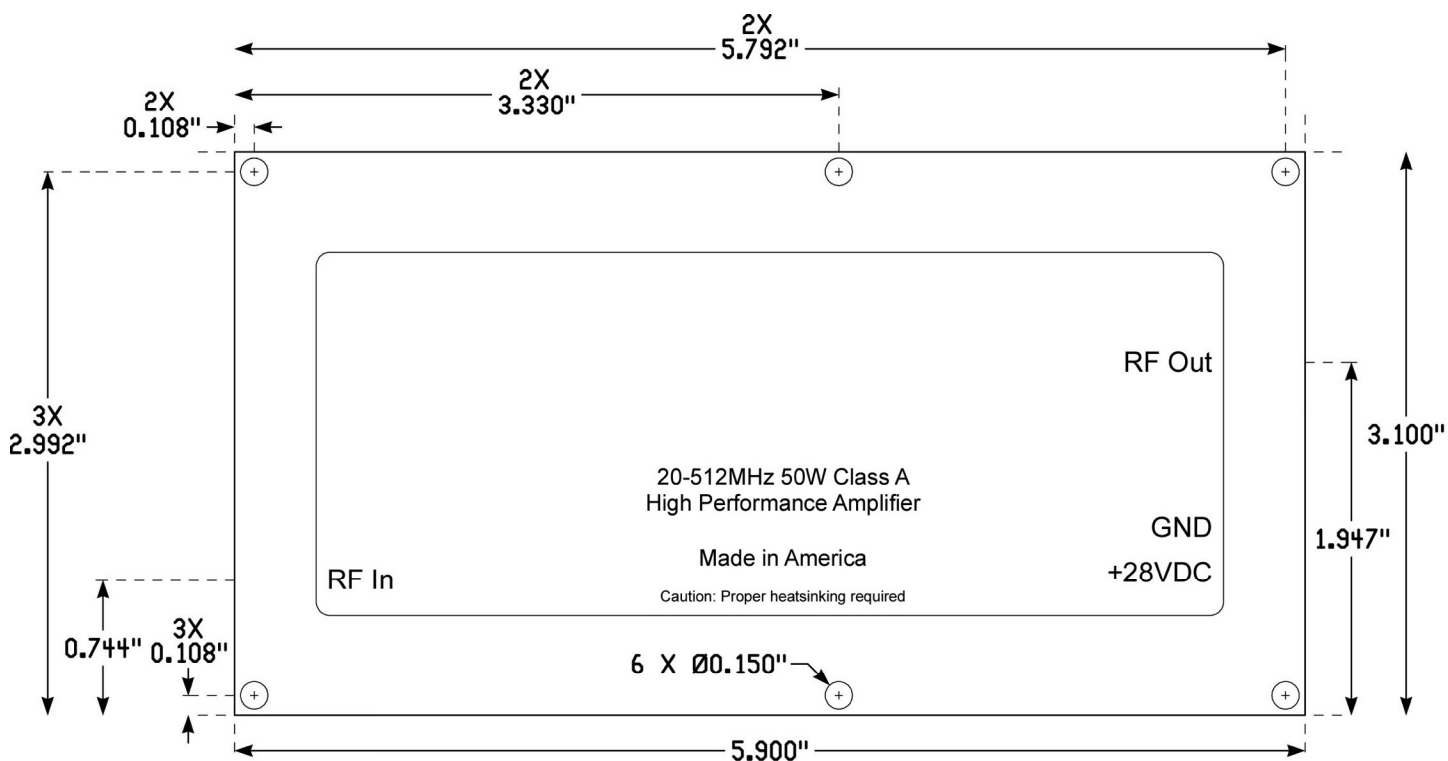


Figure 4: HD31342 Typical  $P_{1dB}$  and Safe Operating Area (SOA). The amplifier is capable of delivering much more power than it is safe to generate. Do not exceed the SOA shown above without first contacting HD Communications Corp. to discuss your application.

## Amplifier Mounting Hole and RF Locations



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**Instructions for Amplifier Use**

- 1) If not supplied with a heatsink, apply a layer of high quality thermal grease (Wakefield Type 120 or equivalent) to the underside of the amplifier housing. Thinner is better, but ensure that when mounted to your heatsink, contact across the *entire* module base is made. Gaps and air bubbles will significantly reduce cooling, leading to possible amplifier damage. Use six #6-32 screws to mount the amplifier to your heatsink. *High performance thermal compound (Wakefield Type 122 or equivalent) may be used, and will enhance ruggedness and extend amplifier lifetime by reducing output transistor die temperature.*
- 2) Guarantee sufficient airflow through the heatsink fins to keep the maximum housing base temperature at or less than that specified in the Maximum Ratings section. Contact RFMPT for details on how to qualify your heatsink's performance, if needed.
- 3) Connect a proper signal source to the RF IN connector, and desired load to the RF OUT connector. Torque connectors to industry standards for the type supplied with the amplifier.
- 4) Connect DC  $V_{supply}$  and Ground wires to the terminals provided. Ensure that the connections are of proper polarity, and within the voltage range in the Maximum Ratings section.
- 5) Apply DC power then sufficient RF drive to achieve desired output level. Ensure that the Safe Operating Area (SOA) power level indicated in Figure 4 is not exceeded, or amplifier damage may occur, and will void the warranty.
- 6) To disconnect the amplifier, first remove the RF drive, then DC power, then the RF connections.

Contact us at [sales@rfcomp.com](mailto:sales@rfcomp.com) with any questions, or for special options, testing requirements, and/or operating conditions not specified in this document.

**Document Control**

Revision	Date	Notes
A	7-29-2016	Initial release.