HD30538

1-525MHz 20W Class A High Performance Amplifier

Communications Corp.

- **Class A 20W linear amplifier**
- **1-525MHz ultra-broadband**
- **45dB typical gain**
- **+/- 1.1dB typical gain flatness**
- **Temperature-compensated bias**
- **50 ohms input/output**
- **Available with disable, heatsink and fan, or as a Mini-System**

The HD30538 is a Class A high performance amplifier module, perfect as a standalone laboratory amplifier, or as a driver stage in military, commercial, industrial, medical, scientific or VHF TV broadcast systems. It exhibits excellent full power and back-off linearity, and utilizes all gold metallized MOSFETs for exceptional ruggedness.

Specifications

V_{sup} = +28VDC, I_{DQ} = 3.45A, P_{out} = 20W, T_{base} = 25°C, Z_{load} = 50Ω

Parameter	Min	Typ	Max	Units
Freq. Range	1		525	MHz
P_{1dB}	20	>25	See Figure 4	W
Input Power		-2	0	dBm
Gain	43	45		dB
Gain Flatness		+/-1.1	+/-1.5	dB
Drain Current		3.70	4.1	A
Efficiency	17	19		%
IRL		-18	-14	dB
f_2		-40	-24	dBc
f_3		-45	-24	dBc
IMD_3 20W PEP, Δf=10kHz See Fig. 2 for 10W		-34	-28	dBc
Dimensions	2.30 X 4.85 X 1.40 (58.42 X 123.19 X 35.56)			inch (mm)

Maximum Ratings

Operation beyond these ratings may damage amplifier.

Parameter	Value
V_{supply}	24-28VDC
Bias Current	3.5A
Drain Current	4.3A
Load Mismatch*	5:1
Housing Base Temperature	65°C
Storage Temp.	-40°C to 85°C

*All phase angles, 20W forward power, current limited to 4.3A.

Option Ordering Info

Disable (TTL, active high)	HD30538-DIS
Heatsink and fan	HD30538-HSF
Mini-System	HDS30538

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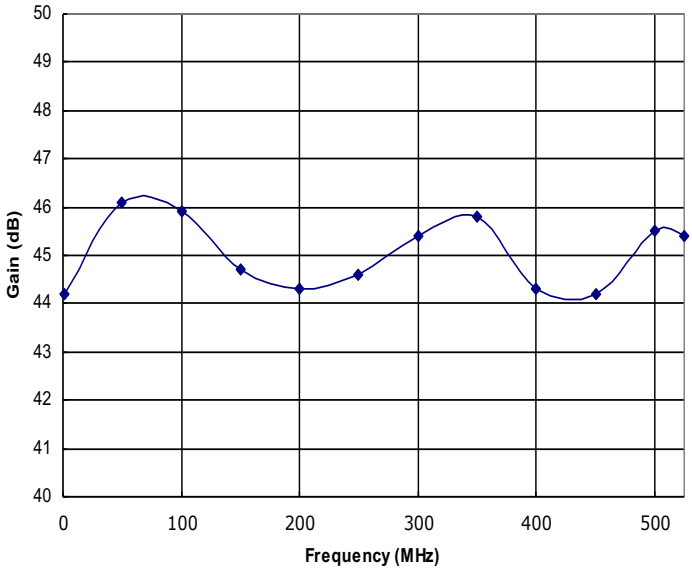

Figure 1: HD30538 Typical Gain @ P_{out} = 20W.

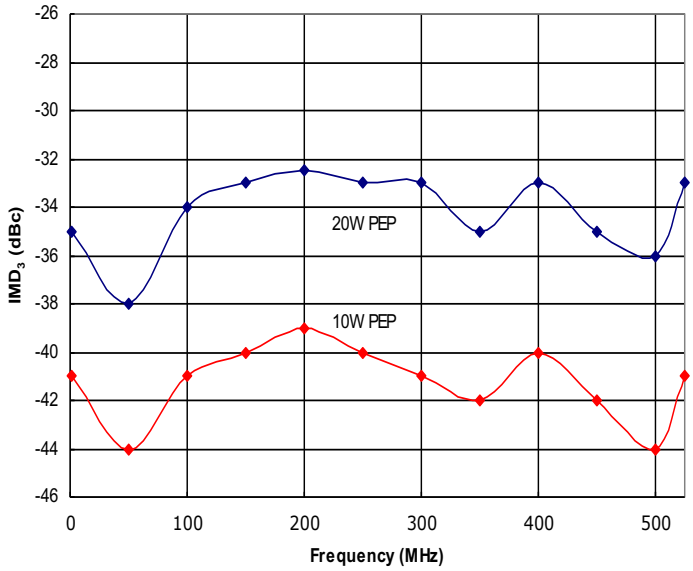

Figure 2: HD30538 Typical IMD_3, Δf=10kHz, @ P_{out} = 20W and 10W PEP.

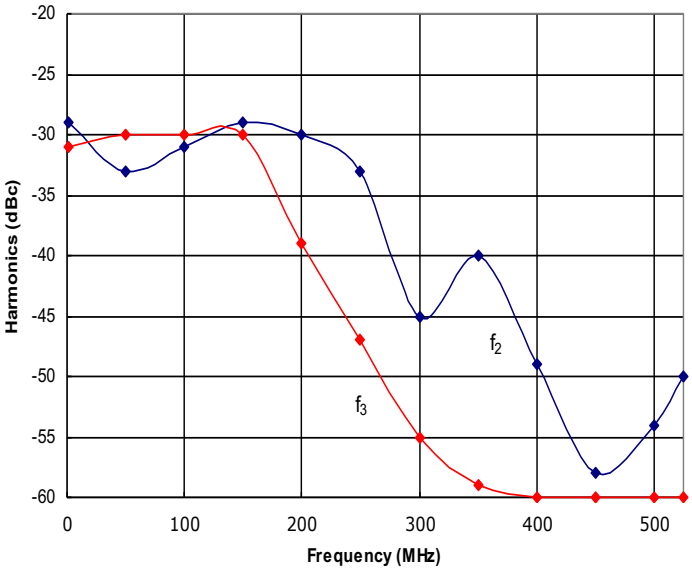

Figure 3: HD30538 Typical f_2 and f_3 @ P_{out} = 20W.

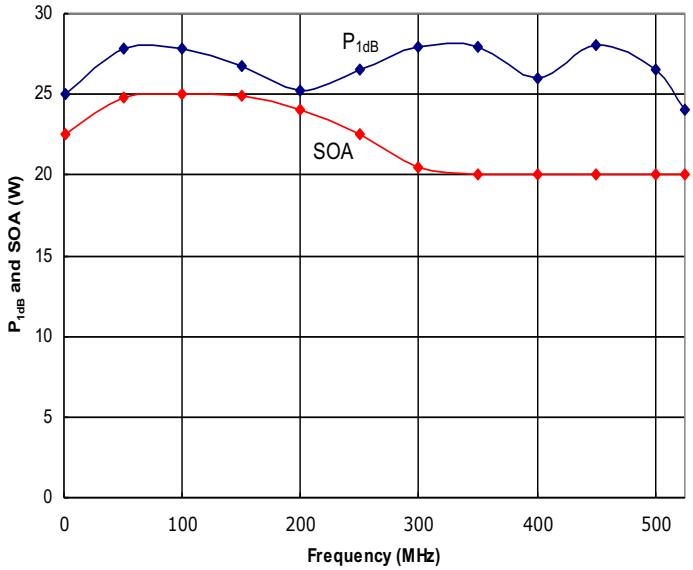

Figure 4: HD30538 Typical P_{1dB} and Safe Operating Area (SOA). The amplifier is capable of delivering more power than it is safe to generate. Do not exceed the SOA without first contacting HD to discuss your application.

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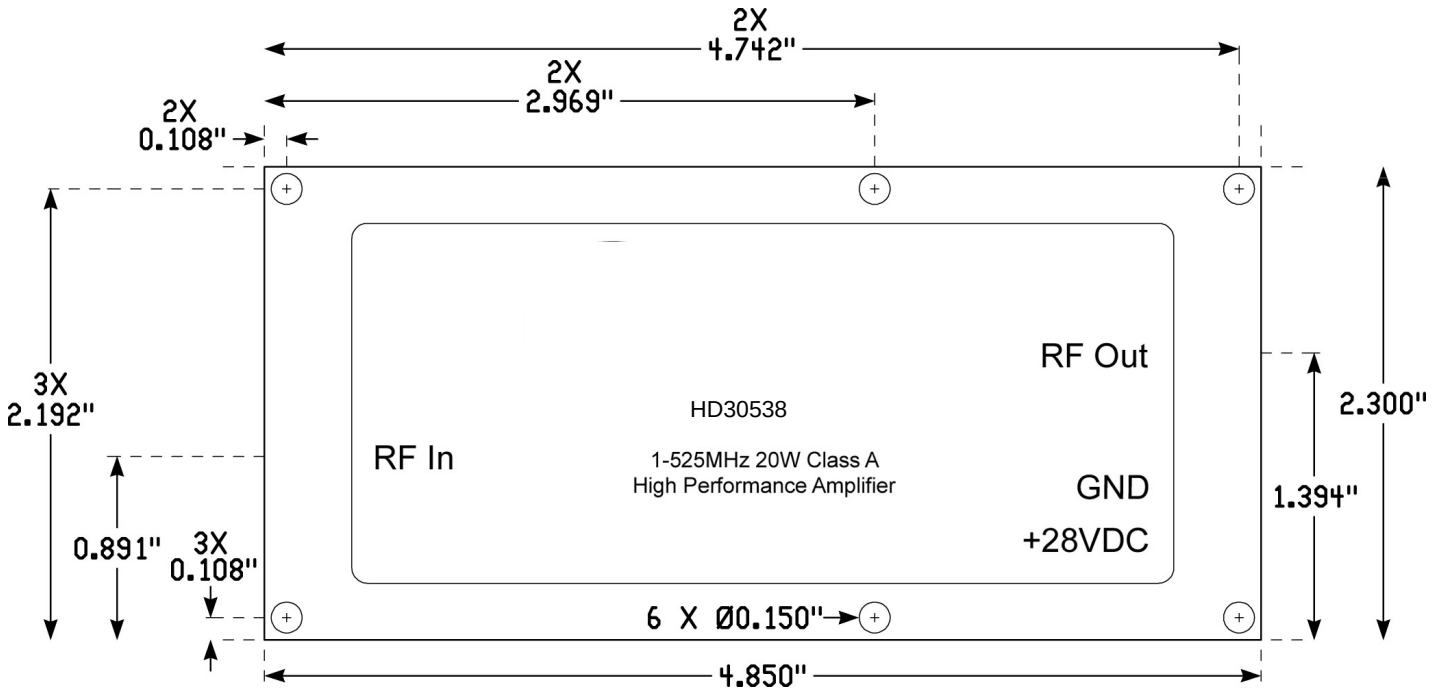
Amplifier Mounting Hole and RF Locations



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* housing 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.
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 HD 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 and 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 the factory at sales@hdcom.com with any questions, or for special options, testing requirements, and/or operating conditions not specified in this document.

Document Control

Revision	Date	Notes
Pre	2-28-2015	Preliminary release.
A	6-7-2015	Initial production release.
B	6-1-2016	Updated company info and specifications.