RF and Microwave Power Technology

RFM30-512-20

30-512MHz 20W Class A High Performance Amplifier

- **Class A 20W linear amplifier**
- **30-512MHz bandwidth**
- **46dB 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 RFM30-512-20 is a Class A high performance amplifier module, outstanding as a driver stage in military communications 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 *Amplifier is usable to 20MHz. Contact RFMPT for details.	30*		512	MHz
P_{1dB}	20	>25	See Figure 4	W
Input Power		-3	0	dBm
Gain	43	46		dB
Gain Flatness		+/-1.1	+/-1.5	dB
Drain Current		3.8	4.1	A
Efficiency	17	19		%
IRL		-20	-14	dB
f_2		-37	-24	dBc
f_3		-45	-24	dBc
IMD_3 20W PEP, Δf=10kHz See Fig. 2 for 10W		-37	-30	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)	RFM30-512-20-DIS
Heatsink and fan	RFM30-512-20-HSF
Mini-System	RFMS30-512-20

RF and Microwave Power Technology, LLC • 2380 Solitude Drive • Reno, NV 89511 USA
(775) 842-3280 • sales@rfmpt.com • www.rfmpt.com

MADE IN AMERICA

Doc #100013, Rev B, 6-2-2016

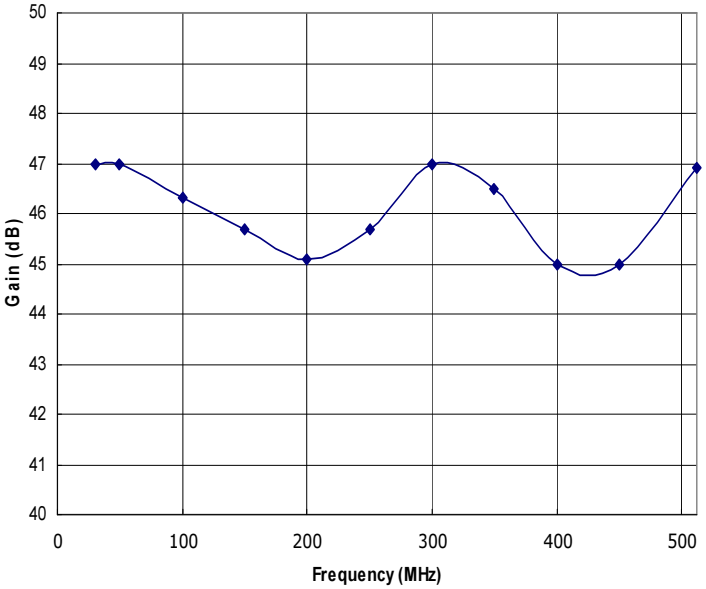

Figure 1: RFM30-512-20 Typical Gain @ P_{out} = 20W.

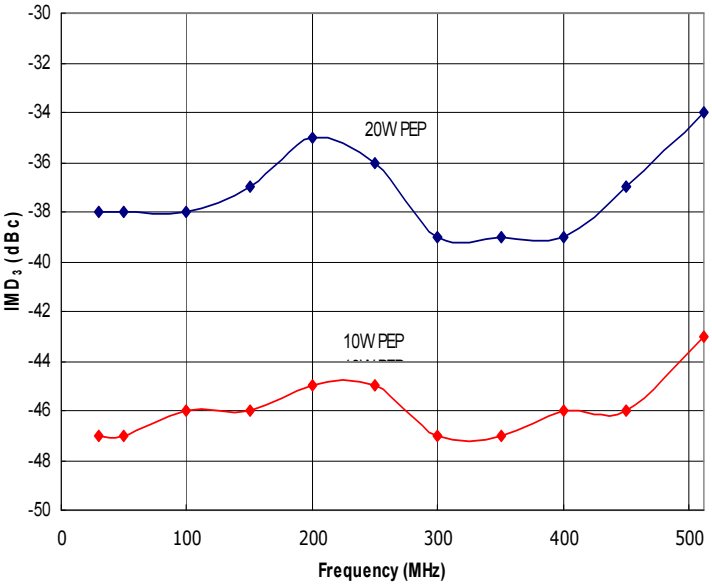

Figure 2: RFM30-512-20 Typical IMD_3, Δf=10kHz, @ P_{out} = 20W and 10W PEP.

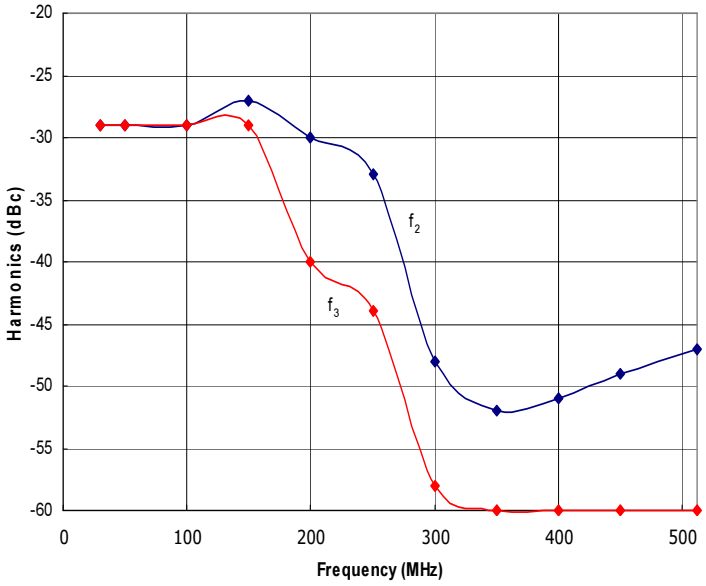

Figure 3: RFM30-512-20 Typical f_2 and f_3 @ P_{out} = 20W.

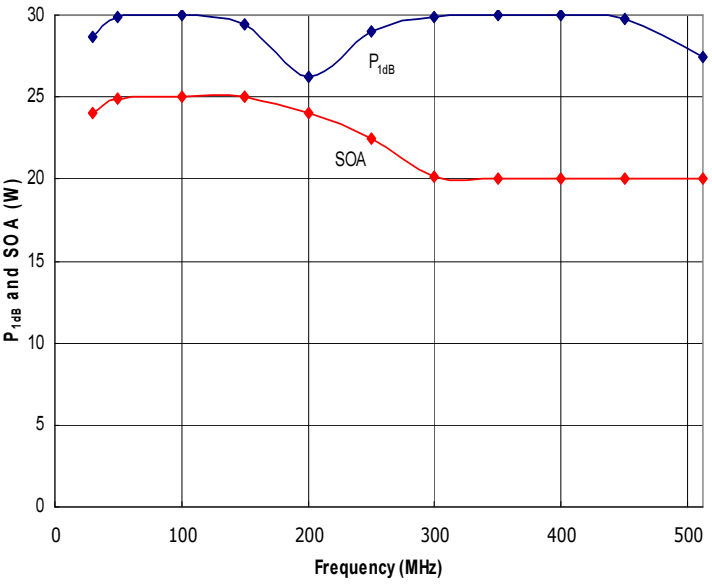

Figure 4: RFM30-512-20 Typical P_{1dB} and Safe Operating Area (SOA). The amplifier is capable of delivering more power than it is safe to generate. Do not exceed the SOA without first contacting RFMPT to discuss your application.

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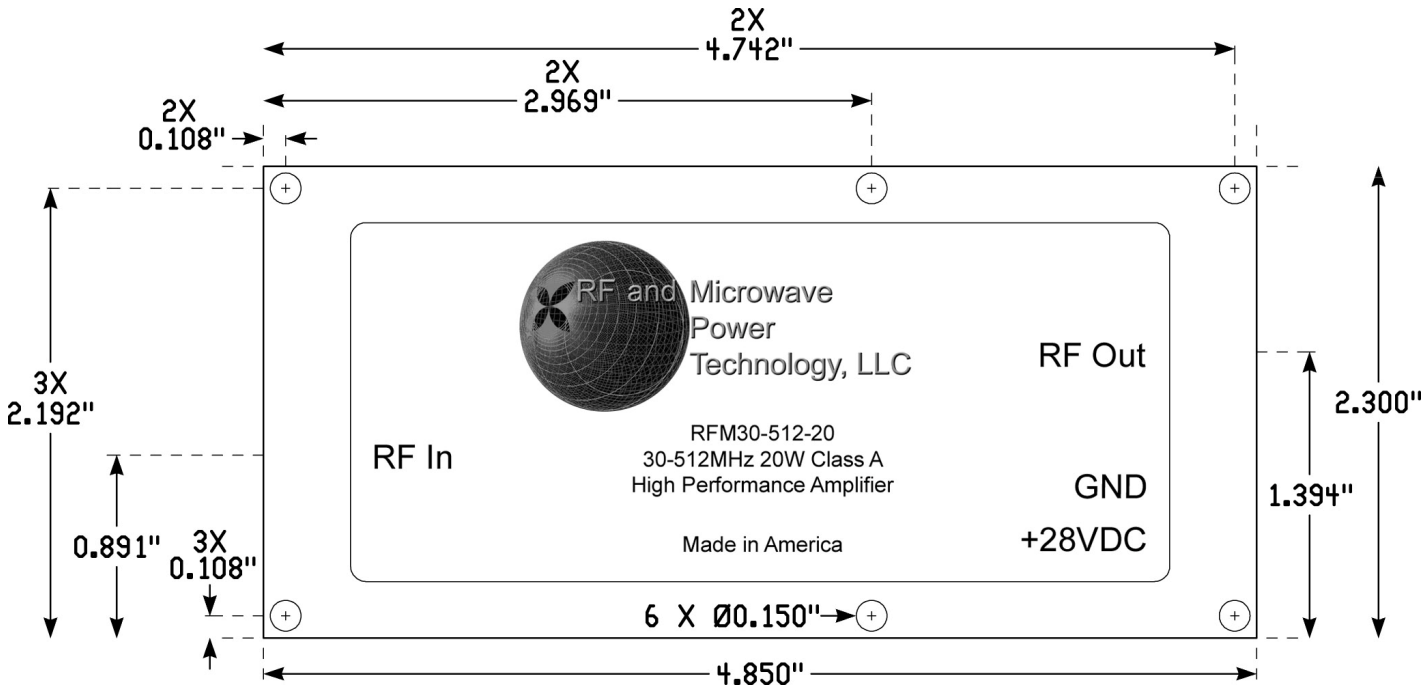
Amplifier Mounting Hole and RF Locations



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 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 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@rfmpt.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	4-27-2015	Preliminary release.
A	6-7-2015	Initial production release.
B	6-2-16	Updated company info and specifications.