HD30690

27.12MHz 1000W Class AB ISM Amplifier

Preliminary

- **Class AB 1000W XR-rated amplifier**
- **27.12MHz ISM band**
- **85% typical efficiency**
- **22dB typical gain**
- **Temperature-compensated bias**
- **TTL disable**
- **Available with SMA and N, or all N connectors, and/or heatsink and fan**

Photo for reference only. Shown with optional N connectors.

The HD30690 is a very high pow.er Class AB amplifier designed specifically for demanding 27.12MHz ISM applications. It is ideal as an output stage in industrial, medical, or scientific systems. Combined in a multiple pallet configuration, it allows the system integrator to create efficient and rugged amplifier systems exceeding 25kW in a small footprint.

Specifications

V_{sup} = +48VDC, I_{DQ} = 0.1A, P_{out} = 1000W, T_{base} = 25°C, Z_{load} = 50Ω

Parameter	Min	Typ	Max	Units
Freq. Range		27.12		MHz
P_{2dB}[1]	1000			W
Input Power		38	40	dBm
Gain	20	22		dB
Gain Flatness		N/A		dB
Drain Current		24.5	25.4	A
Efficiency	82	85		%
IRL		-20	-14	dB
f_2		-30	-25	dBc
f_3		-13	-10	dBc
Dimensions	2.95W X 5.65L X 2.10H (74.93 X 143.51 X 53.34)			inch (mm)

Maximum Ratings

Operation beyond these ratings will void warranty.

Parameter	Value
V_{supply}	46-50VDC
Bias Current	0.25 A
Drain Current[2]	26.0A
Load Mismatch[3]	10:1
Baseplate Temperature	60°C
Storage Temp.	-40°C to 85°C

1. This is a highly non-linear amplifier. P_{2dB} is measured relative to 10dB drive back-off.
2. See Important Operating Notes on Page 3.
3. All phase angles, 1000W forward power, current limited to 26A for 5 seconds max. See Important Operating Notes on Page 3.

Option Ordering Info

Heatsink and fan	HD30690-HSF
N connectors	HD30690-N
SMA In/N Out connectors	HD30690-SN

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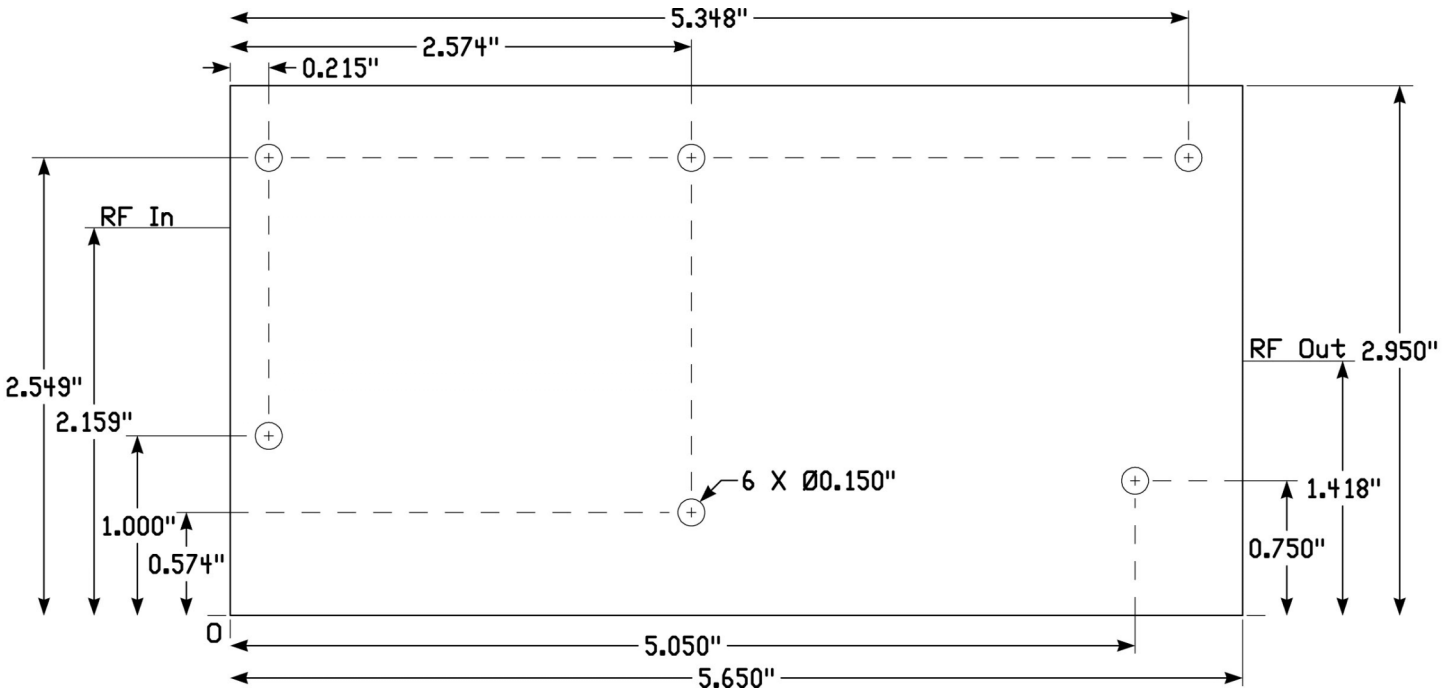
Amplifier Mounting Hole and RF Locations



Important Operating Notes

This is a very high power and efficient amplifier. However, in order to achieve high levels of efficiency and limit transistor power dissipation, it must be operated at, or near, full power. Reducing the CW output power to below 800W will increase transistor dissipation to the point that its lifetime will be significantly shortened, at maximum baseplate temperature. This can be mitigated by using a copper baseplate, but even so, one must maintain at least 600W output power. Operation below this level will require that the baseplate temperature be reduced via extra airflow, or liquid cooling.

The transistor and amplifier are designed to withstand high VSWR. However, it is the user's responsibility to take appropriate measures to limit VSWR to the rated specification, as well as limit the current drawn by the amplifier. Unlimited exposure to high VSWR and/or high DC current can cause amplifier damage, and is not covered by the warranty. It is left to the end user to ensure that appropriate system protection measures are employed to avoid damage to the amplifier. Please contact the factory for guidance if you are unsure how to properly protect the amplifier or system electrically and/or thermally, or for ordering the amplifier with a copper baseplate.

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 baseplate. Thinner is better, but ensure that when mounted to your heatsink, contact across the *entire* baseplate 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 baseplate temperature at or less than that specified in the Maximum Ratings section. Contact HD Communications for details on how to qualify your heatsink's performance, if needed.
3) Connect a proper signal source to the RF IN connector (or via cable to RF IN pad), and desired load to the RF OUT connector (or via cable to RF OUT pad). Torque connectors, if present, to industry standards for the type supplied with the amplifier.
4) Connect DC V_{supply} to the terminals provided. Use both terminals and heavy gauge wire capable of handling 25-30A total. Solder a similarly capable ground wire (or wires) to the GND pad. 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. Do not exceed 1000W forward power, 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 with any questions, or for special options, testing requirements, and/or operating conditions not specified in this document.

Document Control

Revision	Date	Notes
Pre	7-3-2015	Preliminary release.