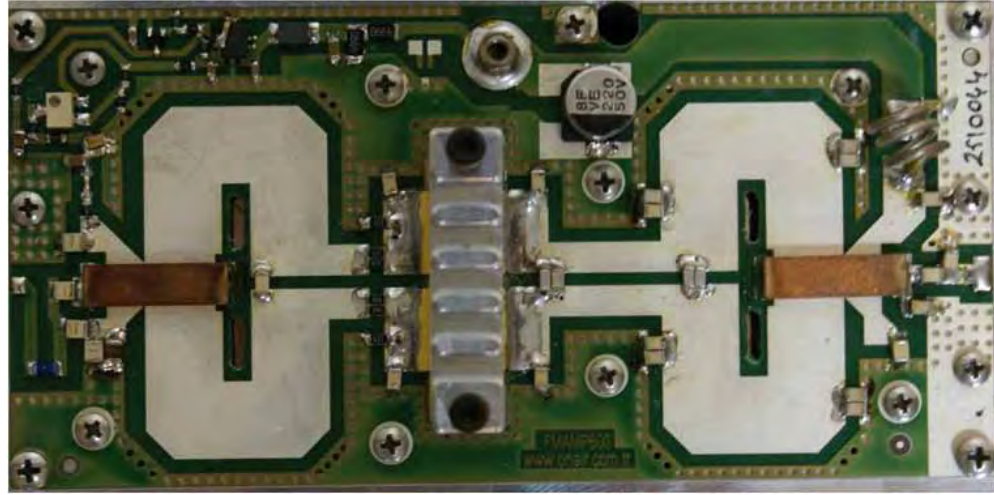




FMAMP650 650W FM LDMOS PALLET AMPLIFIER



This LDMOS Paller Amplifier has been designed to operate in the whole FM frequency range (87.5 to 108 MHz), able to deliver max.700 W output power when fed with 0-2.5 W input power.

This Solid State Amplifiers use high efficiency latest generation LDMOS BLF574.

This LDMOS technology allows higher performance compared to the traditional junction transistors:

- Higher efficiency.
- Higher gain
- Higher thermal stability (negative coefficient for drain current).
- Smaller dimensions at the same RF output power.

- 87,5 – 108 MHz
- Pout: 650 W typ.
- Gain: 26 dB typ.
- Class B
- Device :BLF574
- Supply : 30-52 V DC 46V nominal

Absolute Maximum Ratings

Parameter	Value
Voltage supply 52V DC Vs	46 VDC
Supply current	20A DC
Operating Temperature range	0/70 °C
Storage Temperature range	-30/90 °C
Load Mismatch	2:1
(650W average, 46Vdc, all phase angle)	

Electrical Specifications

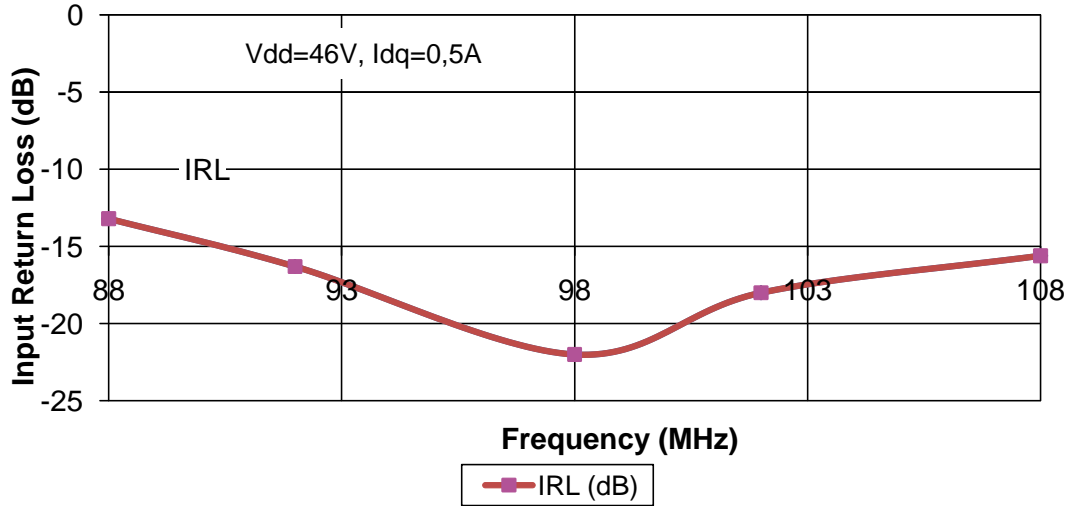
Parameter	Min	Typ.	Max.	Units
Nominal output power	600	650	700	W
Frequency range	87,5		108	MHz
Power gain (saturated)	24	26		dB
Input return loss	13	16		dB
Power input	1	2	4	W
Efficiency	74	76	77	%
Power gain variation	+/- 0,5 +/- 1			dB
F2 Second Harmonic		-28	-24	dB



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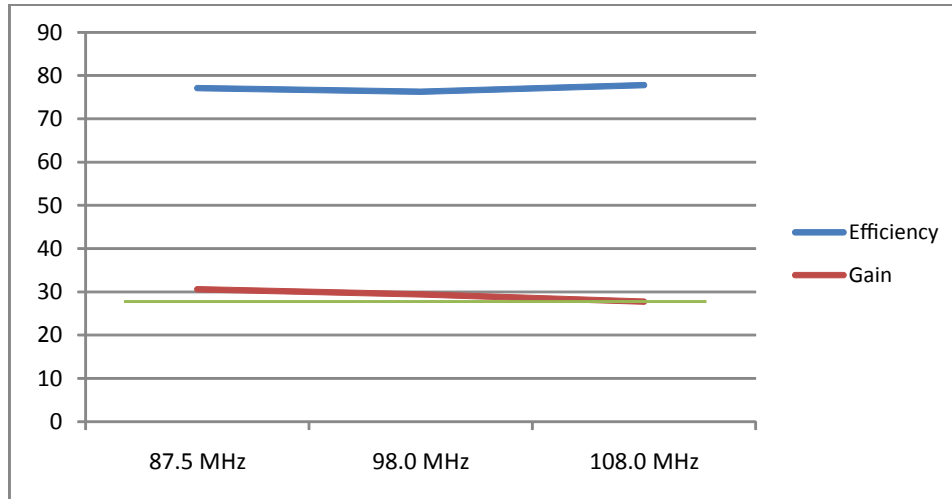
Typical performances

FMAMP650 In R.Loss



FMAMP650 Efficiency and Gain

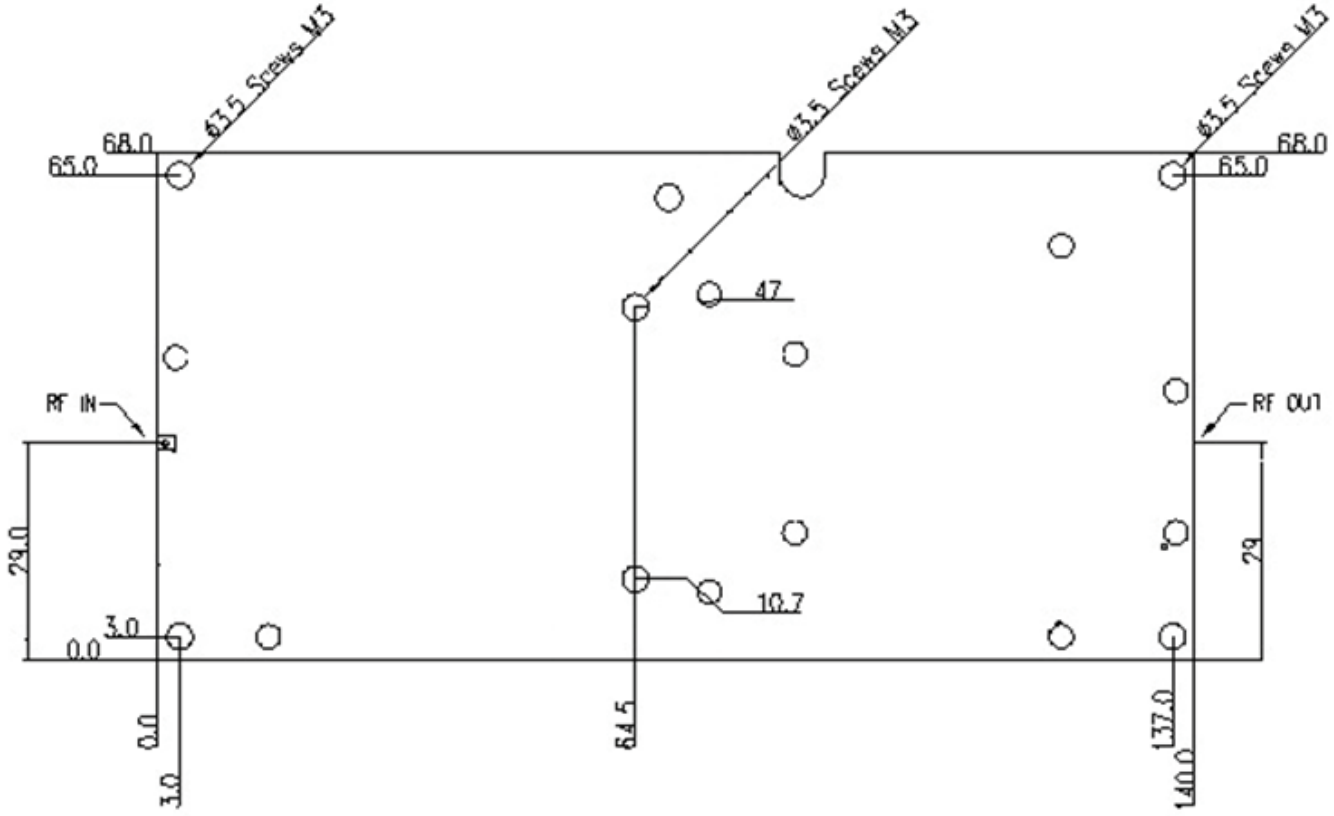
$I_{dq}=0,5A$ $V_{dc}= 46$





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Mechanical Layout



FMAMP650 Mounting Instructions

Please use this instruction to mount the pallet on the Main heatsink. Mounting procedure is very important, this because wrong coupling between pallet and heatsink surface can increase device temperature up to the destruction of device.

- 1) Before mounting, check heatsink surface, this must be much cleaned and extremely flat. Max unflatness +/- 0.4mm on the whole pallet surface and +/- 0.03mm of roughness.
- 2) Put a good quality thermal compound (recommended Dow corning 340) on the bottom side of carrier, in the device area.
- 3) Apply the pallet to the final position then place over the device heat the pressure kit in this order: First the fibre glass spacing (in contact with device heat), then the rubber gasket and over all the aluminium bridge. Follow this tightening order, when all screw are inserted in the holes, first tighten the two device screw over the bridge, then the others on the pallet corners.
- 4) Connect RF input/output and supply wire, then supply the amplifier in according to note 5 (efficiency requirements)

In case of operation at low power, working temperature can be higher, however don't Exceed 170°C of junction temperature, to avoid a sensitive reduction in the amplifier MTBF. Junction temperature can be calculated using the formula " $T_j = \text{Flange temperature} + (\text{device dissipated power} * \text{device thermal resistance})$).



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Application notes

Read carefully the Following information, before design system integration of this amplifier.
Please remember that Onair engineers are available to help customers in any Design activity.

1- Protection Steps

In order to take the amplifier safe in any working conditions, please add this protection in the final equipment.

- Overdrive protection , if the input power exceed 4 W average, the device can be damaged , please use an appropriate protection to reduce or switch off the input signal in case of overdrive. The amplifier can support higher power for short time.
- Reflected power protection (see note 2), a suitable protection system should switch off (or reduce) the input power in case of excessive reflected power.
- Thermal protection, switch off supply voltage if device flange temperature exceeds 80°C when amplifier works at full power.

2- Load matching

This amplifier can work without power reduction up to 2:1 VSWR load matching.

In this condition Phase is irrelevant. Please remember that this specification is valid only in CW or FM application, Pulsed signal or other kind of modulation can drastically change this limit. Since this amplifier is designed on a single RF device, under unmatching condition, power output can change up to +/- 1.5dB in function of reflected signal phase.

3-Thermal exchanger requirements

Max operative temperature must be measured very closed to the device flange.

Max temperature value is referred to the nominal operative condition (Pout 650W VD about 46V). In case of different working conditions, this limit can be different.

Please provide an appropriate heatsink and a little air flow in the output transformer area.

4- Shielding

Due to the High gain of this pallet, a good shielding between final stage and any driver/low power stage is required. Please foresee also a good RF choke on the supply wiring.

On request Onair can provide an analysis on your line up.

5 -Overdrive

High driver level can damage this amplifier, design of equipment where the amplifier will be mounted, must foresee an appropriate protection circuits. Max input level is + 4 Watt Average, higher value can damage the amplifier.

6- Efficiency

Amplifier efficiency is function of supply voltage and input power. In order to obtain max efficiency please reduce supply in function of desired output power, leaving input power at about 2 W. High voltage supply and low input power involve a sensible reduction in the efficiency. Please note that this amplifier is designed in order to have the best efficiency between 600 and 650W of output power, supposing this as typical working condition.