



UHFAMP500

180 WRMS DVB 500 WPS UHF PALLET AMPLIFIER



This power amplifier pallet has been designed to cover UHF TV band from 470 to 862MHz and to use in analog and digital applications. UHFAMP500 incorporates microstrip technology and the latest generation of LDMOS power devices from NXP.

Technical Specification Summary

Frequency Range	470-862MHz	Typ. Gain	20.5 dB
P1dB	670 W	Typ. Efficiency	>20% at 1 dBcp
Analogue TV	500 Wps	Temperature Range	-10 to +55 °C
DVB	180 Wrms	Max VSWR	1.35:1
DTV	250 W	Working Class	AB
Dual tone	670 Wpep	Supply Voltage	50 V

Electrical Specifications

Parameter	Min	Typ.	Max	Unit	Notes
Frequency Range	470		862	MHz	Full coverage without tuning
P1dB		670		W	CW Mode
Power		600		Wpep	2 tones , 100kHz spacing (-28dBc)
IMD3		-40		dBc	2 tones , 100kHz spacing (500Wpep)
Power Input		7		W	CW
Gain	19.5	20.5		dB	at 500 Wps
V Supply		50	52	Vdc	
Drain Current		30		A	for 500 Wps
Input Return Loss			-16	dB	
Gain Variation			±1%		
Phase Variation		±5%			Unit to Unit
F2 Second Harmonic		-44	-30	dBc	
F3 Third Harmonic		-45	-30	dBc	
Baseplate Temp	-10		55	°C	

Mechanical Specifications

Physical Dimensions (LxWxH)	85.5mm x 117mm x 25.4mm / 3,36" x 4,6" x 1,00"
Weight	150 g. / 0,33 Pounds

ABSOLUTE Maximum Ratings

Output Power	600 W
Input Power	7 W
Operating Voltage	50 Vdc
Stable Operations	48-52 Vdc
Bias Current	1.5 A
Drain Current	30 A
VSWR	3:1
Storage Temp.	-20 / +80 °C
Base Plate Temp.	75°C

All Specifications are valid for load impedance 50 Ohm, V=50 Vdc, I=15 A



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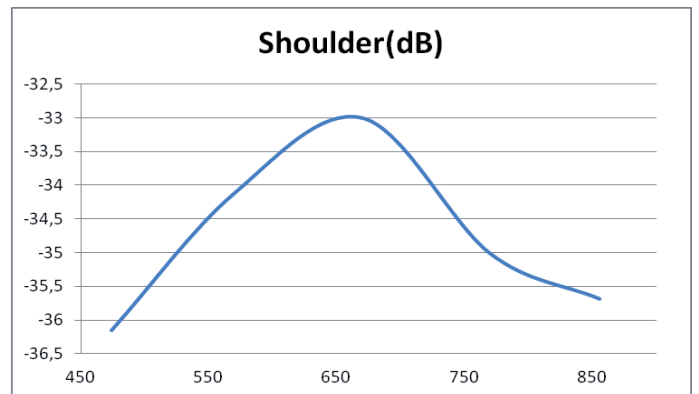
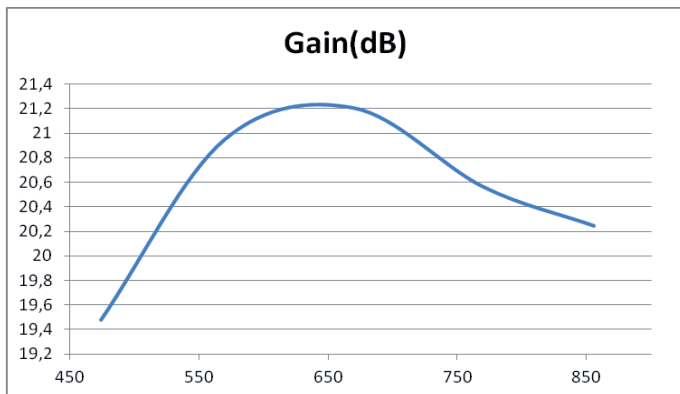
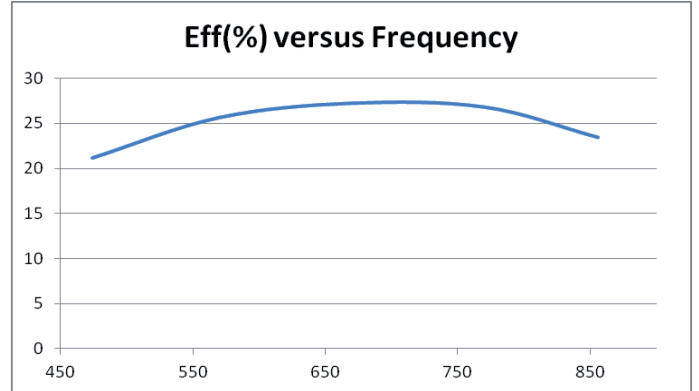
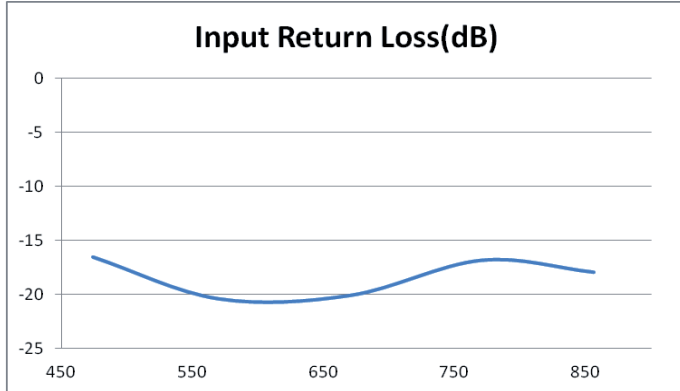
180 WRMS DVB 500 WPS UHF PALLET AMPLIFIER

Key Features and Functions

- Temperature compensated bias
- High temperature protections

Graphs and Charts

Test condition: $V_d=50$ V, $i_{dq}1.5 + 1.5A$, $P_{out}=180$ W DVB-T



WARNING: The input power must not exceed +6dB, for 300 nanosecond, the nominal input power referred to the 1dBcp power output, or nominal input power to obtain **100W DVB-T Output Power**.

WARNING: In case of DVB-T or DTV application nominal performance are warrant up to 1,8 : 1 load VSWR . If load mismatch exceed this value a specific protection circuit must be used.

Mechanical Specifications

UHFAMP500 Layout Dimensions and screw tightening order:

1. Type Of Screws

- 8 x M2.5 - Socket head cap screws.
- 8 Split lock washers WZ Ø3 + 8 Flat washers ZU Ø3.

2. Recommended Torque:

- The recommended Torque is: 0.9 N/m for Devices Fixing (4 places) and 1 N/m for other screws.

3. Thermal Compound:

- Paste with silicones
- Thickness: optimum between 0.06 mm and 0.15 mm, on the whole back surface of the amplifier

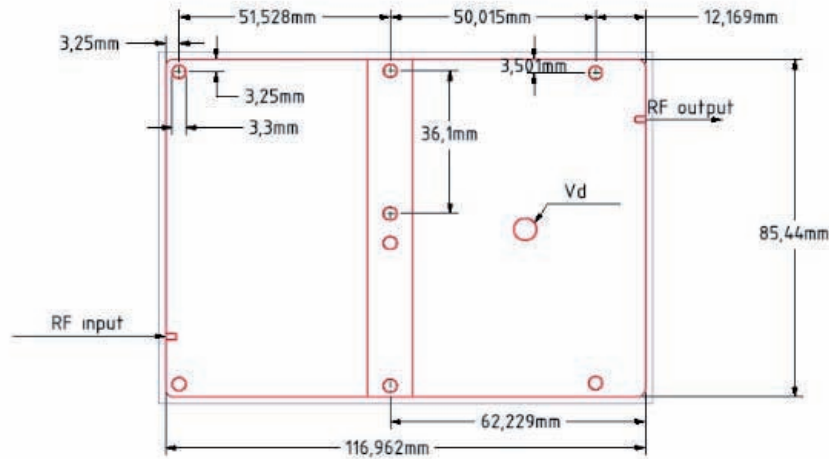


UHFAMP500

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4. Heatsink Tooling

- Planarity: typical value 0.8 μ
- Roughness: better than 0.03 mm



Integration And Important Operating Instructions

UHFAMP500 is designed for operation of up to 180Wrms (DVB signal). The high power density of the amplifier will not safely allow prolonged operation above this average power level.

The LDMOS devices used in this design are of the 6th generation family, capable of very high peak power as long as the average power does not exceed specified ratings. The devices are protected by an external circuit provided by the OEM, as specified in this datasheet (Overdrive and Mismatch load protection: See Graphs and Charts section).

UHFAMP500 amplifier requires an excellent heatsink for reliable operation. This heatsink must be capable of dissipating the maximum heat generated. In the case of 180Wrms (DVB) operation, this is approximately 600W of heat in the worst condition. Use of the correct amount of a quality thermal compound is also critically important to long term operation and high reliability. It's suggested to keep 3.8mm (0.15") minimum spacing in the short dimension between pallet.

Use stainless hardware and applying appropriate torque at all fixing points, as indicated in this datasheet. Direct some airflow over the top of the amplifier. Minimal airflow is recommended, strong airflow is not required.

Use appropriate size Teflon insulated wire for positive voltage. Please refer to the specific drawing in this datasheet for contact locations. Apply supply voltage with the RF drive OFF. Due to its high gain, the amplifier is sensitive to overdrive and can be damaged if overdriven.

Monitor pallet carrier temperature. In the event of cyclic shutdown, cooling must be improved.

IMPORTANT: This amplifier is sensitive to overdrive and may be damaged by careless application of input power. Please always refer to the safety area in the Overdrive Diagram shown in this datasheet. It is the customer's responsibility to ensure input and output power does not exceed ratings. Warranty will be voided in cases of overdrive.



UHFAMP500

180 WRMS DVB 500 WPS UHF PALLET AMPLIFIER

The system must allow the nominal voltage before applying RF driver signal or damage can result to the amplifier. For this reason the voltage must be applied before the RF driver signal. Additionally, the input signal, must be removed before powering down to prevent damage to the amplifier. You can accomplish this by removing the RF driver signal and powering down the power amplifier.

The pallet is delivered within its sealed ESD packaging. Use all professional caution during unpacking, handling and mounting.

Please consult ONAIR MEDYA factory with any integration questions.

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