

500W pep –27dBc min Tetrafet Technology Amplifier

Designed for analog and digital TV transposers and transmitters, this amplifier incorporates microstrip technology and push-pull TETRAFET to enhance ruggedness and reliability.

- 170 - 230 MHz
- (28 ÷ 32 Volt) 30 Nominal
- Input/Output 50 Ohm/50 Ohm
- P_{out} : 500W pep –27 dBc min (two-tone test 6MHz spacing)
- Gain : 13.5 dB min; 14.5 dB typ
- Class AB
- Devices: D1030UK or equivalent
- Connectorized version available



Dimensions (LxWxH) 210x96x30 mm (8.26"x3.77"x1.18")

This picture is a mere example, it does not bind the provided product

ABSOLUTE MAXIMUM RATINGS (Device Flange T = 70 °C)

Symbol	Parameter	Value	Unit
V _s	Voltage Supply	35	V dc
I _s	Current Supply	25	A dc
T _{stg}	Storage Temperature Range	-20 + 80	°C
T _c	Operating Base Plate Temperature ¹	0 + 75 ²	°C
ψ	VSWR max	3:1 all phase angle	-
	Max input power	See note ³	-
	Max cw output power (continuous work)	300	Wattt

ELECTRICAL SPECIFICATIONS (Base Plate T. = 45 °C, 50 Ohm loaded, Vd = 30 V)

Symbol	Parameter	Test Conditions	Value			Unit
			Min	Typ.	Max	
BW	Bandwidth	P _{out} = 300 W (CW)	170		230	MHz
G _p	Power gain	P _{ref} = 300 W (CW)	13.5	14.5	-	dB
P _{out} – 1dB	Power Output @ 1dB Compression	Referred to P _{out} = 100W (CW)	480	550	-	W
I _q *	Quiescent Current	P _{out} = 0 W – Total * ⁴	-	-	6.0	A
I _{tot}	@ P _{Max}	400W Ps Black Level Video + Audio	-	-	22	A
I _{rl}	Input return loss	P _{out} = 250 W CW	16	18	-	dB
	Load mismatch	P _{ref} = 300 W CW, f= 230MHz, load VSWR = 2:1, all phase angles	No degradation in P _{out}			
G _r	Gain Flatness	P _{ref} = 300 W CW, BW: 170-230MHz		±0.5	±1	dB
η	Drain Efficiency	P _{out} = 500 W ⁵ (CW)	45	50	-	%
	P _{out} separate ampl.	Sync. Compression < 1dB without correction	460	500		Wps
	P _{out} common ampl.	P _{out} 400W ps common ampl. dual sound, with Red Field sound 1 @ -13dB and sound 2 @ -20dB without pre correction	-45	-50		dBc
	P _{out} DAB	P _{out} 180Wms without pre correction	-27	-30		Wrms
	P _{out} DVB-T	P _{out} 120Wms without pre correction	-27	-30		Wrms

¹ A temperature sensor is mounted on the circuit to have an immediate working temperature measurement. The temperature can be measured by a Voltmeter on the "Temperature Measurement Point" (see picture on p. 3), 1mV = 1 °C. **Warning:** the measured temperature refers to the Printed Circuit Board and not to the device flanges.

² **Warning:** The base plate temperature must be 75 °C max, using an appropriate Heatsink. Measure taken on point indicated in p. 3.

³ The input power must not exceed +6dB, for 1 microsec. , the nominal input power referred to the 1dBcp power output.

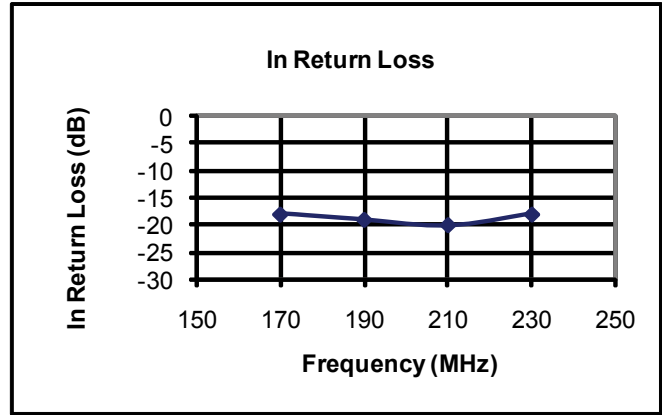
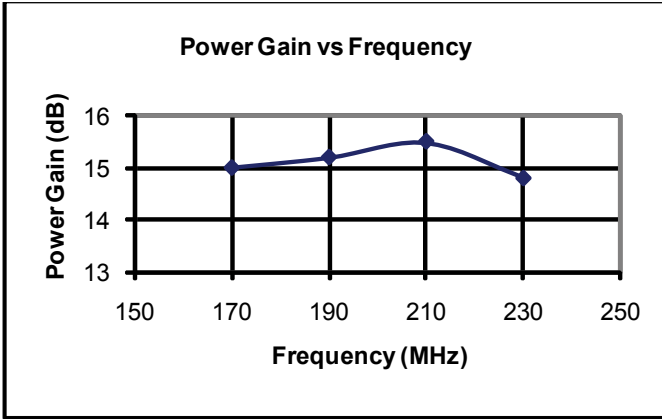
⁴ The Quiescent Current is set at typical value, in factory. This parameter can be adjusted by the final user depending on the applied signal and/or frequency and output power (See Application note ING01). (**Warning:** Do not exceed the specified max I_q value).

* Depending of handling signal (analog /digital)

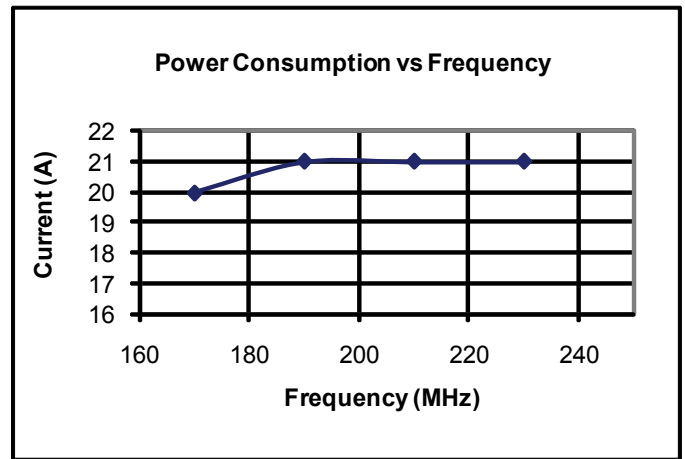
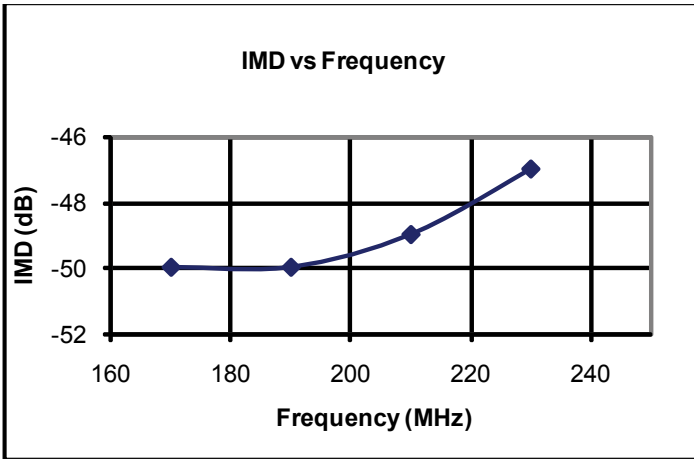
⁵ Do not keep the amplifier working at this P_{out} for more than one minute



VHFAMP550-R

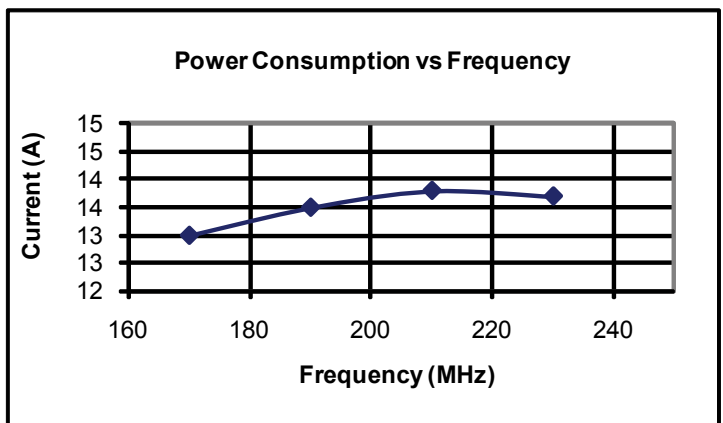
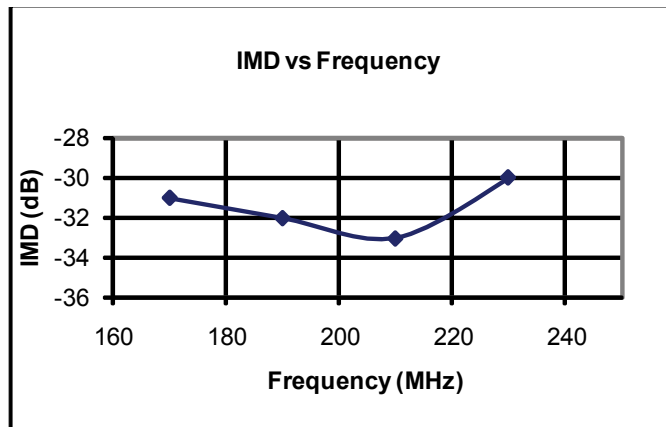


Test Condition: Vd 30V, Idq 2 x 2.2A, Pout 300W CW Test Condition: Vd 30V, Idq 2 x 2.2A, Pout Low Level



Test Condition: Vd 30V, Idq 2 x 2.2A, Pout 400W ps (red field with sound 1 @ -13dB and sound 2 @ -20dB)

Test Condition: Vd 30V, Idq 2 x 2.2A, Pout 400W ps with black field

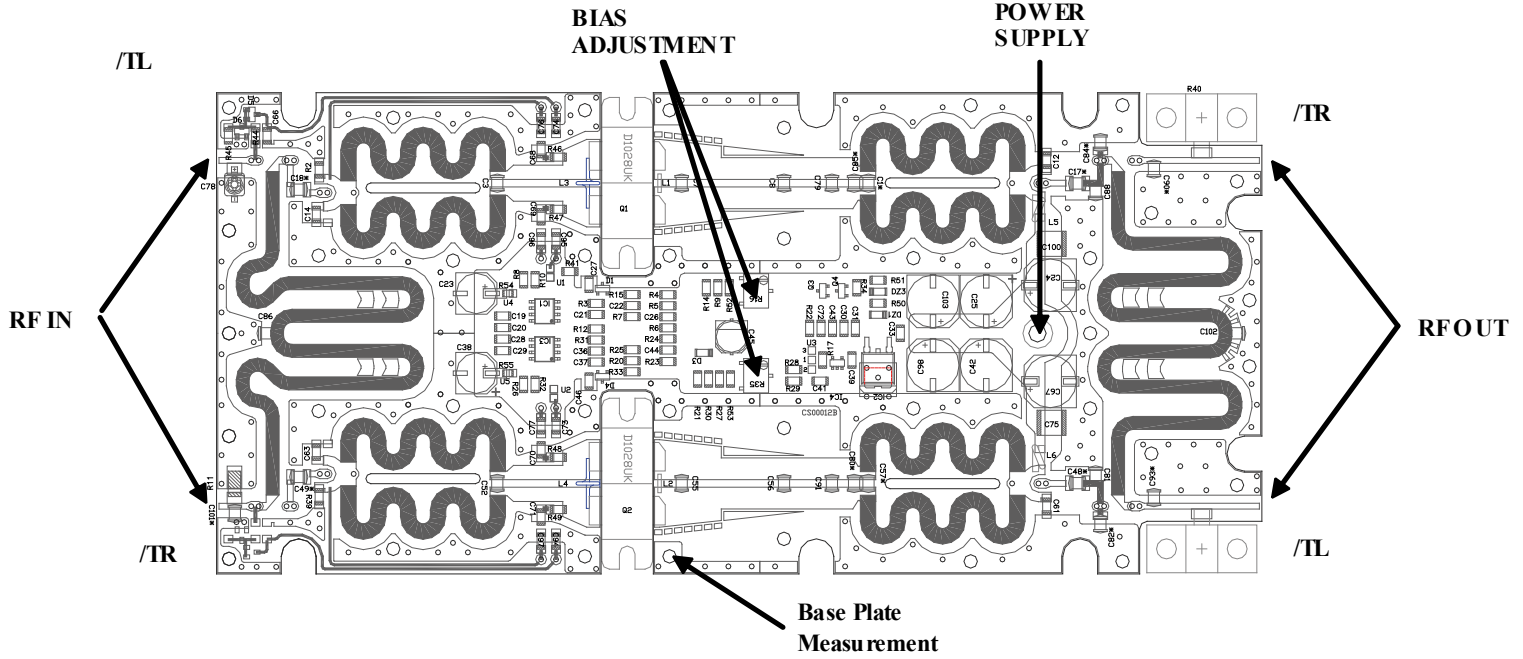


Test Condition: Vd 30V, Idq 2 x 2.2A, Pout 110Wrms DVB-T signal

Test Condition: Vd 30V, Idq 2 x 2.2A, Pout 110Wrms DVB-T signal

The operating voltage range of this module is from 28V to 32V, 30V nominal. If used at 32V, the max power available will be higher but with a consequently decrease of MTBF. Under conditions of overdrive or reflected power, when a multicarrier signal is applied, the 32V supply can be the reason of a minor ruggedness. Please, use suitable protection circuits.

Layout and Connections



NOTE. In response to customer request, this pallet has been designed to allow two different positions of IN/OUT connections: /TL = connection on the left side, /TR = connection on the right side.

HEATSINK MOUNTING/HARDWARE

1.HEATSINK TOOLING

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

2.THERMAL COMPOUND

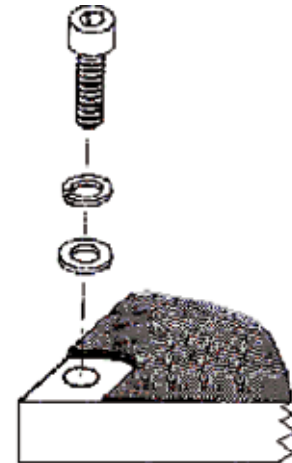
- Paste with silicones
- Thickness : optimum between 0.06 mm and 0.15 mm, on the whole back surface of the amplifier.

3.SCREWS

- 8 x M3 - Socket head cap screws .
- 8 Split lock washers WZ Ø3 + 8 Flat washers ZU Ø3.
- The recommended Torque is 12 Kg/cm for M3 type screws and 10 Kg/cm for M2.5 type screws.

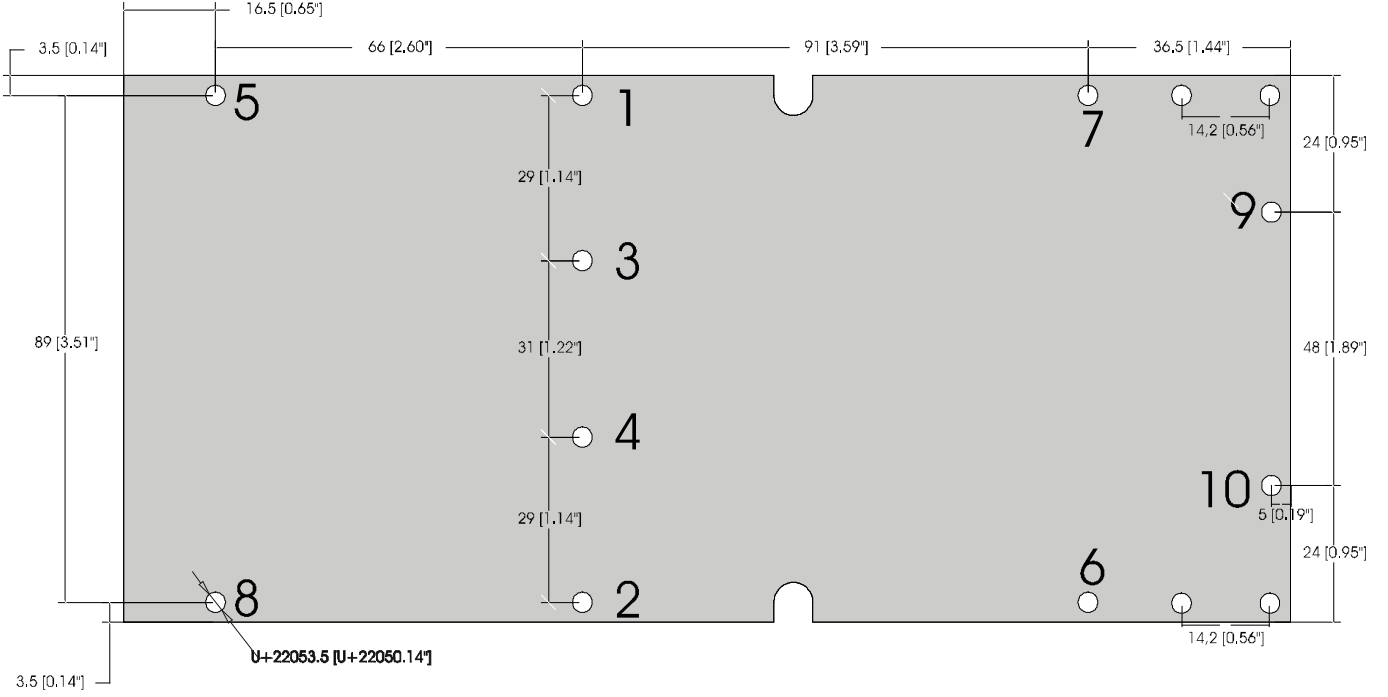
4.TIGHTENING ORDER

- See next figure:





VHFAMP550-R





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