

500MOD144

September 09 - 2009 second edition

Developed and designed for Broadcast applications, this amplifier incorporates micro strip and MOSFET technology to guarantee 500, 1000, 1500, 2000 and above output power if appropriately coupled.

Its high efficiency allows the usage of reduced size radiators (low dissipation) $% \left({{\left[{{{\rm{s}}_{\rm{s}}} \right]}_{\rm{s}}}} \right)$

- 144 MHz
- 44 48 Volt
- Input / output 50 O
- P_{out} : 600 W **Max** (Typ. 500 W)
- Gain : ≥ 20 dB
- Class A, AB or C (adjustable)
- ALC input, inhibit
- 4 mm thick Copper Base
- Teflon pc board



Dimension: (L x W x H) 100 x 50 x 30 mm

ABSOLUTE MAXIMUM RATING (T case = 25 °C)

Symbol		Value	Unit
۷ _s	Drain Voltage Supply	50	V dc
۱ _s	Supply Current (total)	18	A dc
VSWR	Load Mismatch (all phase angles, T _c = 40°C @ 500 W)	10 : 1	
т _{bp}	Base Plated Operating Temperature	40	°C
T _{stg}	Storage Temperature Range	- 20 ÷ + 70	°C

ELECTRICAL SPECIFICATIONS (T case = 38° C, 50 O loaded, Vs = 48 V, IA = 15 - 16 A, IDQ = 0.3 A total)

Characteristics	Min	Тур.	Max	Unit
Operating Frequency Range	142		148	MHz
Power Input	2.5	3	3.5	Watt
Power Gain	19	20	22	dB
Power Output (fundamental)	500		500	Watt
Drain Efficiency (load 50 O)	70	75	78	%
Input VSWR	1.2:1	≥1.3 :1	1.5:1	
Insertion Phase Variation (Unit to Unit)	±2	±3	±4	Degrees
Power Gain Variation (Unit to Unit)		±1		dB
F2 Second Harmonic	- 40	- 43	- 50	dBc
F3 Third Harmonic	- 20	- 25	- 30	dBc

Dynamic test Vs = 44 V., IDQ = 300mA (total), Copper Base Temperature = 30°c

Freq. MHz	Vdc	I.A	P. In Watt	Power output Watt	F2 Second Harmonic	F3 Third Harmonic	Gain dB	Efficiency
			_					
144	+ 44	14.9	3	500 CW	- 40 dBc	- 25 dBc	≥ 20	= 75%

CONNECTIONS





DIAGRAM



Last release 20-08-2008

COMPONENTS MAP



Copper plate 4 mm



Last release 08/09/2009

N°	Axis X	Axis Y	M 2,5	M 3	Through 3.5
1	4	4		Х	X
2					
3					
4	46	4		Х	X
5	10	36		Х	X
6	40	36		Х	X
7					
8					
9	10.5	67		Х	X
10	39.5	67		Х	X
11					
12					
13					
14					
15					
16					
17					
18	4	96		Х	X
19					
20	46	96		Х	X

PROTOCOL TEST

PRELIMINARIES

- 1) Put conductive paste on **500MOD144** and screw it on heatsink
- 2) Close 8 screws 3MA
- 3) Connected IN and OUT of module to RF connectors
- 4) Connected tester on Ampere
- 5) Connected OUT RF connector to good wattmeter
- 6) Connected dummy load 50 Ω
- 7) Connected Spectrum Analyzer
- 8) Adjust power supply limitator to 250 300 mA @ 44 Volt

We advice connected low pass filter with low insertion loss (0,15 dB or better) with -40 dB UP 175 MHz.

- 1) Connected generator to RF INPUT connector
- 2) Switch ON power supply adjusted on 44 Volt and limitated on 500 mA
- 3) Check "BIAS current" ABOUT 250 300 mA, adjust it with R2 if necessary.

After all operation remove limitator on current and switch on generator (TX); adjust input to 1 W, check RF OUT and increase step by step until to obtain RF 500 Watt.

We recommended don't exected power out, however don't exected 15 - 17 A.

You can use 50 Volt, in this case the performance will be little bit better, but we recommended to use the module on 350. We recommended to use a good blower on the heatsink, to have on the Fet no more than 45° C.

The Fet must be protected from SWR, we advice to make PC Board to obtain 5 negative Volt to connected on PIN "INHIBIT"; we advice a threshold of –10 dB @ 500 Watt out.