

HAM RADIO

1KW 144 MHz RF POWER MODULE

- Operating Frequency: 140 - 150 MHz
- 5.5 W Input \pm 1dB
- V.S.W.R. input (@ 144 MHz) \leq 1.1:5
- 50 Ω Impedance (in - out)
- CW – FM – SSB “JT 65” Mode
- RF DISPOSITIVE : MRF6VP61K25H (1250 W)
- Vdd 48 - 50 Volt
- Id (@ 1 KW Out RF) 30 A \pm 5%
- Maximum Copper Base Plated temperature 70°C
- Adjustable Bias
- High efficiency (\geq 70%)
- H 24 Service (with adequate ventilation)
- HIGH Quality
- HIGH stability
- Teflon PCB
- 9.5 mm thickness Copper Base Plated



Dimension : 110 X 50 X 30 mm
Weight : \leq 0.4Kg

GENERAL DESCRIPTION

Our latest product in the HAM product category is the MD 1K AR -144. This pallet performs our variety of the Amateur radio equipments. It has exceptional characteristics and it is technically made up of “in the state of the art”.

MD 1K AR -144 allows an easy assembling in order to create a complete “SSPA” (Solid State Power Amplifier).

The realization is very simple: a cooler, two fan coils, a power supply, a simple protection (optional), RF coaxial relays and RF connectors.

Having an high output power, it is recommended to use an adequate low pass filter (LPF).

The module needs to be mounted onto an heat sink able to dissipate about 500W (without exceeding of 40°C temperature compared to the ambient one of 25°C).

The power supplier will produce a well stabilized voltage of 46-50 V.

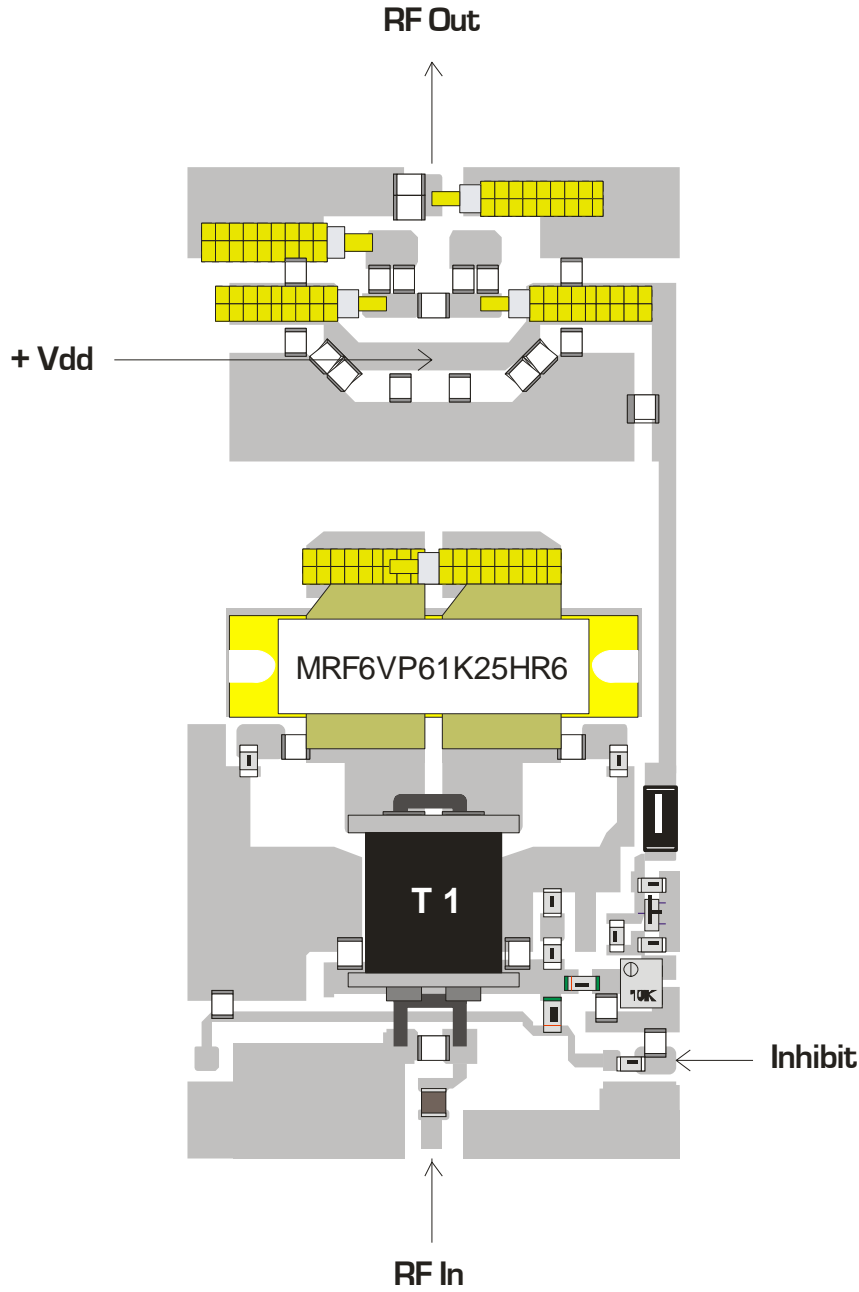
The relative current is 30 A min (Id) with no limitation.

Its high linearity makes it suitable for SSB usage and with an adequate ventilation, it will be also suitable for EME full power.

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CONNECTIONS



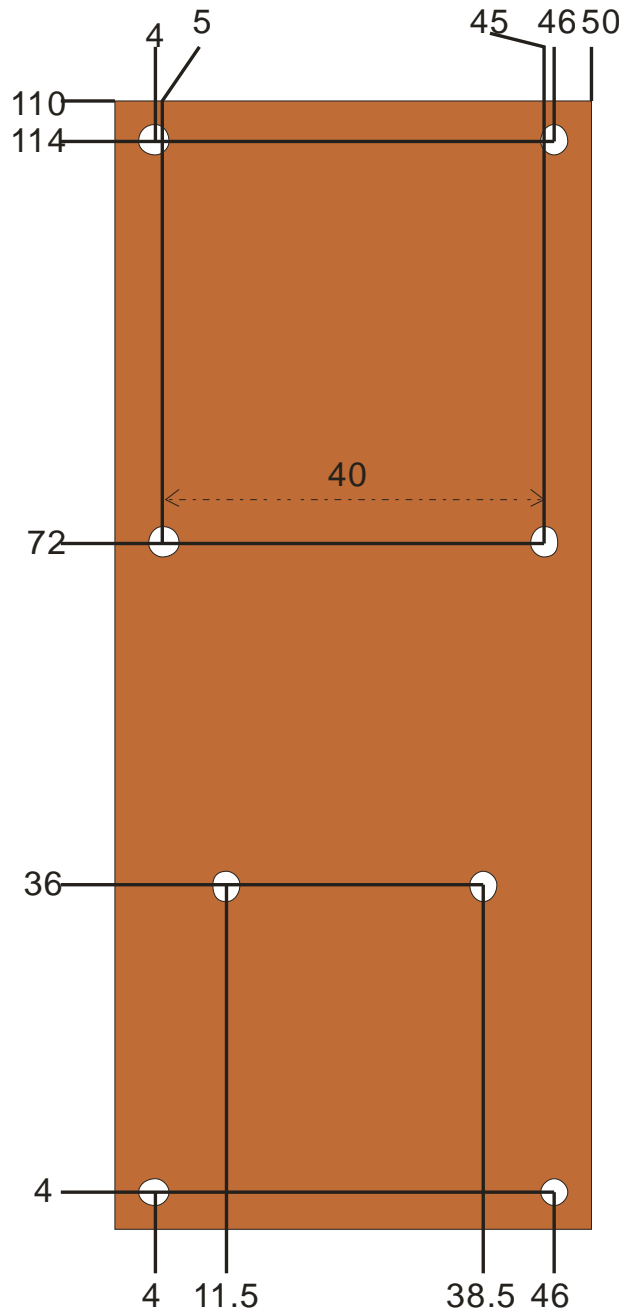
+ Vdd = 48 - 50 Volt

Inhibit = 0 ÷ - (minus) 5 Volt MAX

RF In = input Max 4.5 W

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Heat Sink's holing



VENTILATION SYSTEM



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Assembling and testing

PRELIMINARIES

- 1) To fix the **MD 1K AR-144 Pallet** with 8 m3 screws on the suitable heat sink (power dissipation), laying a thin layer of heat conduction paste (p.3)
- 2) Install the fans (typeFFB0824EHE DELTA or equivalent) as per description (p.4)
- 3) Insert an RF exit through a 50 Ω coaxial connector or cable (p. 2) to an coaxial feed through attenuator able to handle high power such as 1.5 KW – 30 dB (min)
- 4) Insert the bolometer probe (1 W out of scale referred to a 30dB attenuation at the exit of the feed through attenuator).
- 5) Insert the transmitter's cable along the coaxial 50 Ω cable in the RF input (p.2)
- 6) Connect the positive power (+ Vdd) with a proper electrical cable (p.2)
- 7) Setup the current limitation of the power supplier at 30 A (46-50 Volt as reference).

TURNING ON

- 1) Turn on the Transmitter at ZERO Watts output power
- 2) Turn on at DC 48 - 50 Volt the power supplier (**you will notice see an Id current of about 2.5 A**)
- 3) Activate the fan coil process

At this point, please increase the output power of the Transmitter until you will be able to get 100 W.

We recommend to this operation with an extremely attention since the gain of the PA is high.

We also recommend to put a 6dB 100W attenuator (in the input stage).

Following, you can increase the driving level until you will get an output power not beyond 1000 W (please see general characteristics of the datasheet).

Please verify during this operation both the Bolometer (for measuring the RF signal) and the Amperometer, will indicate an increasing of output power .

If this will not happen, it means the RF output cable **is not well connected!**

INHIBIT (Optional)

This input allows the regulation of the output power.

Negative voltages in the range of 0 (zero) to -5 (minus five) Volts (max) needs to be tuned.

Of course, the operating class of the amplifier will be close to "C class" .

This tuning can be done by an interface (made up of a recommended circuit) that limits the output power at 1000W and permit to activate the VSWR protection.

We strongly suggest to tune this protection (the one of the VSWR) to MAX 100 W: following you must disable (TURN OFF) the Vdd!

We recommend to avoid exceeding the temperature of 80°C of the flange of the transistor (if you use/adopt lowers and silenced **fain coils**). The temperature can be measured on the alumina **clamp** of the transistor.

If the temperature option control is on board, you will be able to verify it directly by an **NTC 10 K Ω** variable resistor.

This is a suggestion. It is not mandatory!

We also recommend to use only Teflon coaxial cables for the RF output, and good quality RF connectors.

We suggest to insert the **MD 1K AR-144** into an RF shielded box.

Please do not forget to add/include a suitable Lowpass Filter (LPF) in the system.

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