

Broadcast Power Xperience Design



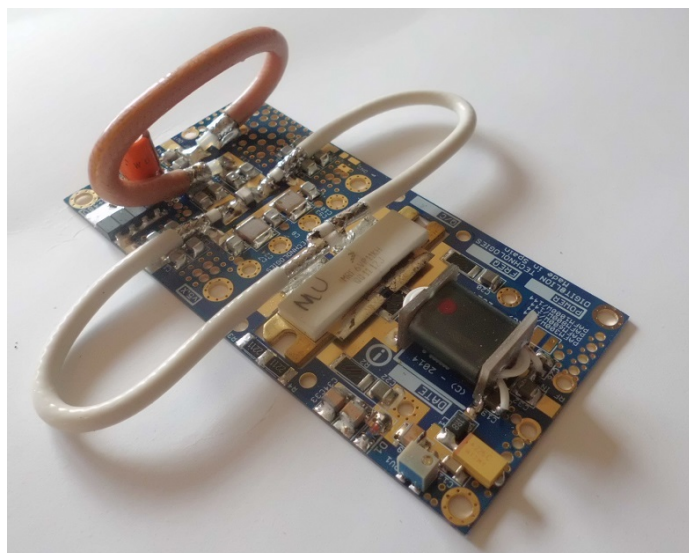
PAFM600W144

600W – HAM RADIO 2M/144Mhz POWER AMPLIFIER MODULE

Designed for 2M/144Mhz radio transposers and transmitters, this amplifier incorporates LDMOS transistors to enhance ruggedness and reliability.

General characteristics:

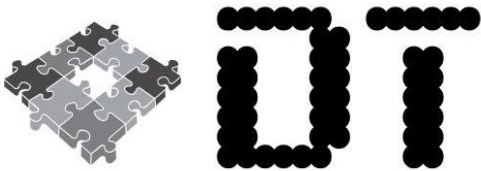
- 140 - 148 MHz.
- 48 Volts.
- Internal Bias.
- Input/Output 50 Ω.
- Board PTFE 1.6mm GOLD plated.
- Pout : 600 W typical, 700 W max.
- Gain : 21 dB typical, 22dB Max.
- Class A, AB, B or C (adjustable).
- Modes Supported: FM, CW, SSB and others.
- Devices: LDMOS Technology.
- ROHS Compliant.
- Mosfets supported:
 - NXP/Freescale MRF6VP2600H
 - NXP/Freescale MRFE6VP5600H
 - AMPLEON/NXP BLF574
 - AMPLEON/NXP BLF574XR
 - AMPLEON/NXP BLF184XR



Dimensions (L x W x H): 102 x 50 x 32mm (4" x 2" x 1.25")
This picture is a mere example, it does not bind the provided product

ABSOLUTE MAXIMUM RATINGS (Heatsink Temperature = 50 °C)

SYMBOL	PARAMETER	VALUE	UNIT
Vs	Drain Voltage Supply	50	V
Is	Supply Current	20	A
VSWR1	Load Mismatch (all phase angles, T-heatsink =40°C, Id=14A)	9:1	-
VSWR2	Load Mismatch (all phase angles, T-heatsink =40°C, Id=14A)	65:1	-
Tstg	Storage Temperature Range	-30 to +100	°C
T-heatsink	Operating Temperature	-20 to +70	°C



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ELECTRICAL SPECIFICATIONS (T-heatsink = 50 °C, 50Ω loaded, Vs = 48 V)

CHARACTERISTICS	MIN.	TYP.	MAX.	UNIT
Operating Frequency Range	140		148	Mhz
RF Output Power (RFOUT)		600	700	W
RF Power Input (RFIN)	4	5	8	W
Power Gain (600W output)	18	21	22	dB
Power Supply Module (Vs)	42	48	50	V
Mosfet Gate Current (Igs)	50	100	150	mA
Current (+48V)		15	18	A
Collector Efficiency (Load 50Ω)	71	78	82	%
Input VSWR	1.1:1	1.3:1	1.5:1	
F2 Second Harmonic (without L.P.F.)	-33	-36	-42	dBc
F3 Third Harmonic (without L.P.F.)	-22	-28	-34	dBc

NOTES



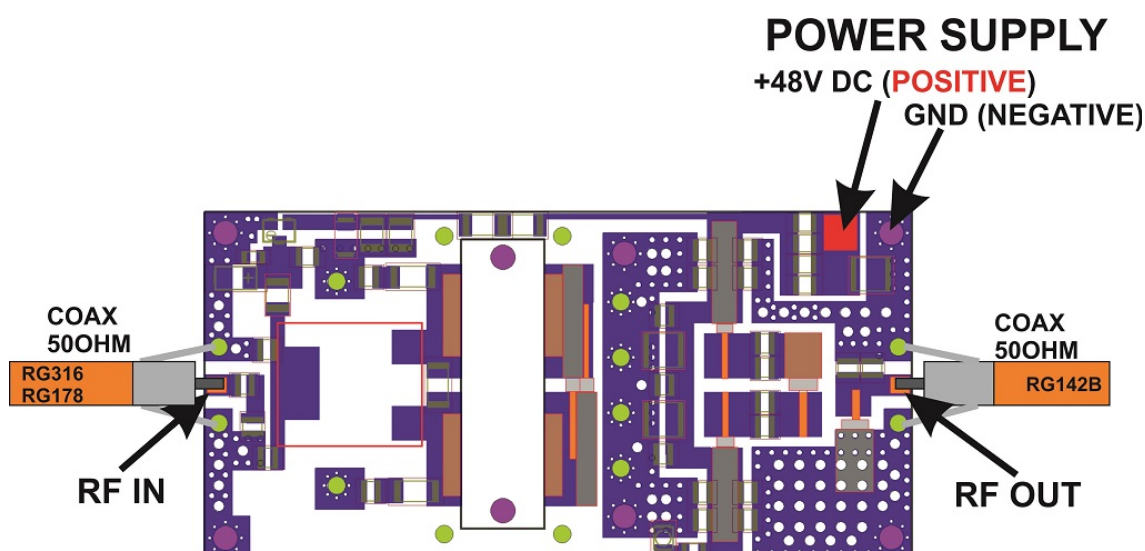
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CONNECTIONS

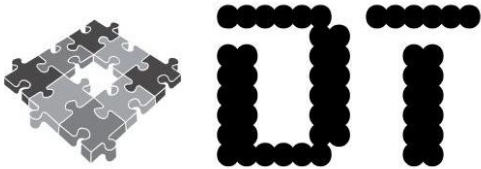


1. **RF Input (0-7W).** You connect 50 ohm coaxial cable (RG316 or RG178 type) in this connection.
2. **RF Output (0-600W).** You connect 50 ohm coaxial cable (RG142 type) in this connection.
3. **+48V input power supply connection Vs.** Connect to you +48V power supply. +48V/20A min. RECOMMENDED. You use 470-1000uF/63V electrolytic capacitor.

Note: You connect GND (Supply Negative) to a M3 screw board or aluminium heatsink.

QUICK ASSEMBLY INSTRUCTIONS:

1. Install PCB in copper laminate plate with M2 or M2.5 screws in green points (14 screws).
2. Install copper laminate in Aluminium Heatsink and use M3 screws in violet points (8 screws). **Note:** The 2 screws in mosfet, max force 0.9N/M, more force you can break mosfet/transistor. You use screw driver tool with N/M scale, 100mN/M to 900mN/M recommended.
3. Connect in red point +48V (positive) of power supply.
4. Connect in screw point GND (negative) of power supply.
5. Install input coax cable, RG316, RG178 or similar, 50ohm coax cable.
6. Install output coax cable, RG303, RG142B or similar, 50ohm coax cable.
7. Trimmer pot, not touch if you board amplifier with mosfet installed, factory calibrated. You use this trimmer pot for board without mosfet/transistor installed or for repair amplifier.
8. Not use amplifier without dummy load or professional antenna, you can break amplifier.
9. If you use Low Pass filter, the coax cable of amplifier to Low Pass filter is of 34cm or 13.4". If you use direct connection without coax cable, not problem, you connect to Filter directly. You read PDF datasheet of your Low Pass Filter for notes.
10. You install Fans (more of 70CFM) in heatsink aluminium.



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TRANSISTOR INSTALL



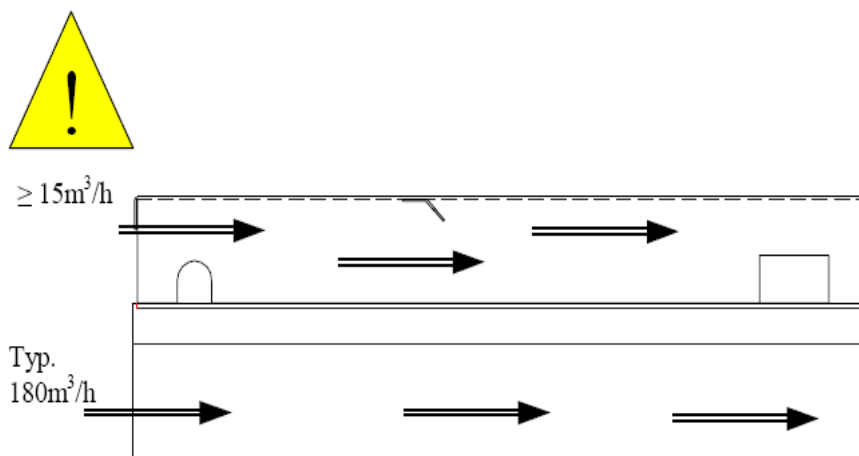
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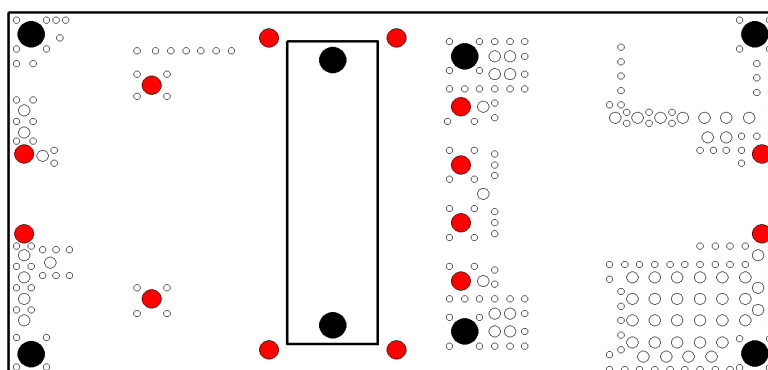
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AIR FLOW DETAIL

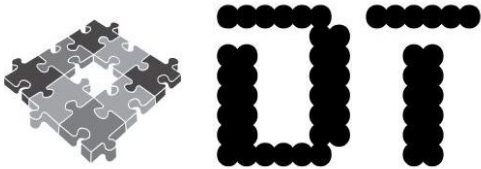


- Is very important you install 1 or 2 fans in FM amplifier (100 – 180 CFM).

MECHANICAL



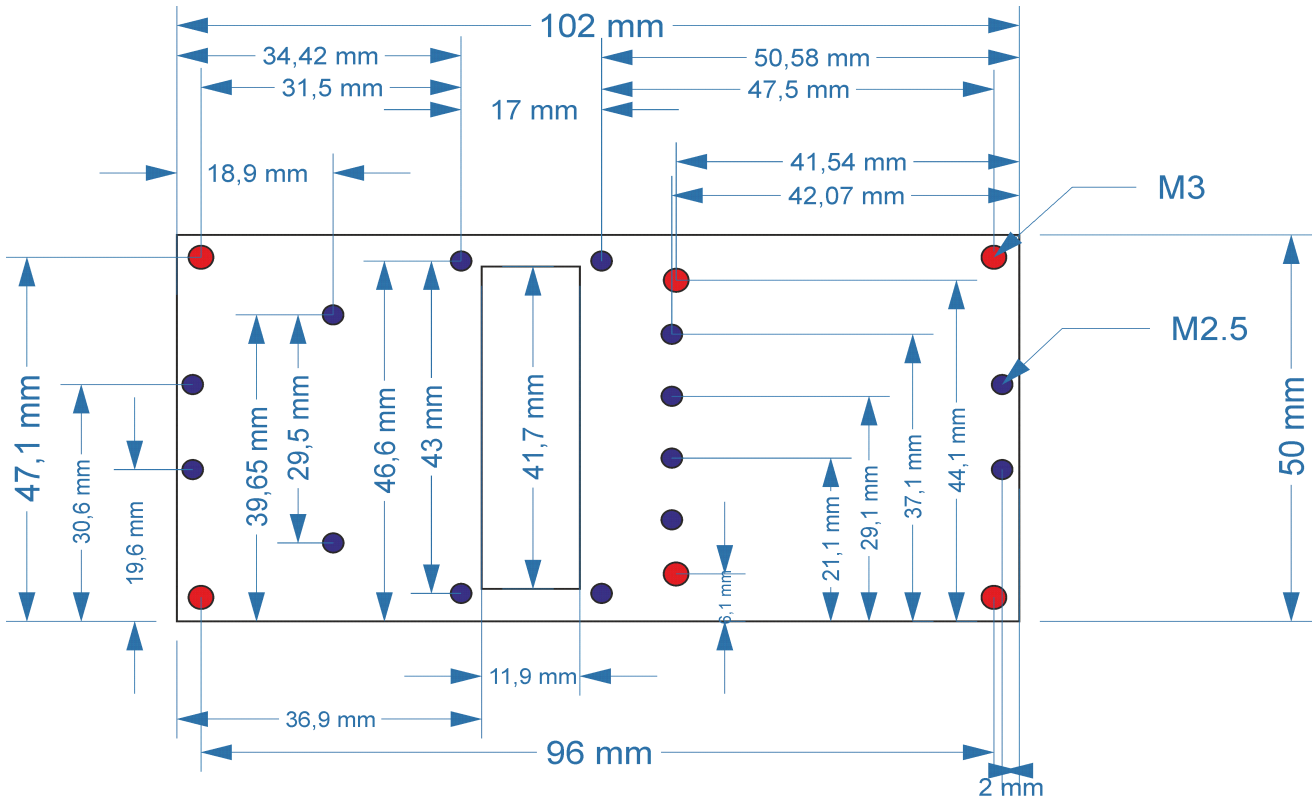
- Use M2 or M2.5 screws in point marked (Red point).
- Use M3 screws in point marked.(Black point)
- Use special paste silicone of RF semiconductors in RF LDMOS Transistors. RF LDMOS can to die if you use bad paste silicone.
- Use aluminium heatsink, minimum size board. 270mm (10.4") x 100mm (4") recommended.
- It is necessary to use spacer nuts in M3 screws of LDMOS screws or Aluminium Heatsink mosfet.
- We recommended that you use 5mm copper laminate (10.2x5cm (4"x2")) between PCB board and aluminium heatsink to dissipate heat faster LDMOS.
- Attention: The screws M2 or M2.5 (red points) in near side of mosfet, not short circuit with supply pads in resistors 2K21 ohm, it is very important!!!



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RECOMMENDATIONS FOR USE

NOT USE AMPLIFIER WITHOUT ANTENNA OR DUMMY LOAD CONNECTED TO THE OUTPUT OF RF.

NOT USE AMPLIFIER WITH TRANSMITTER HAVING PROBLEMS TRANSMISSION, YOU CAN DAMAGE THE AMPLIFIER (TRANSISTORS INSTALLED). NOT ADVISABLE TO USE CHINESE ECONOMIC TRANSMITTERS WITH AMPLIFIER, ARE UNRELIABLE.

NOT USE AMPLIFIER WITHOUT ALUMINIUM HEATSINK.

NOT USE AMPLIFIER WITHOUT COPPER LAMINATE FOR HIGH POWER TRANSISTOR INSTALLED.

NOT USE AMPLIFIER WITHOUT FANS.

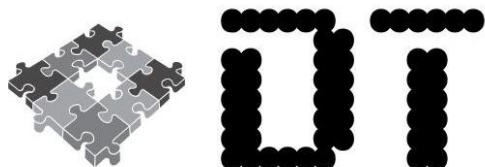
NOT USE AMPLIFIER WITHOUT ALL SCREWS INSTALLED BETWEEN PCB AND ALUMINIUM HEATSINK.

NOT USE AMPLIFIER WITHOUT SCREWS INSTALLED IN AMPLIFIER TRANSISTORS.

READ AIR FLOW DETAIL AND MECHANICAL RECOMMENDATIONS, PLEASE.

WE RECOMMENDED USING PROFESSIONAL WATTMETER TO MEASURE POWER AMPLIFIER.

ANY DOUBT, ASK IS RECOMMENDED.



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REVISION 5.2.3 - 04/2017

REVISION 5.2 - 03/2015

REVISION 5.0 - 02/2014

REVISION 4.2.1 - 11/2013

REVISION 4.2 - 01/2012

REVISION 4.1 - 10/2011

REVISION 4.0 - 08/2011

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WARRANTY

All OEM modules have 1 year warranty in Digit@lion Technologies.

The warranty not include the RF power transistor installed.

Shipping Cost to our laboratory and back for a repair is not included in the warranty.

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