SOTABEAMS™
AMATEUR RADIO FOR THE GREAT OUTDOORS

BOXA-LOAD

a BOXA-LINE product

The BOXA-LOAD is a useful dummy load that has a dissipation of 20 Watts and gives great performance from DC to 150 MHz.

The BOXA-LOAD is available as an easy-to-make kit or as a ready-made unit. The BOXA-LOAD can either be fitted into our neat custom enclosure or mounted in your own enclosure.

Building the BOXA-LOAD is easy and fun. It will take less than an hour to build and is suitable for a beginner.

Revison History

02-Dec-2014 First issued

10-Dec-2014 Typos corrected. Minor changes.

BOXA-LOAD Packing List

It's a good idea to check that you have all the parts before you get started:

Item	Number	Comments
1200 Ohm 0.6 watt resistor	1	brown-red-red
100 Ohm 3 Watt Resistors	8	colour code brown-black-brown
Cermet trimmer pots	1	1k
LED	1	
BNC socket	1	PCB mounted
Plastic spacer	1	
Printed circuit board	1	
OPTIONAL ENCLOSURE KIT		
Laser cut front panel	1	
Laser cut rear panel	1	
Aluminium enclosure	1	
Panel fixing screws	8	
Self adhesive feet	4	

If anything is missing, just get in touch for help.

Richard@sotabeams.co.uk

Errata

None

BOXA-LOAD Instructions

The BOXA-LOAD kit is easy to make and you will end up with a very useful dummy load.

Step by step instructions together with lots of photographs will make it easy to build your BOXA-LOAD. It will take around 30 minutes work.

Spotted a mistake or need help?

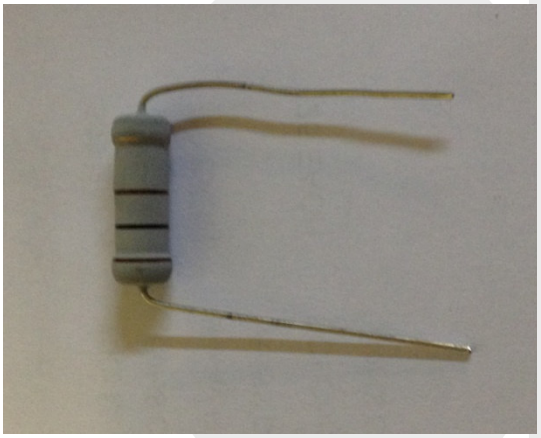
Please let me know!

Email Richard@sotabeams.co.uk, telephone +44 (0) 7976 688359

Install the 100 Ohm 3 watt resistors

1. Identify the eight 100 Ohm resistors and the plastic spacer.

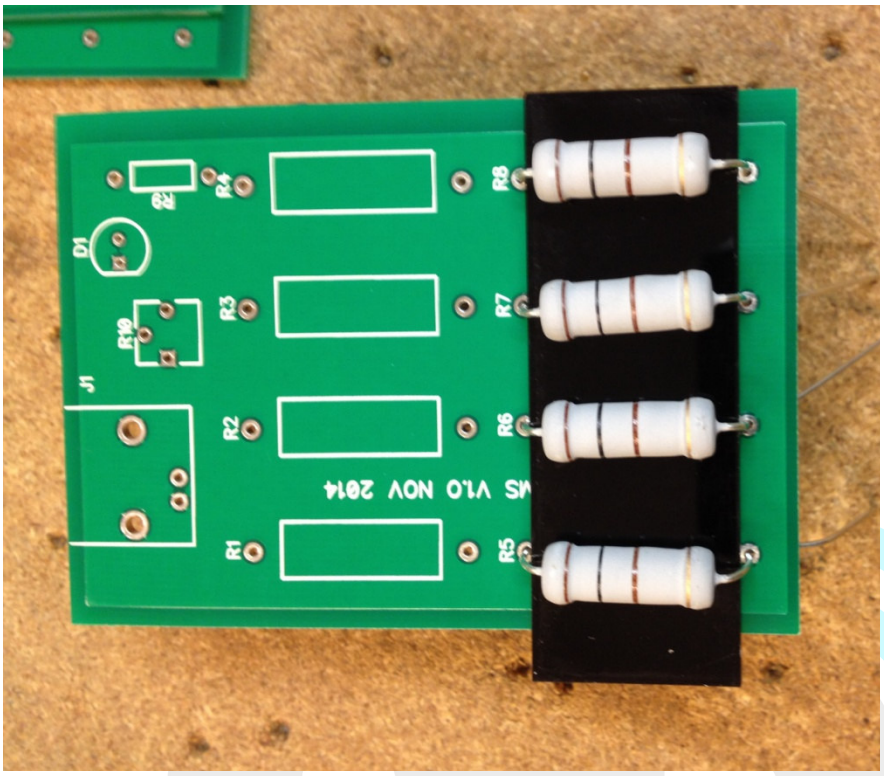
2. Remove four of the resistors from their retaining paper and bend the leads at right angles to the body of the resistor



3. Lay the plastic spacer on the top surface of the printed circuit board (pcb) and install the resistors (R5 R6 R7 R8) as shown. Make sure that the resistors are in contact with the spacer. Don't press the resistors down too hard onto the spacer or the spacer will be hard to remove.

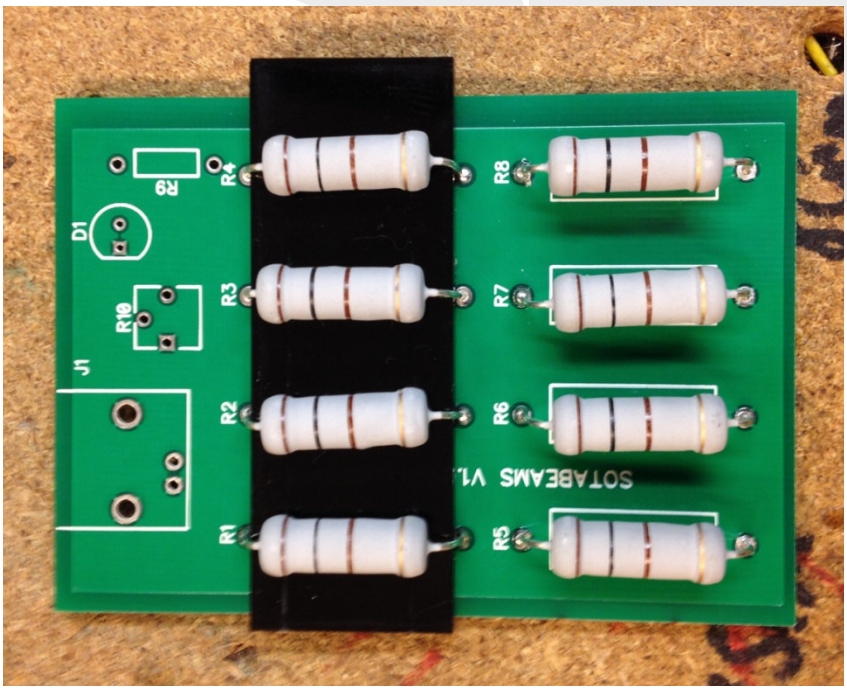
Hint – for a professional look, mount the resistors all the same way round.

4. Solder the resistors on the underside of the PCB and trim the leads.



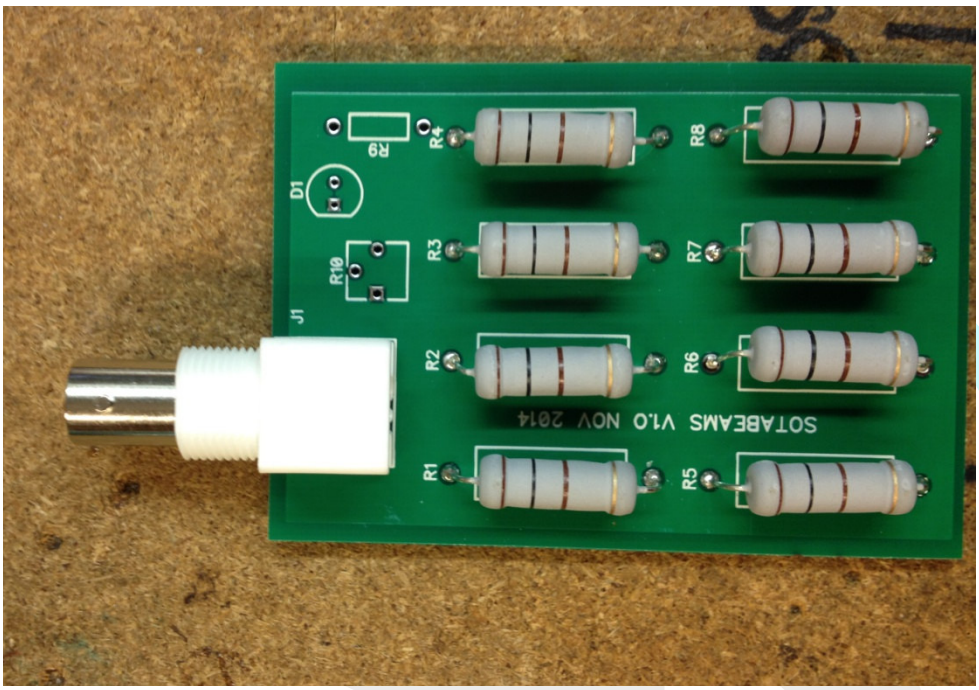
5. Carefully slide the spacer out.

6. Repeat the process with R1, R2, R3 and R4.



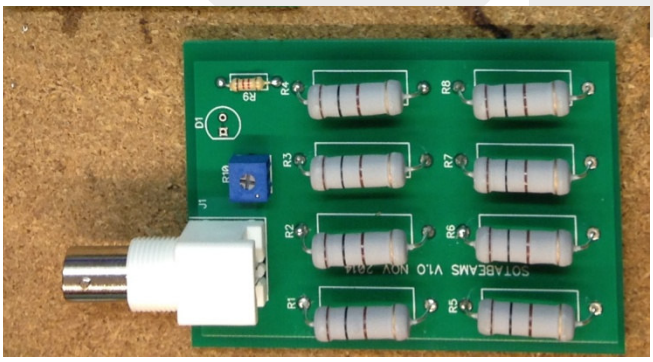
7. Remove the spacer.

8. Install the BNC socket. Solder it in all four points that pass through the PCB. Do not heat the larger mounting lugs for too long. Be careful when soldering the two connecting pins as they are close together and it is easy to get a solder bridge between them.



9. Install R9 (1k2)

10. Install the blue potentiometer.

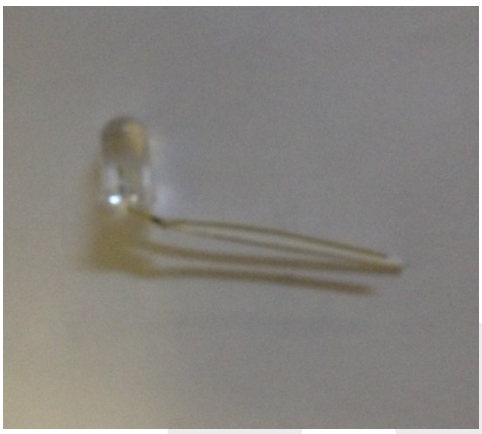


11. If you do not have the BOX-LOAD enclosure, install the LED to suit your preferred mounting method.

12. If you have the BOX-LOAD enclosure kit, located the BOX-LOAD laser cut front panel – has a large hole in it.

13. Push the BNC socket through the hole, making sure that the writing on the panel is on the outside. Attach the panel loosely to the BNC using the serrated washer and nut.

14. Bend the leads of the LED at right angles to the body of the led.



15. Insert the leads of the LED through the board and insert the LED into the hole on the laser cut front panel. This can be a bit fiddly. Note that it does not matter which way round the LED is mounted.

16. Make sure that the panel edge is parallel to the PCB (easiest to see underneath). When everything is aligned, solder the legs of the LED in.

17. In our production versions, we glue the LED in with hot-melt glue. This is optional.

18. Stick the four self adhesive feet on the bottom of the aluminium box – this is the plain side, the top has milled grooves.

19. Install the back panel of the BOX-LOAD using four of the self tapping screw supplied. Note that the panel must be the right way up. Do not over-tighten the screws as you may split the panel.

20. Slide the completed PCB into the other end of the enclosure in the bottom set of grooves.

21. Before screwing the front panel up, test the load with an SWR bridge at 28 MHz. It should have a low VSWR (1:1 or less). Adjust the potentiometer to make the LED

light level suitable (to taste). Note that the LED will not light with power levels below about 1 Watt.

22. The load can also be checked with a multi-meter. The resistance between the centre pin and outer of the BNC socket should be 50 Ohms.

23. Assuming all is well, fasten up the front panel with the remaining four self-tapping screws. Do not over-tighten the screws as you may split the panel.

Your BOX-LOAD is good to go!

Fault finding

The most likely problem on this board is a poor solder joint on the eight power resistors. If the VSWR is high, re-solder these connections.

If you get stuck, send me an e-mail for help! Richard@sotabeams.co.uk

Additional information

The following article may be helpful:

http://www.eham.net/articles/9054