

How to Increase 23 cm Power to 250W with 2 x XRF 286

Some modifications to the W6PQL kit

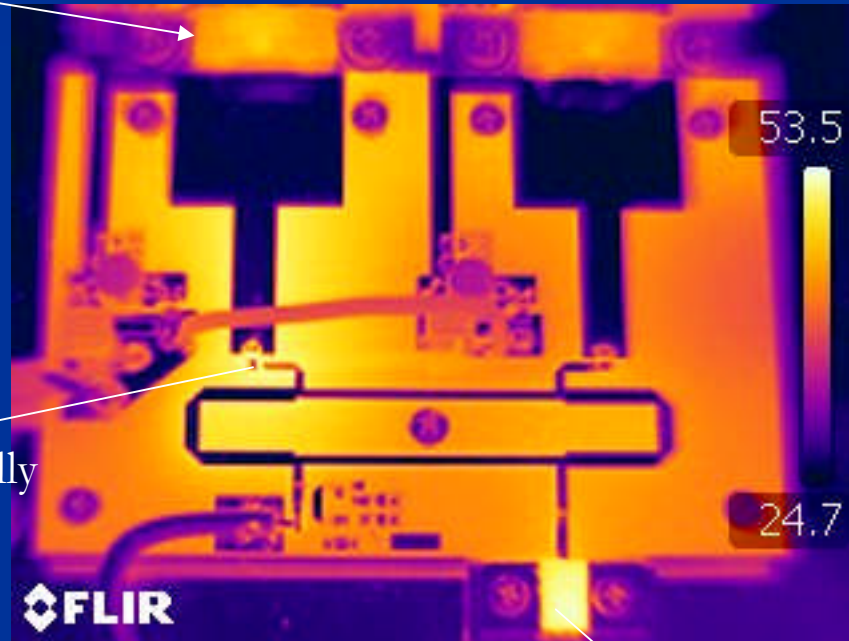
By HB9BBD

Observations

- The PQL layout may be ideal for some XRF286 but was not for mine
- Unfortunately matched pairs cannot be figured out because of soldering/desoldering issues
- The board did not fit to some used transistors I got so I had to fit the boards to the transistors
- I built 10 double boards (pcb version 7.2) and try to summarize the findings

At a Glance – Visible Imbalances

Thermal analysis of the *original* board at 94 W out
(due to imbalance of hybrid at input, one transistor seems to be driven harder?)

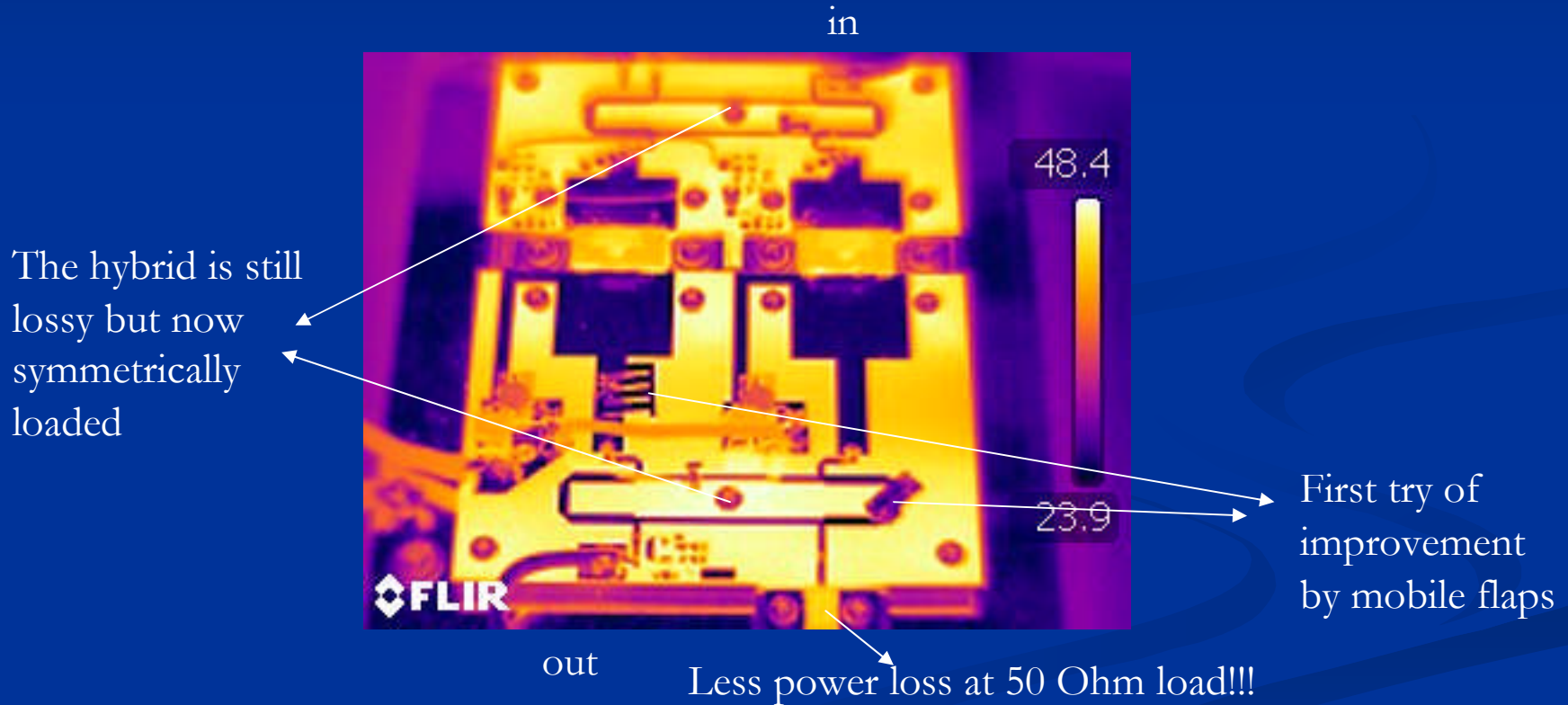


Output capacitor is thermally the hottest part

Difference in outputs results as unbalanced power in the termination

Addition of Matching Flaps Gives Better Output & Heat Distribution

Now at 10W in 180 W out



Parts to be Replaced

- Replace the tiny ceramic trimmer TC1 and TC2 with High Q piston capacitor 1-5pF (*muRata*)* or similar
It offers higher Q, thus rewards with less loss
- Replace C2 and C12 by ATC 800A 22pF



*Thanks to Mike,
JH1KRC I have these
on my bench..!

How to find out what to do?

As mentioned earlier, each transistor is unique in its capacitance etc. This is why I recommend you find out what is needed on your Board, by doing the following:

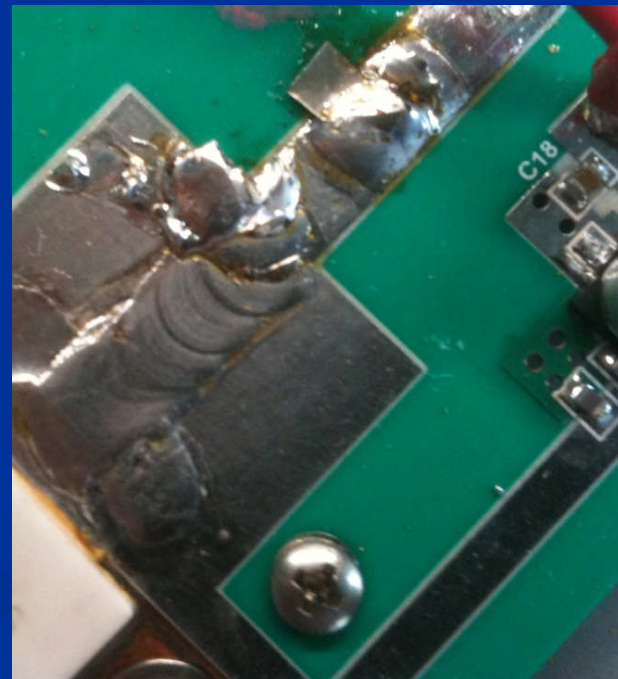
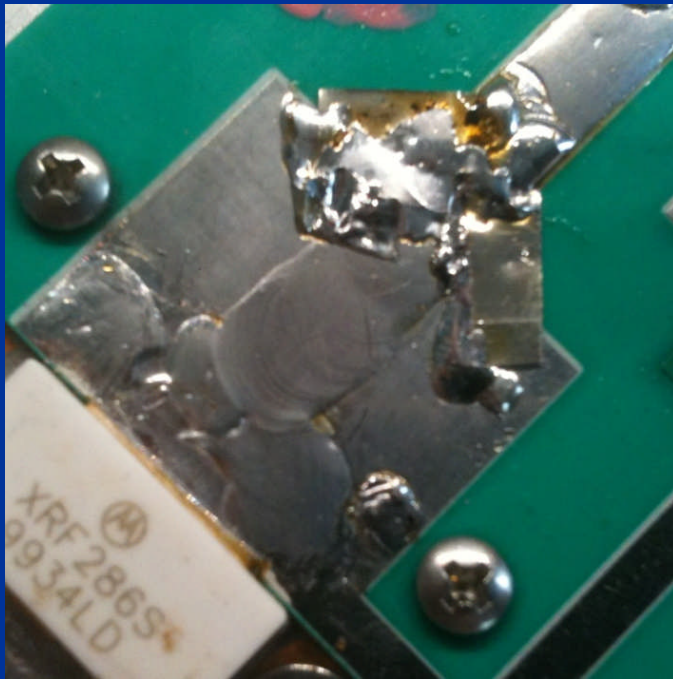
- Prepare a teflon stick with little flap at its end
- At reduced drive (5W) carefully position the flap to the board (without shorting DC !)
- At position where positive effect is detected, lay down a flap and so on
- Once no further improvement can be seen, solder all mobile flaps to the board
- Beware of excessive RF exposure to your eyes, man! Remain at max. distance from the amp when unshielded. Avoid long periods of exposure.

These Flaps Helped a lot to Balance the Amplifier in Power and Phase



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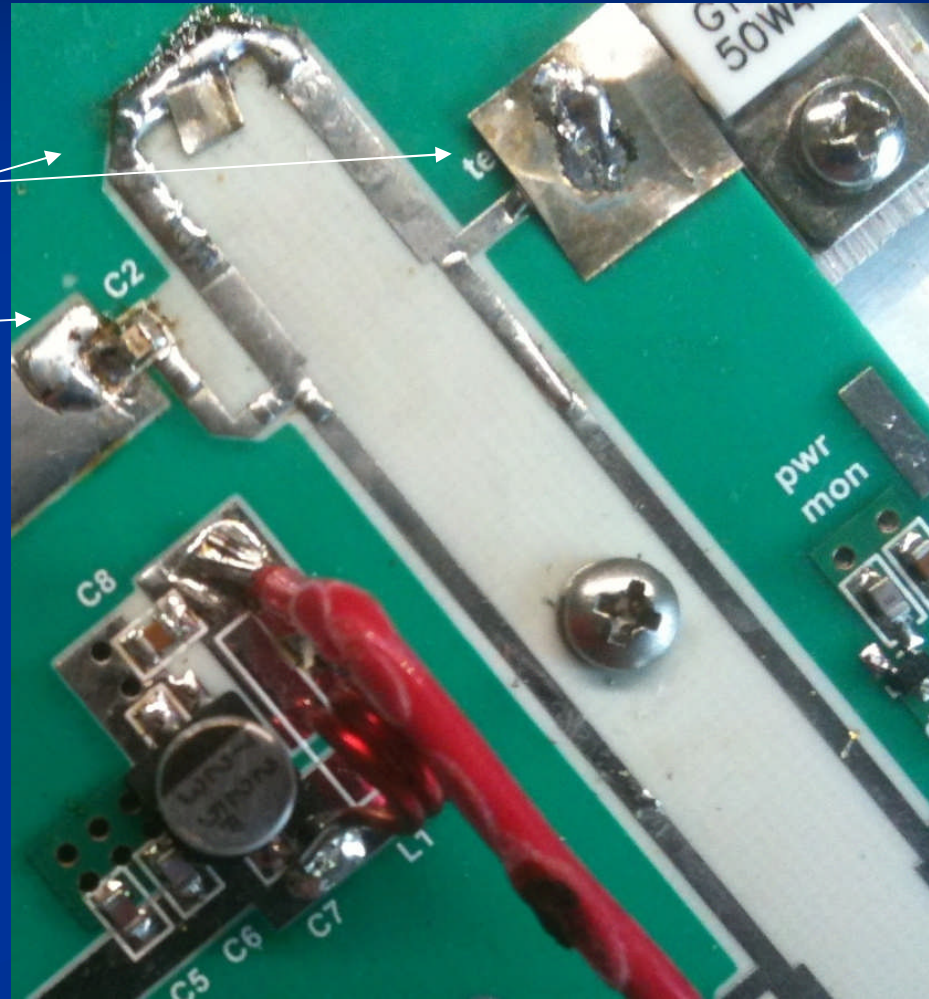
- Output lines remarkably different..
- Due to high current, generously solder the Drain & Gate to the board! Thicker is better here



These Flaps Helped a lot to Balance the Amplifier in Power and Phase

- The hybrid also needed some mods

(Note C2 still original size, Changed Later)



Final Results

- At an input power of 14W the gain is 14dB
- At 250W Output and 28VDC 16A, key down for 1 minute is possible with moderate heatsink without fan
- Enjoy these fine transistors and call me off the moon!
- 73 HB9BBD Dominique JN47ee

