

## Notes on the Yaesu FT-857/897 Antenna Switch board version 1.02E

### Changes since last version

This is the current (production) board of the antenna switcher PCB. It differs slightly from the board illustrated in the AR article (May 2015) in the following ways:

1. A low current +5V output on pin 8 of connector J1 added
2. There is now some clearance space on the top layer ground plane around the fuse holder clips
3. Documentation and labels have been tidied up on top and bottom silks for clarity

### Future Development

Not wishing to discriminate against our Icom using “brothers”, I am currently developing a small plug-in board that will convert Icom CI-V serial data signal into the BCD data required for this board to work with Icom radios. The additional supply output is intended powering the microcontroller I am using for this task. If you are using the board with Yaesu radios, simply leave JU10 OUT and there will be no +5V on pin 8 of J1.

The intention is to make a board that fits between the plug that goes into J1 and J1 with the CI-V signaling utilizing only the “A” line as the serial input and a ground connection to the Icom radio.

### Notes on Transistors and semiconductors

There is nothing critical about the small signal transistors. Almost any BC548 NPN equivalent will do, they’re only switching DC. The same goes for the BD140 PNP transistors, as long as they’re capable of switching adequate collector current, they should be OK. Just make sure you check the pin-outs and get them in the right way.

The opto-coupler is specified as a 4N25 but again, it isn’t critical. I think the picture in AR shows a 4N28 and I have also used a 4N33 Darlington in an early prototype with equal success.

If you do not intend to use any LNAs on your system, you can omit Q2, 3, 4 & 5 and associated components. Q1 needs to stay because it is required for the PTT interlock.

### Assembly Notes

For ease of construction, I recommend all SMD components on the bottom layer be assembled first. Use care and do not overheat chip components.

After this stage is completed I usually wash down the PCB with methylated spirits and a cotton bud to remove excess flux.

Next, you can load all the leaded components like diodes, electros and resistors. Soldering and trimming the leads and wash with methylated spirit as you do each one.

Connectors, jumpers and headers can go in next, cleaning up excess flux as per above.

Finally, you can insert the ICs and transistors and do the same.

Take care when mounting the PCB into a case. Make sure you avoid shorting anything out underneath the board if you're using metallic mounting posts. There's plenty of space but I've seen some horrible work in the past.

Bypass capacitors are provided in the circuit but it's always a good idea to run all the DC switching lines through a ferrite bead and you will see these in the article in AR. None of the lines going to or from the board carry any RF, similarly, you should make sure none gets in! It's just good RF hygiene.

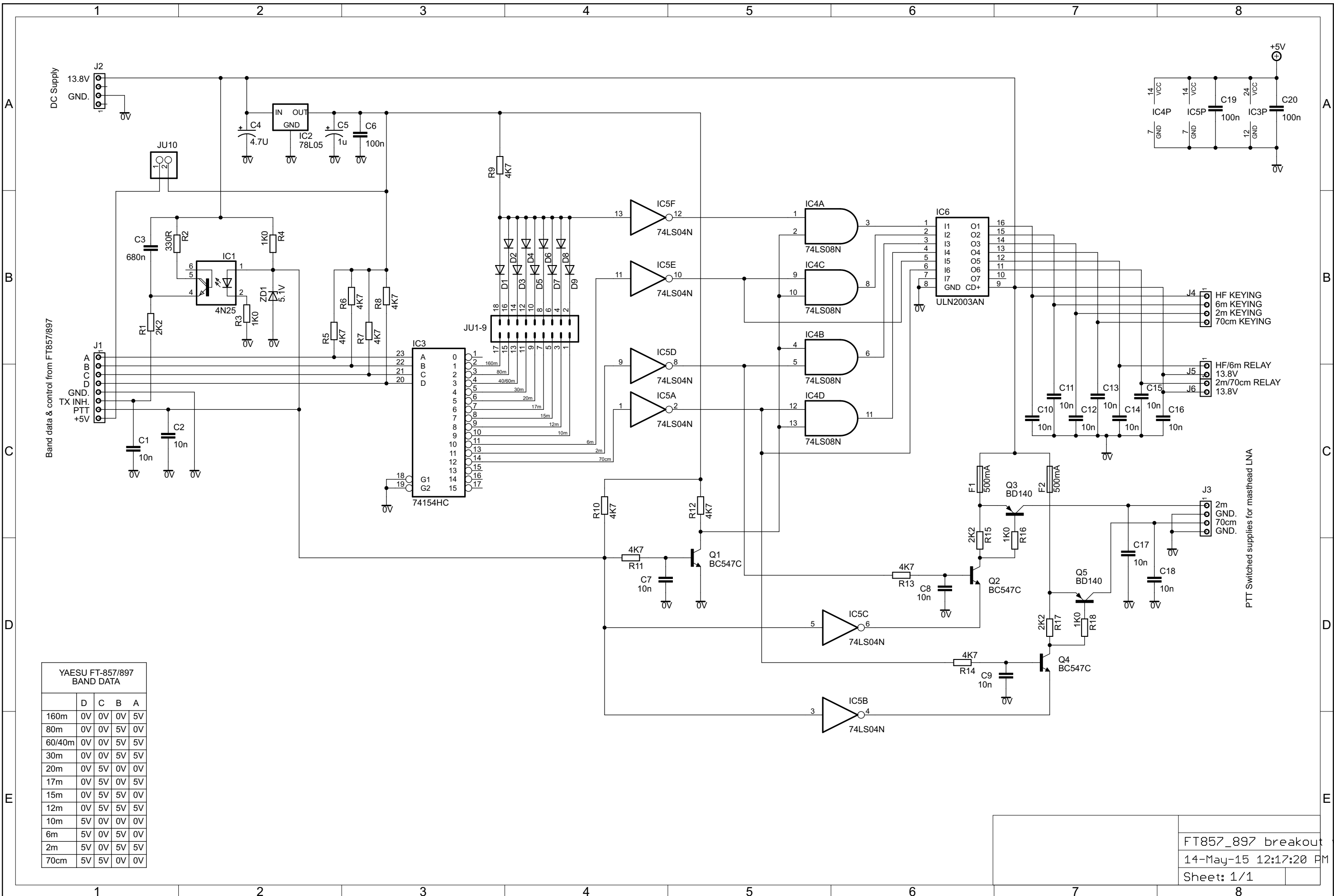
Capacitor C3 sets the delay for the Transmit Inhibit signal back to the FT857/897. I used a 680n but you have some latitude to play with here. I found a delay of half a second or so is plenty for the relays to settle.

Good luck.

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YAESU FT-857/897  
BAND DATA

	D	C	B	A
160m	0V	0V	0V	5V
80m	0V	0V	5V	0V
60/40m	0V	0V	5V	5V
30m	0V	0V	5V	5V
20m	0V	5V	0V	0V
17m	0V	5V	0V	5V
15m	0V	5V	5V	0V
12m	0V	5V	5V	5V
10m	5V	0V	0V	0V
6m	5V	0V	5V	0V
2m	5V	0V	5V	5V
70cm	5V	5V	0V	0V