

# 1 PPS Stretcher Kit – Construction notes

## Start Here;

We have highlighted **(yellow)** areas needing careful/special attention.

Open the component bag and check the contents against the Parts List shown below, we take great care to insure our kits are properly kitted, including taking a final photo of all parts prior to sealing the bags, however things can happen. If a part appears to be missing please contact us at the email address shown at the end of this document

## Parts list:

Part	Quantity	Notes
Resistor	1	220K, Red-Red-Blk-Ora-Brown
Resistor	1	680 Ohm, Blue-Gry-Blk-BLK-Brown
Resistor	1	220 Ohm, Red-Red-Brown
Resistor	1	1K, Brn-BLK-BLK-BRN-Brown
Ceramic Capacitor	1	Marked 104
Electrolytic capacitor	1	Red tubular marked 10uF
Electrolytic capacitor	1	Brown tubular marked 2.2uF
IC 74HC123	1	Monostable multivibrator
Regulator IC	1	Black plastic TO-92 package marked 78L05z
NPN Transistor	1	Black plastic TO-92 package marked 2n2222
BNC Connector	2	Plastic body PC mount with nut/washer
LED	1	Green 5mm LED
Diode	1	Black with silver band marked 1N4004 or 1N4007
IC DIL Socket	1	16 way IC socket black
PCB	1	70x45 mm Approx.
Power jack	1	Black plastic 2.1mm jack

Sort the components into similar part category and begin construction by fitting D1 the input protection diode at the location shown on the PCB. **Make sure the silver band on the diode matches the band printed on the PCB.**

Continue construction by installing the 4 resistors, the only warning here is that there are 2 resistors of similar name value, 220 Ohms and 220 K Ohms. Make sure to install these in the correct positions.

Next install the ceramic capacitor C3 marked 104, followed by the IC socket for IC1. **Make sure the notch in the socket matches the notch marked on the PCB.**

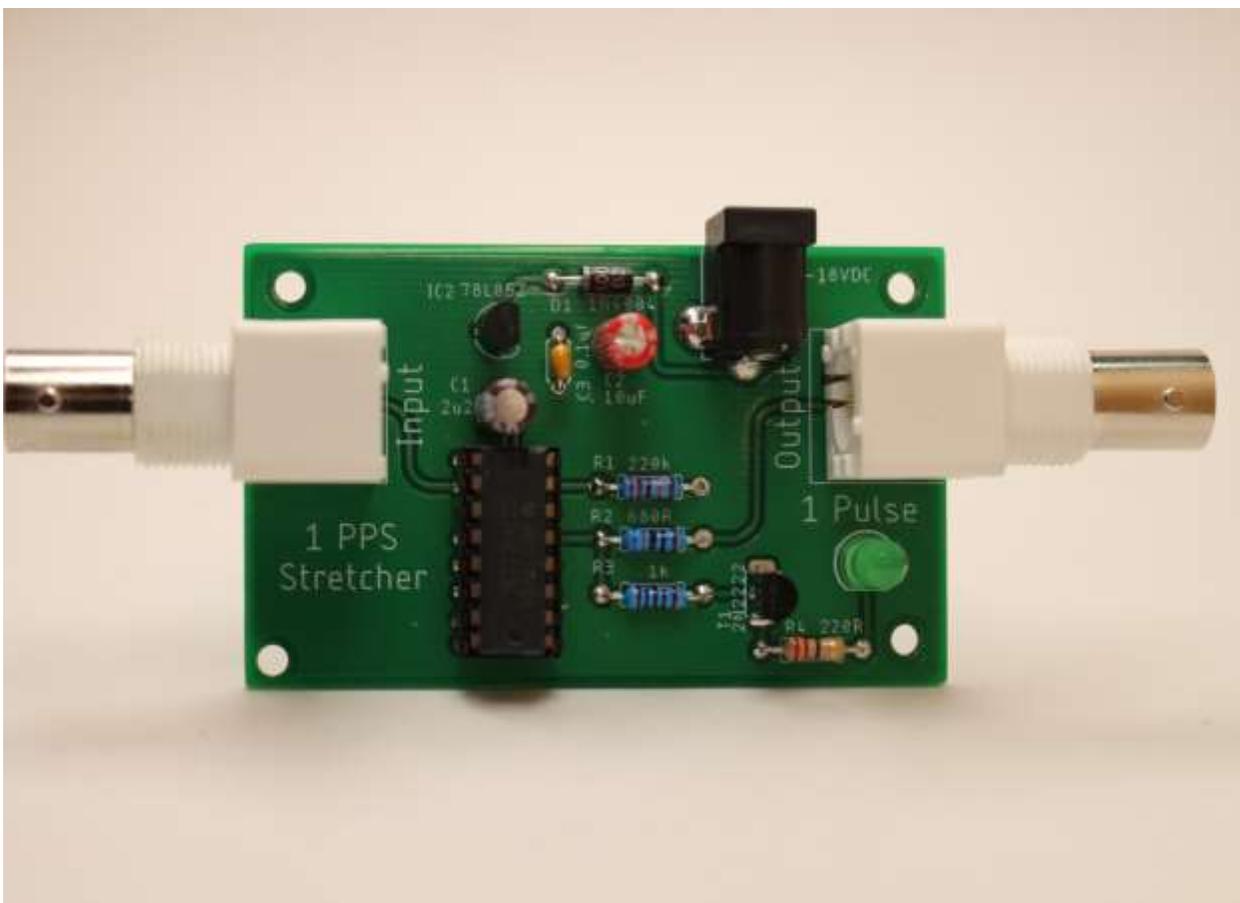
Now install the LED, the flat on the body of the LED must match the flat printed on the PCB location for the LED, the LED shorter lead will also be next the flat on the LED.

Next install the regulator IC marked 78L05 in the correct location, you may need to gently bend the legs to match the holes in the PCB. Make sure the flat on the regulator body matches the printed flat on the PCB.

Similarly install the transistor T1, marked 2N2222, bending the leads as for the regulator and matching the outline to the component.

Install the power jack and finally the two BNC connectors. We have provided nuts and lock washers for these connectors to assist with mounting if needed.

This photo shows the board as completed to help with parts location:



## Initial Tests

After completing the board but before inserting the IC carefully examine the bottom side of the PCB for missed solder joints, joints that appear suspicious and for bridges or solder tails. Correct any issues found. Likewise, check the top side for incorrectly installed parts; use the photo to help in identifying issues.

With the IC still not installed apply 9- 24 VDC power to the power jack (center Positive) and with a meter check for 5VDC +/- between pins 8 and 16 of the IC socket, if all is correct, remove power and prepare the IC for insertion. You may need to gently bend the IC leads to insert the IC into the socket; this can be done by pressing first one side and then the other on the bench or with a lead straightener if one is available. Make sure the IC is inserted with the notch matching the notch on the PCB.

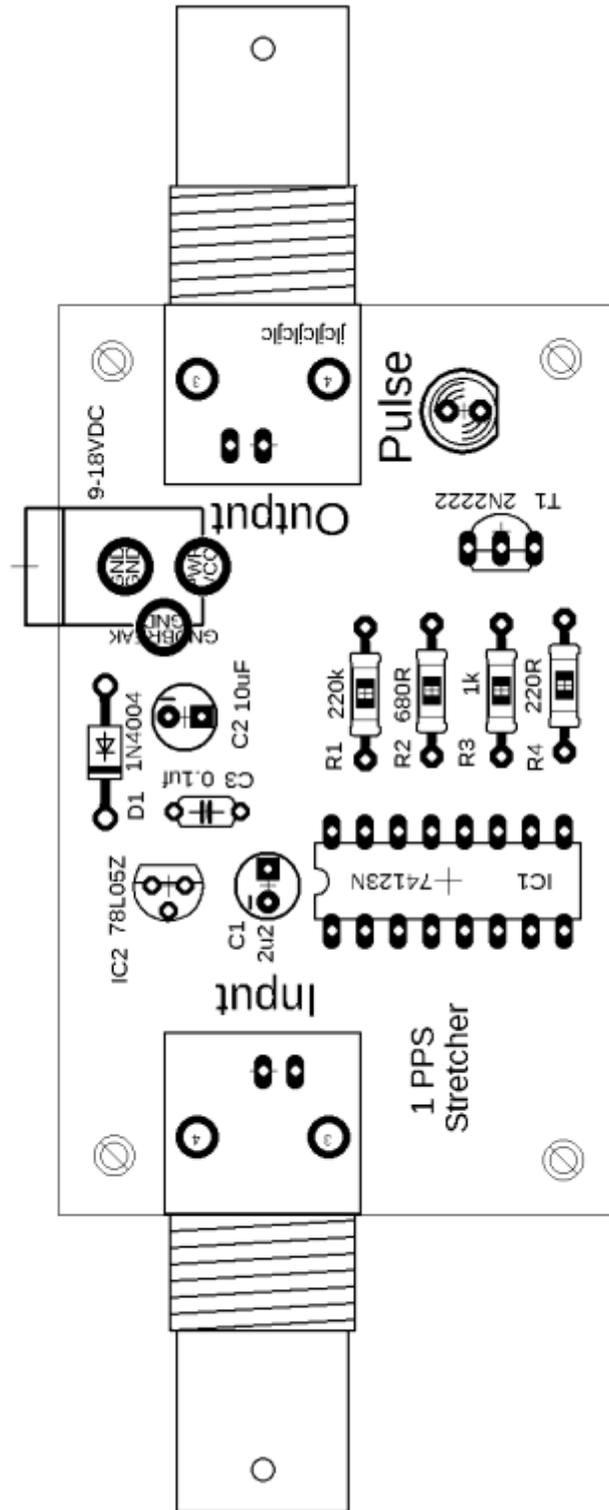
Connect the PCB to your 1PPS source and the output to an oscilloscope and re-apply power. The newly stretched pulse should now be visible or be easily made visible on the 'scope by adjusting the controls of the 'scope. Your 'stretcher' is ready for use.

To assist with construction and troubleshooting the layout drawing nad schematic are included on the following pages.

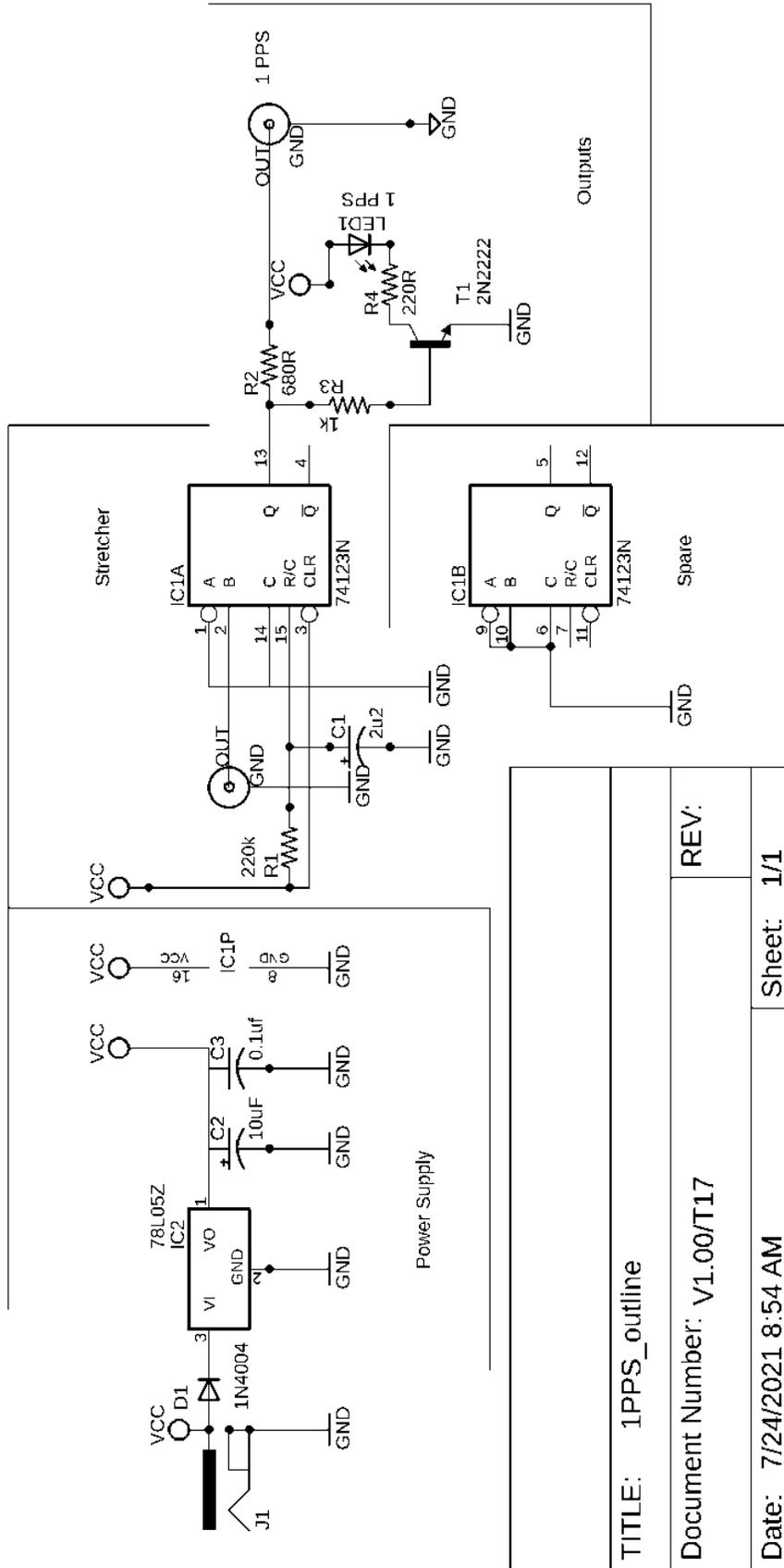
For any problems we can be contacted at:

[steve@electroresales.com](mailto:steve@electroresales.com)

# 1 PPS stretcher PCB layout



# 1 PPS Stretcher Schematic



TITLE: 1PPS\_outline

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