Electro-Resales

Xtal Check – Kit build

Read me first!

-------- **UPDATED GUIDE**------ **September 12, 2018**---------

The following steps are designed to get your 'Xtal check' kit built and operational. This is a good beginner's kit; however, you do need to know the basics of soldering and electronic construction, if you are unsure of your skills, seek the help of a knowledgeable 'Elmer' who can assist. Before starting work, carefully unpack the component pack, and check the components supplied against the component checklist and the component identification pictures. If any parts are missing please contact us immediately at: resalese@gmail.com and we will assist. Preparation is 99% of success, and building this kit is no exception. Make sure to have a clean well-lit work area, some containers to hold the parts are a good idea, and familiarize yourself with this guide. Be methodical in your construction and by following our stage construction process your kit will be built quickly and work first time.
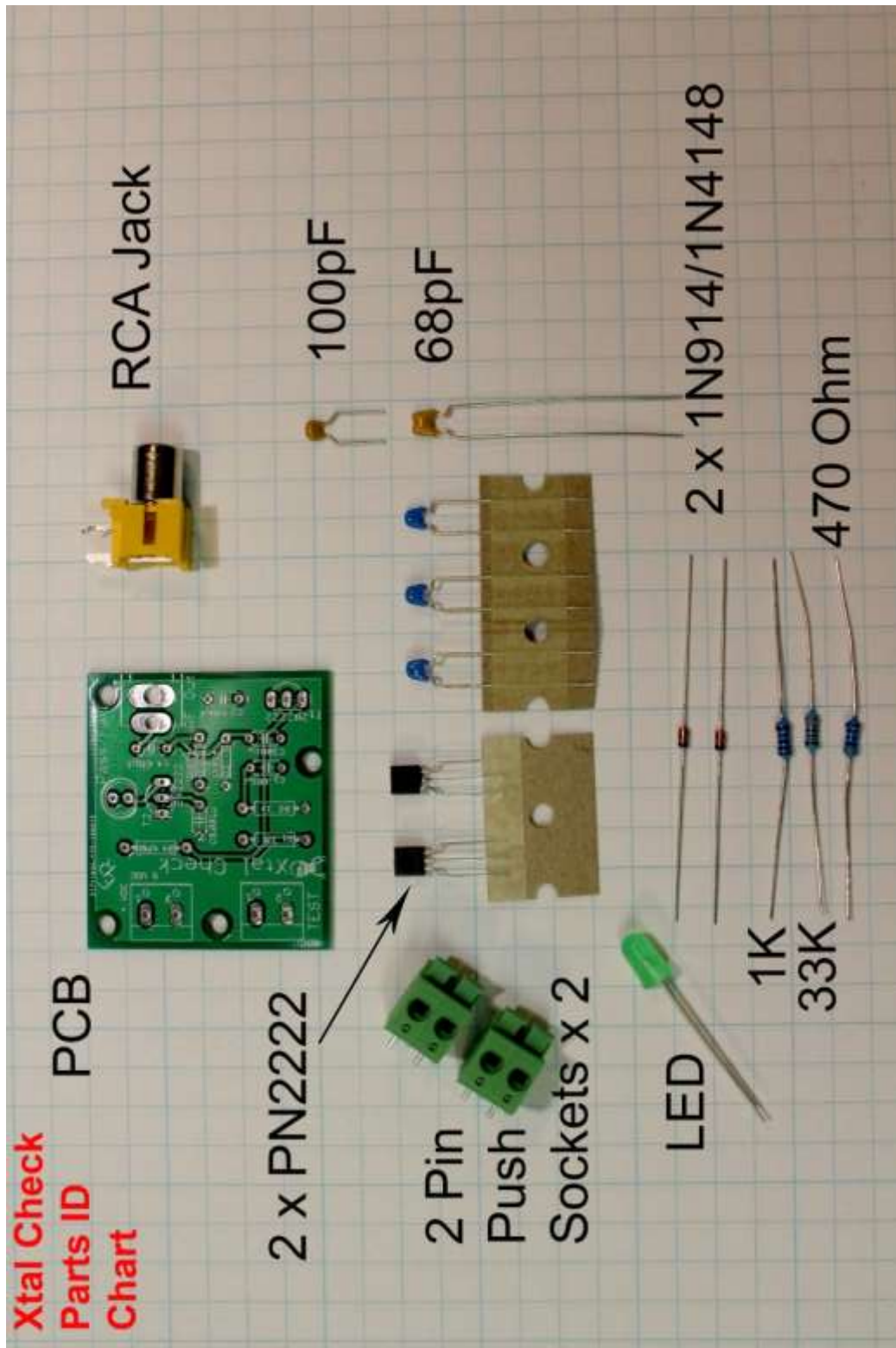
Parts Checklist - Please note there is no resistor R3. Diodes, LED and transistors are polarized see construction stages
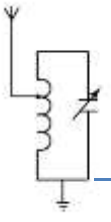
Part Name	Part number	Part Value	# Included	Identification
Resistor	R1	33K	1	Orange, Orange, Orange, white Or, Ora Ora, Blk, Red, Brn
	R2	1K	1	Brown, Black, Red Or, Brn, Brn, Blk, Blk, Red
	R4	470 Ohm	1	Yellow, Violet, Brown Or, Yell, Vio,Blk, Blk, Brn
Capacitor	C1, C3, C5	0.001uF	3	Marked 102
	C2	100pF	1	Marked 101
	C4	68pF	1	Marked 68J
Transistor	Q1, Q2	PN2222	2	Black Plastic transistor
Diode	D1, D2	1N4148 or 1N914	2	Glass body, brown color with black band
	Led	Green	1	5mm green led
Hardware	J1	RCA	1	Yellow or Green body
	Test/Batt	5mm Conn	2	Green push button wire connectors
	PCB		1	Double sided PCB
	Batt. snap		1	9 Volt battery connector
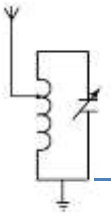
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In addition to the parts list please also refer to this photo to help identify the parts visually.

- RCA Jack
- 100pF
- 68pF
- 2 x 1N914/1N4148
- 470 Ohm
- 1K
- 33K
- LED
- Sockets x 2
- Push
- 2 Pin
- 2 x PN2222
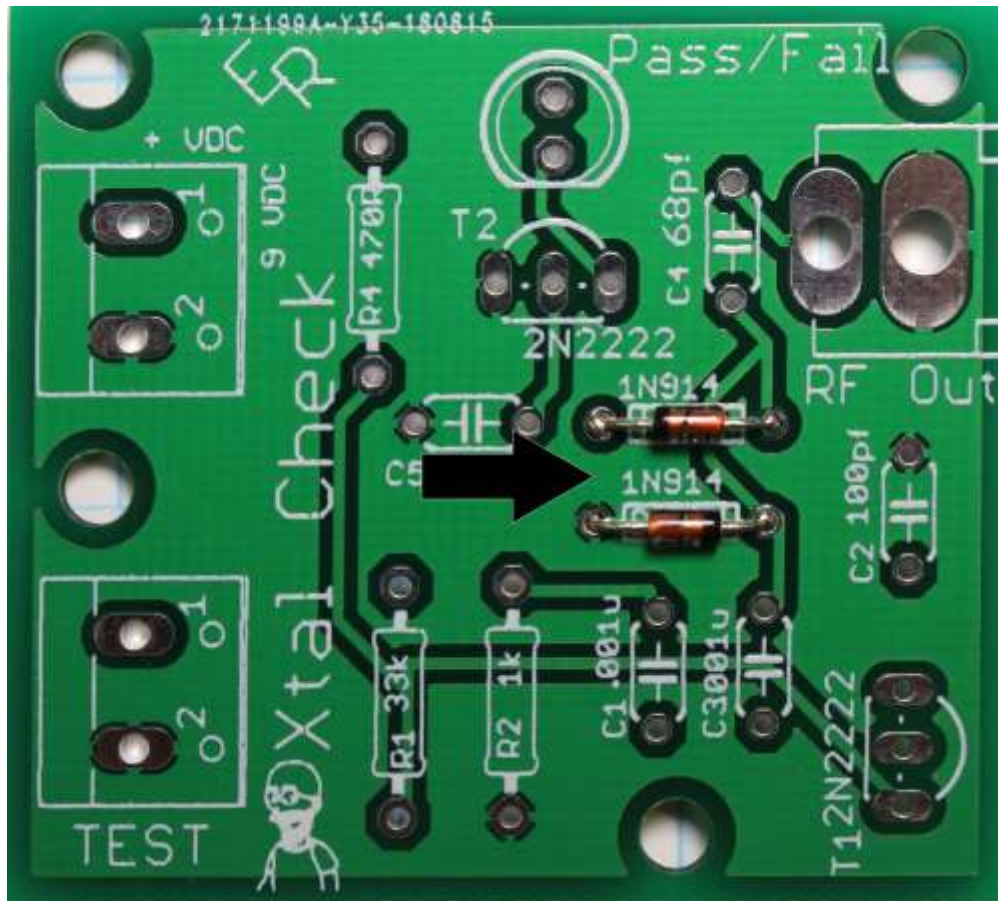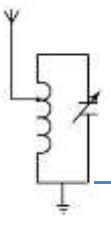- PCB
- Xtal Check
- Parts ID
- Chart

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Stage one

Start construction by inserting and soldering the diodes D1 & D2, these parts are polarized so it is important to make sure that the black band on the diode body matches the line printed on the PCB, this photo will assist in getting this step right.
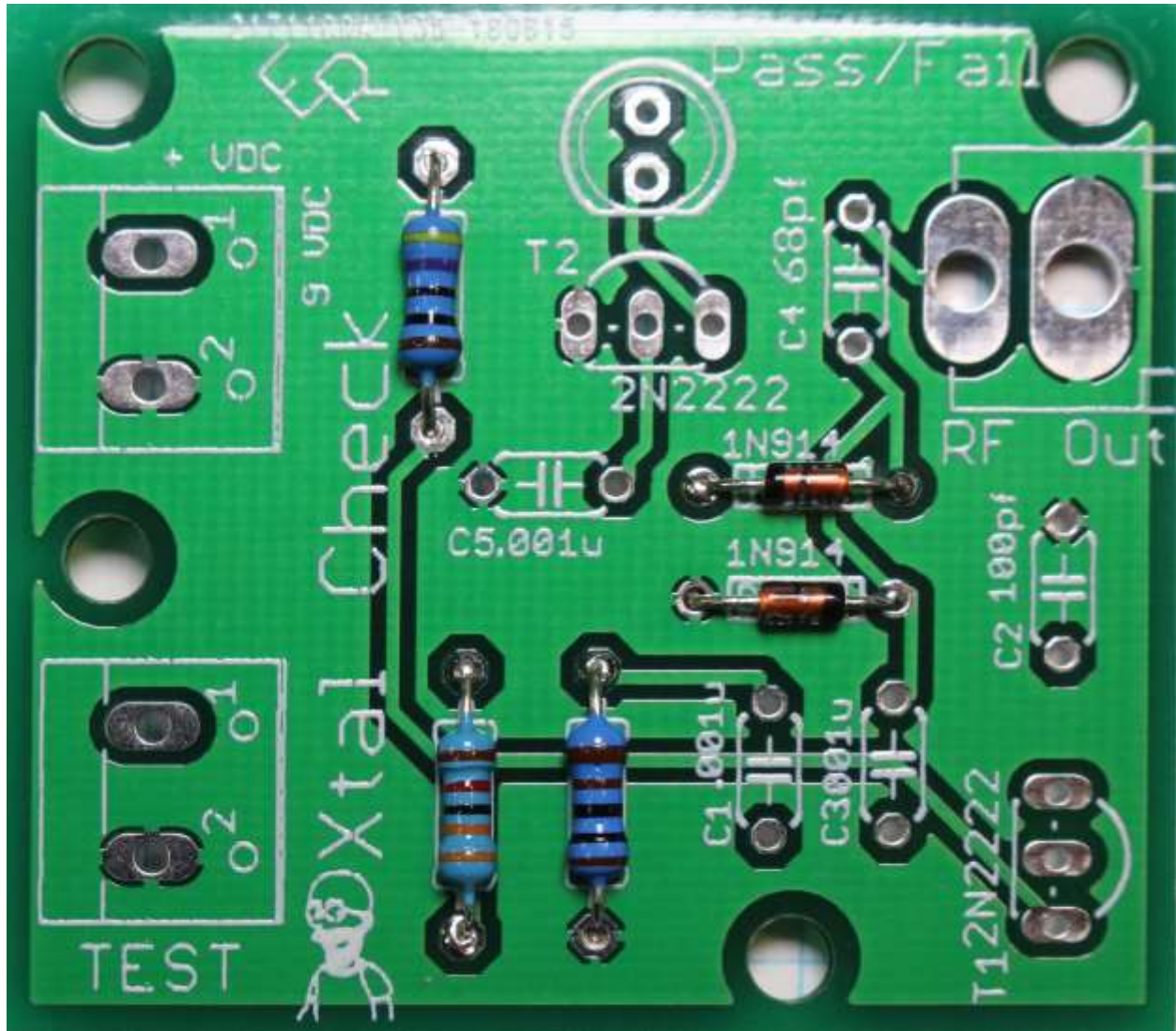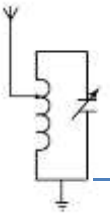
Diode placement and orientation;

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Stage two

With the diodes installed, now insert and solder the resistors, R1, R2 & R4, remember there is no R3. Resistors are not polarized so can be inserted either way round. This next photo shows how the board should look.
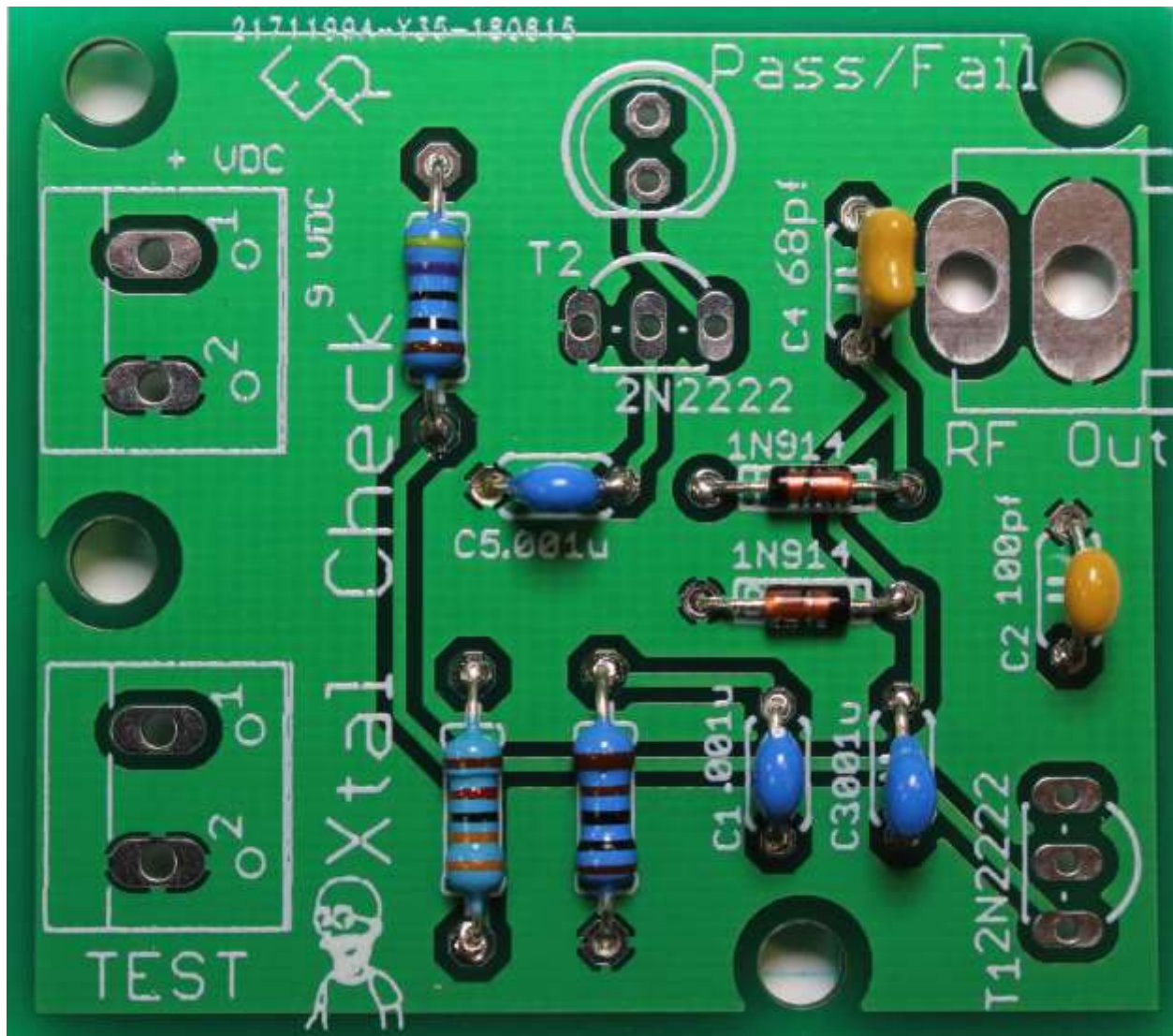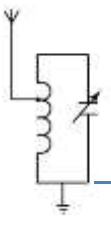
Resistor placement;

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Stage three

Now add the capacitors, none of the capacitors are polarized, so like the resistors can be inserted any way round.

Capacitor placement;
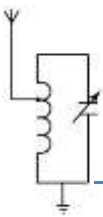
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Stage four

It's now time to add the LED and transistors. These parts are polarized; follow these notes to ensure they are added correctly.

The Led is mounted at the top of the board (Pass/Fail) with the writing the correct way round. The short lead of the LED goes in the hole next to the flat printed on the board. The transistors are plastic, the transistor leads are pre-formed to fit the holes correctly, make sure that the flat on the transistor body matches the flat on the PCB legend.

Transistor orientation
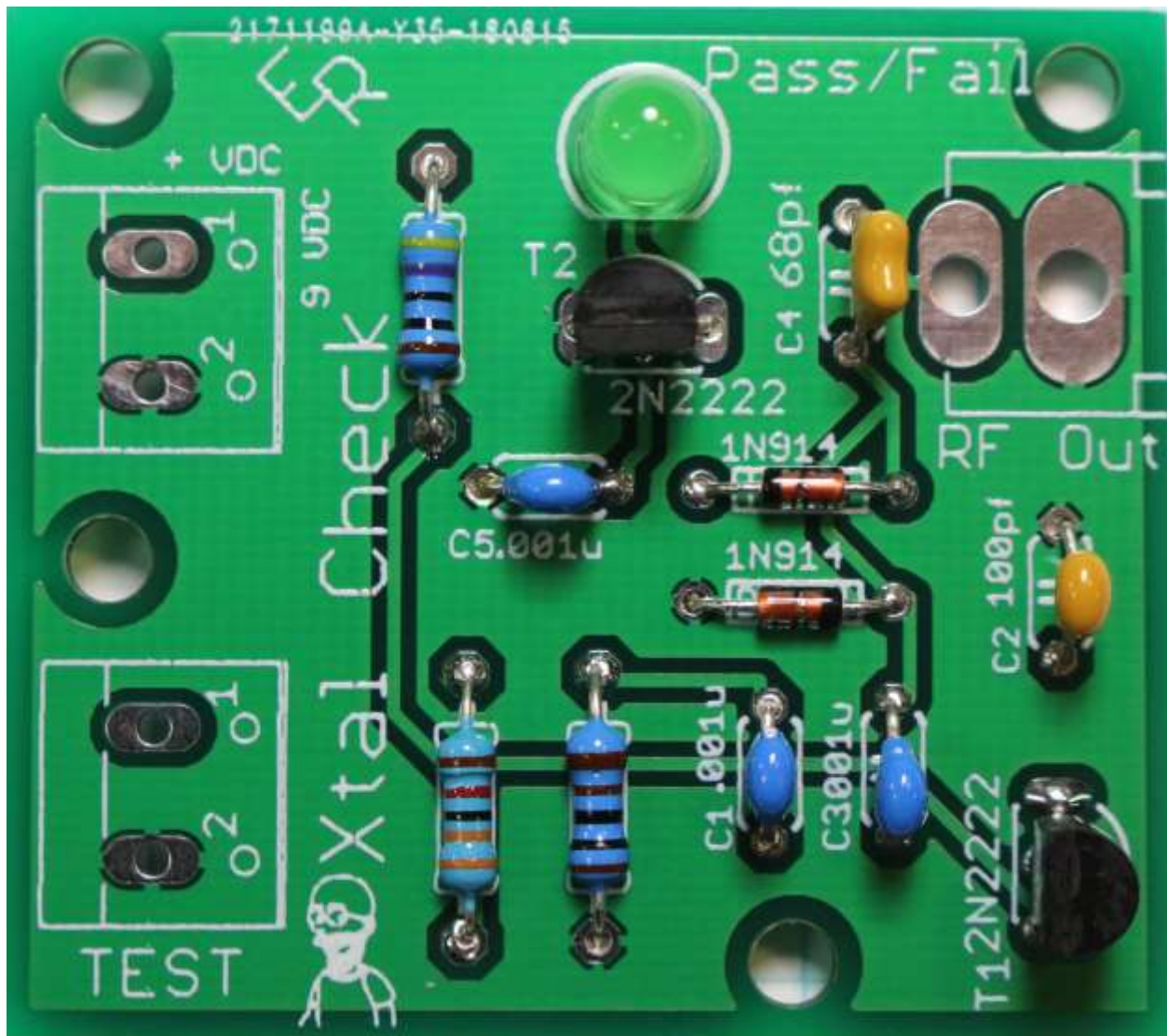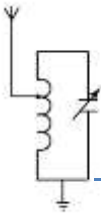
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Stage five

The last step is to insert the connectors, an RCA (phono) socket is used for the RF output, and the Pomona brand push sockets are for power and the test crystal. You can add the sockets in any order, we recommend soldering the RCA socket first followed by the push sockets. Tack solder one connection of the socket first, check alignment and that the sockets are flush to the board. When happy solder the other connection and re-solder the tack soldered connection.

Congratulations your board is now completed, it should look like this!
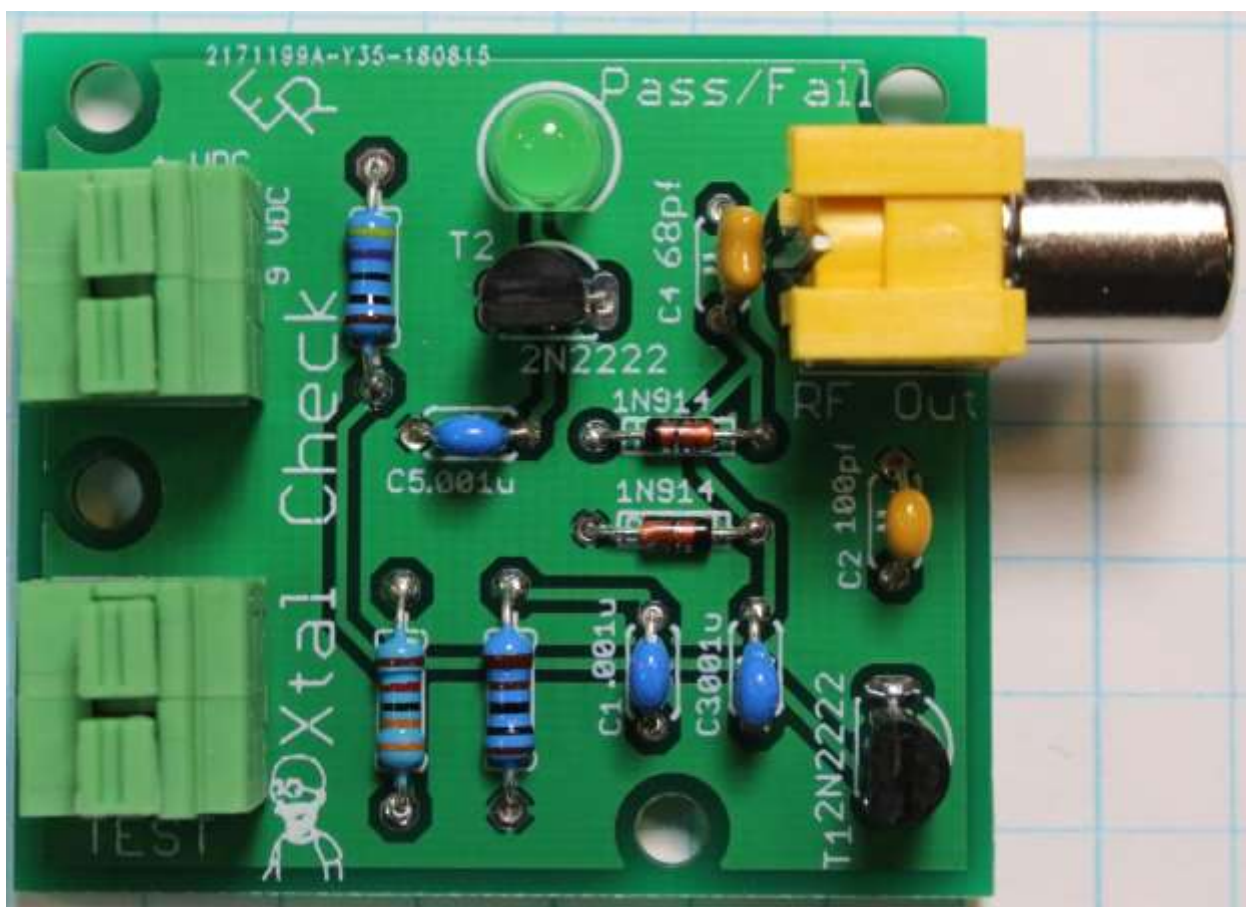
Inspection & Test

At this point it is very tempting to apply power and get going, however, it is better to closely inspect the PCB mistakes are easier to correct now – start by comparing the board you built to the picture above, make sure your transistors and diodes are correctly orientated, correct any mistakes now.

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Flip the board over and inspect your soldering – reflow any suspect joints, make sure all joints are soldered; it's easy to miss one joint.

If it all looks good, attach the battery snap as shown and with a (new) 9 Volt battery attached, but no crystal, the LED should be off. Using the push connectors at the test location, attach a good crystal, the Led should light.

If the board passes these tests your board works and is ready to be used. If it did not function as described:

1. Check with another battery
2. Check with another crystal
3. Is the battery snap conductor making contact in the socket
4. Is the crystal properly inserted and making contact in the socket
5. Recheck the board on both sides to make sure components are in the right place and solder joints are good

The small Print

DISCLAIMER

Any person who constructs or works on electronic equipment may be exposed to hazards, including physical injury, the risk of electric shock or electrocution.. These hazards can result in health problems, injury, or death. Only qualified persons who understand and are willing to bear these risks themselves should attempt the construction of electronic equipment. By purchasing this item, the buyer acknowledges these risks.
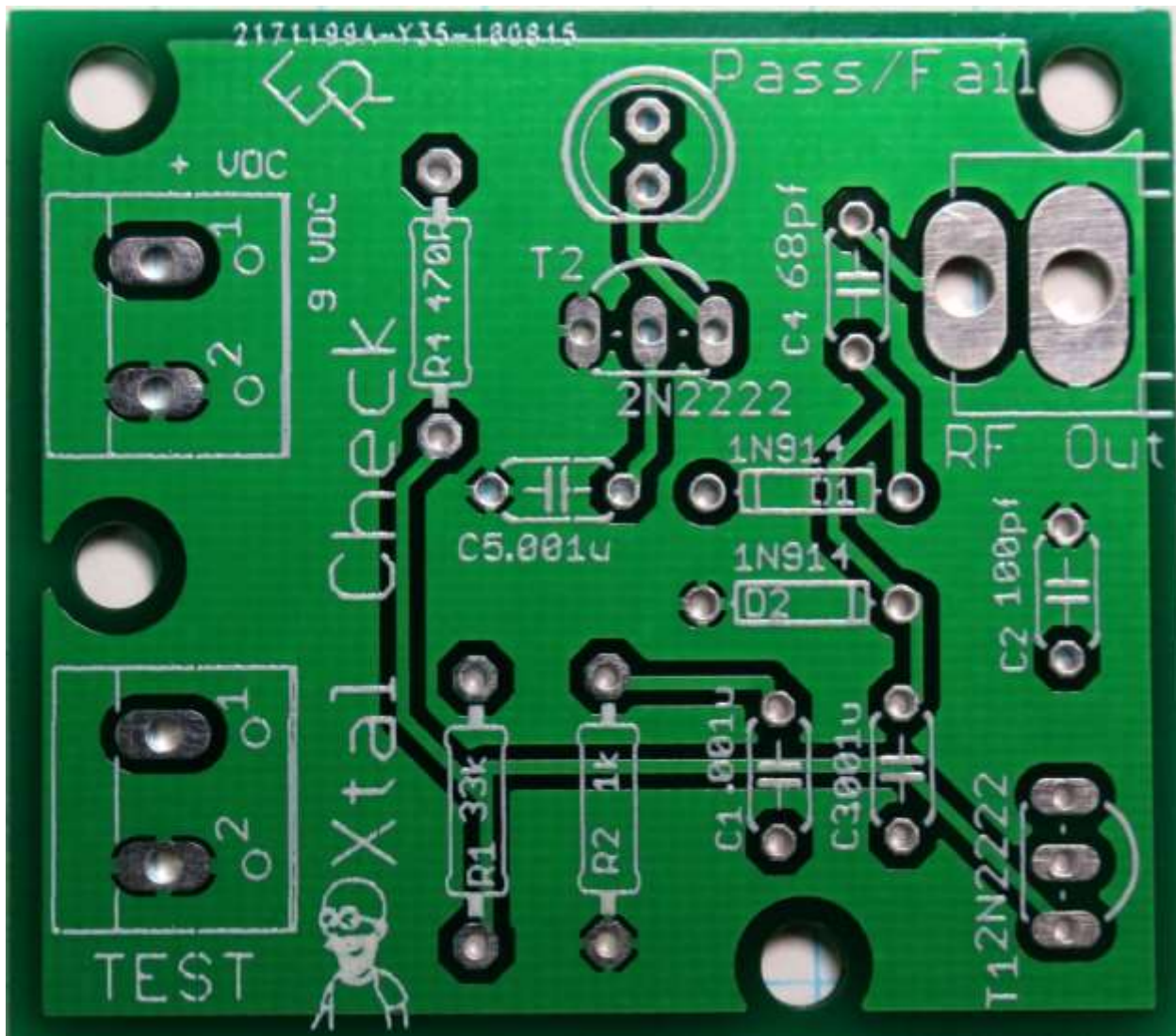
There is a risk of electric shock, electrocution, burns, or fires that is inherent in the construction and use of electronic equipment. By purchasing this item, the buyer acknowledges these risks.
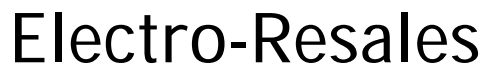
IN NO EVENT SHALL THE SELLER BE LIABLE FOR ANY SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES OF ANY NATURE including, but not limited to, property damage, personal injury, death or legal expenses. Buyer's recovery from Seller for any claim shall not exceed the purchase price paid by Buyer for the goods, irrespective of the nature of the claim, whether in warrant, contract or otherwise. By purchasing this item, BUYER AGREES TO INDEMNIFY, DEFEND AND HOLD SELLER HARMLESS FROM ANY CLAIMS BROUGHT BY ANY PARTY REGARDING ITEMS SUPPLIED BY SELLER AND INCORPORATED INTO THE BUYER'S PRODUCT.

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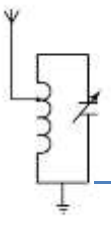
Appendix

The Bare PCB for reference

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The Xtal Check schematic