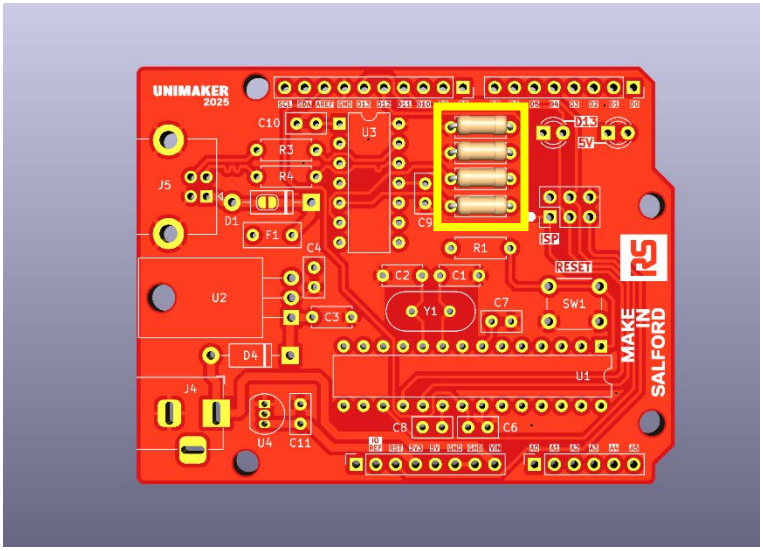
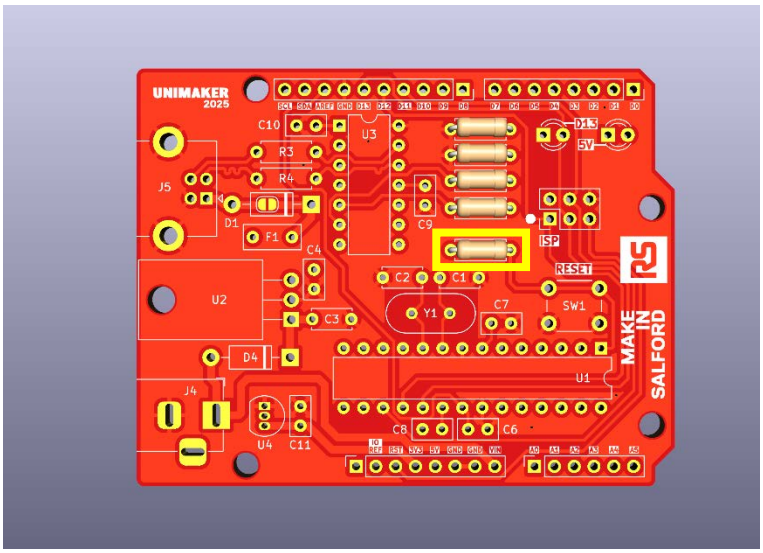
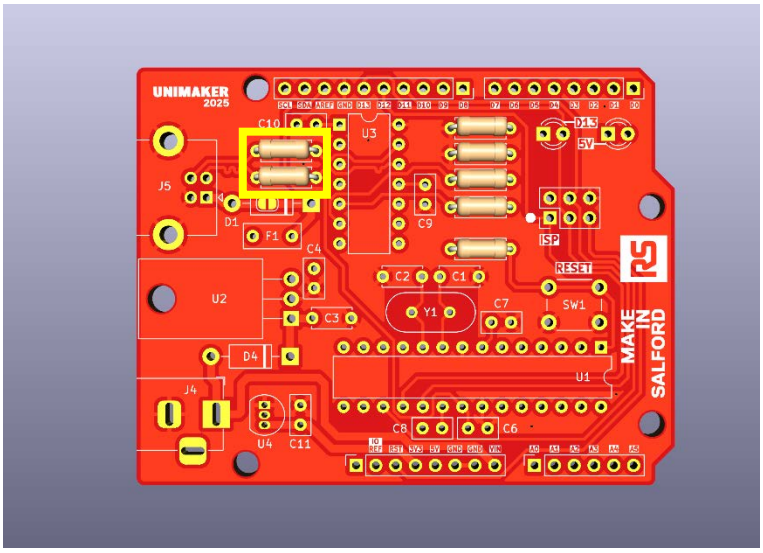
Assembly Instructions

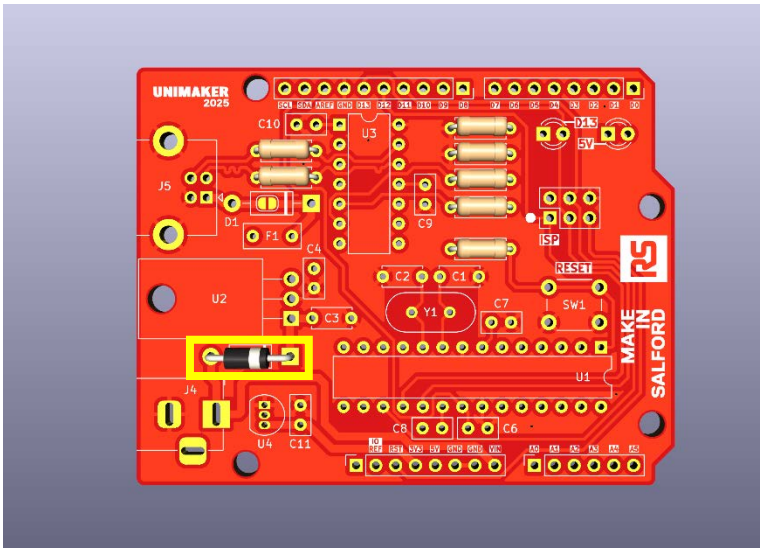
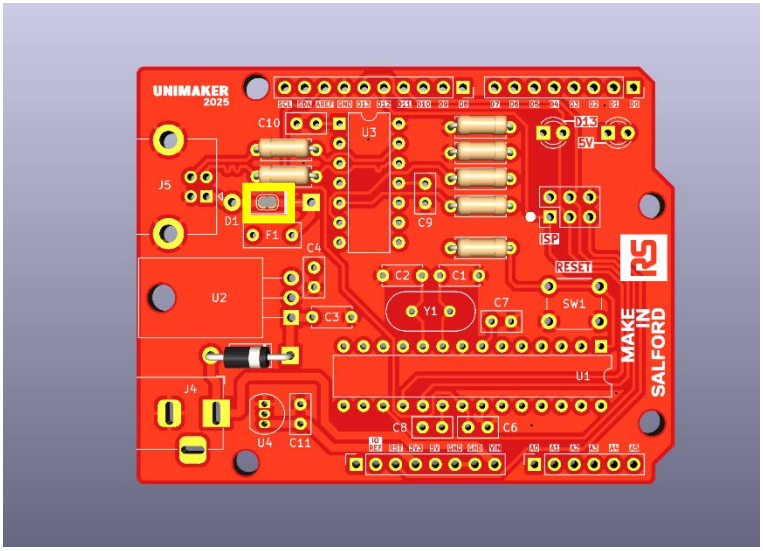
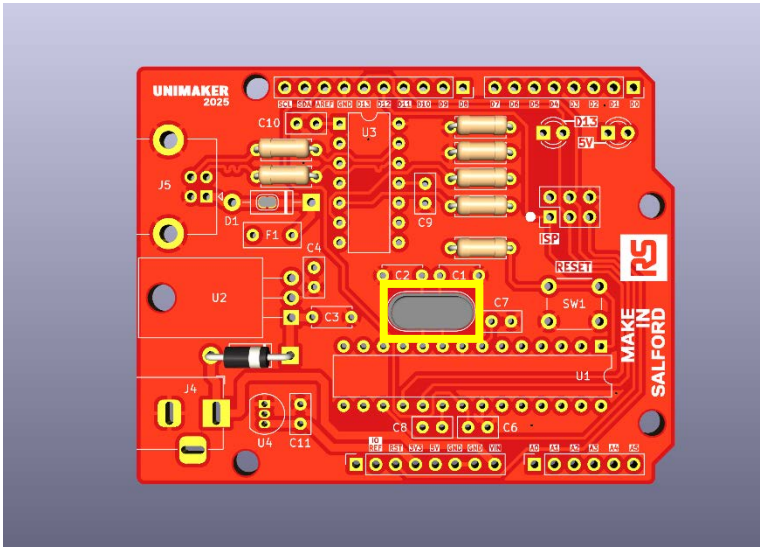
This is an Arduino-compatible development board that you can use in place of an Arduino Uno or similar. It is designed to use solely through-hole components, so if you can perform basic soldering you will be able to build this circuit and end up with a functional board.

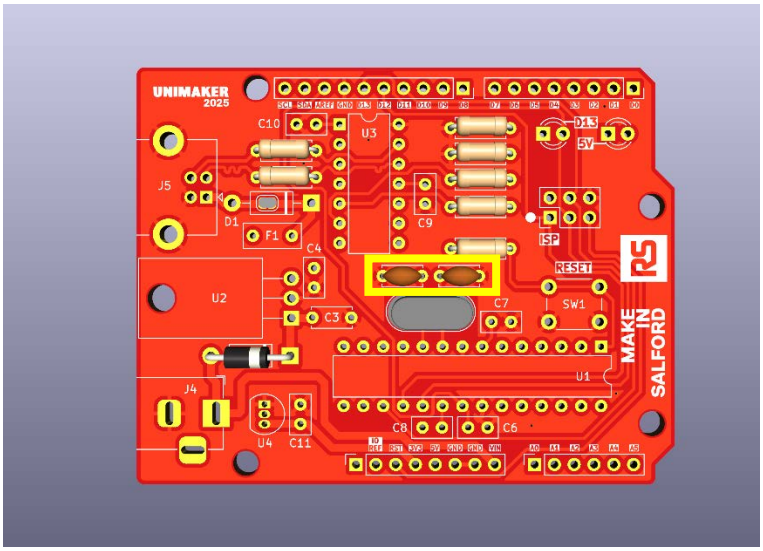
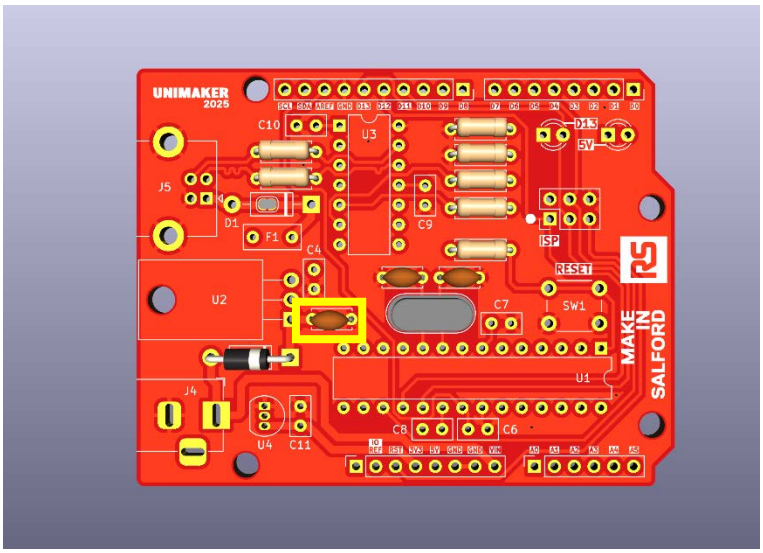
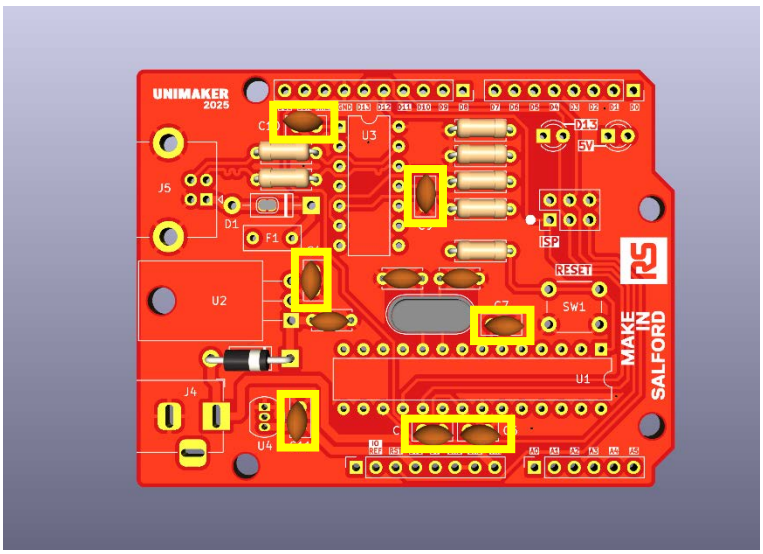
There are two sides of the board, the front side (with the logos and most of the silkscreen artwork, as shown in the illustrations below) and the back side. Components are placed on the front side, and soldered on the back side.

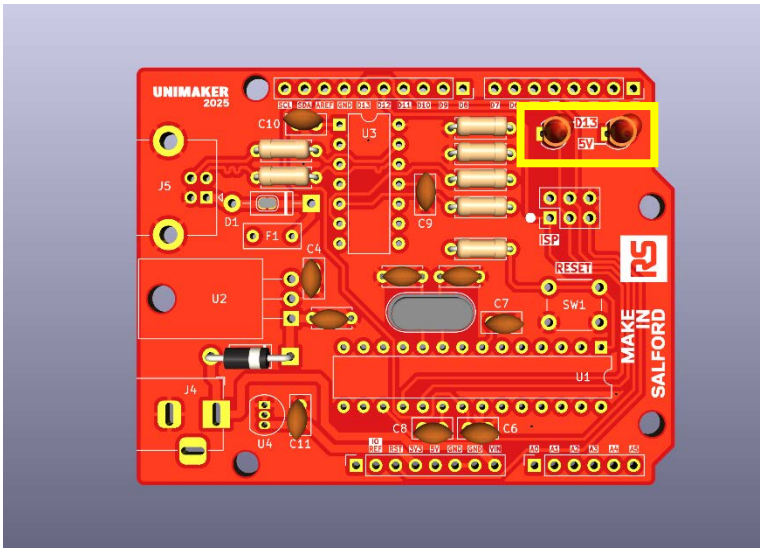
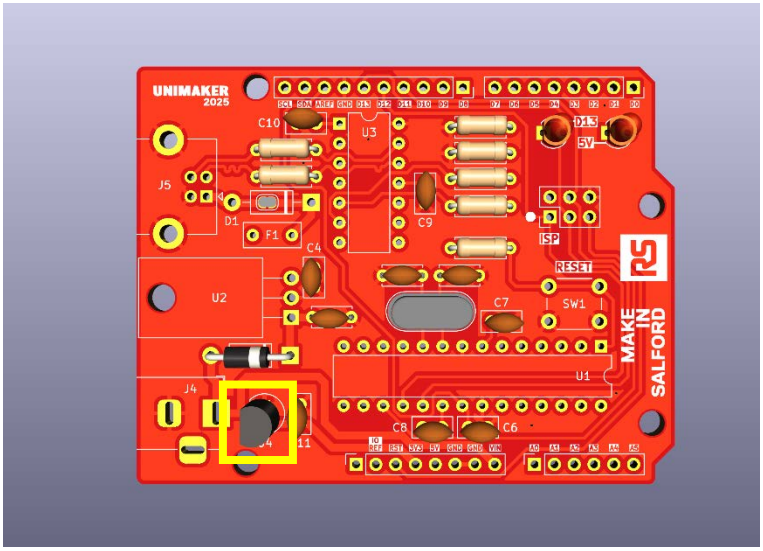
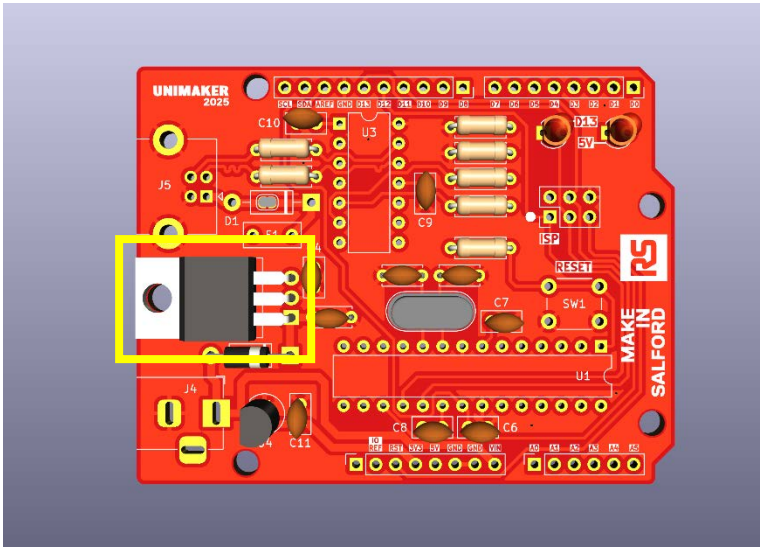
After you have finished soldering a component onto the board you should trim the leads flush. Wherever possible the components should be soldered close to the board, with minimal wire on show. To help with this you might want to solder one lead and adjust by reheating the joint before soldering everything fully.

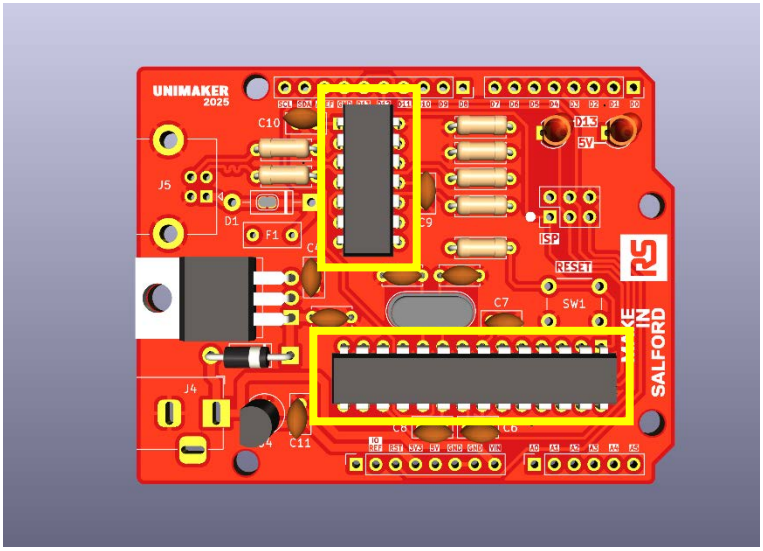
Where possible components have been left attached to their feeder tape, so it should be easy to identify components where there are multiples – for example there should be four 1K resistors banded together, two 22 Ohm resistors, and one single resistor. The same applies to capacitors as well.

	Locate the four 1K resistors in the parts bag. They have Brown-Black-Red-Gold stripes. Bend the leads close to the resistor body at 90 degrees, and solder these into positions R2, R5, R6, R7 on the front side of the board.
	Locate the single 10K resistor in the parts bag. It has Brown-Black-Orange-Gold stripes. Bend the leads close to the resistor body at 90 degrees, and solder into place in position R1.
	Locate the two 22 Ohm resistors with the Red-Red-Black-Gold stripes. Bend the leads and solder into positions R3 and R4.

	Find the two diodes in the parts bag. You will need one of these. Solder one diode into position D4. Make sure the white stripe on the diode body aligns with the white stripe on the silkscreen.
	In the space under position D1 there is a solder jumper. Bridge the two contacts with solder.
	Solder the 16 MHz crystal into position X1.

	Find the two 22pF ceramic capacitors (which may be labelled 22J) and solder them into positions C1 and C2.
	The single 220 nanofarad ceramic capacitor (labelled 224K) should be soldered into position C3. Make sure you don't accidentally pick up the polyfused with bowed legs.
	Locate the seven 100 nanofarad ceramic capacitors and solder them into positions C4, C6, C7, C8, C9, C10, and C11.

	The two red LEDs should be soldered to the D13 and 5V labelled LED footprints in the top right of the board. Polarity is important – the long leg of the LED must be inserted into round pad of the LED footprint, and the shorter leg goes into the square pad.
	The small black, three legged voltage regulator in the TO92 package marked 1700 3302 should be soldered to position U4. Line up the curved section on the part to the curved section on the silkscreen. This orientation is important.
	The larger voltage regulator marked 7805 should have its legs bent back 90 degrees at the point where they thicken. Line the hole in the heatsink tab up with the hole in the board, and solder it in position U2. The component should be lying flat on its back.

<table>
<tr>
<td> 
</td>
<td>There are two chip carriers, one 14-pin and one 28-pin. These allow you to remove the integrated circuits (ICs) from the board if needed, and reduce the chance of heat damage.

These should be soldered into U1 and U3, making sure to match the notch on the silkscreen to the notch moulded into the plastic body.

Don’t insert the ICs into their carriers yet.

To help get the carriers flat to the board solder one leg, then solder the opposite corner at the other end of the footprint. Make adjustments as needed.</td>
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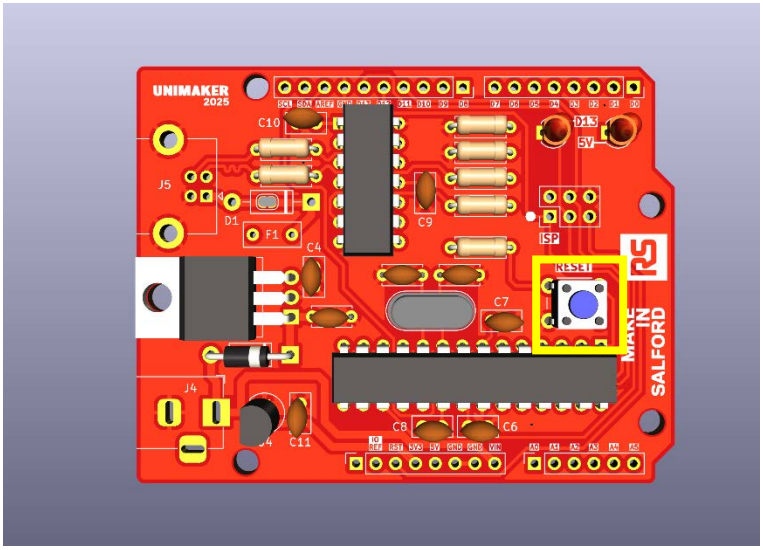
<td> 
</td>
<td>Solder the blue-topped tactile switch into position SW1/RESET.</td>
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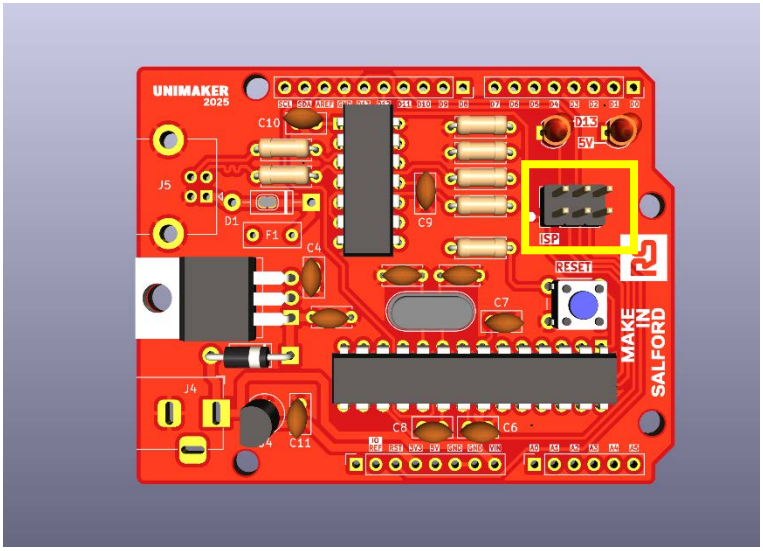
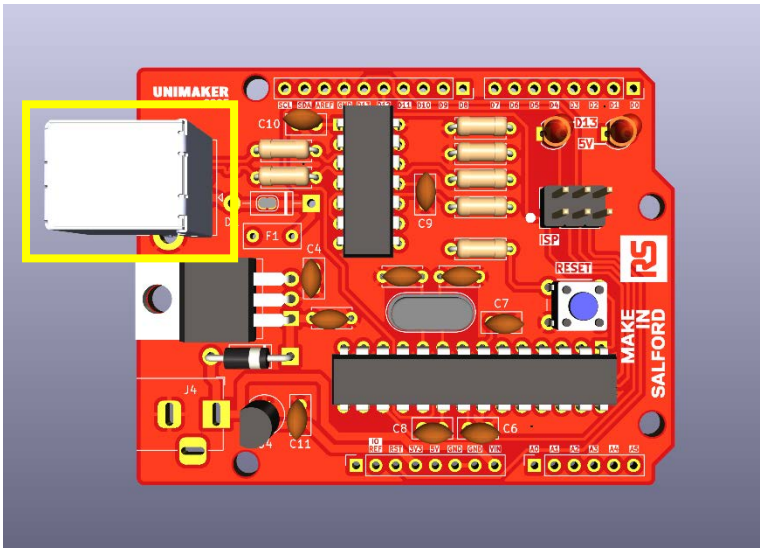
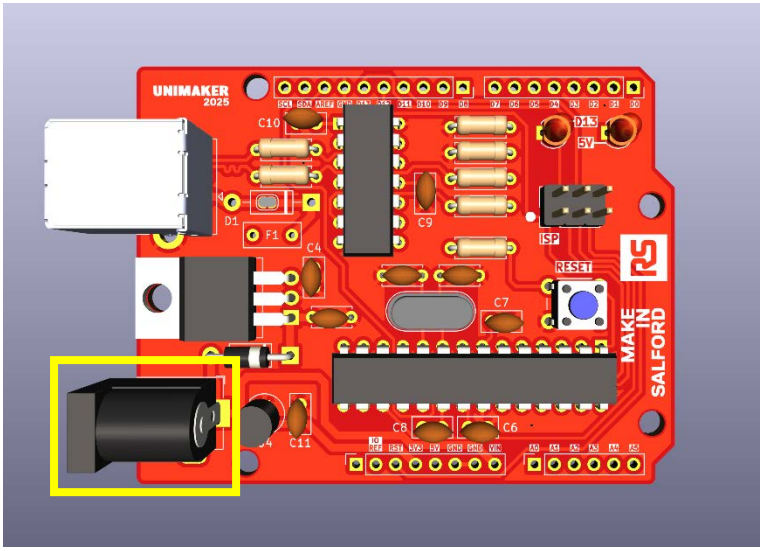
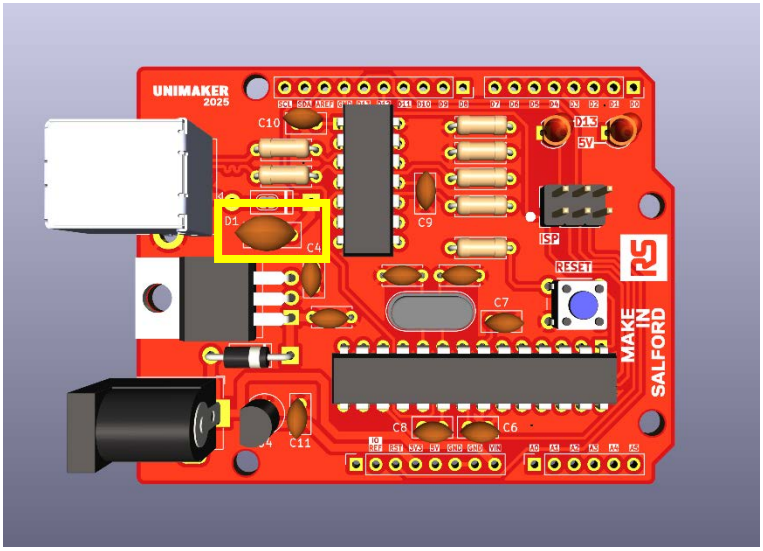
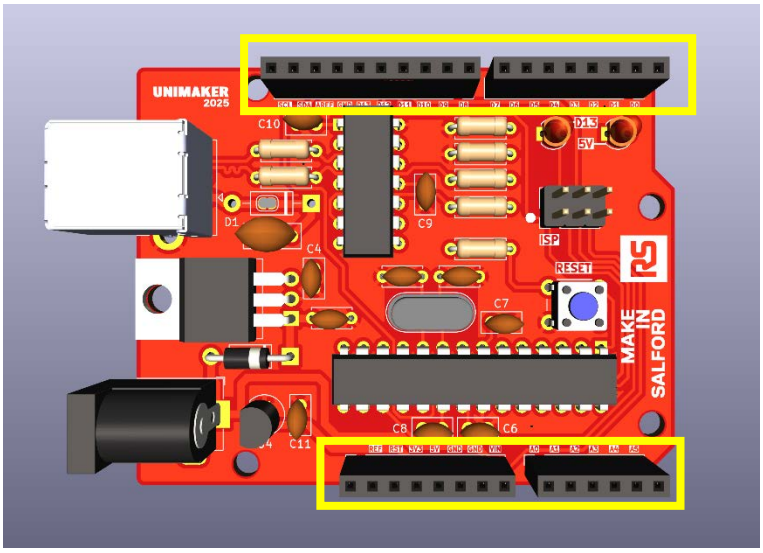
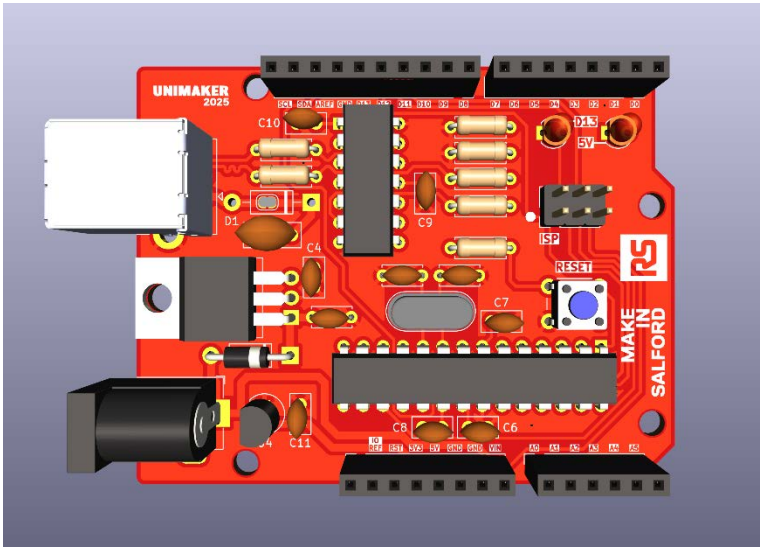
<tr>
<td> 
</td>
<td>Solder the 2x3 pin headers into the position marked ISP.</td>
</tr>
</table>

	Snap the USB socket into position J5, then solder it in place.
	Add the DC Power Jack to position J4 and solder it in place.
	Locate the 500mA Polyfuse, it should have bowed legs. The bow in the legs should sit close down to the surface of the board, they shouldn't go through the board to the other side. Solder it into position F1.

	Add the pin header sockets to the perimeter of the board, Solder one pin, then reheat and align to make sure they are straight. If you have an Arduino Shield available you may wish to use this to help keep things aligned.
	Finally, insert the two ICs into their respective sockets. Make sure the notch moulded into the IC matches up with the notch in the chip carriers. You can now plug the board in to your computer and use it as an Arduino-compatible development board. When uploading programs, you must hold down the Reset button until “Uploading” appears in the Arduino IDE.