# BOM Open PCB.

### Electronics PCB

|  |  |  |
| --- | --- | --- |
| ID | Value | Amount |
| D1 | 1N4004 | 1 |
| Q1 | TIP120 | 1 |
| R1 | 100 K ohms | 1 |
| R2 | 470 ohms | 1 |
| R3 | 330 ohms | 1 |
| T1 | 2N2222 | 1 |
| Pin Header  | Female 2.54 mm | 11 (4,5,2) |
| Pin Header  | Male 2.54 mm | 32 (8,10,6,8) |
| Heat-sink per TIP120 | -- | 1\* |
| Screw Terminal | 2 pins 5mm | 4 |

\* Heat-sink: <https://solectroshop.com/product-spa-1736-Disipador-de-calor-para-transistores-con-caja-TO-220-TIP120.html>

### It’s very important the heat sink use, otherwise, it may burn the pcb. The current design also uses a 40x40 fan plugged to the heating system connectors

### .Additional Electronics

Screen LCD 16 x 2 - I2C.

[https://www.amazon.es/dp/B01N3B8JMN/ref=twister\_B0821N9LCV?\_encoding=UTF8&psc=1](https://www.amazon.es/dp/B01N3B8JMN/ref%3Dtwister_B0821N9LCV?_encoding=UTF8&psc=1)

Rotating Encoder

[https://www.amazon.es/AZDelivery-040-drehwinkelgeber-donante-Encoder-Arduino/dp/B07TKK4QQD/ref=sr\_1\_4?\_\_mk\_es\_ES=%C3%85M%C3%85%C5%BD%C3%95%C3%91&crid=2ISVGVTMBN15X&keywords=encoder%2Brotativo&qid=1584701774&s=industrial&sprefix=Encoder%2Br%2Cindustrial%2C180&sr=1-4&th=1](https://www.amazon.es/AZDelivery-040-drehwinkelgeber-donante-Encoder-Arduino/dp/B07TKK4QQD/ref%3Dsr_1_4?__mk_es_ES=%C3%85M%C3%85%C5%BD%C3%95%C3%91&crid=2ISVGVTMBN15X&keywords=encoder%2Brotativo&qid=1584701774&s=industrial&sprefix=Encoder%2Br%2Cindustrial%2C180&sr=1-4&th=1)

1 Sensor Termistor 100k

[https://www.amazon.es/UKCOCO-Termistor-cableado-clavija-impresora/dp/B07BMT6H45/ref=sr\_1\_9?\_\_mk\_es\_ES=%C3%85M%C3%85%C5%BD%C3%95%C3%91&keywords=sensor+termistor&qid=1584701812&s=industrial&sr=1-9](https://www.amazon.es/UKCOCO-Termistor-cableado-clavija-impresora/dp/B07BMT6H45/ref%3Dsr_1_9?__mk_es_ES=%C3%85M%C3%85%C5%BD%C3%95%C3%91&keywords=sensor+termistor&qid=1584701812&s=industrial&sr=1-9)

1 12V 3A Momentary Push Button Switch

1 AC/DC 12v 1,5 A

1 Arduino UNO,

The current design requires removing the input diode, and making a jumper as it is not ready to withstand the input amps.



### PCR reactor



|  |  |
| --- | --- |
| 1.- cooling system  | Fan 70x70  |
| 2,- Reactor armour  | (See SLT file) |
| 3.- temperature probe support | M5 or M6 Screw ( 60mm) & nut + thermo retractile tube |
| 4.-heating system | Halogen lamp G4 12v 25-50W & G4 Socket Base Holder |
| 5.- reactor wall | Steel tube, 63,5 mm external diameter |
| 6.- PCR tube holder | Domestic drain filter, 61 mm external diameter, 19 holes. The diameter of some holes needs to be increased with a 6mm drill bit for metal |
| 7.- Silicone ring | 63,5 mm external diameter. Some moka coffee maker joints are perfect |
| 8.- Support for tube holder  | (See SLT file) |
| It’s advisable the use of Thermal tape for improving the reactor wall assembly, with the other reactor elements. |