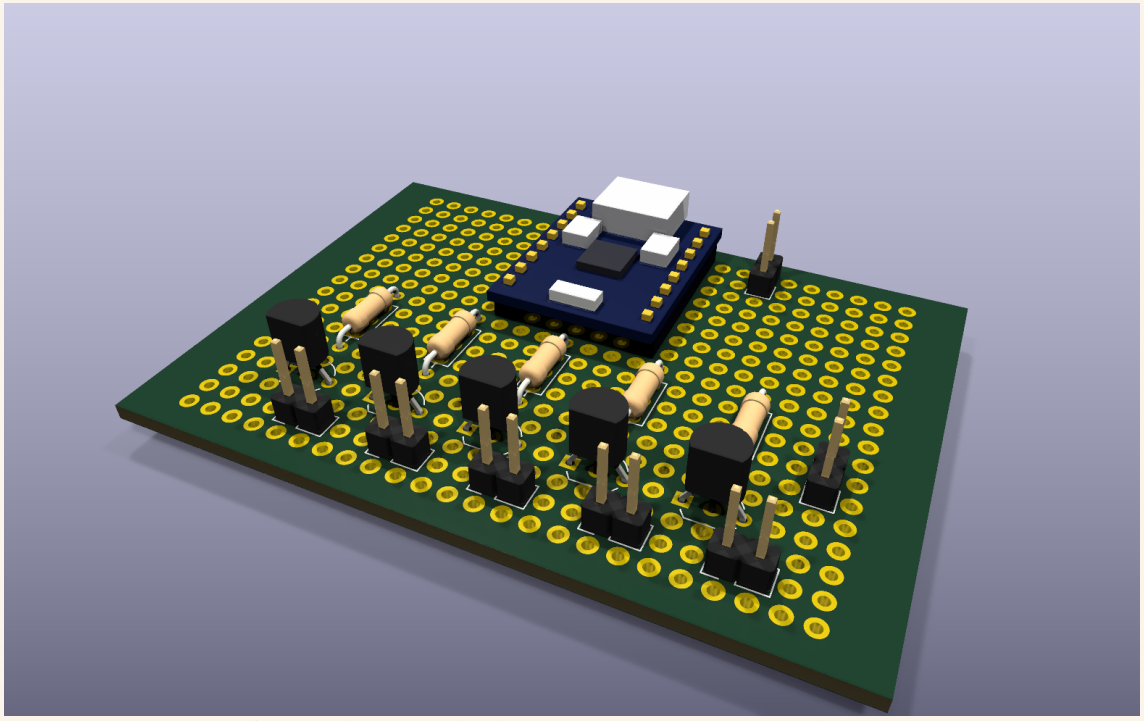
The circuit on one perfboard

The ESP32, five transistors and five resistors on an ordinary 5 x 7 cm perfboard (24 x 18 holes, one pad per hole). Every connection runs along the grid on the solder side and no two cross, so there are no jumper wires.



3D view. Open mood_lamp_perfboard.kicad_pcb in KiCad and press Alt+3 to turn it round.

Parts on the board

Part	How many	Notes
Perfboard, 5 x 7 cm	1	24 x 18 holes, single pads (not strips)
ESP32-C3 SuperMini	1	USB socket towards the top edge. Solder it on its header pins
2N2222 transistor (Q1 to Q5)	5	Flat face towards the bottom edge: legs read E, B, C from the left
400 ohm resistor (R1 to R5)	5	Each stands in its GPIO line, above its transistor
Wire pads	7 pairs	Five COB pairs along the bottom, 5 V in, 12 V in. Solder wires straight in, or fit 2-pin headers

Which colour goes where

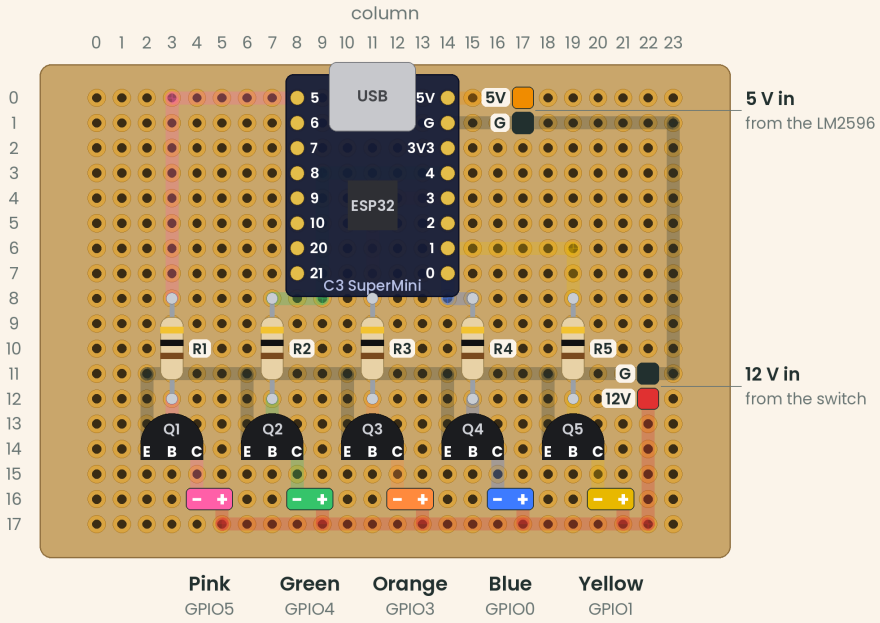
Position, from the left	Colour	ESP32 pin	Resistor	Transistor
1	Pink	GPIO5	R1	Q1
2	Green	GPIO4	R2	Q2
3	Orange	GPIO3	R3	Q3
4	Blue	GPIO0	R4	Q4
5	Yellow	GPIO1	R5	Q5

Parts side

How the board looks from above. Column and row numbers tell you which hole each leg goes in.

JAXLAB mood lamp: perfboard layout

Parts side · 5 x 7 cm board, 24 x 18 holes



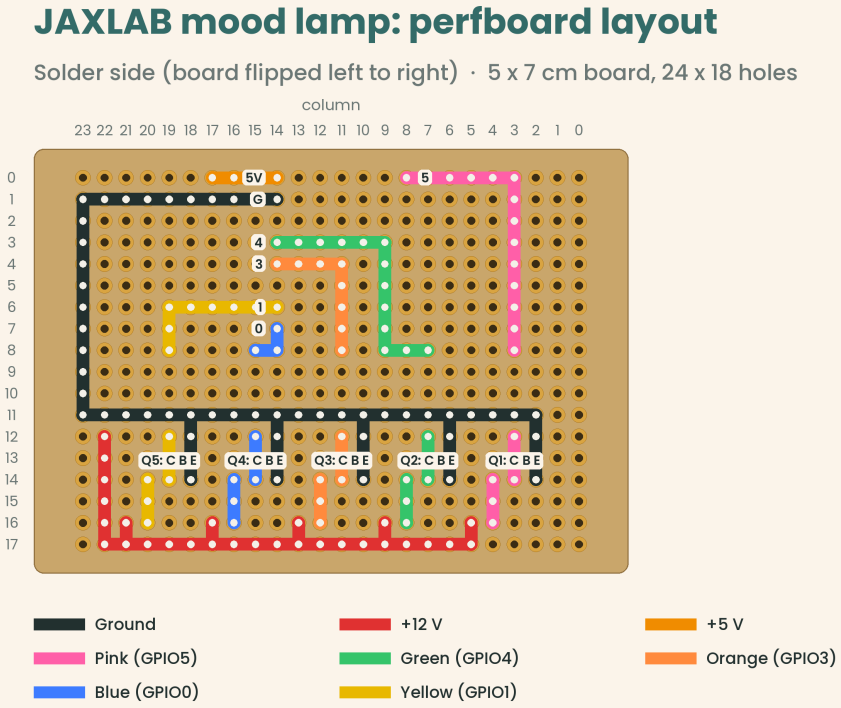
COB wire pads: - to the COB's minus wire, + to its plus wire

- Ground
- +12 V
- +5 V
- Pink (GPIO5)
- Green (GPIO4)
- Orange (GPIO3)
- Blue (GPIO0)
- Yellow (GPIO1)

Faint lines show the solder-side runs under the board. The two under the ESP32 go on first.

Solder side

The board flipped over left to right, as you see it while soldering. Column numbers run backwards on purpose.



Solid lines: bridge these pads with solder (or lay a bare wire along them).

Soldering order

1. The runs under the ESP32 first (green GPIO4 and orange GPIO3, rows 3 and 4): you cannot reach them once it is on. Lay a bare wire along each run, or bridge pad to pad with solder.
2. Resistors, then transistors. Check each 2N2222's leg order on one transistor before soldering all five.
3. The ESP32, on its header pins.
4. The remaining runs: ground (black), +12 V (red), +5 V and the short links. 174 holes are soldered in all.
5. Wires: COB pairs along the bottom, 5 V from the LM2596, 12 V from the switch.
6. Check before power: with a meter, no connection between +12 V and ground, or between +5 V and ground. Set the LM2596 to 5.0 V before connecting it.

Check your ESP32's pin labels. The drawing assumes the usual SuperMini order (USB up: 5, 6, 7, 8, 9, 10, 20, 21 on the left; 5V, G, 3V3, 4, 3, 2, 1, 0 on the right). If yours is printed differently, follow the labels on the board, not the drawing.