

PCB Christmas Tree Kit – Assembly Guide

Thank you for purchasing the DIY PCB Christmas Tree Kit! This guide will walk you through the soldering and assembly process. Basic soldering skills are recommended.

What's Included

- 2× PCB boards (form the tree)
 - ATtiny402 microcontroller (pre-programmed)
 - SMD LEDs (red, orange, yellow, yellow-green)
 - Resistors (220 Ω and 10 k Ω)
 - MOSFET transistors (4× MMFTP84W-DI) + NPN transistor (1× BC846-QR)
 - Schottky diode (1× BAS70)
 - Push button switch (1×)
 - Battery holder (CR2032)
 - CR2032 battery
-

Tools You'll Need

- Fine-tip soldering iron (320–340 °C recommended)
 - Lead-free solder (SAC305 or similar)
 - Tweezers
 - Multimeter (optional, for testing)
-

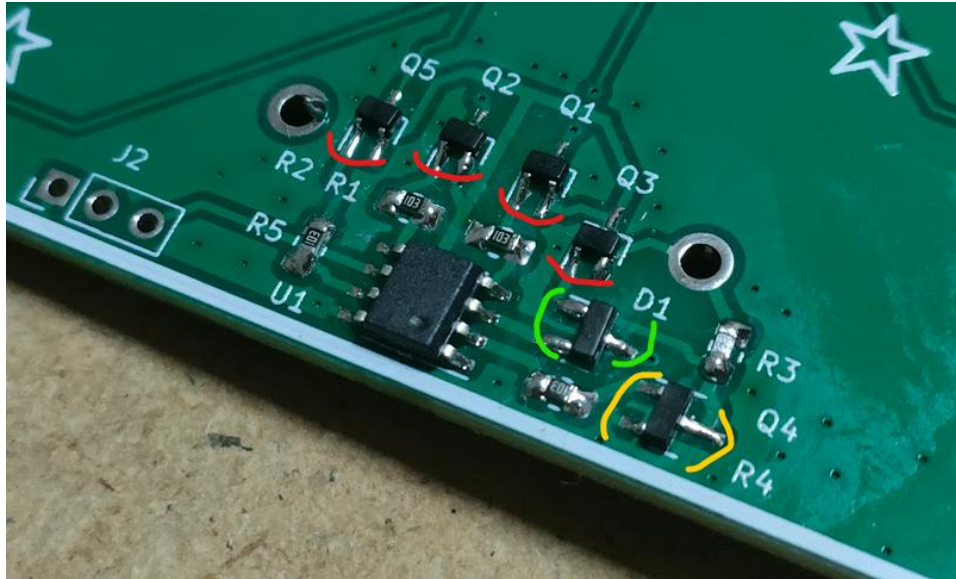
Assembly Steps

1. Start with the microcontroller

- Solder the ATtiny402. Align the dot on the package toward the PCB edge.

2. Add small SMD parts

- Solder the MOSFETs (RED in the picture, Q1, Q2, Q3, Q5), NPN transistor (YELLOW, Q4), and Schottky diode (GREEN, D1).
- Solder the small 10 k Ω resistors (all of them are placed around the uC)

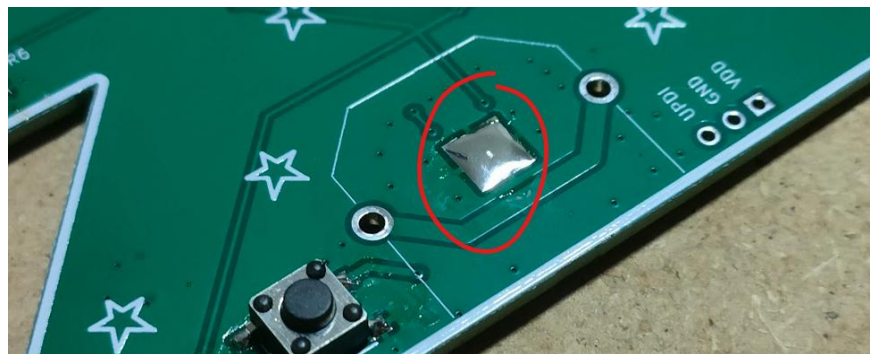


3. Install LEDs and resistors

- Place LEDs on marked pads. Pay attention to polarity: the cathode (negative) is marked by a green dot and should face the resistor.
- Solder the matching 220 Ω resistors.
- Choose your LED colors – you can group them by channel or mix freely.

4. Add remaining parts

- Solder the push button switch and the CR2032 battery holder.
- Pre-tin the battery negative pad to ensure good contact. **Important!**



5. Test each board

- Insert the battery, press the button. LEDs should light up in fading/blinking modes. Each press cycles through modes; a long press turns the tree off.

6. Assemble the 3D tree

- Align the two PCBs and solder the connecting pads to form a standing tree.

Modes of Operation

The ATtiny402 is pre-programmed with 6 modes:

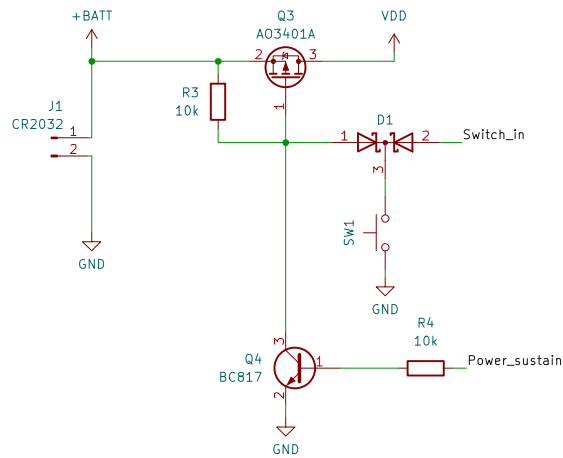
- High brightness, fast/medium/slow blinking
 - Low brightness, fast/medium/slow blinking
- Press the button to cycle modes; hold to power off.

Tips & Troubleshooting

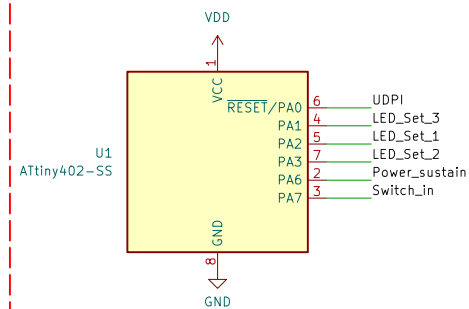
- If an LED doesn't light, check polarity and solder joints.
- If a whole group doesn't work, check the MOSFETs.
- If the board won't power, verify the battery holder solder.

🎄 Enjoy your glowing PCB Christmas Tree!

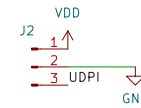
Power button



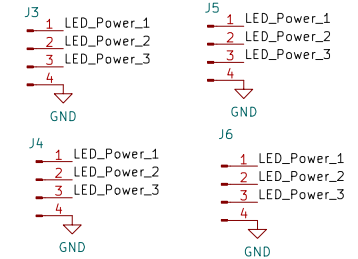
Microcontroller



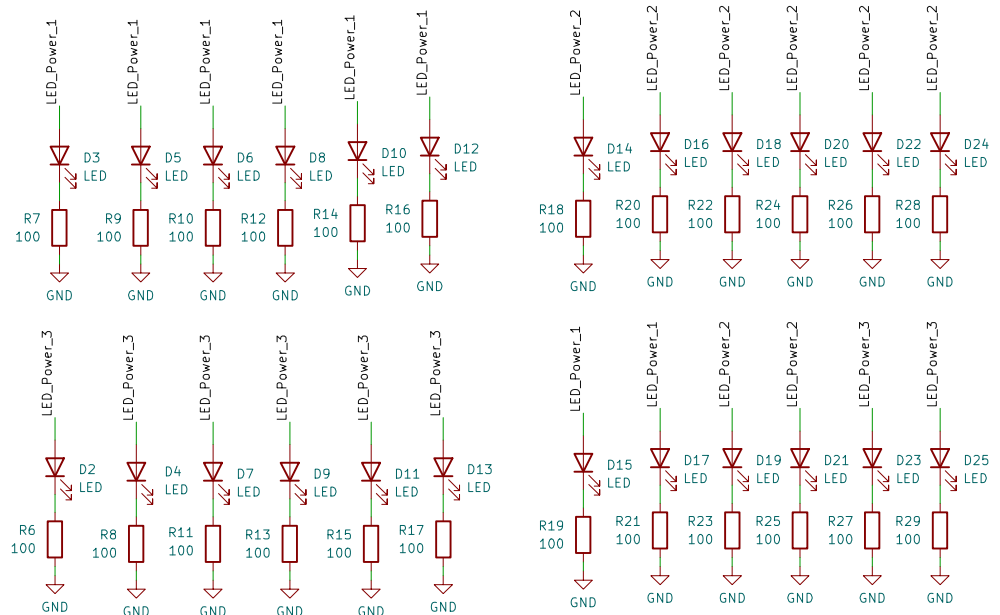
Programming connector



Board connector



LED



LED Control

