PCB For Bruce Hall's (W8BH) NTP Dual Clock
Version 1.1
John Price – WA2FZW

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Introduction

This document describes a printed circuit board that I created for the NTP synchronized dual clock created by Bruce Hall (W8BH). The PCB is designed for the Hiletgo DEVKIT ESP32 and the Hiletgo 2.8" ILI9341 TFT display. Note you can probably find them cheaper than what Amazon gets for both.

Schematic

The circuitry is pretty simple; just the processor, display, 4 capacitors, 1 resistor and a voltage regulator (not needed if you just want to run it via USB power through the processor).

If you do want to run it from an external power source, note that even though the power input is marked 12V, anything over about 7V will work. I use a 9V wall-wart.

C1 solves an issue related to loading software into this particular ESP32 board. Without it, one needs to hold the boot button down until the Arduino IDE establishes a connection with the processor.
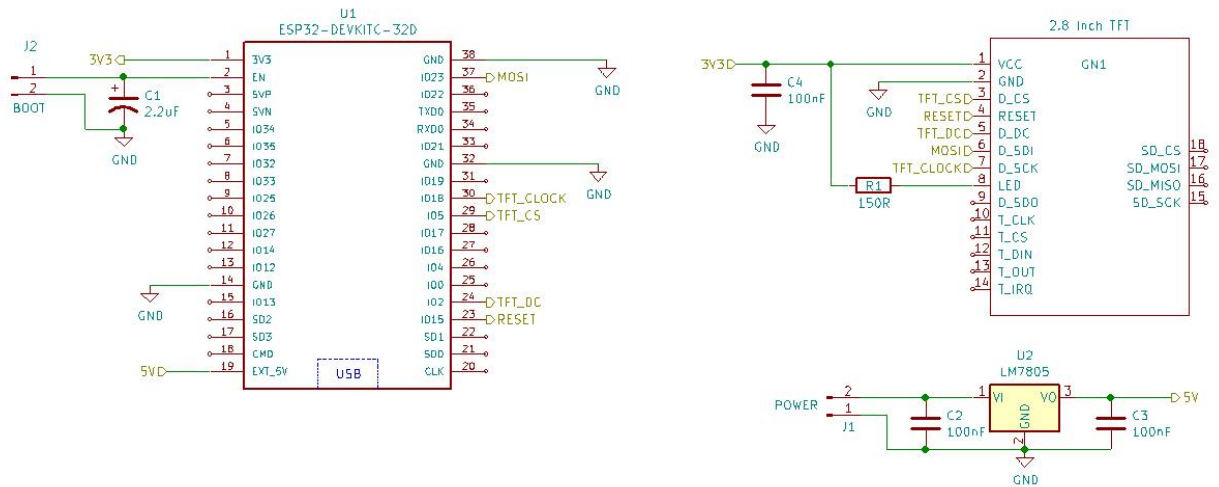
The PCB Itself

This is the layout for the PCB itself:
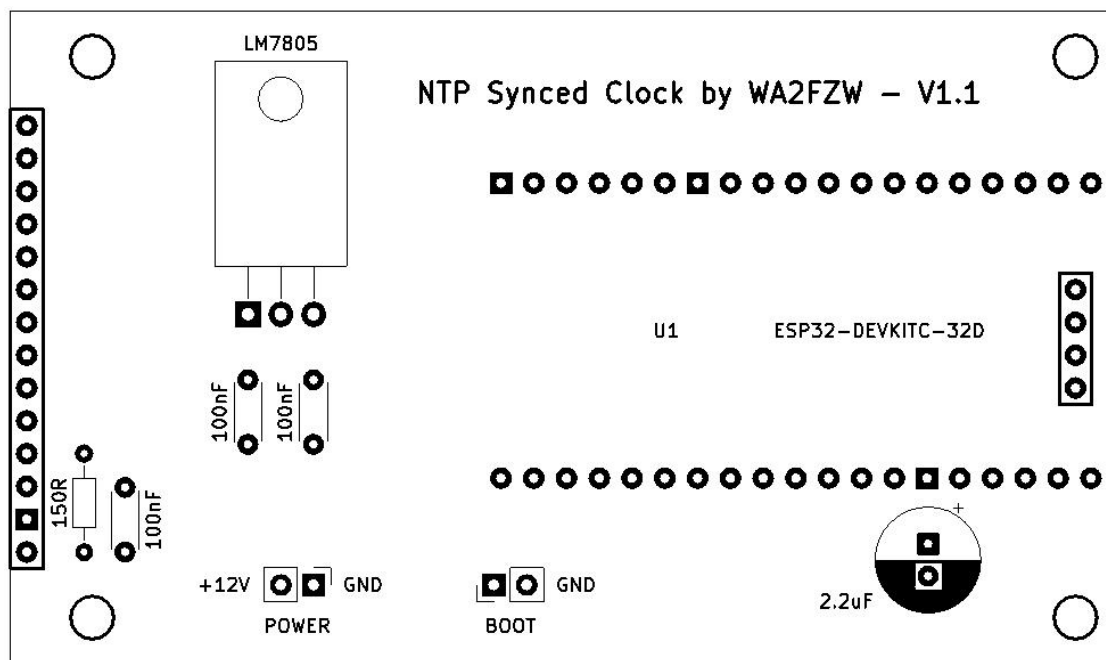
The 14 pin header on the left side is for the display. Note that only the bottom 8 pins are actually connected, so an 8 pin header could be used. The 4 pin header on the right of the board is for the SD card on the display and is not really used and need not be installed.

Note that the PCB is designed so that the display mounts on the rear side of the PCB and everything else goes on the front side.

This picture shows the traces; the green ones ore on the back side of the board: