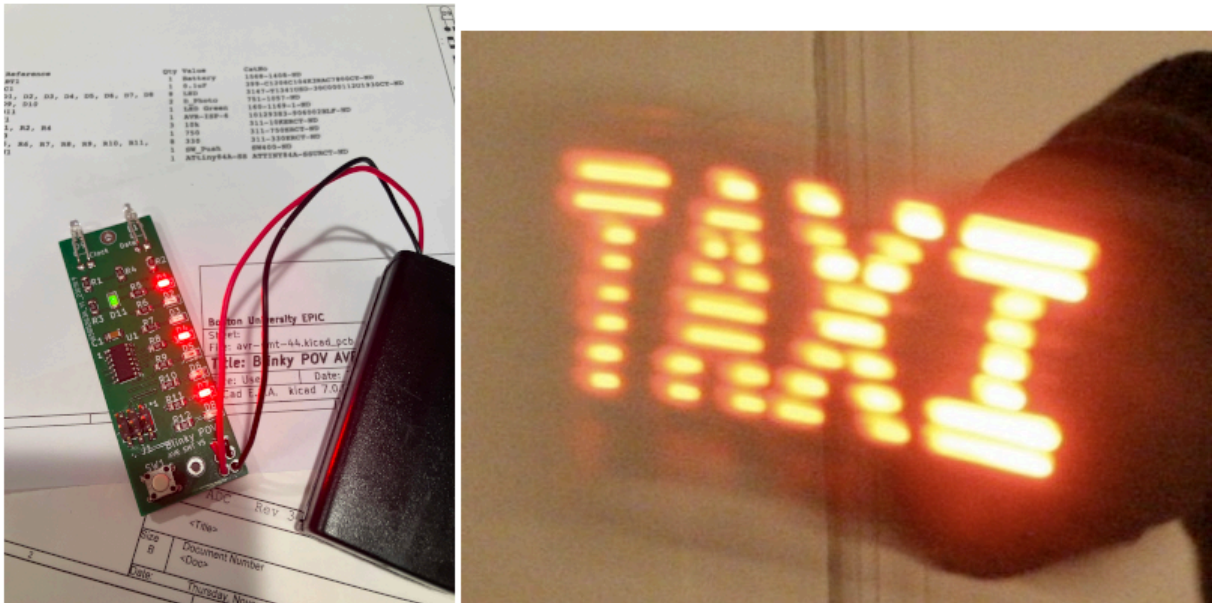# LEAP LIFE 2025

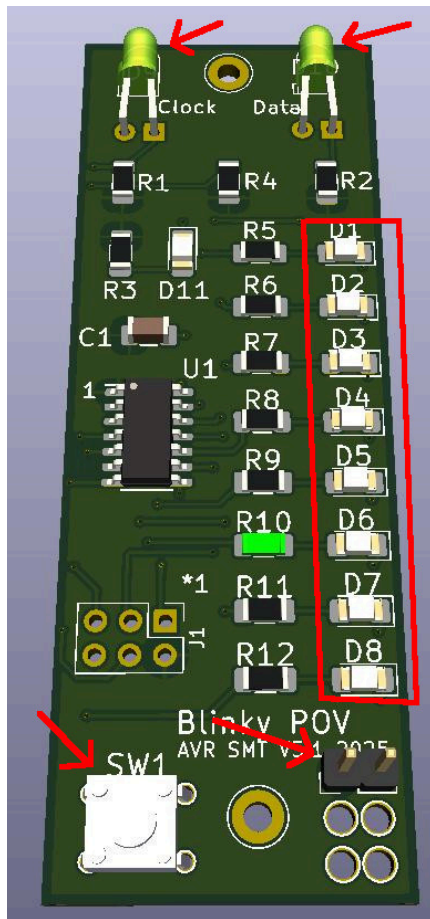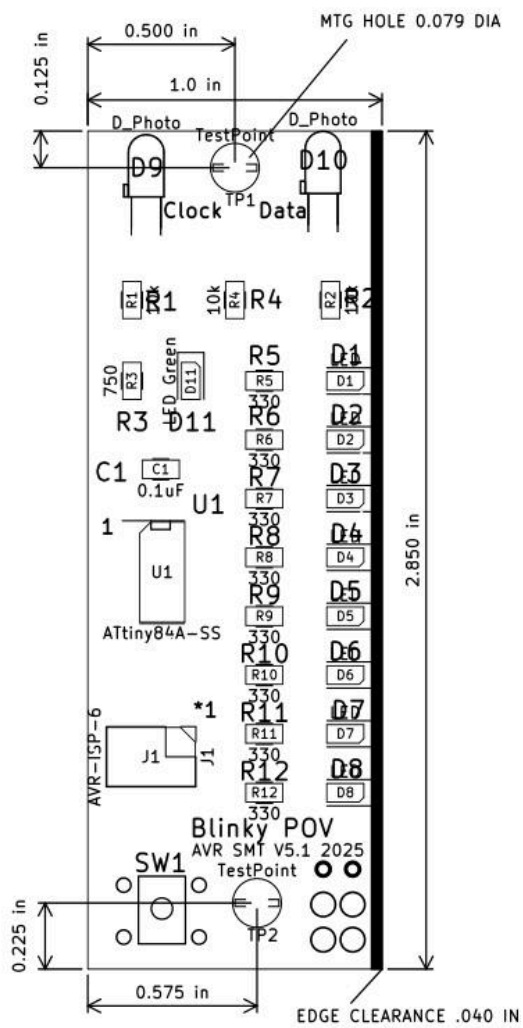Enclosure design for soldering project

blinky-avr-smt

Blinky POV soldering project

This is a soldering practice kit which displays a message in the air on LEDs when waved back and forth.
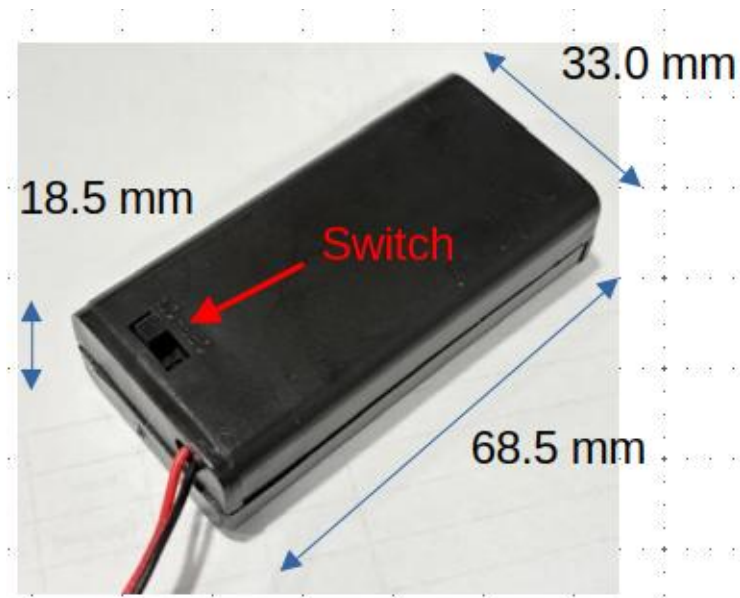
On Thursday (Jan 8th), you'll be learning to solder and putting together one of these "POV" blinking light gadgets, which displays a message when you wave it in the air.

Your homework *before* the workshop is to design a (3D printed or laser-cut) case to hold the device and it's battery holder. See the next page for a dimensioned drawing and a 3D rendering of the completed PC board assembly. This will be a great first project to exercise your CAD skills using OnShape.

Note that there are a few things which need to be visible/accessible through openings in the case. These (Clock/Data sensors, LEDs D1-D8, battery connector and pushbutton) are indicated in red in the 3D rendering below.

0.500 in

0.125 in

1.0 in

MTG HOLE 0.079 DIA

D_Photo   TestPoint   D_Photo

D9   Clock TP1 Data   D10

R1 R1   10k R4   R2 R2

750 R3   LED Green D11   R5   330 D1 D1

R3 D11   R6   330 D2 D2

C1 C1 0.1uF   R7   330 D3 D3

U1 1   R8   330 D4 D4

U1   R9   330 D5 D5

ATtiny84A-SS   R10   330 D6 D6

AVR-ISP-6   *1   R11   330 D7 D7

J1 J1   R12   330 D8 D8

330

Blinky POV
AVR SMT V5.1 2025

SW1   TestPoint   ○ ○

TP2   ○ ○

0.225 in

0.575 in

2.850 in

EDGE CLEARANCE .040 IN

Clock   Data

R1   R4   R2

R5   D1

R3   D11   R6   D2

C1   R7   D3

U1   R8   D4

R9   D5

R10   D6

*1   R11   D7

J1   R12   D8

Blinky POV
AVR SMT V5.1 2025

SW1

In addition to the PC board shown above, you need to accommodate the battery holder. A photo with added dimensions is shown below. Note that there is a switch, which should be accessible from outside the case, and the wire leads should be able to plug in to the two-pin header shown on the 3D view above.

Some suggestions:

- Make use of the mounting holes to secure the PC board. You can either 3D print pegs or possibly use small screws to secure the board.
- Design slots for the PCB to slide into. The board is about .063 in (1.6mm) thick. Note that there are components close to the edge so the slot should not overlap the PCB by more than .040 inches in the area shown on the drawing.
- Don't forget about the openings for the LEDs, light sensors, push-button, battery wiring and on/off switch.
- Consider laser cutting a transparent panel to cover the PCB while still allowing the LEDs to be visible.

Once you have the design, plan to find time to fabricate the case in EPIC, making use of the self-service 3D printers and/or laser cutters.

You will need to complete the EPIC safety training, along with specific training for the 3D printers and laser cutters if you haven't already done this. See the EPIC website at https://www.bu.edu/epic for details.

Also, feel free to contact me via my website: https://edf.bu.edu/ESH
Or email: hazen@bu.edu