

## PintSize Me LLC – GameBoy DMG Power for BoxyPixel aluminum shells

### Usage Notes:

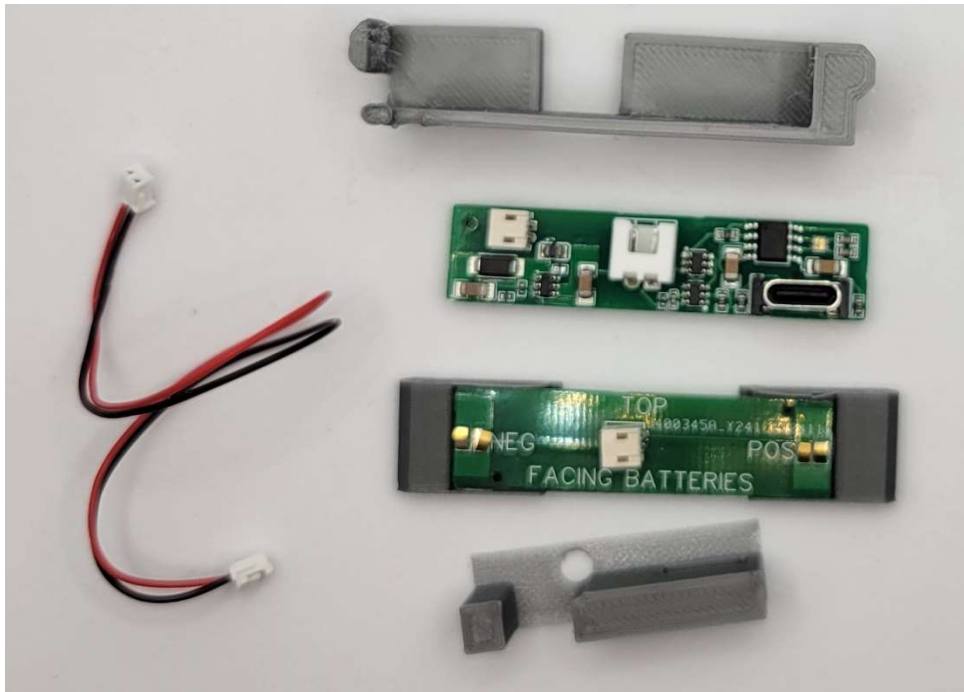
A battery is not included. Our favorite is a 124648 3.7v 3100mAh LiPo available on Amazon.

This circuit does utilize a TP4056 charge controller, however we have added an overcharge and overdischarge protection circuit to address the “charge & play” concerns associated with the TP4056 chip.

The plastic pieces are 3D printed, we are happy to share the .STL files upon request. The contact board is superglued to its spacer.

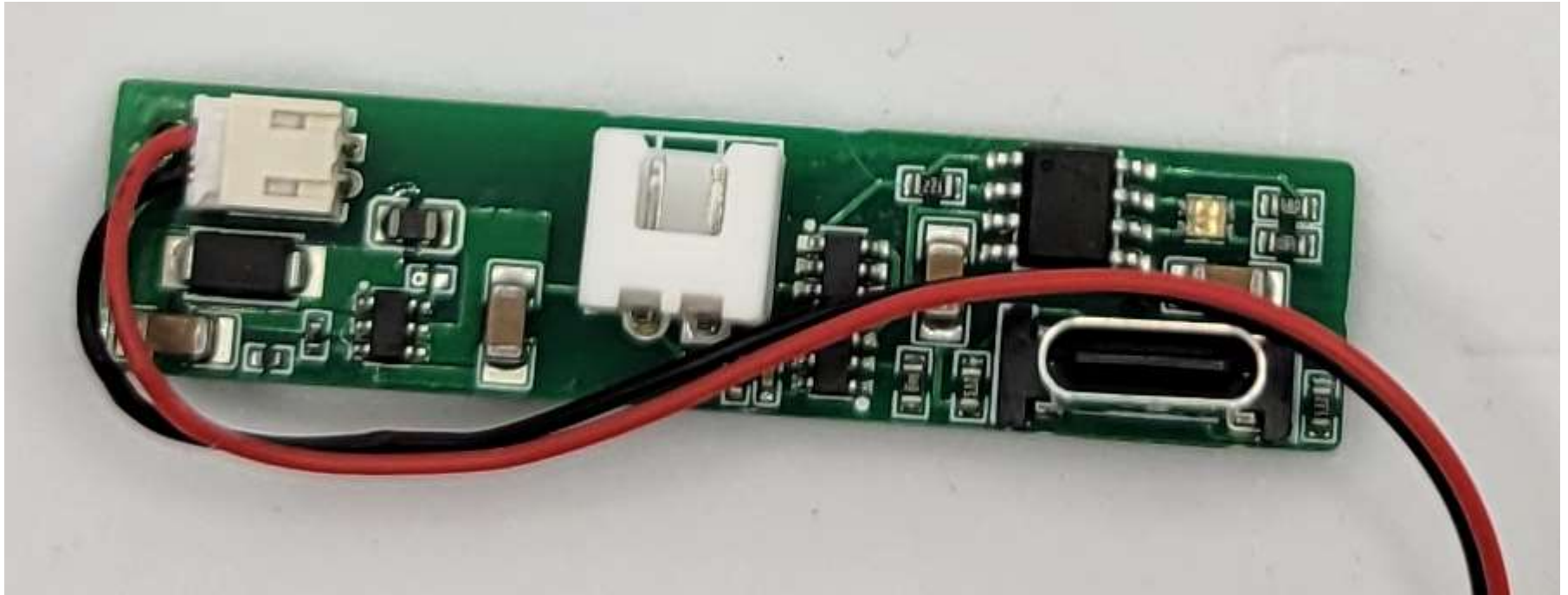
### Installation

First lay out all your parts. On the left is the jumper cable that goes between the two circuit boards. From the top down on the right we have the charge board brace, charge board, contact board and spacer, and the charge board spacer. The bottom of the charge board spacer is extremely thin and flexible material and that material is just for alignment, it is not important if it is torn, slightly bent, or otherwise deformed. Once things are in place it will be held where it needs to be.





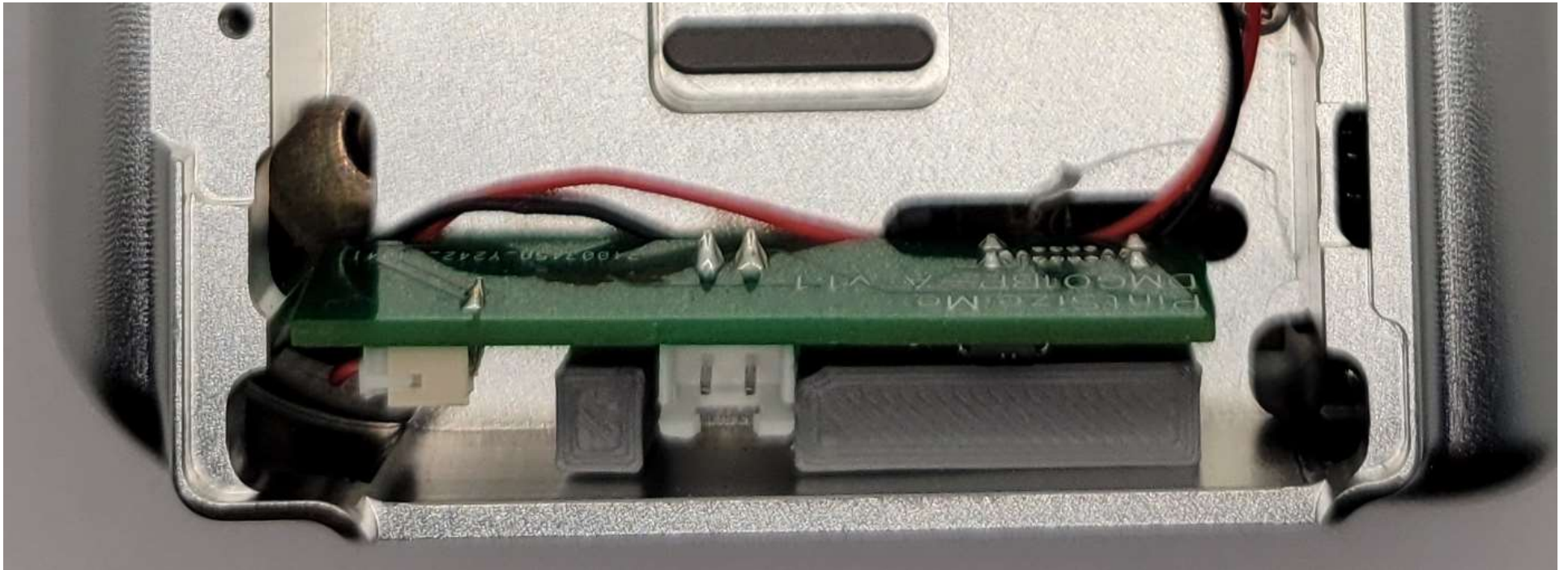
Now connect the jumper wire to the charge board, it only goes in 1 way and should insert with minimal force, if you start using much strength something is wrong and you should stop.



Place the charge board spacer in place, the hole in the bottom of it lines up with the screw hole as pictured and there is a hole in the thick plastic to the right for the USB-C plug in the next step.

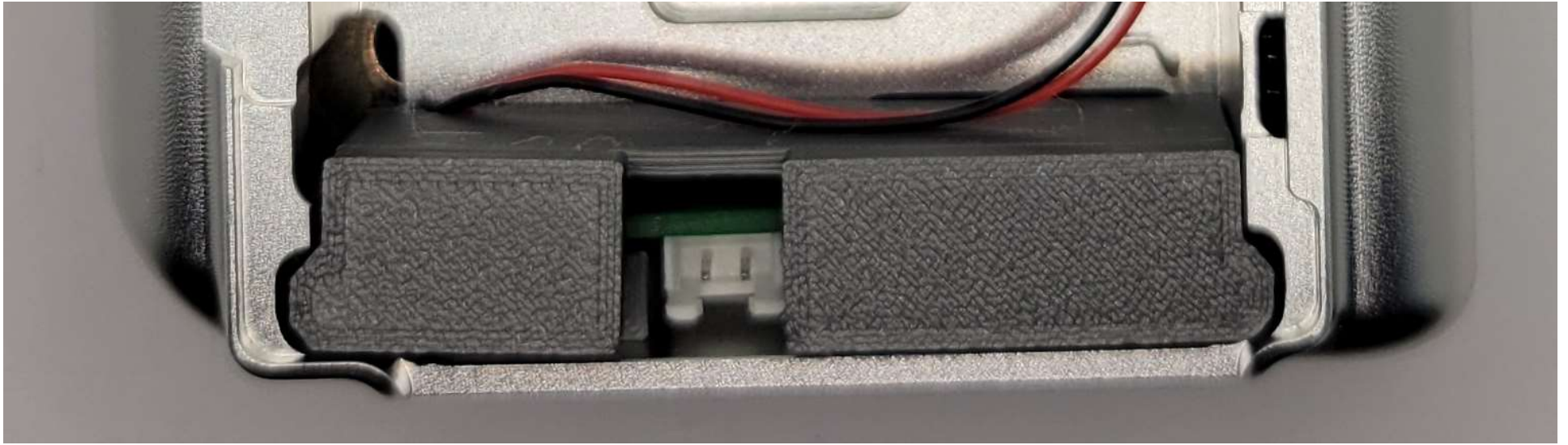


Place the charge board into position. The jumper cable should go underneath the charge board on the left side, the batter connector will center between the two blocks on the charge board spacer, and the USB plug will slide right through the hole in the right side block and go most of the way into the USB-C opening in the shell.





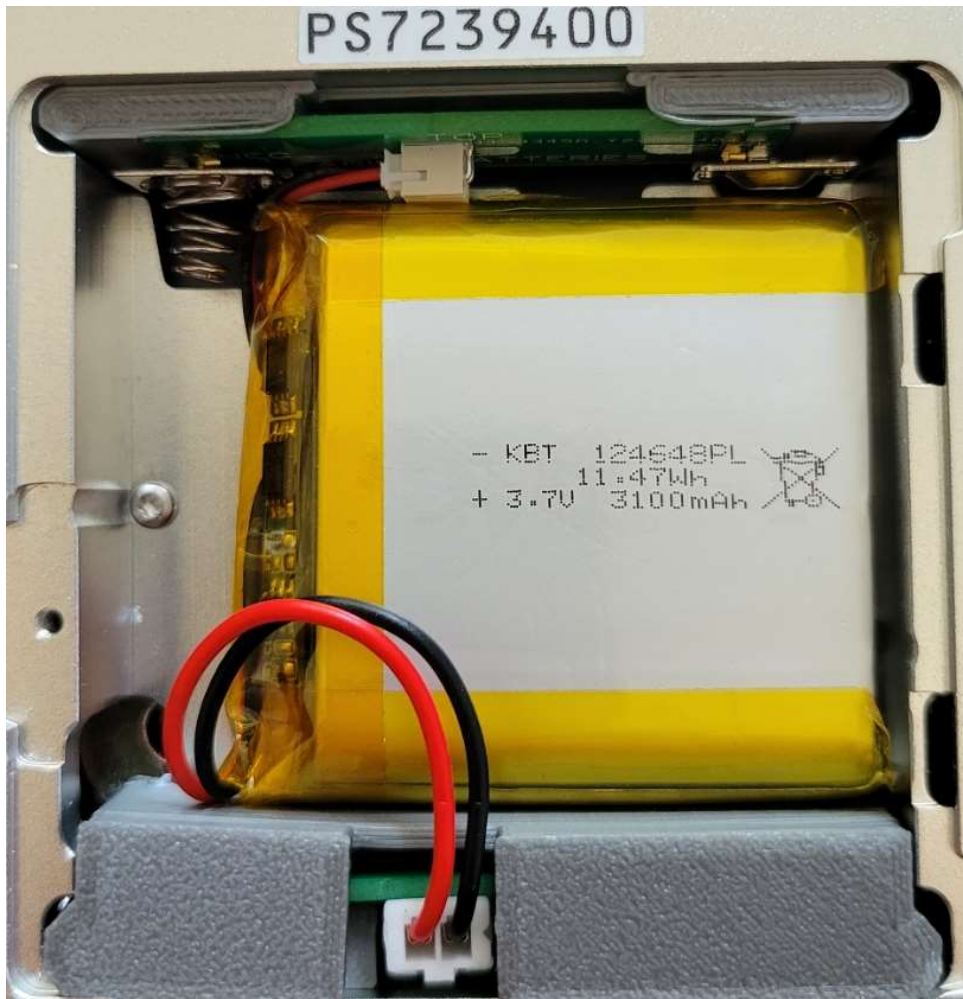
Next place the charge board brace over the charge board. There is a small notch for the jumper wires to go underneath. This part is a tight fit and you may have to use a small screwdriver or knife to adjust the left side of the chargeboard.



Next, bend the battery tabs towards the top of the shell just a bit, then connect the jumper wire to the contact board and insert the contact board behind the contacts. The contact board is labeled for which side is up, which side is facing you, as well as NEG (behind the terminal with the spring) and POS (behind the terminal without a spring).



Now it is time to insert the battery and connect the power cable. You will want to put the battery as far right as possible to avoid bending the negative spring, and if you use the 124648 as we have in the photo (which is of my personal GameBoy), the contact board will shift up just a little bit and make a little more room for the rounded edge of the battery under it making for a snug but not pinching fit.



Last thing, the battery protection circuit will be stuck in an unpowered state at this point so the GameBoy will not power on, you will need to plug it into a powered USB-C cable for at least a second just to initialize the chips. Once initialized the protection chips will stay functional with just the battery as long as the battery does not reach the discharge protection limit of the circuit, once it does you need to charge it anyway.