



Solar Boost Bag

Created by Becky Stern

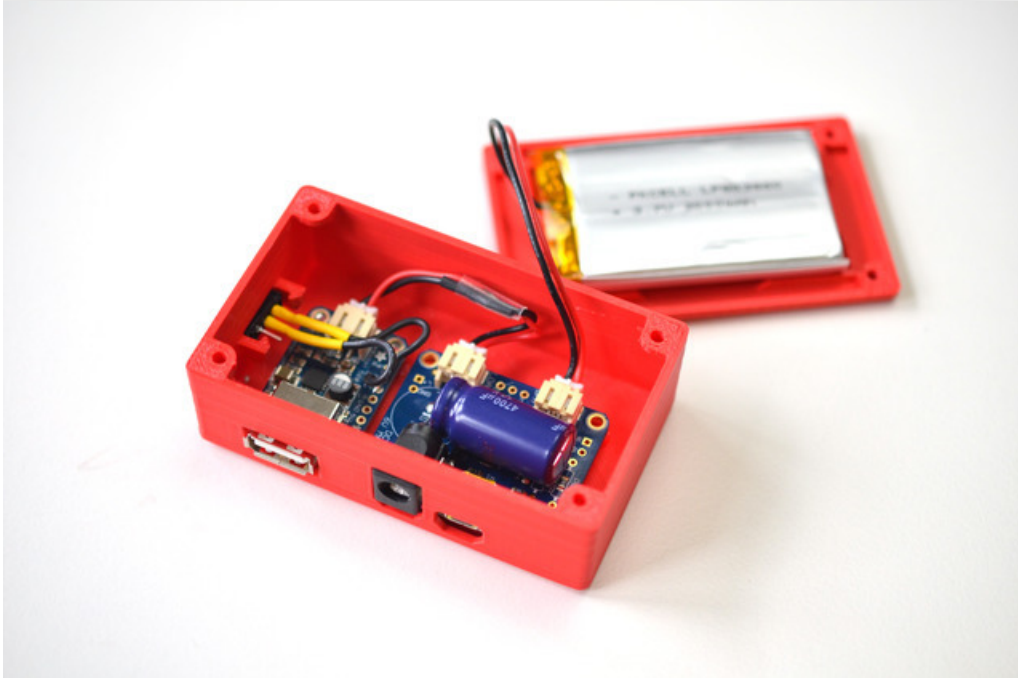


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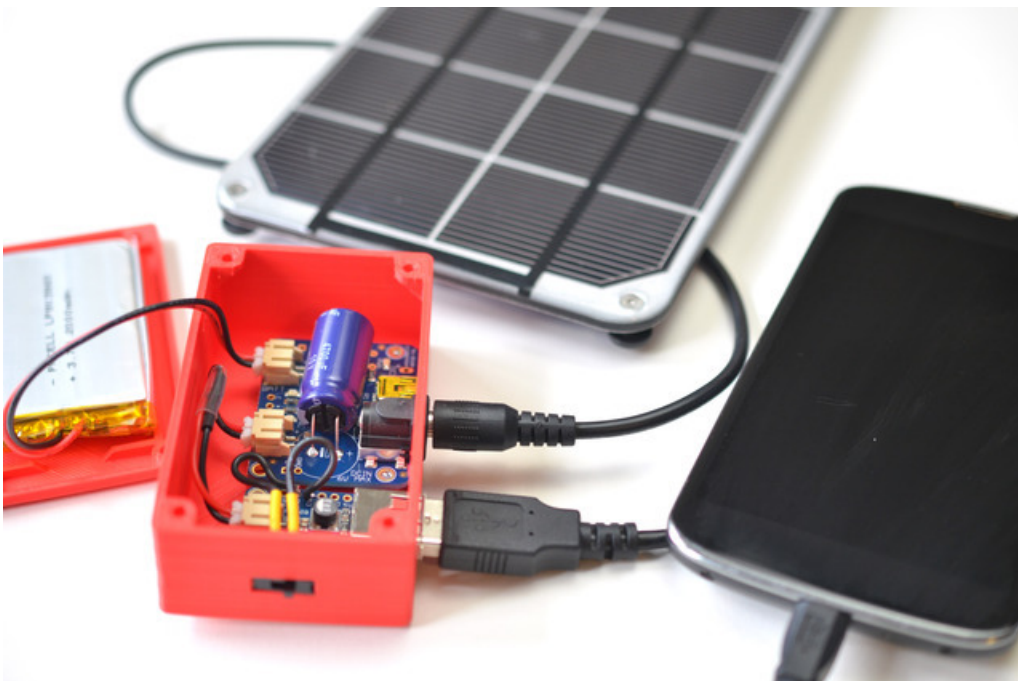
Overview



Make your own backup battery and recharge it with the sun! This is an upgrade project to our original [Solar Charging Handbag](https://adafru.it/Cec) (<https://adafru.it/Cec>) and uses a PowerBoost 500 Basic, a solar lipoly charger, slide switch, and 2000mAh rechargeable battery, all housed in a 3D printed enclosure.

Before you begin, read through the following guides:

- [USB, DC & Solar Lipoly Charger](https://adafru.it/cgS) (<https://adafru.it/cgS>)
- [Adafruit PowerBoost 500 Basic](https://adafru.it/dz1) (<https://adafru.it/dz1>)

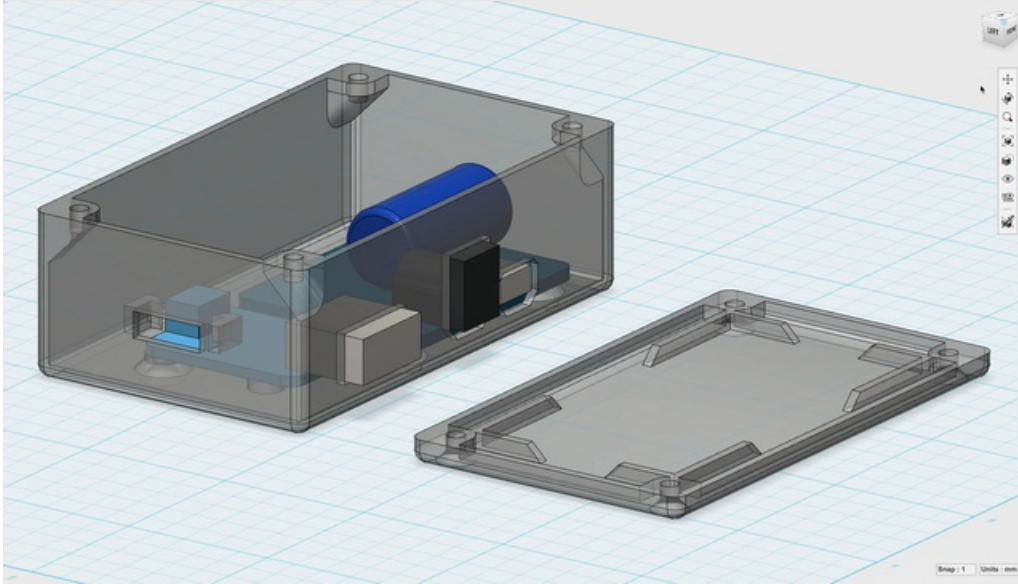




For this project, you will need:

- [USB/DC/Solar Lithium Ion/Polymer charger kit \(http://adafruit.it/390\)](http://adafruit.it/390)
- [PowerBoost 500 Basic \(https://adafruit.it/dFq\)](https://adafruit.it/dFq)
- 3D printer with [filament \(http://adafruit.it/2080\)](http://adafruit.it/2080)
- A [large solar panel \(http://adafruit.it/500\)](http://adafruit.it/500) or a [medium solar panel \(http://adafruit.it/200\)](http://adafruit.it/200)
- [2000mAh lithium polymer battery \(https://adafruit.it/e9b\)](https://adafruit.it/e9b)
- [2.1mm DC Barrel Plug \(http://adafruit.it/1329\)](http://adafruit.it/1329)
- [slide switch \(https://adafruit.it/drN\)](https://adafruit.it/drN)
- A sturdy handbag or backpack
- [soldering tools and supplies \(https://adafruit.it/aTk\)](https://adafruit.it/aTk)
- #4-40 3/8 flat Phillips machine screws

3D Design Files



<https://adafru.it/e97>

<https://adafru.it/e97>

solar-charger-cover.stl

solar-charger-box.stl

Temperature @ 230c

10% Infill

2 Shells

0.2 Layer Height

90/120 Speeds

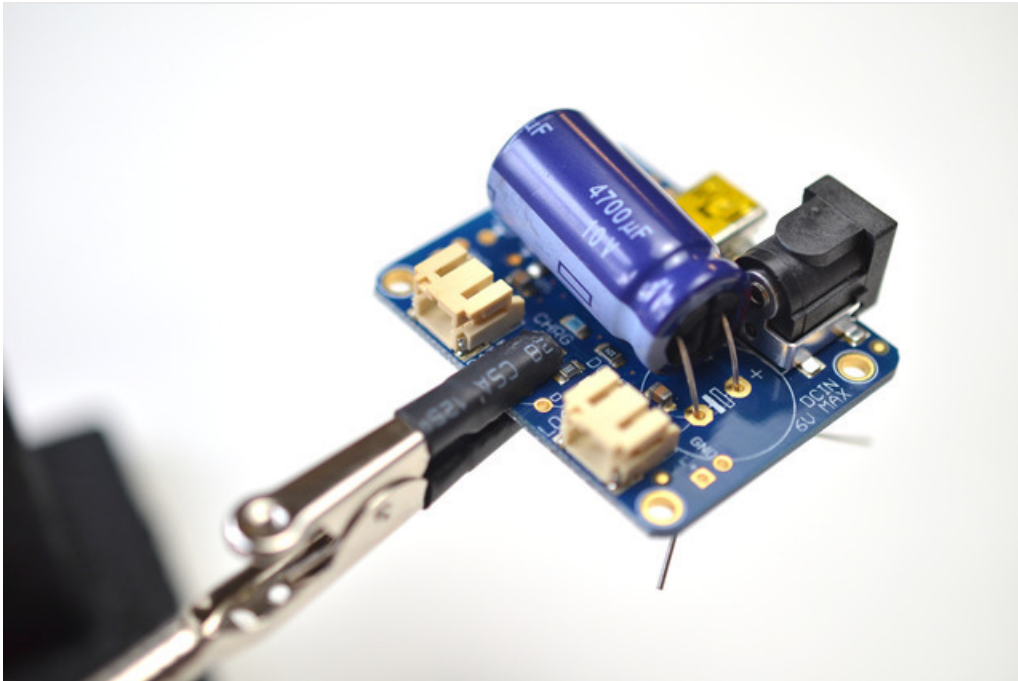
Customize Design

The original solids are available to modify and download from our 123D Design project page.

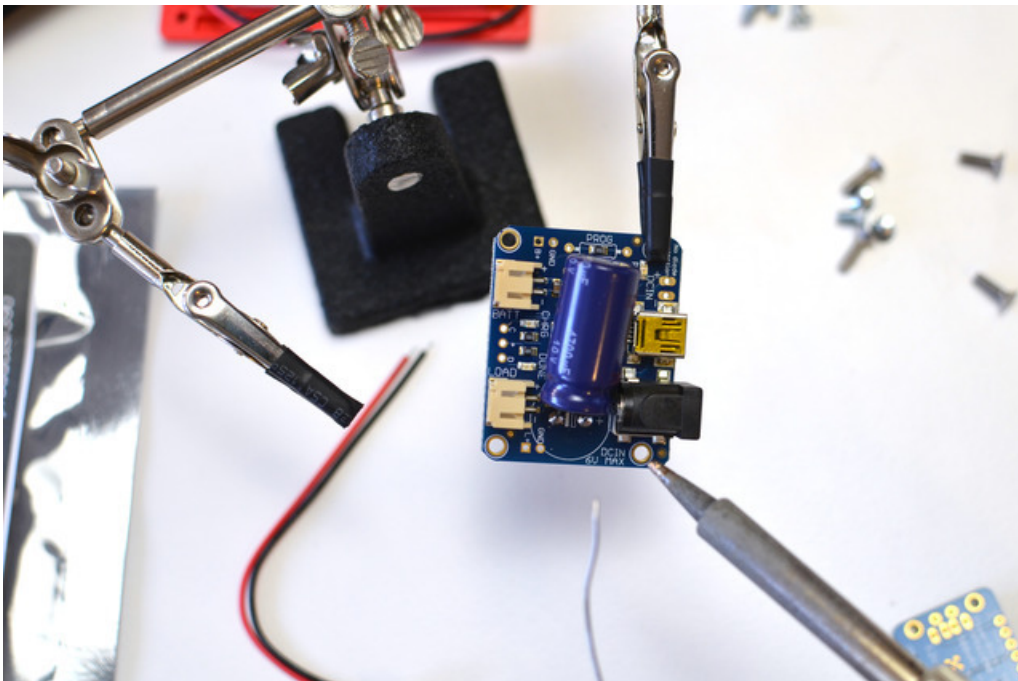
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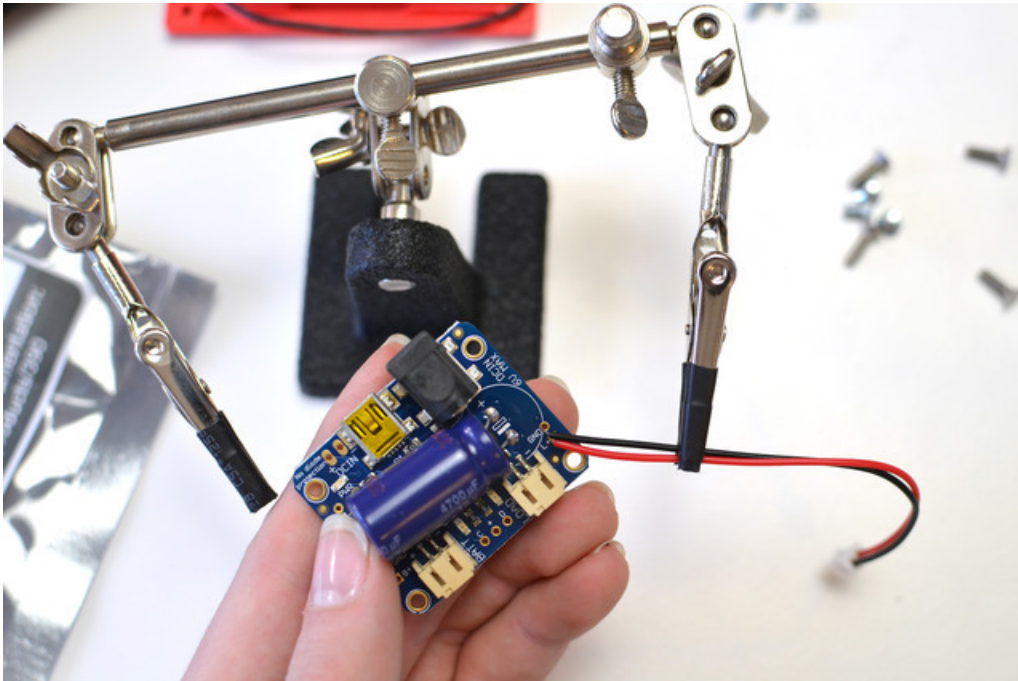
Assemble Circuit



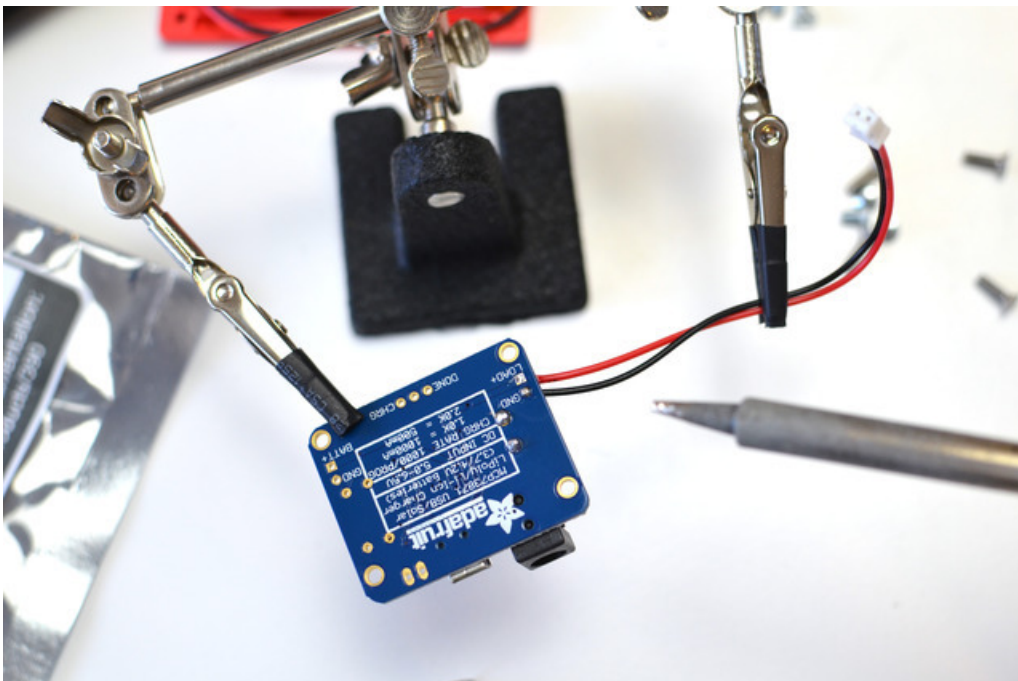
When you solder the capacitor on the solar charger, fold the capacitor over so it makes a more compact shape.



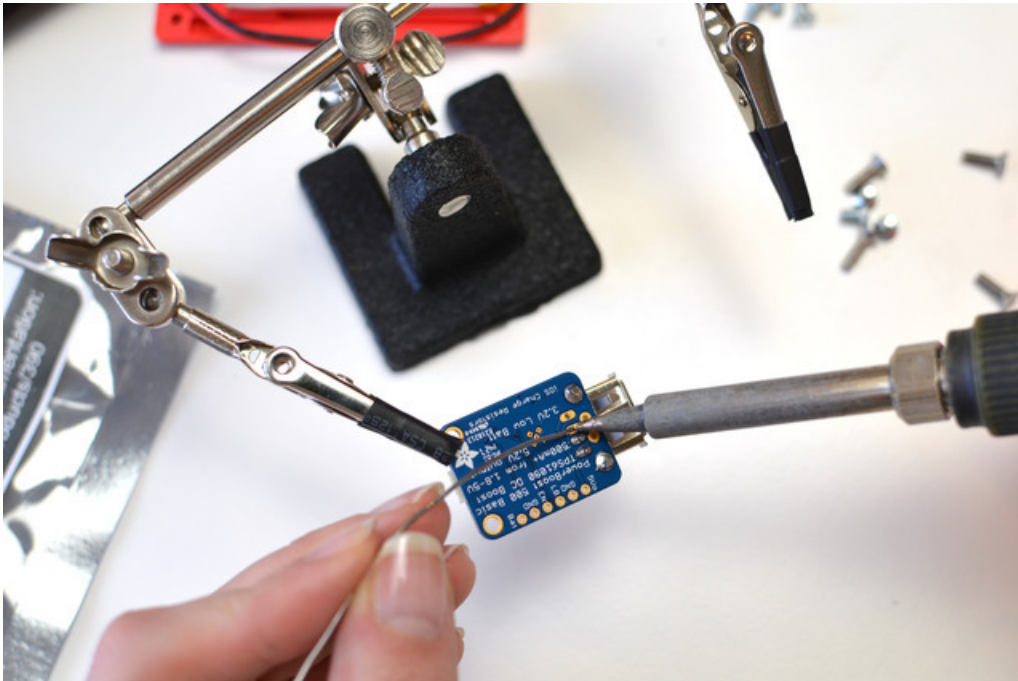
Solder the leads of the capacitor to the board.



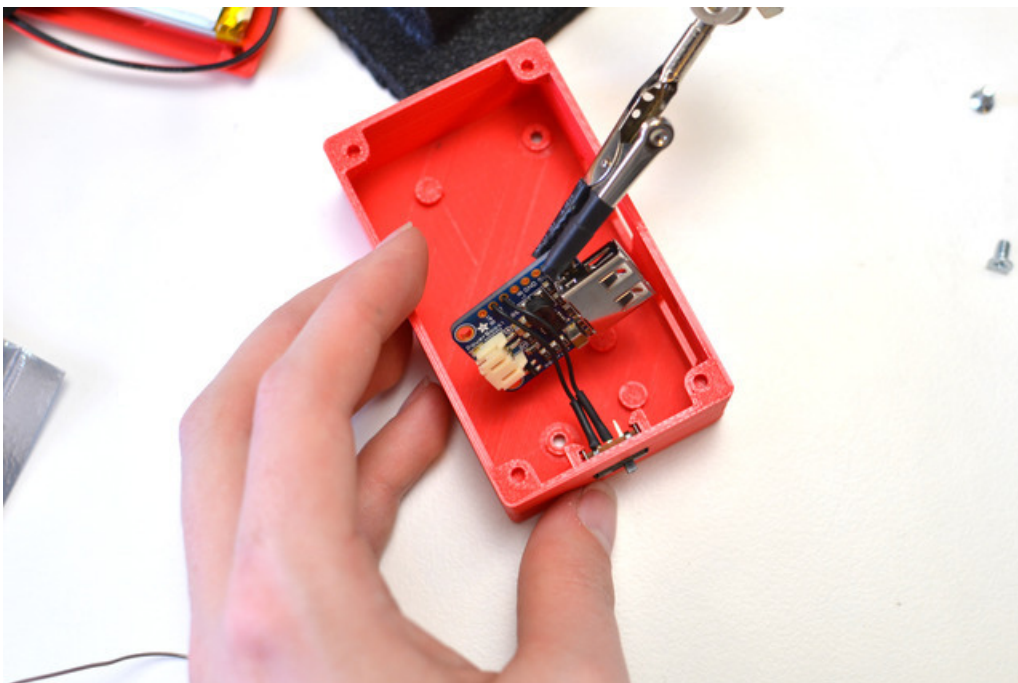
Solder the JST connector to the LOAD side of the solar charger as shown. The red wire goes to LOAD and the black wire goes to GND.



Snip any excess wire on the back side of the board as well as the leads of the capacitor.

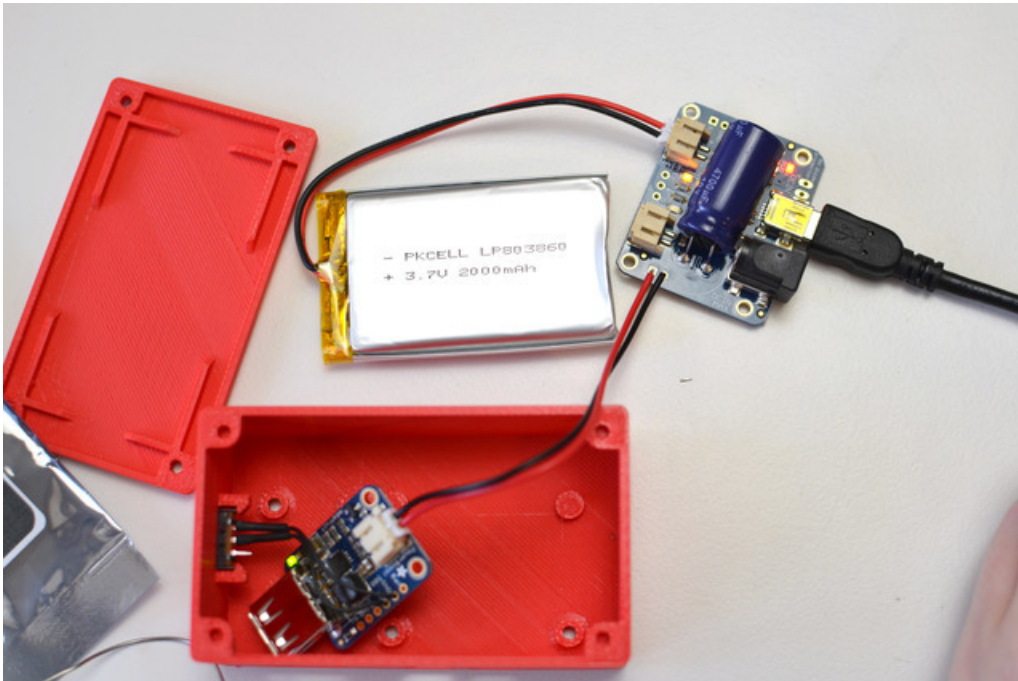


Solder the USB port onto the PowerBoost.



Prepare a slide switch by soldering on two short silicone-coated stranded wires to two adjacent pins, then apply and shrink some heat shrink tubing to protect the connections.

Insert the switch wires from the outside to the inside of the enclosure and seat the switch in its cutout, then solder the two wires to EN and GND (doesn't matter which wire goes to which pin) on the inside of the enclosure.



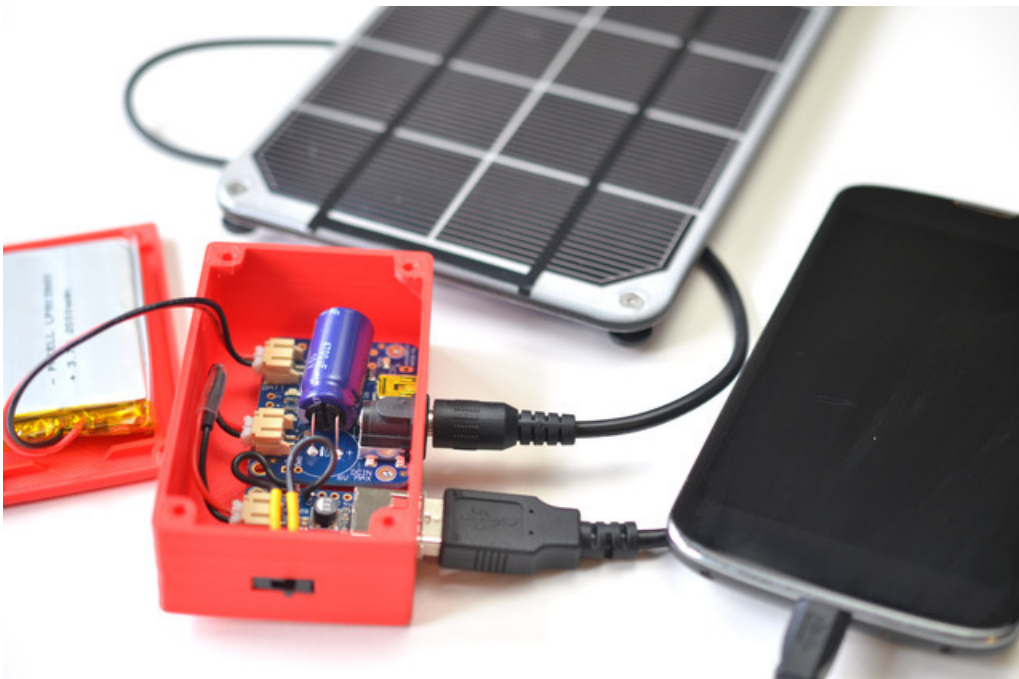
Plug the JST wire from the solar charger into the PowerBoost, plug the lipoly battery into the BATT plug on the solar charger, and connect a miniB USB cable to your computer or an AC adapter to test out the circuit.

If toggling the slide switch turns the green PowerBoost LED on and off, you're good to go!

Prepare Solar Panel

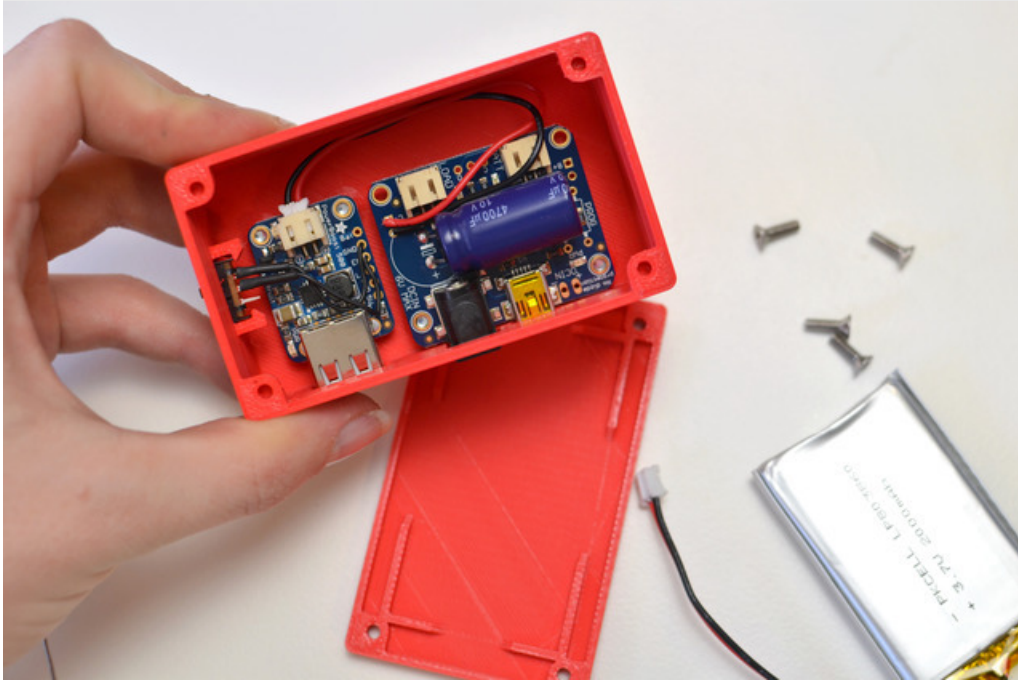


Follow [Method 2](https://adafru.it/cgU) for replacing your solar panel's barrel jack (<https://adafru.it/cgU>) on the appropriate page of the LiPoly Charger Guide: first slide on a large piece of heat shrink tubing, two smaller pieces (one on each wire). Tin the stripped wire leads and solder them together (red to red and black to black). Shrink the little heat shrink tubing pieces over the joints, then shrink the larger piece over the entire section for a finished look and added stability.



Test your circuit by plugging in the solar panel, then placing it in direct sunlight. The red charging light should be bright and solid, not flashing. To learn more about the charger, check out the [LiPoly Charger Guide \(https://adafruit.it/cgS\)](https://adafruit.it/cgS). you can also charge your battery using the mini USB jack. Plug your phone into the PowerBoost's USB port and see it charge up!

Enclosure



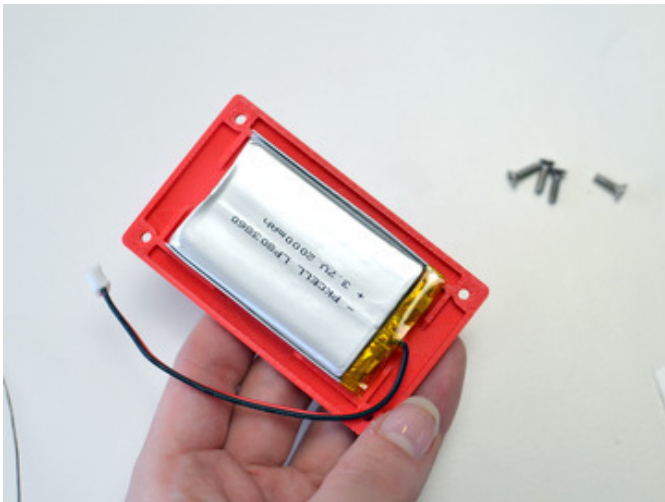
Use #4-40 3/8 flat Phillips machine screws through the enclosure and mounting holes on the circuit boards to secure them inside, aligning the ports with the cutouts on the enclosure.

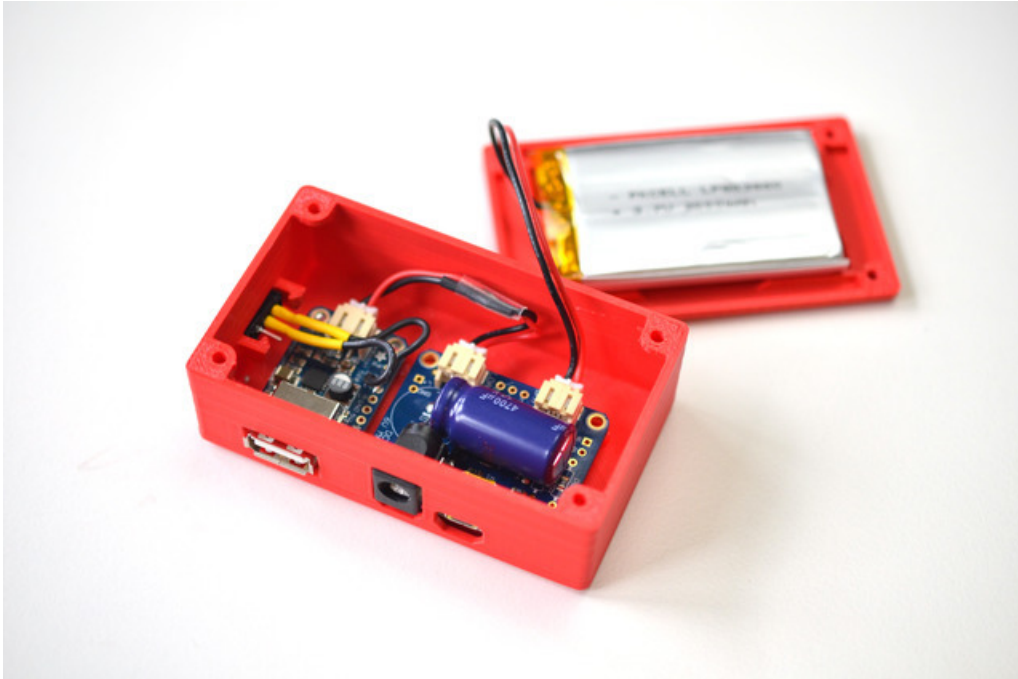


The enclosure has countersunk screw holes so the screws sit flush to the plastic surface.



Apply a piece of foam double-stick tape to the battery and stick it to the inside of the enclosure lid, within the rectangular outline.





Carefully plug the battery into the BATT port on the lipoly battery charger. You may need to use tweezers or pliers to get it into the small space.

The above pictured version of this circuit uses a double-ended JST cable instead of one soldered directly to the LOAD pads on the PCB. There is no reason to do this unless you like practicing your wire splicing and have extra JST wires hanging around your desk (I'm guilty as charged!).

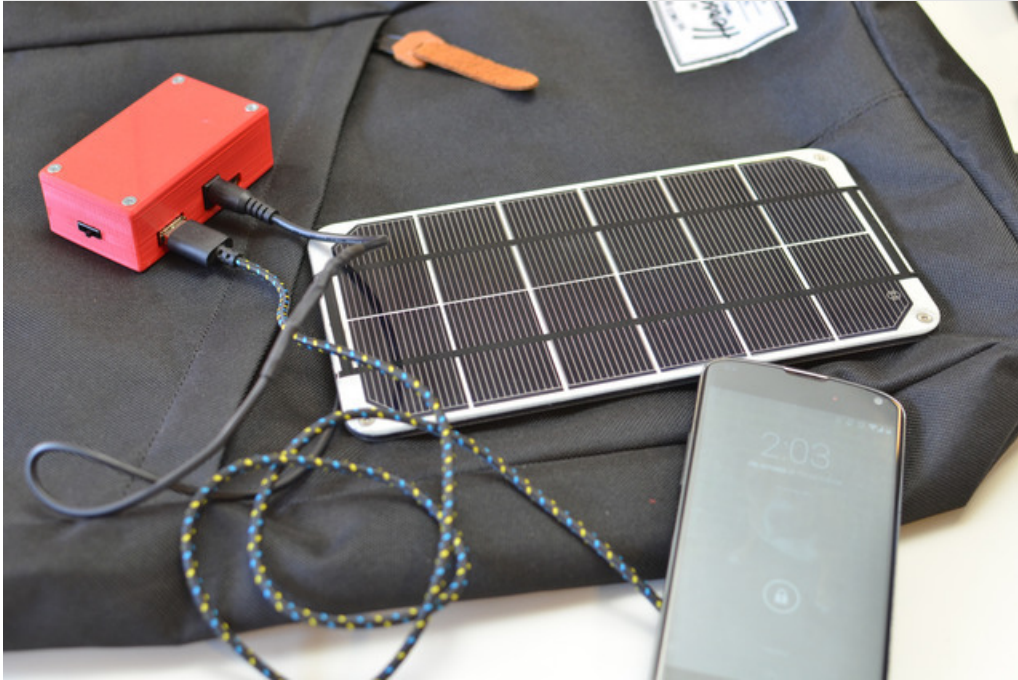


Place the lid and secure it with four more machine screws.



If the solar panel is plugged in and in bright sun, the battery will be charging. You can toggle the PowerBoost power with the slide switch, and you can peek inside the USB cutout to see the green light indicating power is on.

Wear it!



Most of our large solar panels have four mounting screws that make it easy to affix to any bag. You can also use velcro tape to make your solar panel quick-release!



Tuck your power pack into your bag with the cable routed to your solar panel. You can charge while you walk outside or stash your bag in a sunny spot. Even leave your solar panel at home and just take the charged-up backup battery with you!