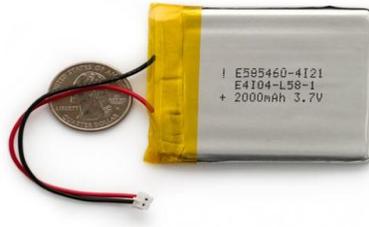


LITHIUM POLYMER



Lithium Polymer (often abbreviated LiPo) batteries are very useful for embedded electronics. They offer the highest density readily available on the market. Because cell phones predominantly use this battery type, they are easy to find for reasonable prices. They **do** require special charging, so be sure to use the right charger for the job.

Nominal Voltage

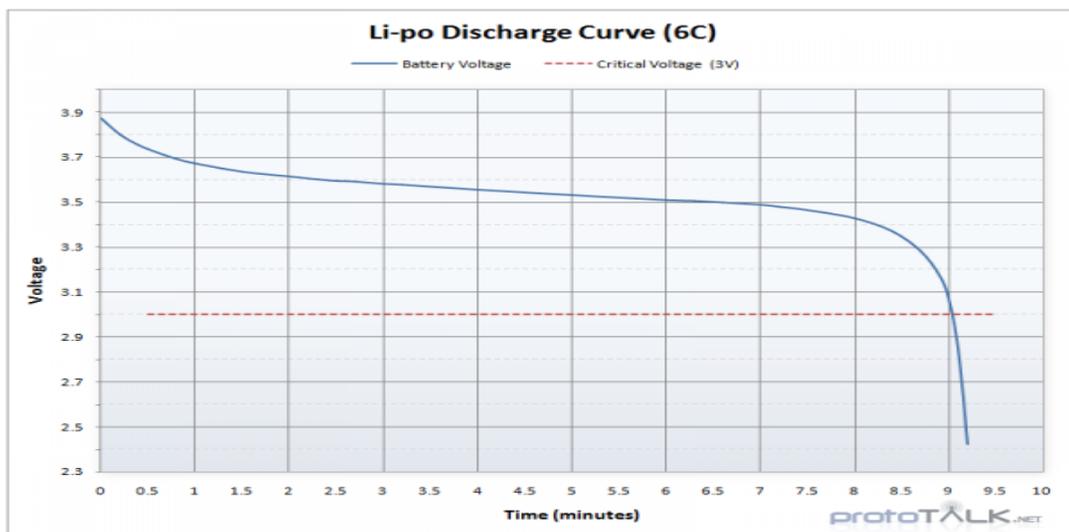
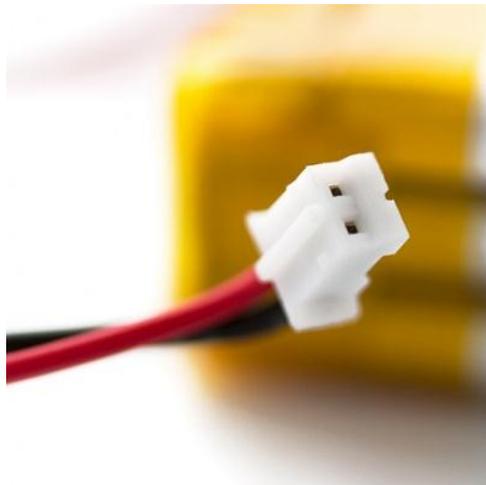


Image from ProTalk.net

An individual LiPo cell has a **nominal voltage of 3.7V**. When fully charged you will see nearly 4.3V on the cell but it will quickly drop to 3.7V under normal use. When depleted, the cell will be around 3V. This means your project will need to handle various voltages if you are running directly from a cell. If you need 5V you will need to combine two LiPos in series to create a 7.4V pack and regulate down to 5V.

Connectors



In the small electronics world, most LiPo batteries come terminated with various 2-pin connectors. At SparkFun, we use the **JST connector**. This prevents the battery from being plugged in wrong. The connector is a friction fit so it's common to use pliers to gently remove the battery.

Charging and Discharging



There are many low-cost chargers created to charge LiPo batteries. They commonly use USB to charge the battery. **Do not** attempt to charge a LiPos without a charger. A LiPo battery can be harmed by overcharging, so use a specifically designed LiPo charger.

LiPo batteries can also be harmed by being discharged too far. To protect against this, almost all LiPo batteries have a small safety circuit built into the top of the cell that will shut off the battery if the voltage drops below a certain threshold (usually 3V).

LiPo batteries have a **very low internal discharge rate**. This makes them a good candidate for projects that have low power requirements and need to run for many days or months.

Respect the energy density: These batteries pack a punch and can source multiple amps continuously. The short-circuit protection will shut off the battery when a short is detected but when using these batteries with projects use common sense.

We recommend LiPo for nearly every portable application. They are fairly robust and when used safely provide a great power source.

Source: <https://learn.sparkfun.com/tutorials/battery-technologies>