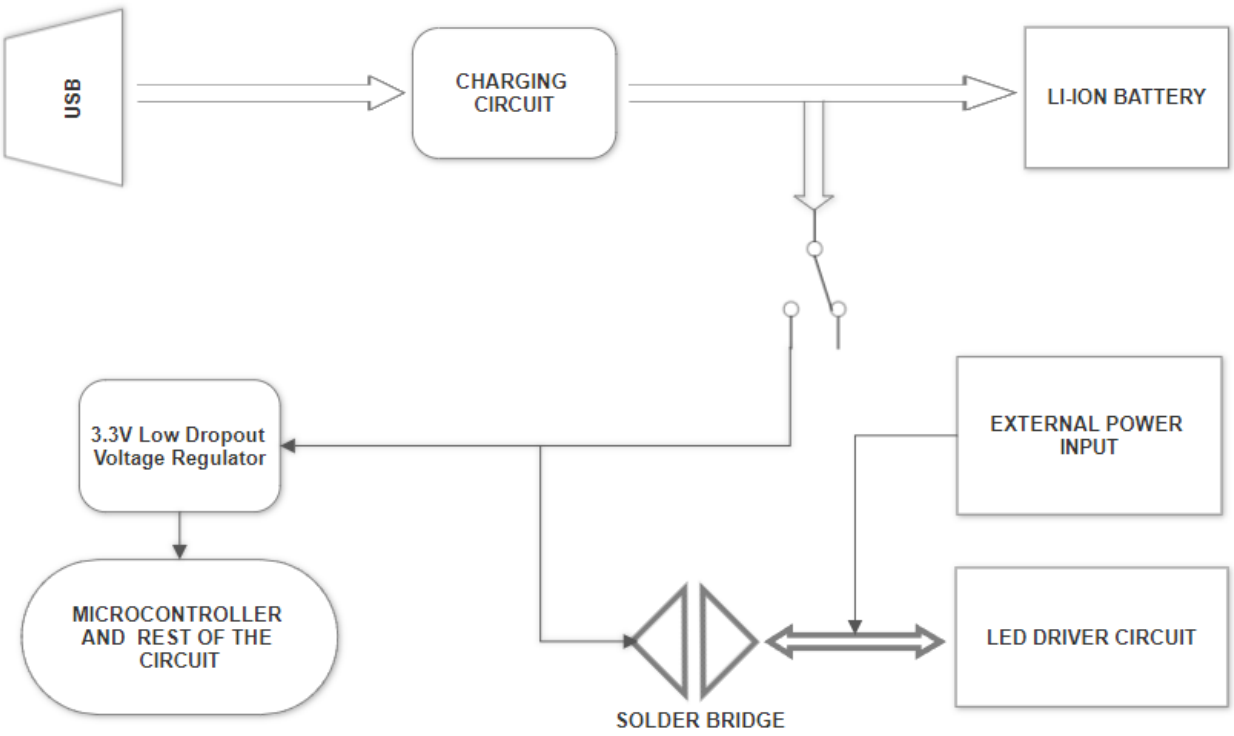
POWER FLOW DOCUMENTATION



Intended Current Flow:

USB->Charging Circuit	SIMPLEX / ONE WAY
Charging Circuit->BATTERY	SIMPLEX/ ONE WAY
Charging Circuit ->SPDT Switch	SIMPLEX/ ONE WAY
BATTERY-> SPDT Switch	SIMPLEX/ ONE WAY
SPDT Switch-> 3.3V Regulator	SIMPLEX/ ONE WAY
Regulator-> MCU & Circuit	SIMPLEX/ ONE WAY
SPDT Switch -> Solder Bridge	SIMPLEX/ ONE WAY
Solder Bridge -> LED DRIVER	DUPLEX/ TWO WAY
Solder Bridge -> External Power	DUPLEX/ TWO WAY
External Power Input	DUPLEX/ TWO WAY

Different Modes of Powering the Device:

> Using USB of PCB:

- In this mode the power is delivered by the external usb cable which will be attached to the USB port of the main board (not talking about the USB of STM32).
- 5V supplied by the USB is given to the “Charging circuit” which forwards the current to the battery.
- In case the battery is not connected, the rest of the circuit acts as a depleted battery and thus the circuit is directly powered by the USB.
- The LED Driver is powered by the same USB port if the solder bridge is shorted.

>Using Battery to power the device:

- Usually Li-Po or Li-Ion batteries have high current discharge rate, so if your LEDs can work between 3.7 to 4.2 V then you can power the LEDs using batteries only.
- To power the LEDs using batteries you need to short the “Solder Bridge” on the pcb.
- If the LEDs run on higher voltage than you need to connect the external source and thus take care of the “Warnings given at the end of this circuit”.
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> Using 5V external Power Supply for both LED and the rest of circuitry:

- First of all you need to desolder the “solder bridge” and then we can proceed.
- Once you have desoldered the “solder bridge” connect the external source using the screw terminal.
- You need to power the board using the USB port. Or if you are using a battery then it will work fine.

> Note/ Warning:

- The max current which the charging circuit can deliver is 1 Amp, considering the circuit consumes about 300mA, we are only left with 700mA for the LED strip. If the current consumption goes beyond 500mA it is better to use an external power source for the LEDs and the USB/Battery for the audio circuit and microcontroller.
- If you are using an external power source for LED make sure you desolder the solder bridge otherwise the devices might be damaged due to reverse current. Moreover, if the battery is being used and you use the external source for the LEDs, then if you look carefully in the above diagram there is no charging circuit between the battery and the LED Driver circuitry, so the battery will be overcharged and explode.
- Always make sure that if the battery is attached and external supply for LED is being used then the solder pad is not shorted. If using the USB power or battery for both audio and LEDs then only you need to short the “solder bridge”.