

# Guía Rápida Kelboy 1.0



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**Grupo Telegram:** [https://t.me/GameBoyZero\\_esp](https://t.me/GameBoyZero_esp)



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# 1.- Tips de soldadura y aclaraciones

Para poder llevar a cabo este proyecto es necesario unos mínimos conocimientos de soldadura y electrónica. No debemos confundir el positivo con el GND, en las fotos de la guía está todo bien aclarado. Al ser un proyecto DIY no nos hacemos responsables de un mal uso con la PCB, pero si ayudaremos a todos los que se encuentren con cualquier tipo de problema e iremos mejorando la guía a medida que surjan las dudas. **Antes de conectar algo sin saber lo que se hace pregunta por el grupo¡¡.**

En cuanto al soldador se recomienda utilizar un soldador de entre **15-30 Watts**, si no dispones de uno y utilizas un soldador de electricista (50 Watts o más) ten en cuenta que puedes llegar a quemar las pistas, por lo tanto debes de hacer las soldaduras de una forma rápida y precisa.

Una de las formas más fáciles para soldar es preestañar siempre los elementos a soldar, en las placas al hacer los test ya tendréis preestañados todos los pads necesarios, pero no los cables que vayáis utilizar, por eso recomiendo encarecidamente que primero le deis un poco de estaño a las puntas de los cables pelados y así luego solamente tendréis que apoyar el soldador encima del cable y el pad a soldar. Recordar que las pistas, aunque son resistentes, no se debe tirar de ellas.

## ***En cuanto a los cables***

No utilizéis cables gruesos, no es necesario, nosotros por ejemplo hemos usado cables AWG30 (es el estándar americano para medir los diámetros de los cables), y han dado muy buen resultado. Si no disponéis de estos cables no os preocupéis, pero usar cables que sean flexibles, si ponéis un cable muy duro cuando la cerréis y haga palanca levantará el pad donde esté soldado. Esto es muy importante, el cable debe ser flexible, es decir que lo dobléis con facilidad con la mano. **Detalle importante, el cuadrado en los pads siempre es positivo y el redondo negativo (en pads con agujero para soldar cables) y el rojo siempre representa el positivo así como negro el GND.**

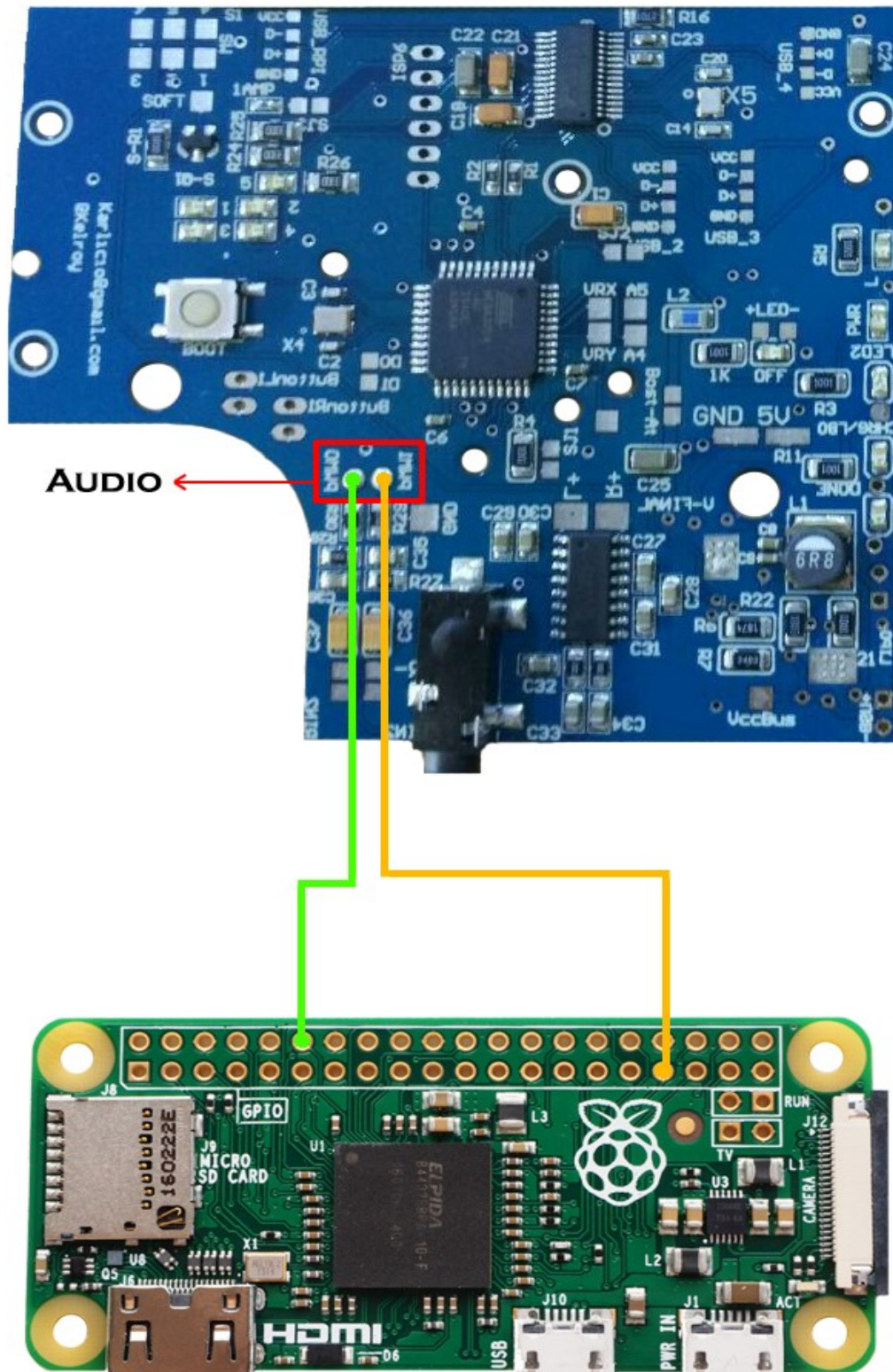
## ***En cuanto a baterías***

En este apartado cada uno puede utilizar la batería que guste siempre y cuando quepa dentro del modelo y tenga en las características de la misma una descarga superior a 2C (vienen indicado cuando la compras). Un detalle a tener en cuenta es buscar baterías con circuito de protección, estas baterías son frágiles, no puede ser agujereadas o dobladas. En nuestras pruebas hemos utilizado una batería de 2,200mAh con una duración aproximada de 2 horas. Veréis que a medida que se agote la batería cuando llegue a niveles de descarga críticos el audio y la pantalla empezarán a fallar. En estos casos hay que conectar el cargador a la GameBoy, **no dejéis que la batería se agote pues puede estropear algo.** Así mismo recomendamos el uso de un conector para unir la batería a la PCB, como puede ser el conector JST.



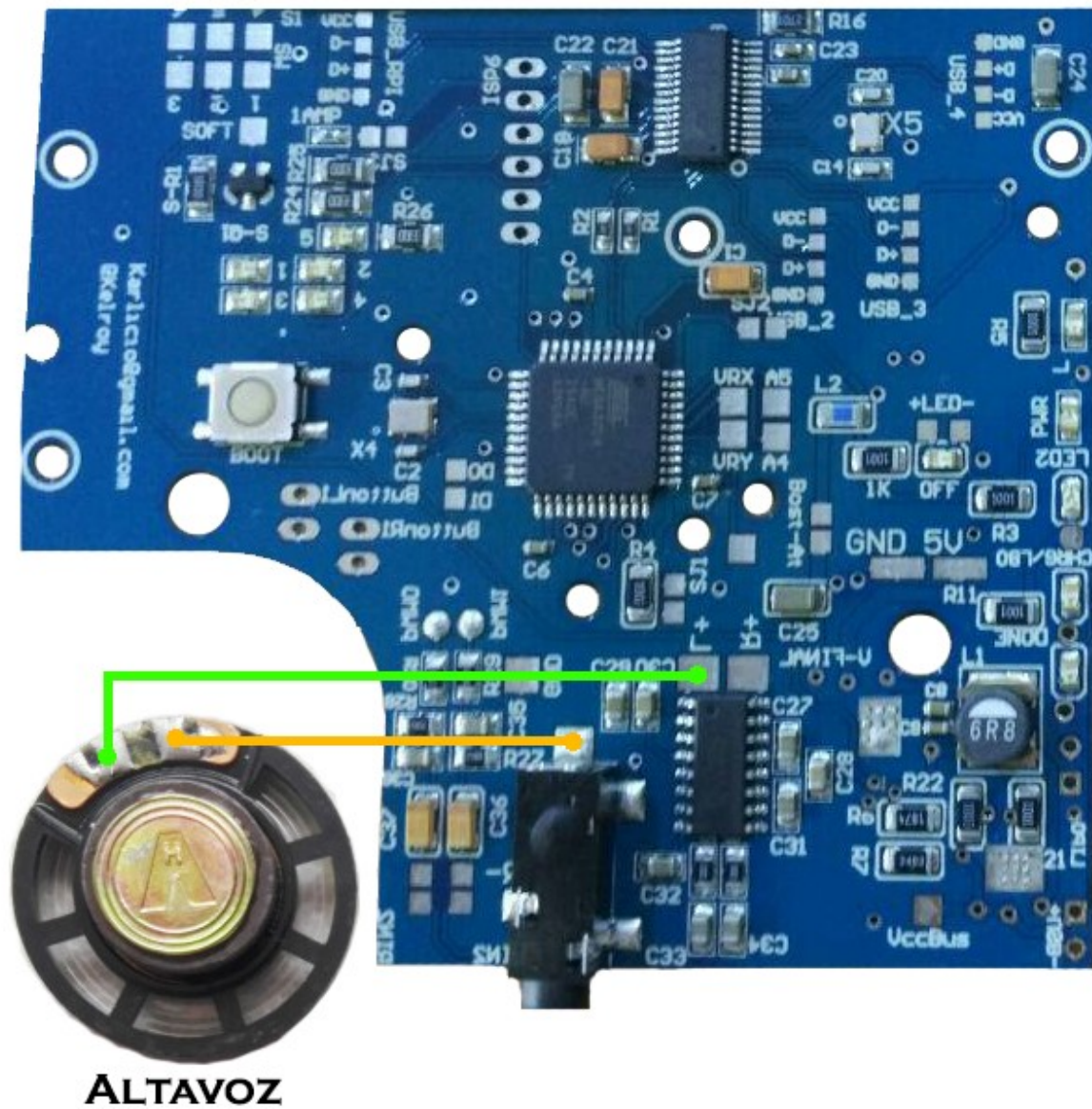
## 2.- Conexión Audio

En este apartado vamos a ver la conexión del audio mediante PWM de la Raspberry Pi. Para ello vamos a necesitar dos cables de colores diferentes y soldar los puntos que se muestran a continuación en la imagen. **PARTE DE PROGRAMACIÓN EN APARTADO 9**





Conexión del altavoz para tener sonido.

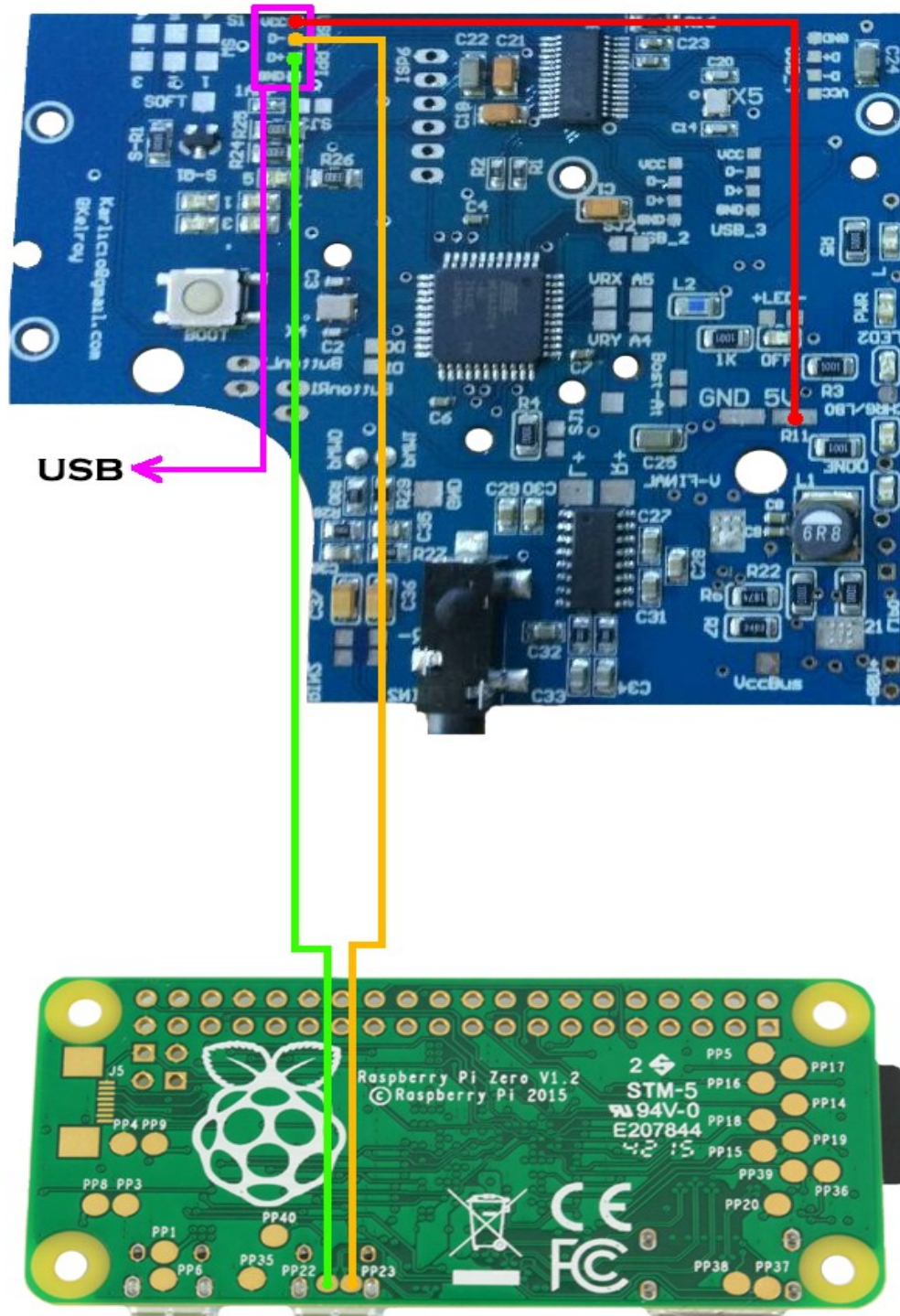




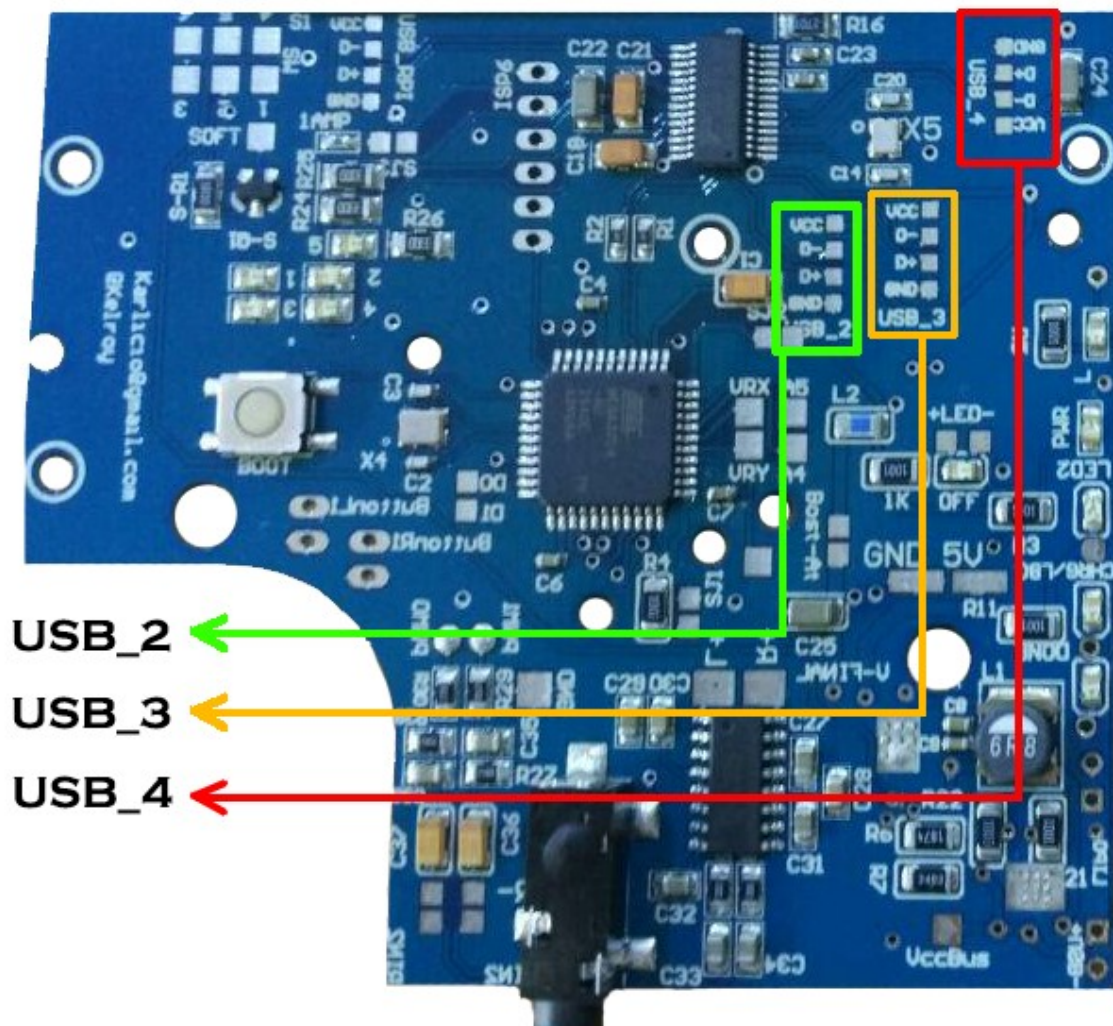


### 3.- Conexión Pi-USB

Conexión del usb de la Raspberry Pi a la Kelboy-AIO. Para poder hacer funcionar la botonera necesitamos unir el Hub usb de la Kelboy a la Raspberry Pi. El cable rojo es para alimentar el Hub usb.



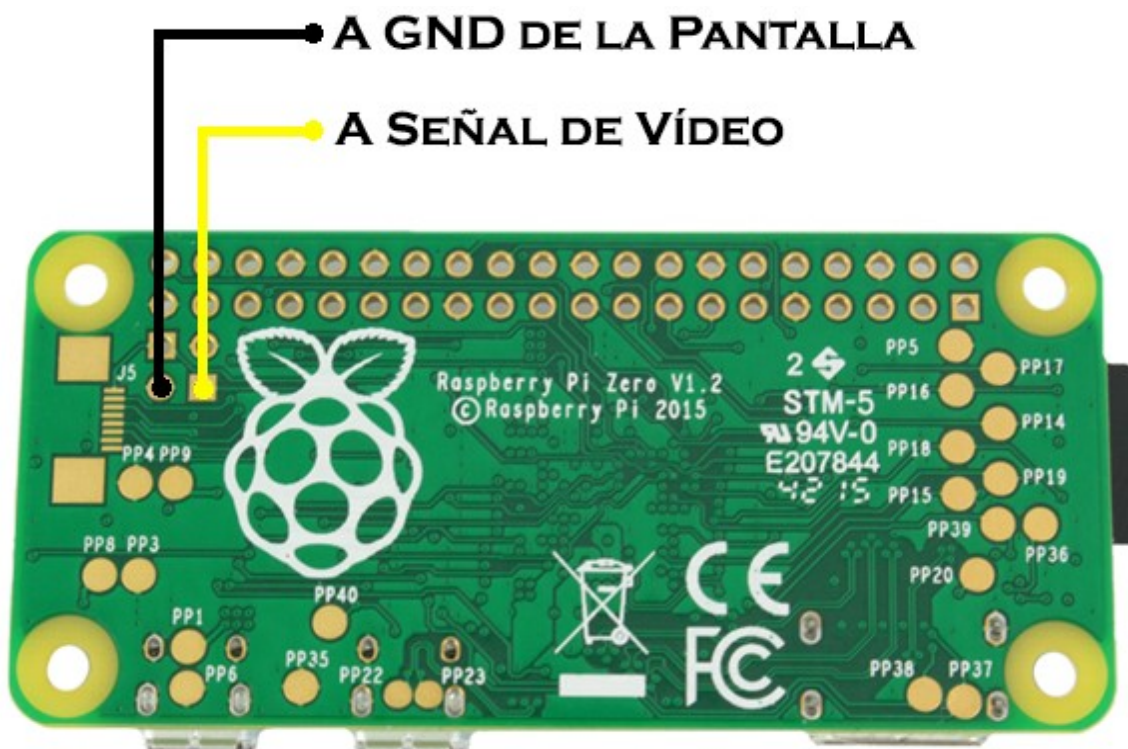
Si queremos ampliar añadiendo otros gadgets (tipo wifi,bluethoot...etc) deberemos usar los usb libres, estos son el USB2 (color verde ), USB3(color naranja), USB4 (color rojo).





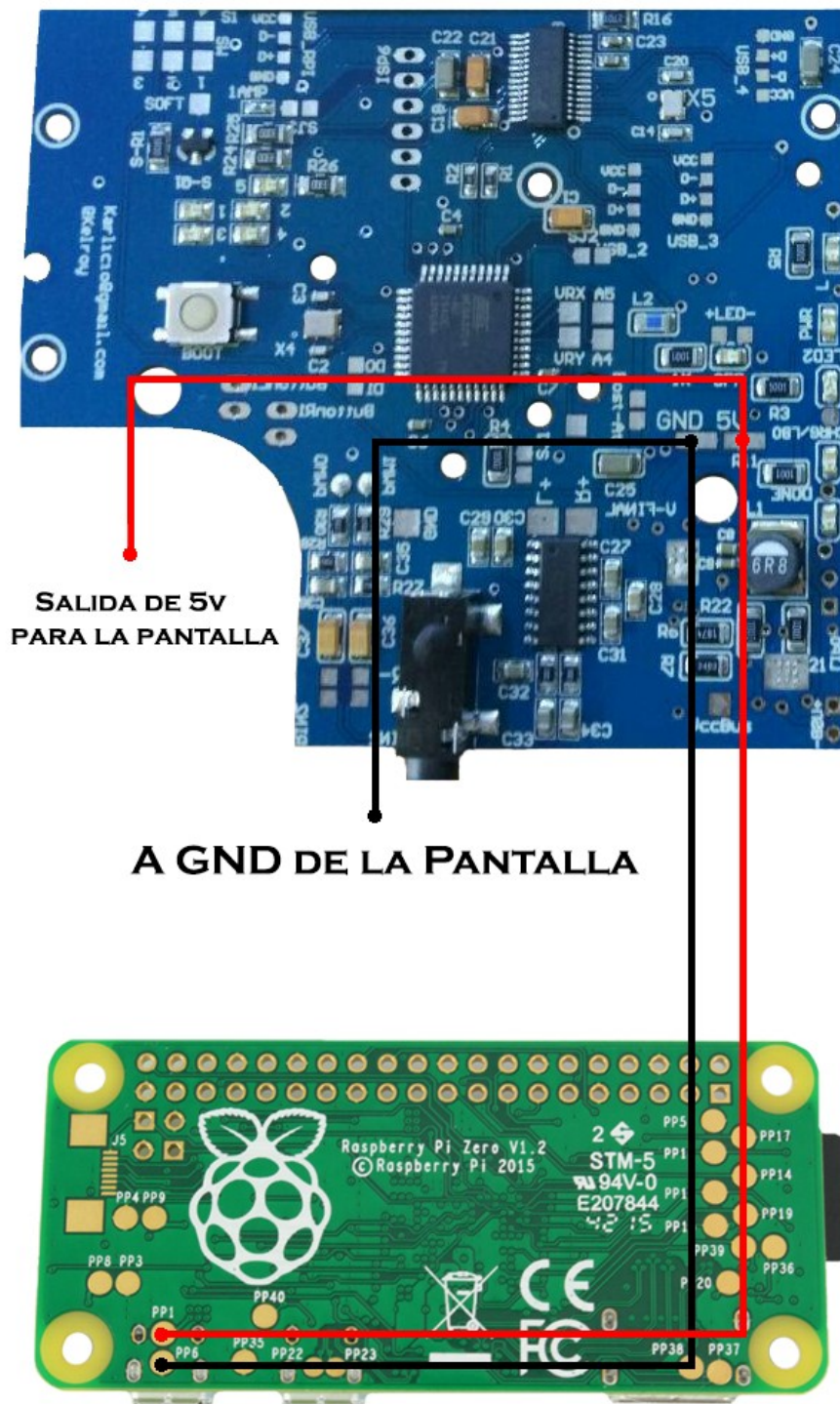
## 4.- Conexión Pantalla

Para la conexión de la pantalla se utilizan solo dos pines de la Raspberry Pi, que se muestran en la foto a continuación.



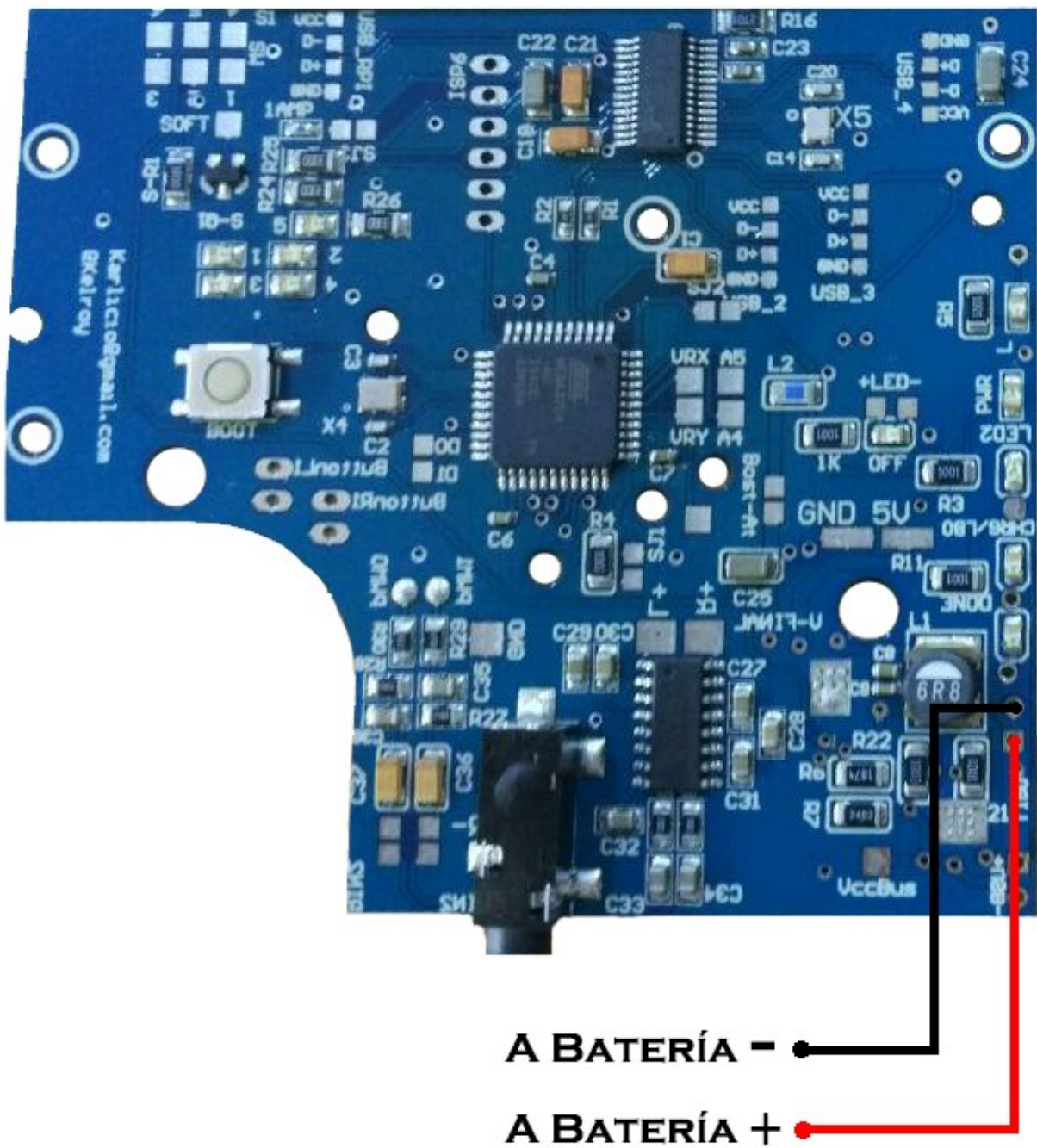
## 5.- Conexiones de alimentación

Para la conexión de alimentación de la Raspberry Pi y la pantalla tendríamos que seguir el siguiente esquema.



## 6.- Conexión Lipo

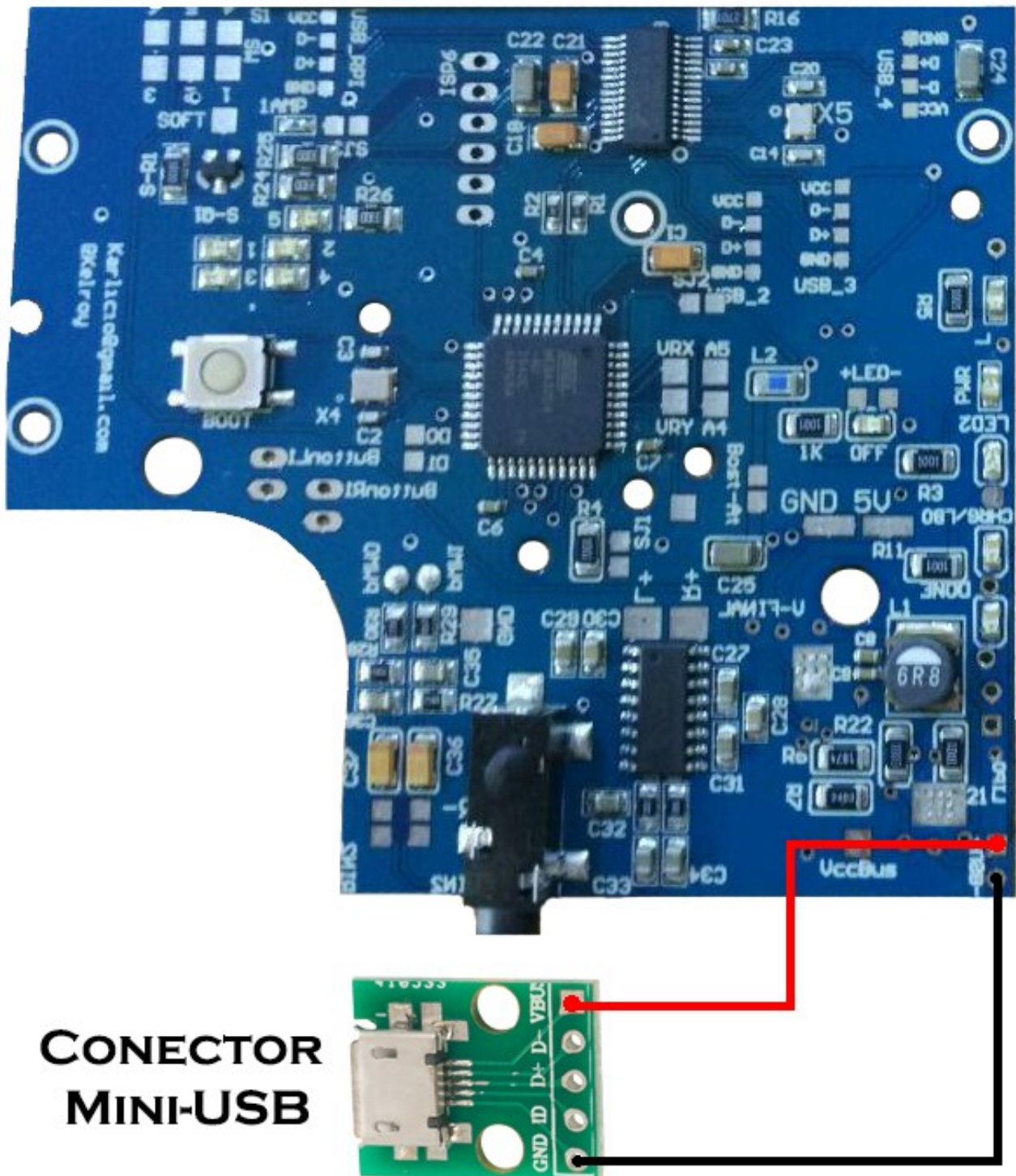
En la foto a continuación se muestra como se debe conectar la batería Lipo a la Placa, **no confundir y poner la tensión al revés.**





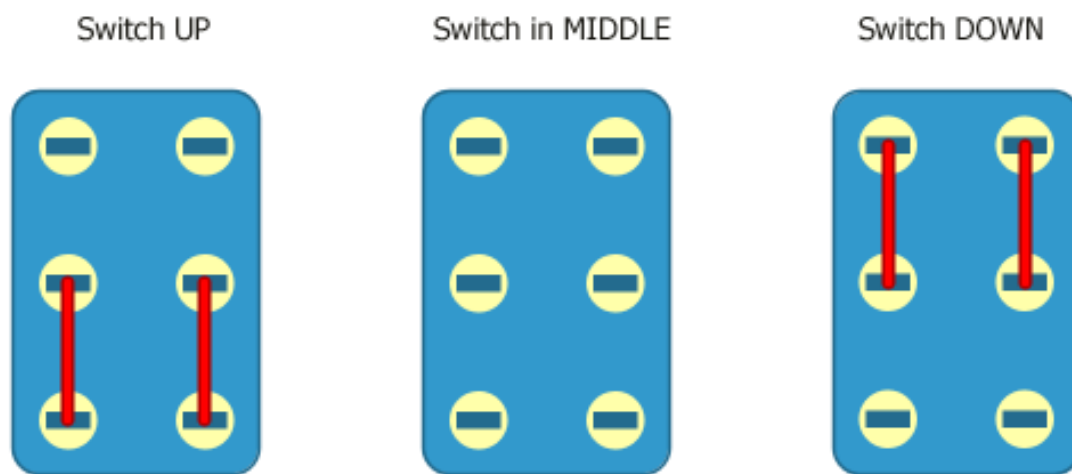
## 7.- Conexión USB/Cargador

Como se ve en esta imagen la parte inferior contiene los pads para poder conectar el mini usb. Estos pines son los que se encargan de alimentar la placa para cargar la batería cuando está baja. Necesitan una alimentación de 5Voltios y por lo menos 1Amperio.



## 8.- Soft Pi

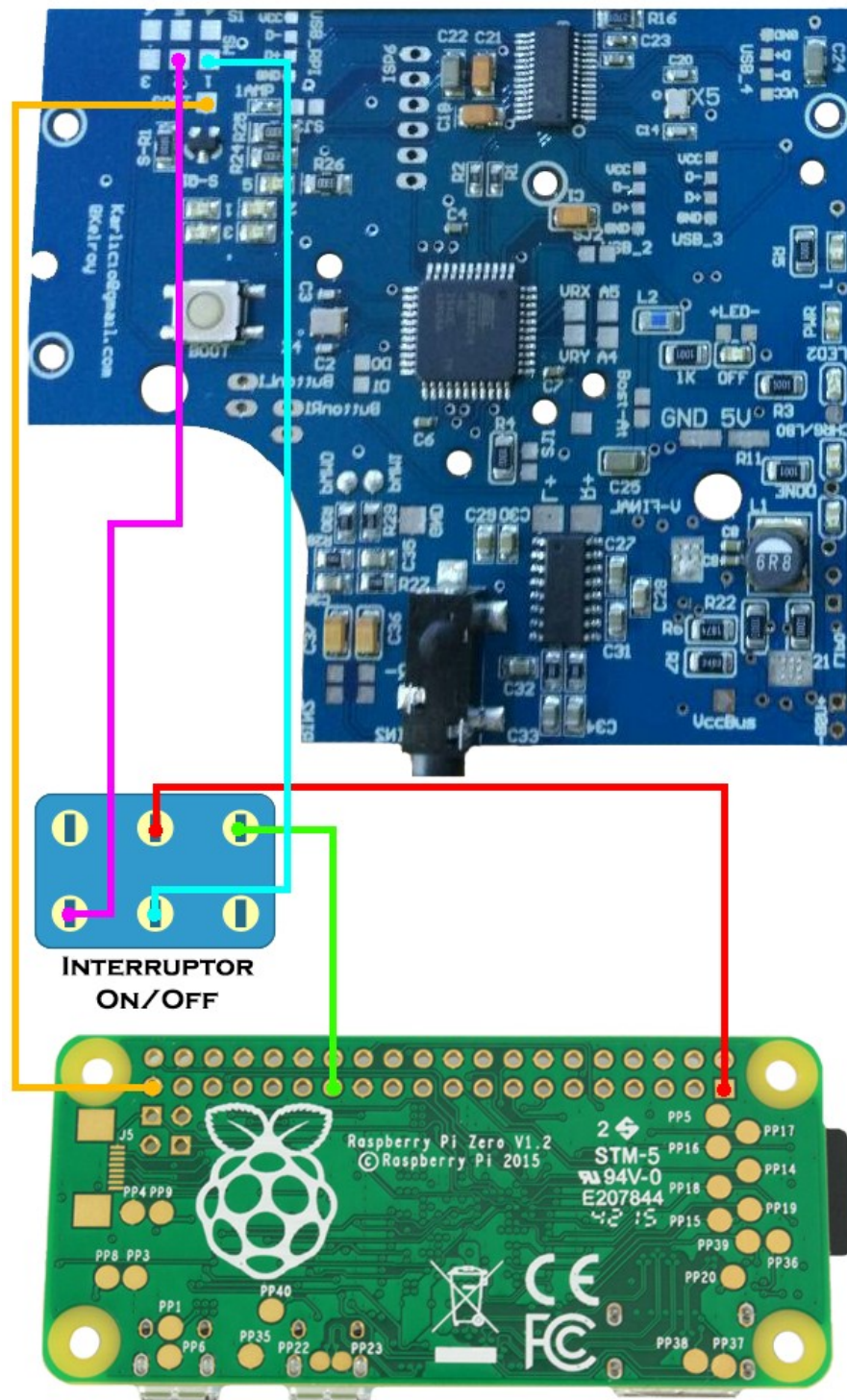
Para poder montar el apagado “Soft” se necesita un interruptor de 6 pines con topología ON-ON, se puede ver el esquema de funcionamiento en la siguiente imagen



Como podemos ver en la imagen cuando le damos al interruptor hacia abajo o hacía arriba y hace contacto ON-ON, la posición del medio es insistente en nuestro caso, pues necesitamos un interruptor de 2 posiciones. Solo nos interesan el de la izquierda y el de la derecha.

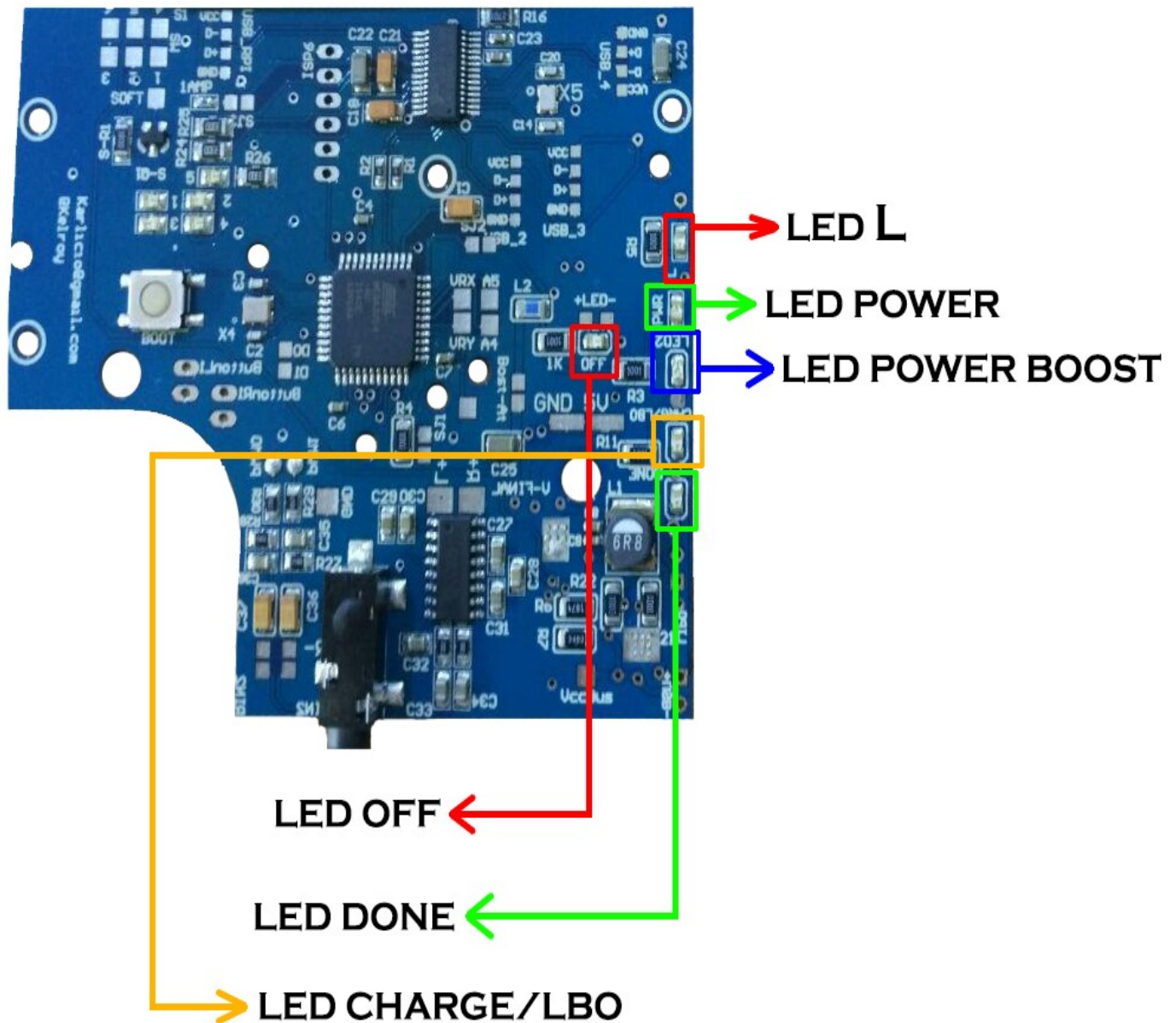
***Al ser un interruptor ON-ON da igual como lo coloquemos, siempre y cuando sigamos el esquema de la foto inferior.***

Diagrama de conexión del interruptor y la Raspberry Pi para el apagado “Soft”. **Posteriormente necesita parte de programación que está en el apartado 10 para su funcionamiento.**





## 9.- Leds y estados



**Led L:** Led especial que se utiliza solo cuando configuramos el joystick.

**Led Power:** Led que indica correcto funcionamiento del integrado ATMEL.

**Led Power Boost:** Led que indica que la placa está encendida y generando 5V.

**Led Off:** Led de batería baja.

**Led Done:** Led de carga de la batería listo.

**Led Charge/Lbo:** Led de correcto funcionamiento del integrado que carga la batería.

## 10.- Programación Pi

Para poder hacer funcionar correctamente el apagado Soft así como el audio en la raspberry pi hace falta unos cuantos scripts que están subidos en la carpeta del github del proyecto. Posteriormente hay que ejecutarlos desde el terminal o mediante ssh. **Mencionar que el programa que estamos utilizando para esta guía es RetroPie.**

### 10.1.- Introducción Github

Para poder tener todo el material necesario, en cuanto a código se refiere, necesitamos hacer primero una copia del repositorio del proyecto con el comando git de linux desde el terminal.

**git clone** <https://github.com/kelroy1990/Kelboy-AIO.git>

De forma que tendremos ya una carpeta con todo actualizado, si en un futuro deseamos actualizar el contenido no tenemos más que situarnos dentro de la carpeta y escribir el comando

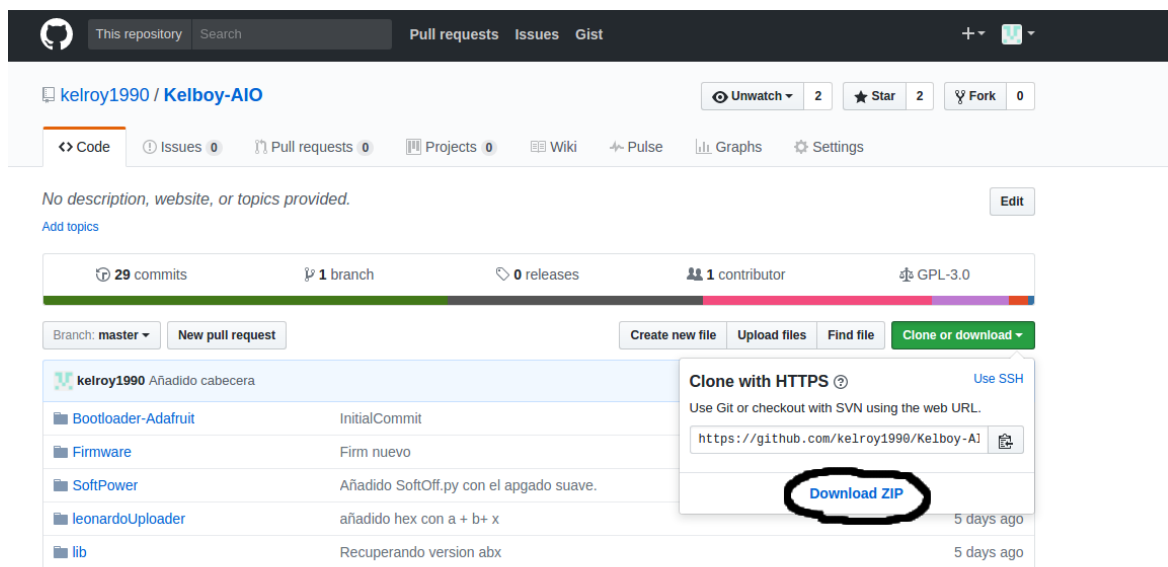
**git pull**

De forma que se actualizará a su última versión.

Si por el contrario no disponemos de linux y estamos en windows la forma fácil de hacerse con una copia del repositorio es entrando en la web del mismo

<https://github.com/kelroy1990/Kelboy-AIO>

Posteriormente debemos pulsar en el botón de color verde “clone or download” y pulsar en el botón “donwload ZIP”.



Una vez echo esto tendremos un archivo comprimido, deberemos descomprimirlo y copiarlo a la carpeta Home de la Raspberry Pi.

Además a mayores si entramos en el repositorio dentro de cada apartado si bajáis la página veréis un montón de texto explicando las cosas que hay dentro de la carpeta del proyecto y como utilizarlas.

***Cabe mencionar que si disponemos de una Raspberry Pi zero w no necesitamos de nada extra pues podemos hacer todo mediante SSH(Linux) con ayuda de la conexión WiFi, o en su defecto si utilizamos una Raspberry Pi zero pero con un dongle WiFi como por ejemplo:***

[https://www.amazon.es/gp/product/B008IFXQFU/ref=oh\\_aui\\_detailpage\\_o02\\_s00?ie=UTF8&psc=1](https://www.amazon.es/gp/product/B008IFXQFU/ref=oh_aui_detailpage_o02_s00?ie=UTF8&psc=1)

## 10.2.- Paso a paso desde terminal SSH.

Se va a necesitar la Raspberry Pi conectada a una wifi o un teclado a ella en la consola de comandos, si accedemos a ella mediante terminal ssh(Linux) o con el programa putty(Windows) escribiremos lo siguiente:

```
ssh pi@retropie.local
```

Contraseña por defecto: 'raspberrypi'. En la consola de comandos editar el archivo /boot/config.txt :

```
sudo nano /boot/config.txt
```

Añadiendo la siguiente línea:

```
dtoverlay=gpio-poweroff,gpiopin=22,active_low="y"
```

Presionar Ctrl+X para salir, pulsar Y para guardar y luego presionar "retorno", la tecla usada para borrar un caracter de texto cuando nos equivocamos.

Posteriormente debemos descargar la carpeta con el código, podemos introducirla de forma manual en la sd o descargar la carpeta de github entera del proyecto, que contiene ademas el programa en python.

```
cd ~;git clone https://github.com/kelroy1990/Kelboy-AIO.git
```

Ahora, para testearlo, debemos lanzarlo manualmente:

```
python ~/SoftPower/SoftOff.py
```



Una vez que estemos a gusto con el resultado debemos instalarlo para que quede como algo definitivo, para que surja efecto debemos reiniciar la consola una vez terminado.

```
echo "@reboot /usr/bin/nice -n 19 /usr/bin/python ~/SoftPower/SoftOff.py" >> mycron;  
crontab mycron;rm mycron
```

Si no somos capaces de escribir el símbolo ~ podemos poner la dirección completa de forma que el código anterior quedaría como sigue:

```
echo "@reboot /usr/bin/nice -n 19 /usr/bin/python /home/pi/Kelboy-  
AIO/SoftPower/SoftOff.py" >> mycron; crontab mycron;rm mycron
```

### 10.3.-Modificar el teclado para poder escribir de forma correcta en retropie con teclado (opcional)

Para poder hacer esto debemos de cambiar el layout del teclado del mismo de gb a es, esta opción está almacenada en el archivo /etc/default/keyboard

```
sudo nano /etc/default/keyboard
```

Una vez dentro del modificamos la línea XKBLAYOUT="gb" por:

```
XKBLAYOUT="es"
```

De esta forma tendremos el teclado en español y podremos escribir símbolos como la @ de la forma que estamos acostumbrados.

### 10.4.-Audio por PWM

En la consola de comandos editar el archivo /boot/config.txt :

```
sudo nano /boot/config.txt
```

Añadiendo la siguiente línea:

```
dtoverlay=pwm-2chan,pin=18,func=2,pin2=13,func2=4
```

Posteriormente para habilitarlo debemos configurar la salida de audio como jack 3.5mm

O podemos hacerlo manualmente de la siguiente forma, en un terminal escribimos:

```
sudo nano /etc/modules
```

Y añadimos la línea:

```
sudo amixer cset numid=3 1
```

## 11.- Instalar tema para que sean visibles los textos

Dentro de la carpeta que previamente hemos descargado del [Github](#) podemos encontrarnos una carpeta llamada Themes, dentro encontramos el tema que se llama gbz35 (gbz pantalla 3,5 pulgadas).

Su instalación es muy sencilla, solo debemos copiar esta carpeta a la dirección de la Raspberry Pi /etc/emulationstation/themes.

Igual que en el apartado 9 se va a necesitar la Raspberry Pi conectada a una wifi o un teclado a ella en la consola de comandos, si accedemos a ella mediante terminal ssh como puty, o similares, escribiremos lo siguiente:

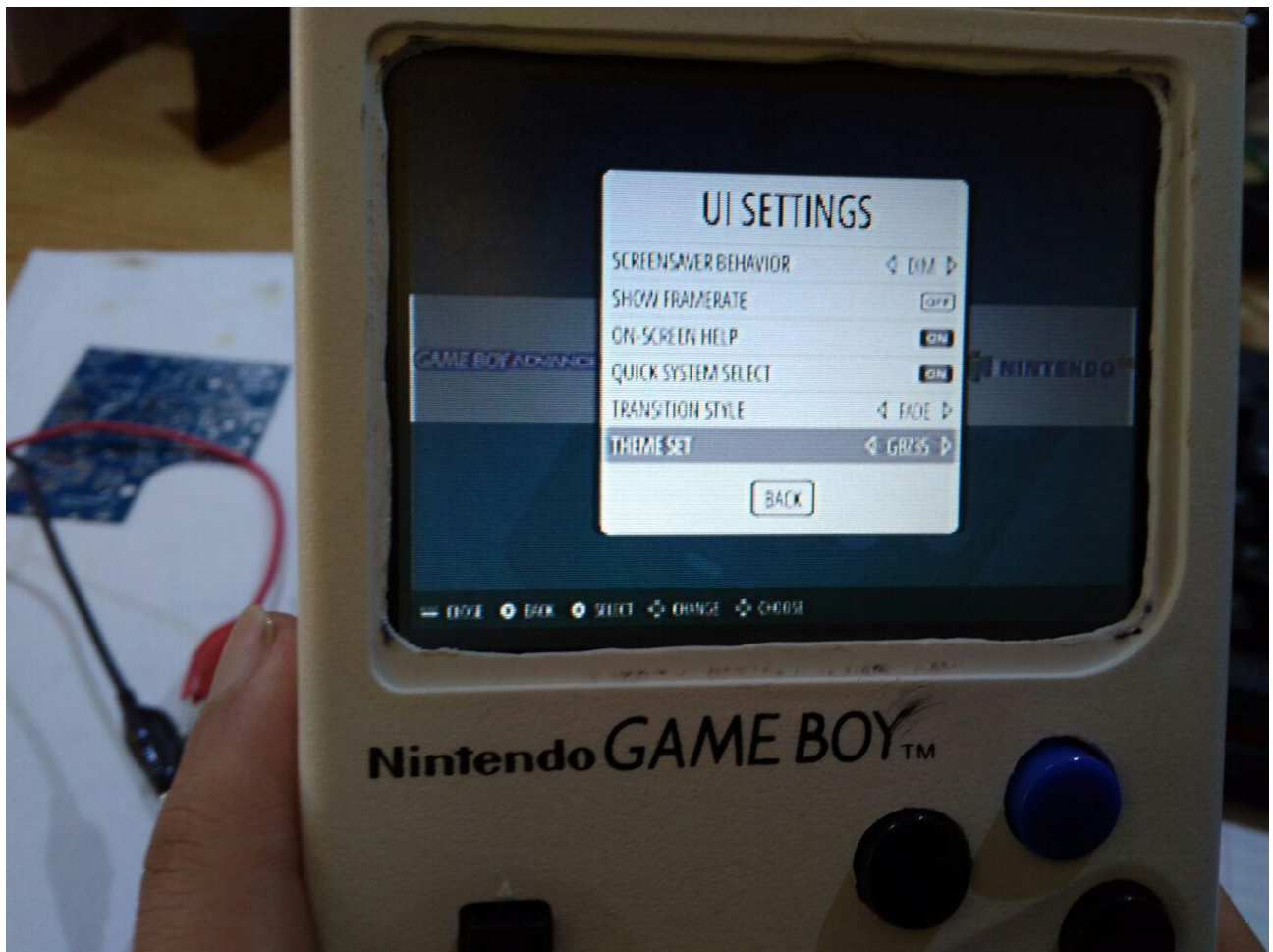
```
ssh pi@retropie.local
```

Contraseña por defecto: 'raspberry'.

Una vez dentro debemos escribir el siguiente comando, y ya tendremos nuestra carpeta copiada en el sitio correcto.

```
sudo cp -R /home/pi/Kelboy-AIO/Themes/ /etc/emulationstation/themes/
```

Por último dentro del menu de retropie de nuestra Game Boy debemos pulsar estar y en el menu dirigirnos a UI-Settings. Una vez dentro de este menu debemos bajar abajo del todo hasta llegar a “Theme Set” y cambiar el tema pulsando la tecla derecha o izquierda hasta encontrar gbz35.



De forma que al volver al menú principal ya tendremos el tema en cuestión donde podremos ver los textos correctamente.



## 12.- Agradecimientos e integrantes proyecto

Queremos agradecer personalmente al grupo de telegram “[https://t.me/GameBoyZero\\_esp](https://t.me/GameBoyZero_esp)” por su apoyo a unos totales desconocidos para llevar a cabo este proyecto. El cual ha sido titánico en cuanto a horas se refiere. En especial agradecer a @Kokosgeek por sus largas charlas en mi habitación mientras diseñaba y a @radeon91 por testear la placa y dar apoyo. Y en general a todos los frikis de este gran grupo, que siempre están para echar una mano y que han ayudado a hacer esto posible.

**Diseño Hardware/Software :** @kelroy

**Montaje placas:** @kelroy @N3VOA @TheMasterCarba

**Logística:** @N3VOA @TheMasterCarba Con ayuda de:



***[www.galiciatechnologies.com](http://www.galiciatechnologies.com)***

**PDF:** @kelroy @TheMasterCarba @N3VOA

**Revisión-PDF:** @Curromac

**Github proyecto:** <https://github.com/kelroy1990/Kelboy-AIO>

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Version 3, 29 June 2007

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