LiPo Battery Breadboard Supply

Calvary Engineering

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**Section 1: Description**

The LiPo Battery Breadboard Supply is a simple LiPo battery breakout that fits snuggly on a standard sized breadboard providing power to rails on both sides of the board. The breakout also includes a 3.3V, 300mA regulator in case the user would like to add a regulated supply to their design. Furthermore, the breakout includes a numberof indicator LEDs so the user can monitor the status of the LiPo battery and the regulated supply. The user can also turn the supply off by disconnecting the supply from the power rails and turning off the regulator without having to remove the breakout board from the breadboard or disconnecting the LiPo battery.

**Section 1: Specifications**

Operating Voltage: Fully charged LiPo battery voltage to discharged LiPo battery voltage1

Operating current: Up to 1A by powering directly through the battery, 300mA if powered from the regulator2

Quiescent Current: As low as 0.01 μA3

NOTES:

1. If operating directly from the LiPo battery, the output voltage will be limited to the output voltage of the LiPo battery. If powering from the regulated output, the output voltage will be 3.3V.

2. The 300mA operating current for the regulator output was obtained from the AP2210 datasheet from Diodes Incorporated Document number: DS37517 Rev. 2 – 2.

3. Quiescent current was obtained from the AP2210 datasheet from Diodes Incorporated Document number: DS37517 Rev. 2 – 2.

**Section x.xx Pinouts**

|  |  |  |
| --- | --- | --- |
| Pins | Name | Description |
| + | NC | No connect. No electrical connection to chip. |
| - | SCL | I2C clock input |
| 3 | SDA | I2C data input |
| 4 | PGND | Ground for LED drivers |
| 5,6,7\* | DRV | Driver for LEDs. No input required of user. |
| 9,10 | Vled | Power input for LEDs. Add a bypass capacitor to ground. |
| 11 | VDD | Analog power. Add a bypass capacitor to ground. |
| 12 | GND | Device analog ground. |
| 13 | INT | Pin output for device interrupt signal. |

\* Pin 7 is NC on the MAX30100 and MAX30102, but is Driver for Green LED in the MAX30101.

**Section x.xx Quick Getting started instructions**

Solder the headers on both sides of the board. Plug the headers into the power lines on the breadboard. Be sure to plug in the back 4 headers as these headers are the electrical connections. The other 8 headers are for mechanical stability.

Plug in your LiPo battery. Move the shunt position to the “LiPo-Vdd” position to power yoru board directly from the LiPo battery. This will give you a battery voltage from 4.3V-3.3V and up to 1A\*.

Move the shunt position to the “Vdd-VReg” position and adjust the 3V3.Switch to the “ON” position to power the board from the 3.3V regulator. This will give you a regulated voltage of 3.3V and up to 300mA\*.

Only 4 of the headers are electrical connections Place two 7 position male headers on a breadboard spaced as pictured. Place the MAX3010X Breakout through the male header pins. Turn on your soldering iron to the appropriate temperature and solder the headers pins to the vias. Allow the board to cool before using the device.

**Section x.xx Design Implementation**

Only 4 of the headers are electrical connections. The other 8 are for mechanical stability. The breakout sits snuggly at the top of the breadboard so that the LiPo battery hangs off the breadboard and leaves the rest of the breadboard open.

**Section x.xx Troubleshooting Guide**

We have two LED indicators to ensure that the battery is still active. The PWR indicator shows that the power is being delivered to the breadboard. The 3.3V LED indicates that the 3.3V regulator is active. If neither of these LEDs is lit, be sure the shunt is fixed. If you want to power from the 3.3V regulator, be sure the 3V3.SWITCH is in the “ON” position.

If none of these fix your problem, be sure the LiPo battery is secured in the JST connector.

**Section x.xx Testing**

The LiPo Battery Breakout Board was tested by attaching a standard 3.7V Lithium Polymer battery to the board, and the voltage was tested at “Vdd” when the power toggle jumper was switched from the “Lipo” position to “VReg” position. The voltage was measured with a standard handheld digital multimeter. The “3V3.Switch” was tested by toggling the switch on and off and observing the voltage at the “VReg” position.

**Section x.xx Contact Us**

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