

6V – 2.5Ah Sealed Lead-Acid Battery Charger

This dual-level float charger was designed for a 6V (three 2V cells) 2.5Ah battery. D2 LED was added for visual indication of charge completion, D3 indicates power, D4 LED presents overcharge condition, etc. 6V lead-acid battery charger is built using the UC3906 chip. UC3906 contains all of the necessary circuitry to optimally control the charge and hold cycle for sealed lead-acid batteries. UC3906 IC monitors and controls both the output voltage and current of the charger through three separate charge states; a high current bulk-charge state, a controlled over-charge, and a precision float-charge, or standby state. Optimum charging conditions are maintained over an extended temperature range with an internal reference that tracks the nominal temperature characteristics of the lead-acid cell. A typical standby supply current requirement of only 1.6mA allows these ICs to predictably monitor ambient temperatures. Separate voltage loop and current limit amplifiers regulate the output voltage and current levels in the charger by controlling the onboard driver. Voltage and current sense comparators are used to sense the battery condition and respond with logic inputs to the charge state logic.

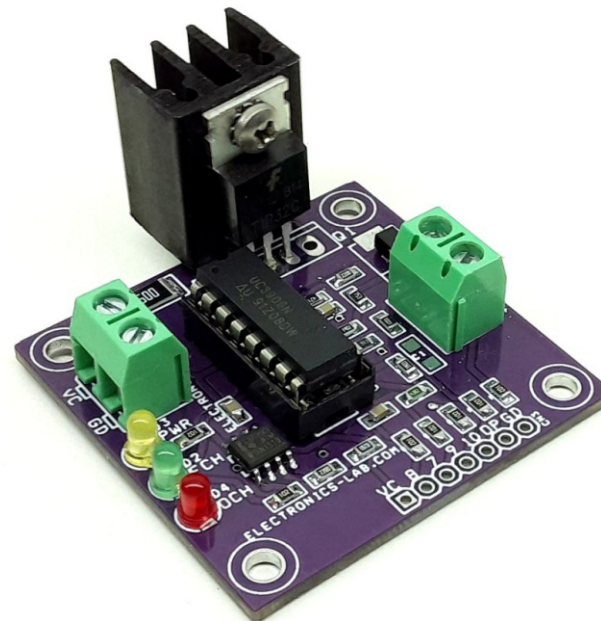
A charge enable comparator with a trickle bias output can be used to implement a low current turn-on mode of the charger, preventing high current charging during abnormal conditions such as a shorted battery cell. Other features include a supply under-voltage sense circuit with a logic output to indicate when input power is present. In addition, the over-charge state of the charger can be externally monitored and terminated using the over-charge indicate output and over-charge terminate input.

Note: The circuit is configured to charge 6V 2.5 to 4.5AH Battery, Higher current and voltage battery can be charge by changing resistors values, refer the data sheet of UC3906 for the same.

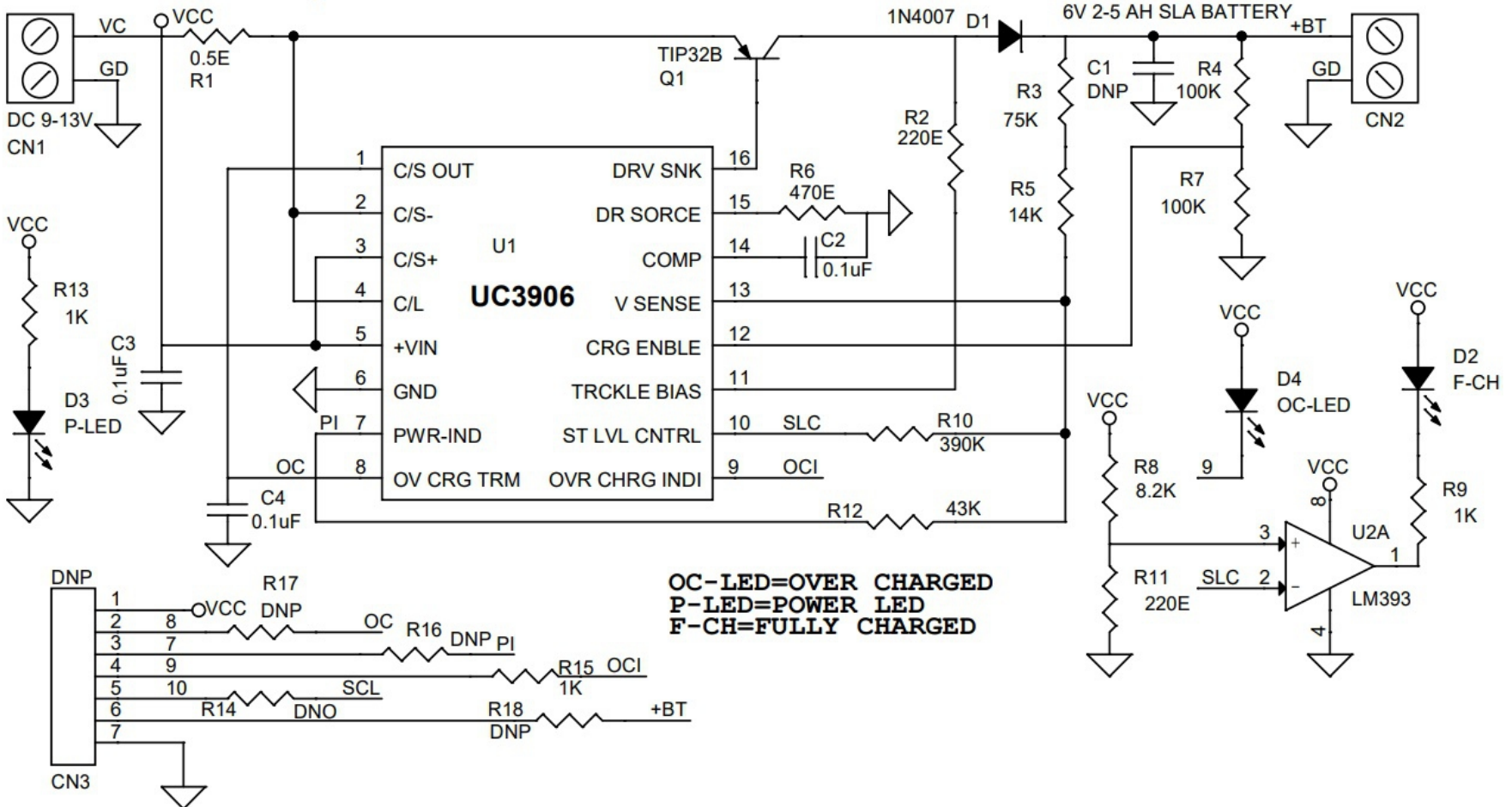
Do not populate following components, CN3, R14, R16, R17, R18 they are optional for micro-controller interface/control.

Features

- Input Supply Voltage 9.0V to 13V DC, 1Amp – 2Amp
- Bulk Charge Rate 500mA
- 2.5AH To 4.5AH Battery Can be Charged
- Start-up Trickle Current 10mA
- Start-up voltage 5.1V
- Bulk to OC Transition Voltage 7.125V
- OC Voltage 7.5V
- Float Voltage 7.0V
- Float to Bulk Transition Voltage 6.3V
- OC Terminate Current 50mA
- On Board Power LED
- Over Charge LED
- Fully Charged LED



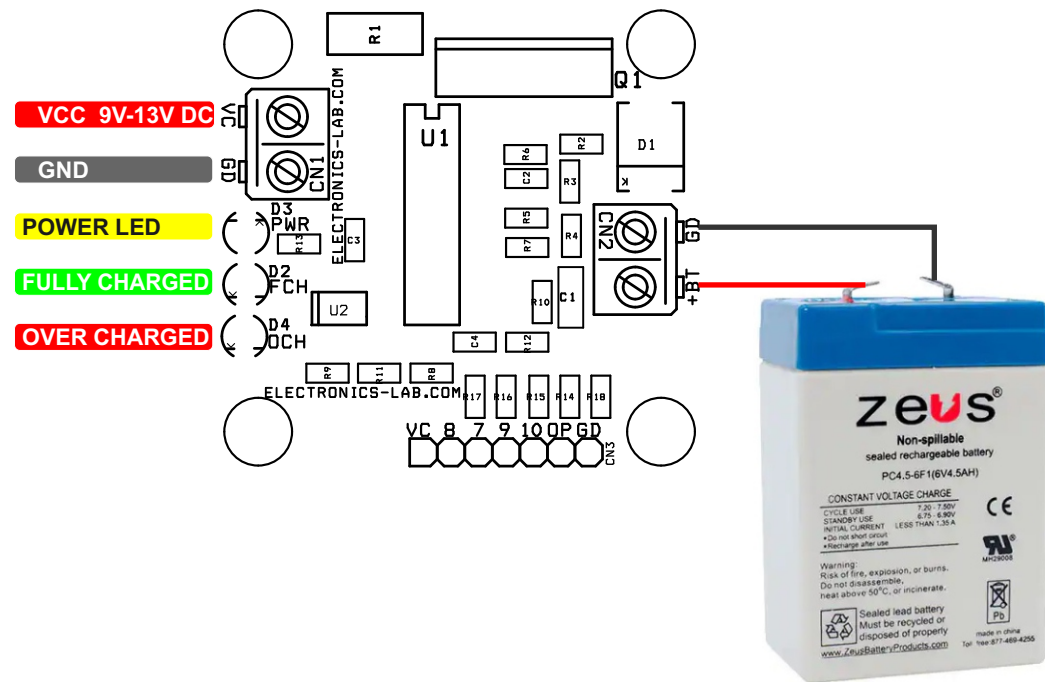
9V to 13V DC @ 1Amp

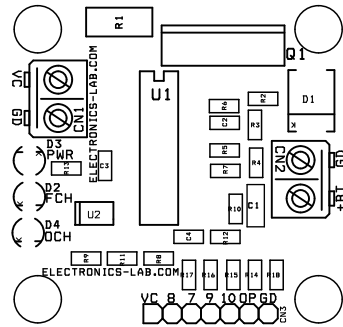




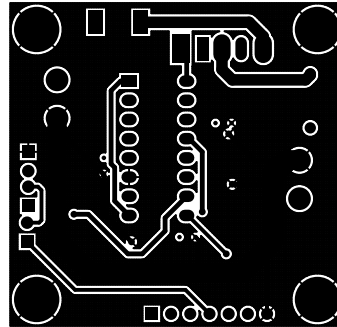
BOM						
NO	QNTY	REF.	DESC.	MANUFACTURER	SUPPLIER	SUPPLIER PART NO
1	1	CN1	2 PIN SCREW TERMINAL PITCH 5.08MM	PHOENINX	DIGIKEY	277-1247-ND
2	1	CN2	2 PIN SCREW TERMINAL PITCH 5.08MM	PHOENINX	DIGIKEY	277-1247-ND
3	5	C1,CN3,R16,R17,R18	DNP			
4	3	C2,C3,C4	0.1uF/50V SMD SIZE 0805	MURATA/YAGEO	DIGIKEY	
5	1	D1	1N4007 SMD	SMC DIODE	DIGIKEY	1655-1N4007FLTR-ND
6	1	D2	3MM LED GREEN	AMERICAN OPTO	DIGIKEY	2460-L314GT-ND
7	1	D3	3MM LED YELLOW	AMERICAN OPTO	DIGIKEY	2460-L314YD-ND
8	1	D4	3 MM LED RED	AMERICAN OPTO	DIGIKEY	2460-L314ET-ND
9	1	Q1	TIP32B	ONSEMI	DIGIKEY	TIP32BOS-ND
10	1	R1	0.5E 1% SMD SIZE 2512	MURATA/YAGEO	DIGIKEY	
11	2	R2,R11	220E 1% SMD SIZE 0805	MURATA/YAGEO	DIGIKEY	
12	1	R3	75K 1% SMD SIZE 0805	MURATA/YAGEO	DIGIKEY	
13	2	R4,R7	100K 1% SMD SIZE 0805	MURATA/YAGEO	DIGIKEY	
14	1	R5	14K 1% SMD SIZE 0805	MURATA/YAGEO	DIGIKEY	
15	1	R6	470E 1% SMD SIZE 0805	MURATA/YAGEO	DIGIKEY	
16	1	R8	8.2K 1% SMD SIZE 0805	MURATA/YAGEO	DIGIKEY	
17	3	R9,R13,R15	1K 1% SMD SIZE 0805	MURATA/YAGEO	DIGIKEY	
18	1	R10	390K 1% SMD SIZE 0805	MURATA/YAGEO	DIGIKEY	
19	1	R12	43K 1% SMD SIZE 0805	MURATA/YAGEO	DIGIKEY	
20	1	R14	DNO		DIGIKEY	
21	1	U1	UC3906	TI	DIGIKEY	296-11621-ND
22	1	U2	LM393	ONSEMI	DIGIKEY	LM393EDR2GOSCT-ND
23	1	U2 SOCKET	DIP 16 IC SOCKET	ADAM TECH	DIGIKEY	2057-ICS-316-T-ND



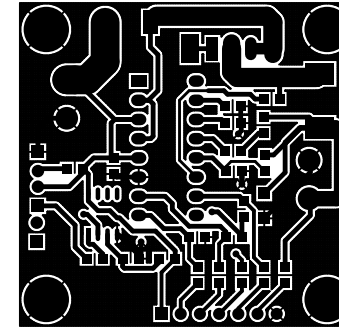




SILK SCREEN TOP



BOTTOM LAYER



TOP LAYER

PCB DIMENSIONS 44.77MM X 43.34MM