DESCRIPTION

Demonstration circuit 498 is a single battery stand-alone battery charge controller with built in charge termination featuring the LTC®4007. The input voltage is 13 to 20V. The charger output voltage is programmed by jumpers to support 3- and 4-Cell Li-ion batteries with a cell voltage of 4.1V or 4.2V/Cell. The maximum charge current is 4A. The demo board is initially configured for 12.6V Li-ion batteries. The board will automatically charge a battery to termination as soon as input power is applied with a battery connected prior to power up. Status LEDs are provided for CHG, ACP, FAULT, FLAG, ICL and LOBAT. An onboard NTC thermistor is provided. Although this charger is not a smart battery charger, a popular smart battery connector is provided that can be used for data logging with the optional DC1223A-B demo board and software. To be clear, you do NOT need a smart battery to use this board. The optional DC1223A-B SMBUS to USB Port Adapter and associated software to monitor a smart battery are for demonstration purposes only. Contact your LT representative for ordering a DC1223A-B.

Design files for this circuit board are available. Call the LTC factory.

LTC is a registered trademark of Linear Technology Corporation.

Table 1. Performance Summary

<table>
<thead>
<tr>
<th>PARAMETER</th>
<th>CONDITION</th>
<th>VALUE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maximum Input Voltage</td>
<td>Limited by input Capacitor Volt Ratings.</td>
<td>20V +/- 10 %</td>
</tr>
<tr>
<td>Recommended Minimum Input Voltage</td>
<td>Vin &gt; Vbat Termination voltage.</td>
<td>13V when using a 12.6V Li-ion battery.</td>
</tr>
<tr>
<td>Input Current Limit</td>
<td>Vin &gt; Vbatmax &gt; 6V</td>
<td>3.5A</td>
</tr>
<tr>
<td>Maximum Charge Current</td>
<td>Vin &gt; Vbatmax &gt; 6V</td>
<td>4A +/- 5%</td>
</tr>
</tbody>
</table>

QUICK START PROCEDURE

Demonstration circuit 498 is easy to set up to evaluate the performance of the LTC4007. Refer to Figure 1 for proper measurement equipment setup and follow the procedure below:

1. Connect the input power source to DCIN terminals J1 or DCIN and GND using a power supply capable of handling 4A of current within an 11 to 20V range. The input supply MUST be greater than the full voltage value of the battery to allow a full charge to take place.

2. Connect the load to VOUT and GND terminals.

3. Configure the jumpers for your specific battery.

4. Plug in the battery. The industry standard 5 Pin AMP Smart Battery connector is provided as well as generic soldering Test Points for hardwire connections.

5. Turn on the input power supply.

6. Optionally use the provided DC1223A-B demonstration software to control and configure the DC498A.

NOTE: When measuring the input or output voltage ripple, care must be taken to avoid a long ground lead on the oscilloscope probe. Measure the input or output voltage ripple by touching the probe tip directly across the Vin or Vout and GND terminals. See Figure 2 for proper scope probe technique.
7. **NOTE:** If the board is allowed to get warm, the onboard NTC thermistor may trip and momentar-ily suspend the charge process. This can be con-firmed by the fault LED turning on. When the board cools down, charging will resume.

![Diagram of the battery charger board](image)

**Figure 1:** Proper Measurement Equipment Setup

**Figure 2:** Scope Probe Placement for Measuring Input or Output Ripple