QUICK START GUIDE FOR DEMONSTRATION CIRCUIT 498

3 AND 4 CELL LI-ION BATTERY CHARGER BOARD WITH BUILT IN CHARGE TERMINATION

LTC 4007

DESCRIPTION

Demonstration circuit 498 is a single battery standalone 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

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

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.

- **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.
- 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.



QUICK START GUIDE FOR DEMONSTRATION CIRCUIT 498

3 AND 4 CELL LI-ION BATTERY CHARGER BOARD WITH BUILT IN CHARGE TERMINATION

7. **NOTE**: If the board is allowed to get warm, the onboard NTC thermistor may trip and momentarily suspend the charge process. This can be con-

firmed by the fault LED turning on. When the board cools down, charging will resume.

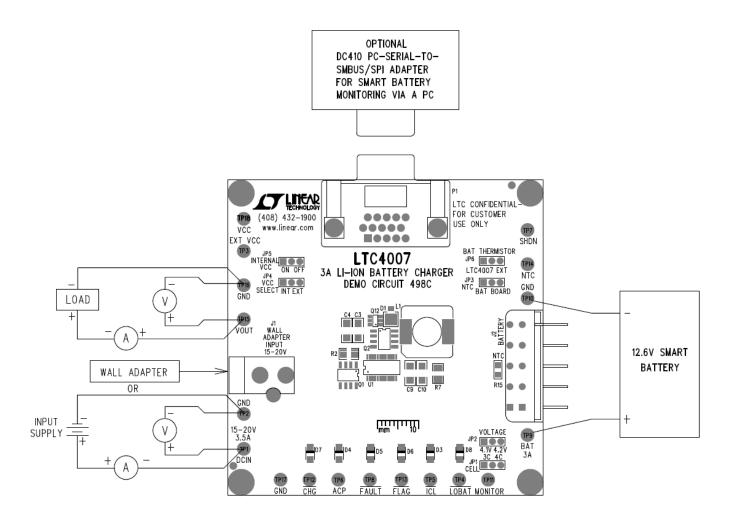


Figure 1: Proper Measurement Equipment Setup

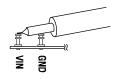


Figure 2: Scope Probe Placement for Measuring Input or Output Ripple

QUICK START GUIDE FOR DEMONSTRATION CIRCUIT 498

3 AND 4 CELL LI-ION BATTERY CHARGER BOARD WITH BUILT IN CHARGE TERMINATION

