

DC294 Introduction

Description

Demo board DC294 features the LTC1729 Li-Ion charge termination IC in combination with the LT1510 battery charger IC. This board provides a complete solution for charging 1- or 2-cell Li-Ion batteries with 1A of charging current. These ICs feature end-of-charge termination, which can be configured to stop the charger when the charge current drops below 10% of its initial setting or when the internal timer counts to three hours. There is safety termination that disables charging if temperature is below 0°C or above 50°C and resumes charging when temperature returns to 0°C to 50°C. The solution extends battery life by trickle charging the battery when the battery is depleted and by meeting the battery manufacturers' voltage requirement of 1% total accuracy. Finally, the board adds convenience by automatically detecting when a battery or supply is present.

This board is intended for designers that need the versatility of a DC/DC converter-based battery charger. The small size and efficiency of this circuit allows it to function in portable applications as well as wall-operated chargers.

Quick Start Guide

It is simple to set up the DC294 demo board to charge a 1-cell or 2-cell Li-Ion battery. Follow the procedure outlined below for proper operation. **Note: Use the battery manufacturer's recommended safety procedures and protection circuits.**

1. The demo board comes in four versions, each with a different output voltage. It is very important to determine the correct version for your battery. To verify the output voltage of the board compare the marking on the top of U2 (refer to Figure 1) with Table 1.
2. Before turning on power, connect the input power supply, battery, oscilloscope and meters as shown in Figure 1. For best accuracy, it is important to connect voltmeters directly to the PCB terminals when measuring input and output voltages.
3. Select the end-of-charge termination method desired. If 3-hour termination is preferred, connect two jumpers on JP1, enabling LED and 3hr. If you want to stop the charger after the current drops below 10% of 1A or 100 mA, connect one jumper on JP1, enabling C/10.
4. The charger can be stopped if the temperature is not in the 0°C–50°C range using the NTC terminal on the PC board. An external 10k NTC thermistor, such as a Vishay

NTHS12106N02, must be connected between the NTC terminal and ground and R6 must be removed from the PCB board.

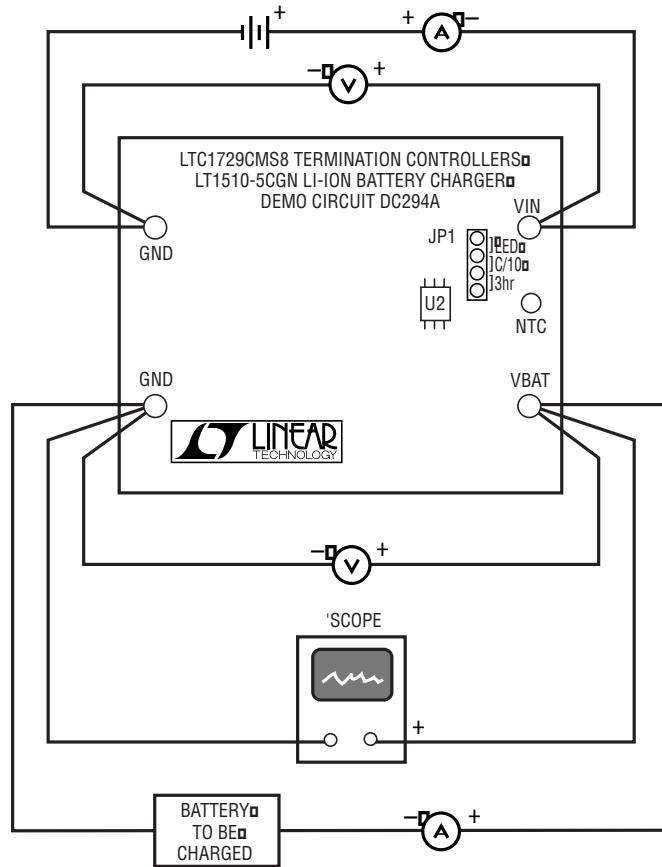


Figure 1. DC294 Setup

Table 1.	
Part Marking	Voltage
LTLY	4.1V
LTJH	4.2V
LTLZ	8.2V
LTJG	8.4V