

## Standalone Linear Li-Ion Battery Charger with Thermal Regulation in SOT

### General Description

The PN4054 is a complete constant current & constant voltage linear charger for single cell lithium-ion batteries. Its SOT package and low external component count make the PN4054 ideally suited for portable applications. Furthermore, the PN4054 is specifically designed to work within USB power specifications. No external sense resistor is needed, and no blocking diode is required due to the internal MOSFET architecture. Thermal feedback regulates the charge current to limit the die temperature during high power operation or high ambient temperature. The charge voltage is fixed at 4.2V, and the charge current can be programmed externally with a single resistor. The PN4054 automatically terminates the charge cycle when the charge current drops to 1/10<sup>th</sup> the programmed value after the final float voltage is reached. When the input supply (wall adapter or USB supply) is removed, the PN4054 automatically enters a low current state, dropping the battery drain current to less than 0.5uA. The PN4054 can be put into shutdown mode, reducing the supply current to 25uA. Other features include charge current monitor, under-voltage lockout, automatic recharge and a status pin to indicate charge termination.

### Applications

- Cellular Telephones, PDAs, MP3 /MP4 Players
- Charging Docks and Cradles
- Bluetooth , GPS Applications

### Typical Application Circuit

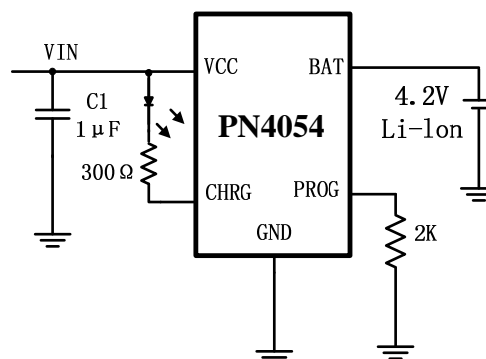


Figure 1. Basic Application Circuit with PN4054

### Features

- Programmable Charge Current Up to 750mA
- No MOSFET, Sense Resistor or Blocking Diode Required
- Complete Linear Charger in SOT Package for single Cell Lithium-Ion Batteries
- Constant-Current/Constant-Voltage Operation with Thermal Regulation to Maximize Charge Rate Without Risk of Overheating
- Charges Single Cell Li-Ion Batteries Directly from USB Port
- Preset 4.2V Charge Voltage
- Charge Current Monitor Output for Gas Gauging
- Automatic Recharge
- Charge Status Output Pin
- C/10 Charge Termination
- 25uA Supply Current in Shutdown
- 2.9V Trickle Charge Threshold
- Soft-Start Limits Inrush Current
- Available in 5-Lead SOT-23 Package

### Package

