



Application Note #: AN0018

Device: ICS1700A, ICS1702, ICS1708, ICS1712, ICS1718, ICS1722

Description: 1 Amp Linear NiCd/NiMH Charger Concept Using On-Semi's MJE371

For many designers, an LM317 based reference design offers internal current and thermal limiting as well as low cost. However, there may be limitations to implementing an LM317 regulator in your designs. An LM317 based design may require up to 4.5V input to output differential when configured as a current regulator at 1Amp: 2.5V for its pass transistor, 1.25V for feedback, and 0.75V for the blocking diode.

As an alternative, a designer may choose the MJE371, manufactured by On-Semiconductor. The MJE371 is rated for 4 Amps so its Vce can go as low as 1V with 1Amp, as it has a gain of 40 minimum with 1 Amp.

With a typical 3Amp schottky diode, the input to output differential can be as low as 2V while maintaining 1 Amp.

The concept integrates a fuse for fault conditions since this configuration does not have back-up internal current or thermal limiting like the LM317 referenced designs.

