## **Application Note #: AN0017**

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

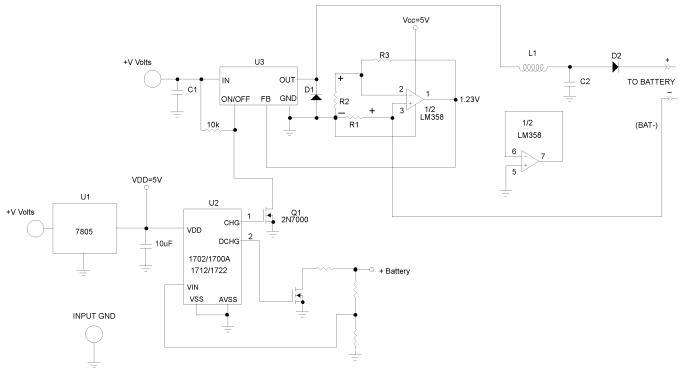
## Description: Simple Switcher Charger Approach for NiMH/NiCd Batteries

The following approach involves using R1 as a current sense resistor between battery negative and input ground. 100 mV is dropped across R1 with the desired average charge current flowing. One half of a LM358 is used to amplify the drop across R1 to 1.25V. R2 has the same voltage across it as R1; R3 drops 1.23V minus the voltage across R2. C1 is based on 100uF per Amp. As a minimum, C2 is selected to absorb the energy kick from L1 for battery removal. Use .5Ll x I = .5CV x V where I is the peak current in L1 and V is the additional voltage rise on C2 as it stores the energy from L1. D1 must be either a schottky or fast recovery diode; D2 can be a general purpose diode. D1 and D2 should carry no more that 50% of their rated current. U3 adjustable regulator is selected to provide the required charging current.

For applications requiring up to 0.4A, U3 can be a 0.5A, 52KHz IC such as the LM2574, made by several manufacturers. To reduce the size of L1 a 0.5A, 200KHz Micrel LM4574 (or other manufacturer's high frequency version) can be considered.

For applications requiring up to 0.8A, U3 can be a 1A, 52KHz IC such as the LM2575, made by several manufacturers. To reduce the size of L1, a 1.0A, 200KHz Micrel LM4575 (or other manufacturer's high frequency version) can be considered.

For applications requiring up to 2.5A, U3 can be a 3A, 52KHz IC such as the LM2576, made by several manufacturers. To reduce the size of L1, a 3.0A, 200KHz Micrel LM4576 (or other manufacturer's high frequency version) can be considered.



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