# Flash Memory VPP Programmer Supplies 60mA from 5V Supply

Generating 12V for flash memory programming is a common requirement in portable systems and PCMCIA cards. The LT1109-12 DC/DC converter IC simplifies this task and uses only 0.75 sq. in. of PC board space. The 8-lead SOIC package requires only three other surface mountable components to construct a complete 12V VPP generator. 60mA of programming current is produced at 12V, enough for simultaneous programming of two flash memories. The circuit draws 320μA (max) of standby current while shut down, and provides a clean transition from 5V to 12V at its output with no overshoot.

The LT1109-12 is also available in 8-pin DIPs.
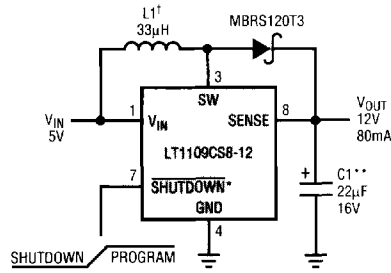
* 8-PIN PACKAGE ONLY
† L1 = SUMIDA CD54-330LC (I_{OUT} = 80mA)
  COILTRONICS CTX33-1 (80mA)
  MURATA-ERIE LQH4N330K (I_{OUT} = 50mA)
  ISI LCS2414-330K (I_{OUT} = 50mA)
**C1 = MATSUO 267M1602226 OR EQUIVALENT
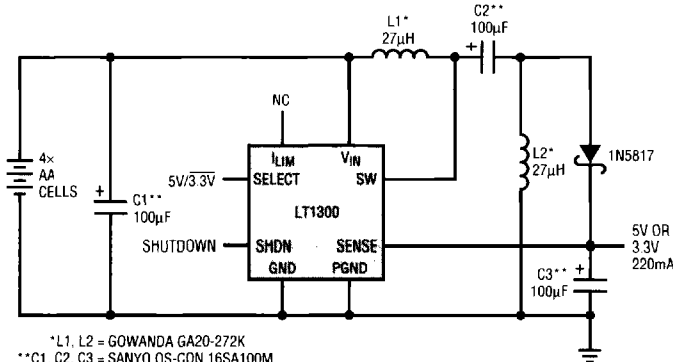
Output Voltage
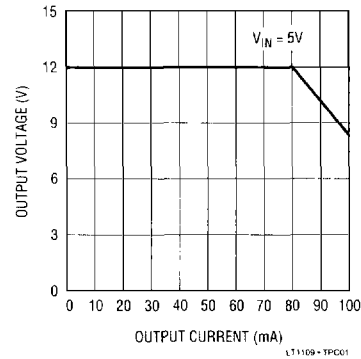
4-Cell to 5V Converter Operates from 3V to 7V Inputs

Converting the voltage from a 4-cell battery input to 5V while using the full capacity of the batteries requires two modes of operation: step-down from an input voltage of 6V and step-up from an input of 4V or less. A flyback topology can accomplish this, but uses a costly custom transformer. The LT1300 circuit shown utilizes the simple "SEPIC" topology, and is capable of 220mA of output current at 5V from a minimum 3V input. The two inductors specified are available off-the-shelf.

The circuit uses a boost section and a buck, or step-down section with the two inductors (L1 and L2), and two capacitors (C2 and C3) all acting as energy storage elements. Efficiency is slightly less than a direct step-up (see graph), but better than an equivalent flyback configuration. Other features of the circuit include shutdown (10μA max supply current) with full input to output isolation, which allows the output to go to zero volts and present no load to the batteries. Also, the output can be selected for either 3.3V or 5V by using the logic select pin of the LT1300.

The LT1300 is available in 8-lead DIP and SOIC packages.

*L1, L2 = GOWANDA GA20-272K
**C1, C2, C3 = SANYO OS-CON 16SA100M