Circuit Idea
20031102

Ferrite Magamp on Flyback Power Supply

Summary of the Idea

For a dual output flyback power supply, a ferrite magamp is used to regulate within tolerances levels when one output goes to no-load.

Description

For a dual output flyback power supply where both outputs deliver substantial power, the larger voltage output may have difficulty regulating within its tolerances at no-load. For example, a power supply with a 5 V, 12 A output and a 12 V, 3 A output regulated within ±5% may not be able to regulate within the 5% limit when the 12 V output goes to no-load.

Previous solutions included a linear regulator. However a linear regulator is expensive and reduces efficiency. A proposed solution is to use a magamp on the 12 V output.

A ferrite magamp may be utilized in order to reduce cost. The control scheme for a ferrite magamp is different from a traditional square-loop material (high permeability material). With ferrite, the control circuit (D1 and Q1) sinks current in order to bring up the output voltage. The circuit proposed has been tested with a transformer wound for 5 V and 13 V outputs. It can meet input power of less than 1 W with 5 V output at 300 mW and no-load on the 12 V output while regulating the 12 V output within ±5%.

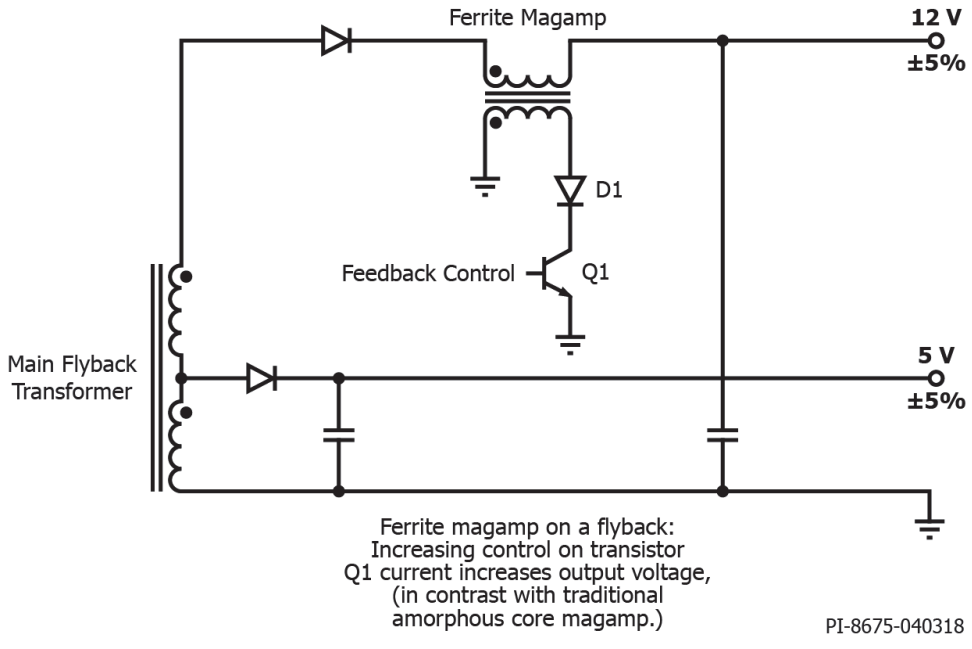

Figure 1. Ferrite magamp coupled to the 12 V output of a dual output flyback.

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