Keywords: SLIC, subscriber line-interface cards, flyback, dual output, shared feedback, regulation, transformer, power supplies

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APPLICATION NOTE 294

Dual-Output SLIC Supply Shares Feedback

Abstract: Dual output subscriber line-interface cards (SLIC) flyback power supply using feedback sharing to regulate both outputs.

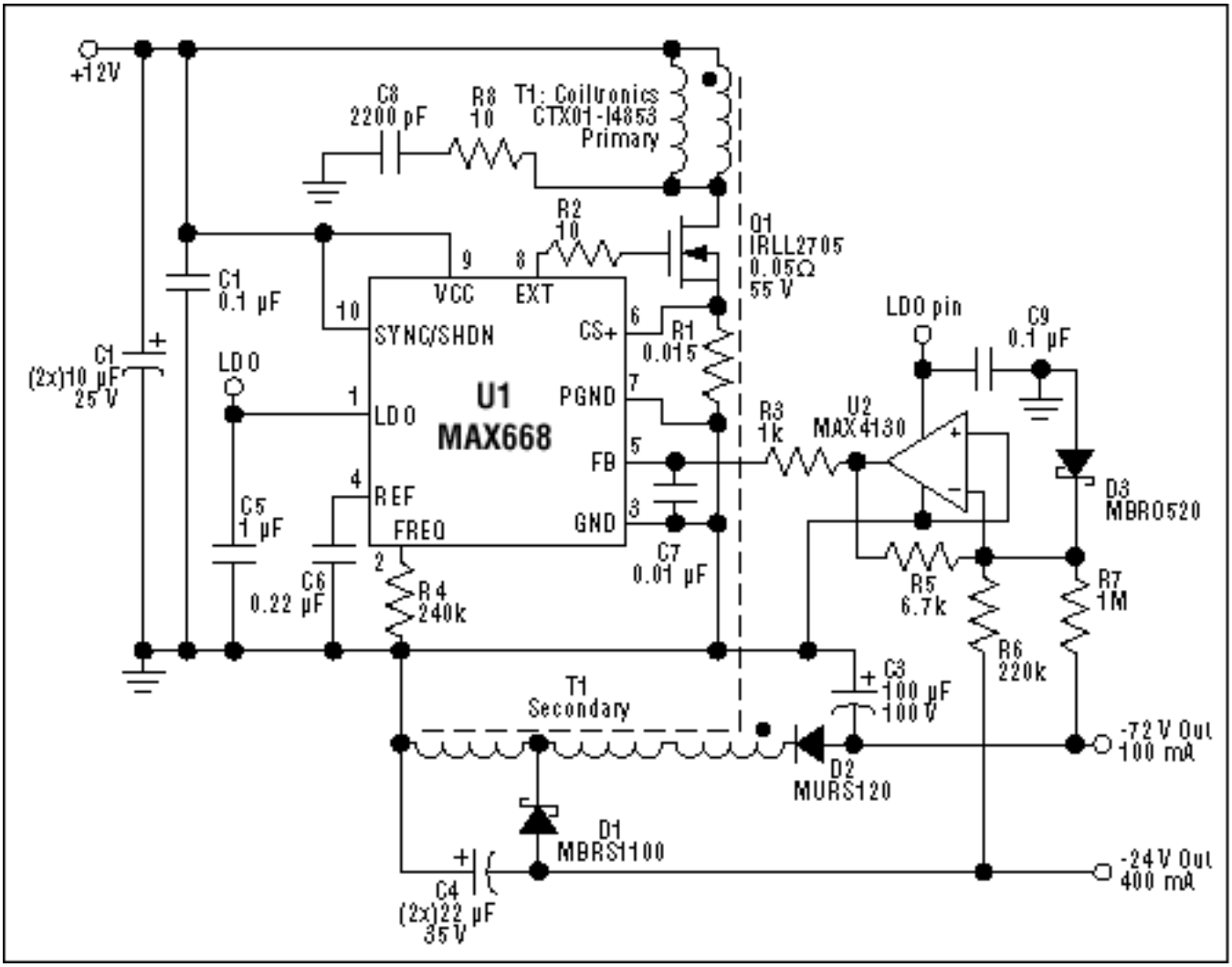
Additional Information:

- Quick View Data Sheet for the MAX668
- Technical Support: Power

For some subscriber line-interface cards (SLICs), both the line and the ringer voltages should be regulated under all conditions. The circuit shown in the figure below meets this requirement. It accepts a 12V ±10% input, and it delivers 0mA to 400mA from a regulated -24V ±5% output. From a regulated -75V ±5% output, it provides 0mA to 100mA. Features of this circuit include a boost-controller IC in a transformer-flyback topology and an op amp in the inverting configuration. Used as a summing amplifier, this op amp derives shared feedback from the two regulated outputs. The transformer turns ratio is approximately 1:2:4.

Both outputs must remain in regulation even when one operates at full load and the other operates at no load. To ensure that this happens, the two outputs contribute to the IC's feedback signal. The -24V output generates the greater output power and two-thirds of the feedback current. Meanwhile, the -75V output provides the remaining one-third of the feedback current.

Such an arrangement allows the regulator to maintain a ±5% output-voltage tolerance on both outputs—for line variations of ±10%, and for any combination of output currents (i.e., zero to full load on either output). For full-load currents at both outputs and a 12V input, the efficiency is 85%.



Notes:
T1: Coiltronics CTX01-14853 or equivalent.
The general specs are:
Primary L = about 22 µH (not critical).
Primary current rating ≥ 6.7A, turns ratio 1:2:2:2.
Q1: Any logic-level (RON rated at 5V) N-FET with similar ratings may be substituted.

Using a combined feedback signal from its two regulated outputs, this power supply for subscriber line-interface cards maintains ±5% regulation on both outputs.

A similar version of this article appeared in the August 7, 2000 issue of *Electronic Design*.

Application Note 294: www.maxim-ic.com/an294

More Information
For technical support: www.maxim-ic.com/support
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Related Parts

MAX668: QuickView -- Full (PDF) Data Sheet -- Free Samples

AN294, AN 294, APP294, Appnote294, Appnote 294