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#### APPLICATION NOTE 294

# Dual-Output SLIC Supply Shares Feedback

By: Len Sherman

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*Abstract: Some subscriber line-interface cards (SLICs) need both the line and the ringer voltages to be regulated under all conditions. Dual-output SLICs have a power supply that uses feedback-sharing to regulate both outputs*

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For some subscriber line-interface cards (SLICs), both the line and the ringer voltages should be regulated under all conditions. The circuit shown in **Figure 1** meets this requirement. It accepts a 12V  $\pm 10\%$  input, and it delivers 0mA to 400mA from a regulated -24V  $\pm 5\%$  output. From a regulated -75V  $\pm 5\%$  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  $\pm 5\%$  output-voltage tolerance on both outputs—for line variations of  $\pm 10\%$ , 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%.



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