

IC allows remote voltage sensing without separate sense wires

Linear Technology Corp's new LT4180 virtual remote sense-controller IC detects losses in the wiring of remote power loads and adjusts a local voltage regulator to compensate for wiring losses. Because most remote loads have a storage capacitor, the IC takes advantage of the fact that the ac impedance of this capacitor is almost 0Ω .

The part multiplexes an ac signal that you set at 20 to 100 kHz onto the power lines to the load. The ac signal "sees" this remote storage capacitor as a short circuit, monitors the current of the ac signal into the load, and then calculates the dc impedance of the wires to the remote load. The device also compensates for changes in the ac impedance

of the load, as long as the frequency of impedance change is sufficiently below the excitation frequency you set.

The IC works with any power-supply topology for both linear and switching regulators. Its 5-mA current sink drives an optoisolator to adjust the regulator when you use it in an isolated supply topology. You can use the IC's oscilla-

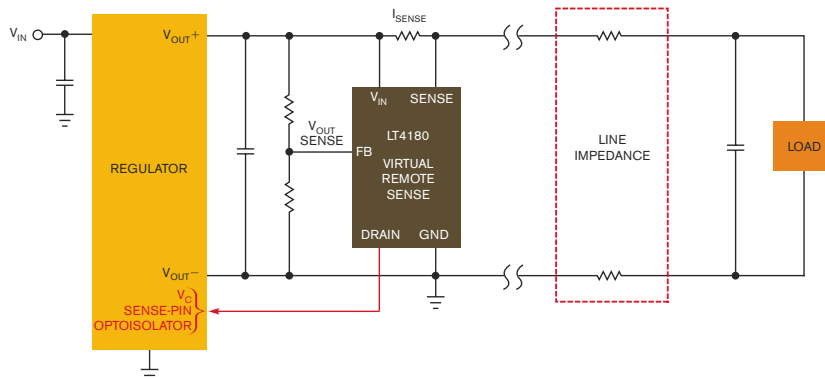
tor-output pin to synchronize a switching regulator or to drive an optocoupler for isolated-supply applications. By interfacing the part to the trim pin of power bricks, you can use it to replace the sense wires you would normally use with those modules.

The LT4180 works with 3 to 50V power-supply voltages and has soft-start and under-voltage and overvoltage-lock-out features. You can modulate the excitation frequency in a spread-spectrum fashion to reduce EMI (electromagnetic interference). An internal voltage reference maintains $\pm 1\%$ accuracy over temperature.

The LT3092 comes in an SSOP-24 package. The LT4180MP version operates in the -55 to $+125^\circ\text{C}$ -junction-temperature range, and the LT4180E and LT4180I versions operate in the -40 to $+125^\circ\text{C}$ range. Prices range from \$2.95 to \$7.88 (1000).

-by Paul Rako

► **Linear Technology Corp,**
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The LT4180 multiplexes a small ac signal onto the power lines so that it can calculate and compensate for voltage drops due to wiring resistance.