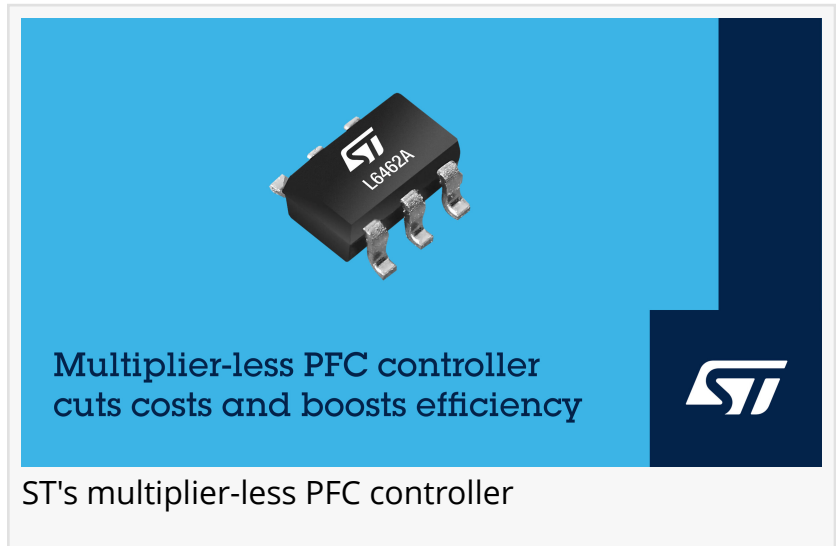


STMicroelectronics' multiplier-less PFC controller enhances cost-sensitive, energy-efficient applications

Targets high-end battery chargers, power adapters, and power supplies for flat-panel televisions and lighting drivers

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STMicroelectronics' [L6462A](#) transition-mode (TM) power-factor correction (PFC) controller cuts bill-of-materials (BOM) costs while enhancing efficiency, enabling consumer products and power supplies up to 250W to meet stringent eco-design norms.



The L6462A uses a current generator and shaper to produce a sinusoidal reference, instead of a conventional voltage sensor and analog multiplier, permitting boost-PFC converters without external voltage-divider components. In addition, the IC coordinates the PFC conversion cycles by sensing inductor demagnetization via the gate-driver output and hence requires no auxiliary inductor winding or interface components.

In addition to lowering BOM, the L6462A's innovative current shaping and demagnetization sensing minimizes distortion (THD) and enhances efficiency, particularly at intermediate and light loads. The new controller thus permits economical PFC with superior performance, targeting high-end battery chargers, power adapters, and power supplies for domestic and consumer products like flat-panel televisions and lighting drivers. The idle current is below 60µA, helping equipment meet strict eco-design rules on standby power.

At full load, the L6462A operates in quasi-resonant mode - valley switching - to minimize power dissipation. As the load is reduced, valley skipping progressively reduces the operating frequency to maintain efficiency. In addition, the controller has a deep burst-mode threshold that ensures smooth dimming in LED-lighting applications.

As a TM-PFC controller, the L6462A allows a wide AC input-voltage range, from 90-264V, and is

typically designed to deliver 400V output voltage. An enhanced error amplifier and high-accuracy voltage reference sharpen dynamic response to large-load transients and prevent excessive output overshoots or undershoots. The totem-pole output drives external boost-converter MOSFETs directly, delivering up to +600/-300mA, with active pulldown for safety during under-voltage lockout. The IC also has a disable function, which allows remote on/off control, and contains built-in protection against overcurrent, output overvoltage, feedback failure, and inductor saturation/short-circuit.

The EVL6462A-250W-M demonstration board provides a 250W PFC pre-regulator with a universal input-voltage range to help quickly evaluate the L6462's features. The board, which illustrates a compact design and low BOM, achieves over 97% peak efficiency with THD below 5% at full load and below 15% down to 20% load. A detailed application note, AN6380, describes the board's operating modes and performance measurements. ST's Power Supply Design tool in the eDesignSuite online helps customize the circuit, while eDsim performs device simulations.

The L6462A is in production now, in a SOT23-6L package, from \$0.18 for orders of 1000 pieces.

Visit <https://www.st.com/l6462a> for more information.

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