



NXP GreenChip 45 W adapter solution

A smart solution for worlds first truly portable power adapter that is as cool as it looks

Offering peak efficiency near 94% and standby power consumption below 30 mW with the output in full regulation, this compact, lightweight solution enables ultra-small 45 W adapters that stay cool by exceeding new regulatory efficiency requirements.

KEY FEATURES

- ▶ Two-chip combination for highest possible efficiency
 - TEA1836 GreenChip AC/DC controller
 - TEA1892 Synchronous Rectification controller
- ▶ Very high efficiency near 94%
- ▶ Low standby power consumption (< 30 mW) while output in full regulation
- ▶ Casing temperature under full load: < 55 °C
- ▶ Integrated active X-cap discharge function
- ▶ Low supply current during normal operation (600 µA typ)

APPLICATIONS

- ▶ Adapters and power supplies for notebooks, ultrabooks, set-top boxes, etc.

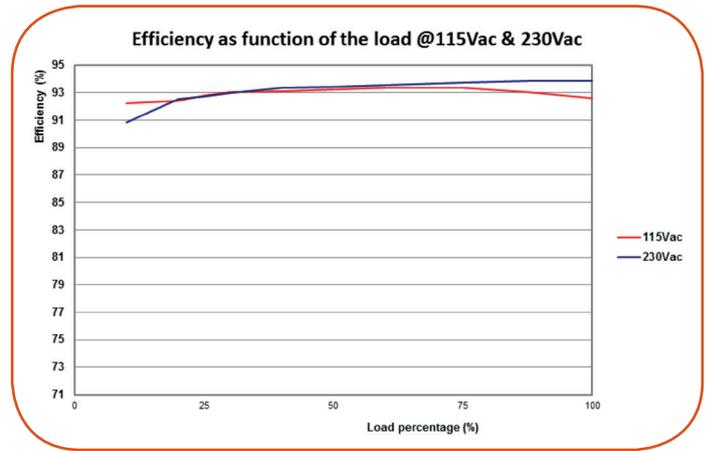
New energy regulations, like those from the U. S. Department of Energy, Energy Star, and the European Code of Conduct, have created the need for a new generation of power-supply ICs with a feature set and smart power-management modes that reflect the needs of more advanced systems like high-efficiency notebook adapters.

The NXP TEA1836 GreenChip, an AC/DC controller, and the NXP TEA1892, a Synchronous Rectification controller, combine to offer a more efficient power supply with lower standby power losses.

Tight integration and a limited number of external / standard components make it possible to create a 45 W charger that is about half the size of the average candy bar, and only slightly larger than the 10 W chargers typically used for smartphones.

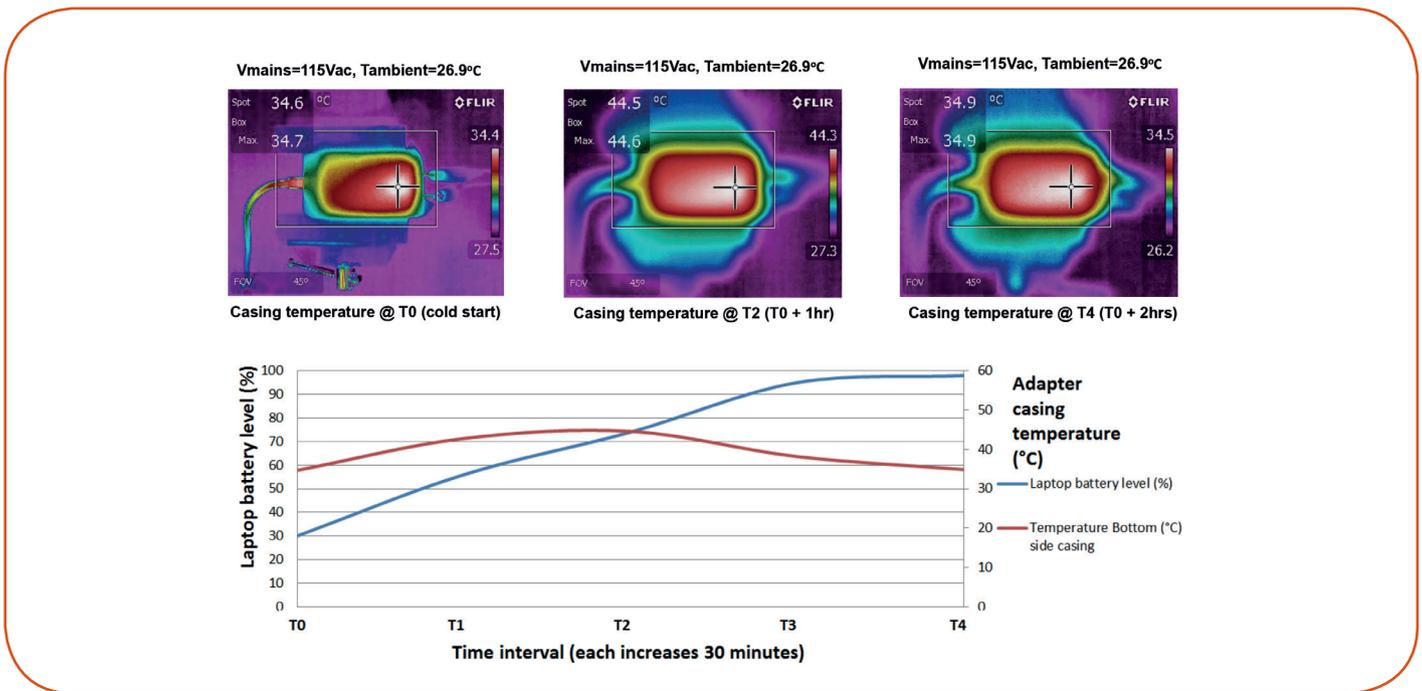


Exceeding the average Energy Star efficiency of 93%, allow the components inside the casing to be well within thermal limits despite the small form factor. The casing temperature remains under 55 °C, even under full load. The adapter uses a low start-up current and requires only 600 μA of current during normal operation. Also, the adapter features a very low standby power (less than 30 mW) while the output is still in full regulation at the intended output voltage. The no-load standby power at 230 V_{AC} is about 26 mW and at 115 V_{AC} is roughly 21 mW. For added efficiency, the TEA1892 is compatible with MOSFETs that have a low R_{DSon} rating, and that helps limit conduction losses.



The increased power density of the TEA1836/TEA1892 combination opens up new applications, allowing integration of power adapters and battery chargers into the wall plug itself.

Efficiency ratings of 45 W adapter (TEA1836 + TEA1892)



Thermal performance of 45 W adapter (TEA1836 + TEA1892)

