



## 19 V - 90 W adapter with PFC for laptop computers based on the L6563H and L6699

Data brief

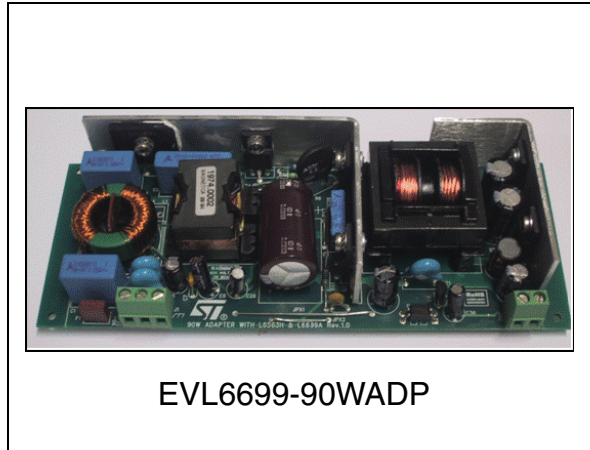
### Features

- Universal input mains range: 90 - 264 V<sub>AC</sub> - frequency 45 - 65 Hz
- Output voltage: 9 V at 4.75 A continuous operation
- Mains harmonics: meets EN61000-3-2 Class-D and JEITA-MITI Class-D
- No load mains consumption: according to ENERGY STAR<sup>®</sup> 2.0 for external power supplies
- Average efficiency: according to ENERGY STAR 2.0 for external power supplies
- Light load efficiency: according to ErP Lot 6 Tier 2 requirements
- EMI: within EN55022-Class-B limits
- Safety: meets EN60950
- Dimensions: 65 x 151 mm, 25 mm component maximum height
- PCB: double-side, 70 µm, FR-4, mixed PTH/SMT

### Description

The architecture of the EVL6699-90WADP is based on a two-stage approach; a front-end PFC pre-regulator based on the L6563H TM PFC controller and a downstream LLC resonant half bridge converter using the new L6699 resonant controller. Thanks to the chipset used, the main features of this design are very high efficiency, compliant with ENERGY STAR eligibility criteria (EPA rev. 2.0 EPS) and very good efficiency at light load too, compliant with the new ErP Lot 6 Tier 2 requirements. No-load input power consumption is also very low, well within the international regulation limits.

The controller of the LLC stage is the L6699, integrating innovative functions such as self-adjusting adaptive deadtime, anti-capacitive



mode protection and proprietary “safe-start” procedure preventing hard switching at startup.

The PFC stage works as pre-regulator and powers the resonant stage with a constant voltage of 400 V. The downstream converter operates only if the PFC is working and regulating its output voltage. In this way, the resonant stage can be optimized for a narrow input voltage range improving the efficiency of the primary side power components.

The transformer uses the integrated magnetic approach, incorporating the resonant series inductance. Therefore, no external, additional coil is needed for the resonance. The transformer configuration chosen for the secondary winding is centre tap.

Figure 1. EVL6699-90WADP electrical diagram

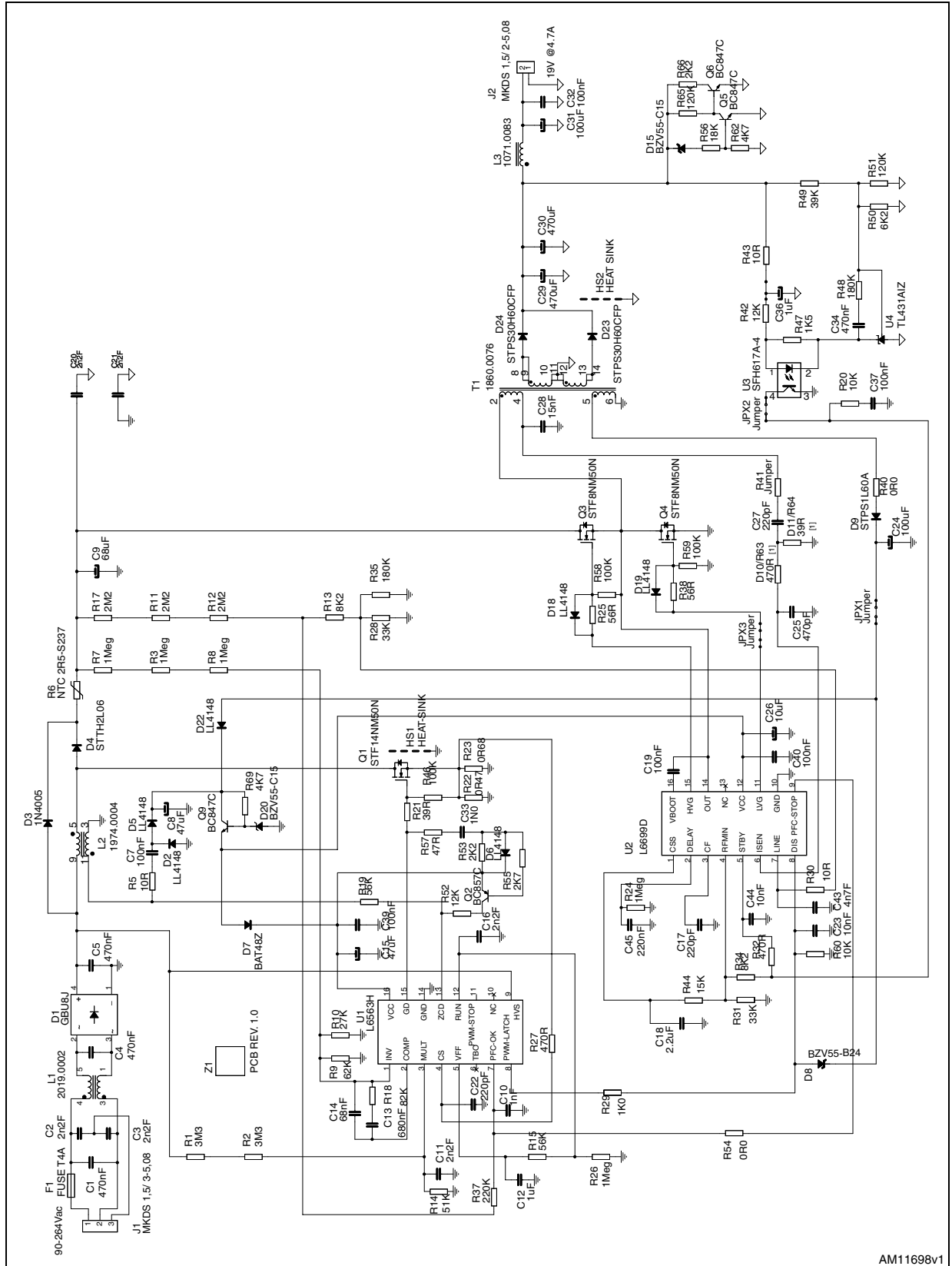
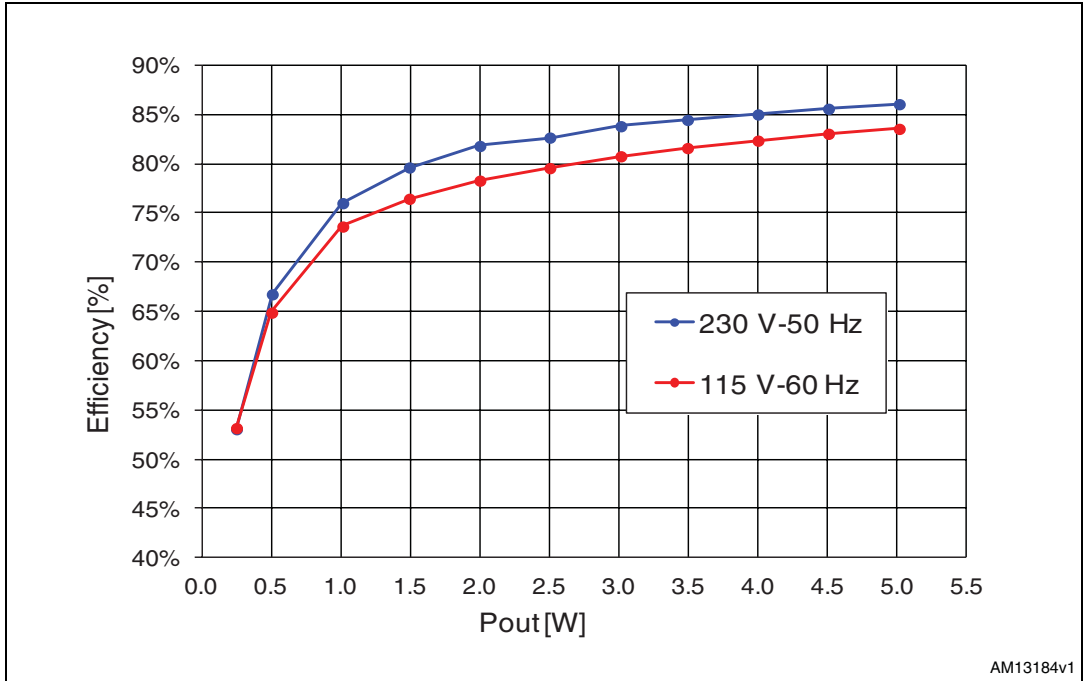


Figure 2. Light load efficiency measurements



AM13184v1

# 1 Revision history

**Table 1. Document revision history**

Date	Revision	Changes
02-Jul-2012	1	Initial release.

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