
12 V – 150 W power supply based on STNRG011 digital combo and SRK2001 adaptive synchronous rectifier controller

Data brief

**Features**

- Digital controller: STNRG011
- TM PFC with resonant HB-LLC converter
- Input voltage range: 90 ÷ 264 V ac
- 12 V ± 5% CV output regulation
- Full-load power: 150 W continuous operation
- Peak power loading: 200 W
- Full-load and average efficiency: greater than 90% at 115/230 V ac
- Peak efficiency: greater than 93%
- No-load mains consumption: less than 75 mW
- Hold-up time: greater than 10 ms
- Full set of programmable parameters
- High flexibility thanks to the configurable NVM
- Black box functionality with the installed EEPROM

Description

The EVLSTNRG011-150 is a 12 V, 150 W power supply demonstration board for 90 V ac to 264 V ac mains, which is representative of an AC/DC converter for an all in one (AIO) computer or a general purpose high power adapter.

The design is based on the STNRG011 IC, a digital combo that controls a two-stage AC/DC SMPL. The front-end is a transition mode PFC pre-regulator and the second stage is an LLC HB resonant converter. The SRK2001 implements the synchronous rectification in order to obtain higher efficiency.

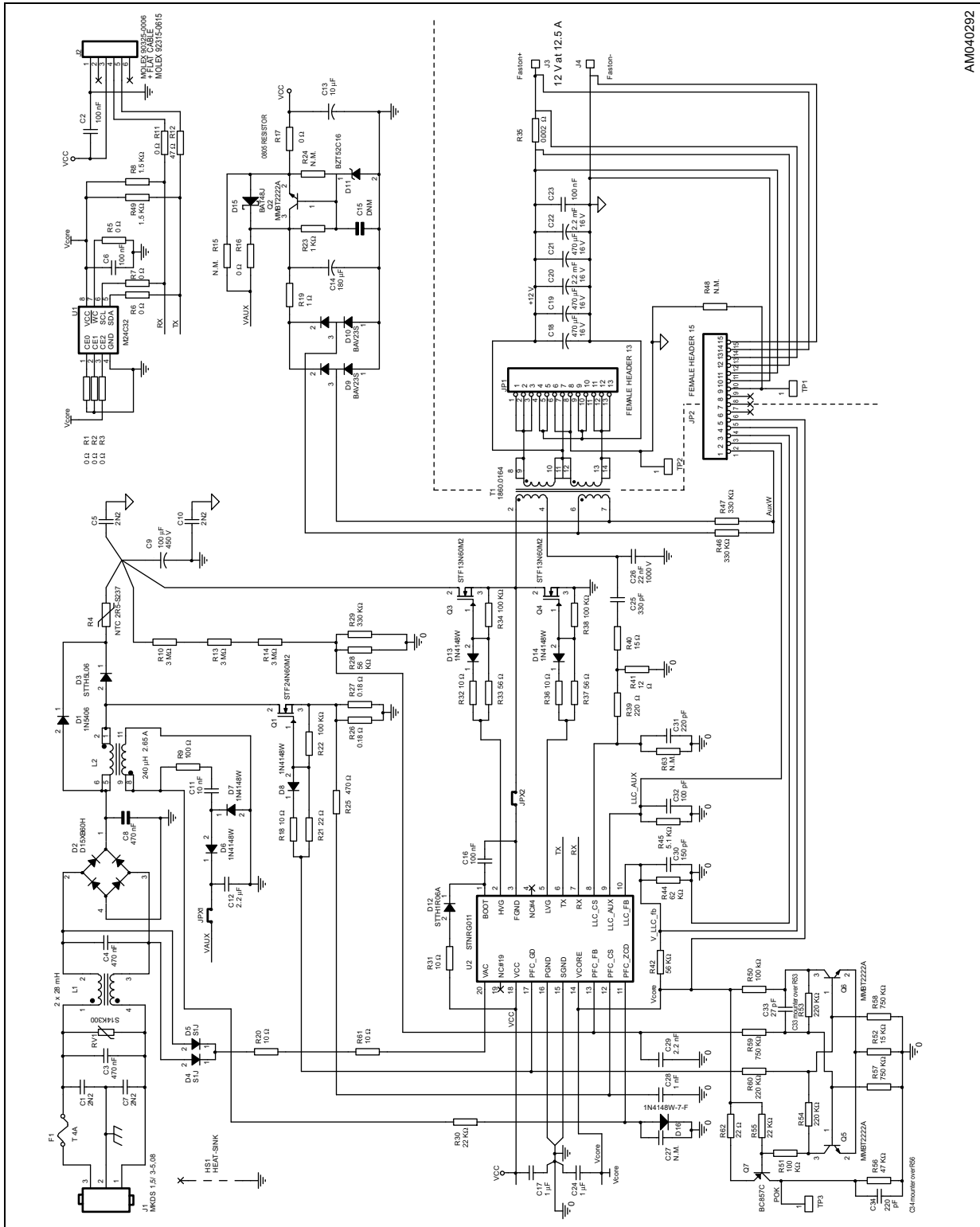
No auxiliary supply is needed due to the very low consumption at no load.

A full set of auxiliary functions and protection is also provided, this allows reduction of the overall BOM while maintaining a rugged design.

The performances of the EVLSTNRG011-150 can meet the requirements of major standards ENERGY STAR® for computers ver. 6.1, EuP Lot 6 Tier 2, European CoC ver. 5 Tier-2, in terms of efficiency, no-load input power and power factor and feature harmonics content well below the limits of European Standard EN61000-3-2 Class-D and Japanese standard JEITA-MITI Class-D regulations.

Electrical diagrams

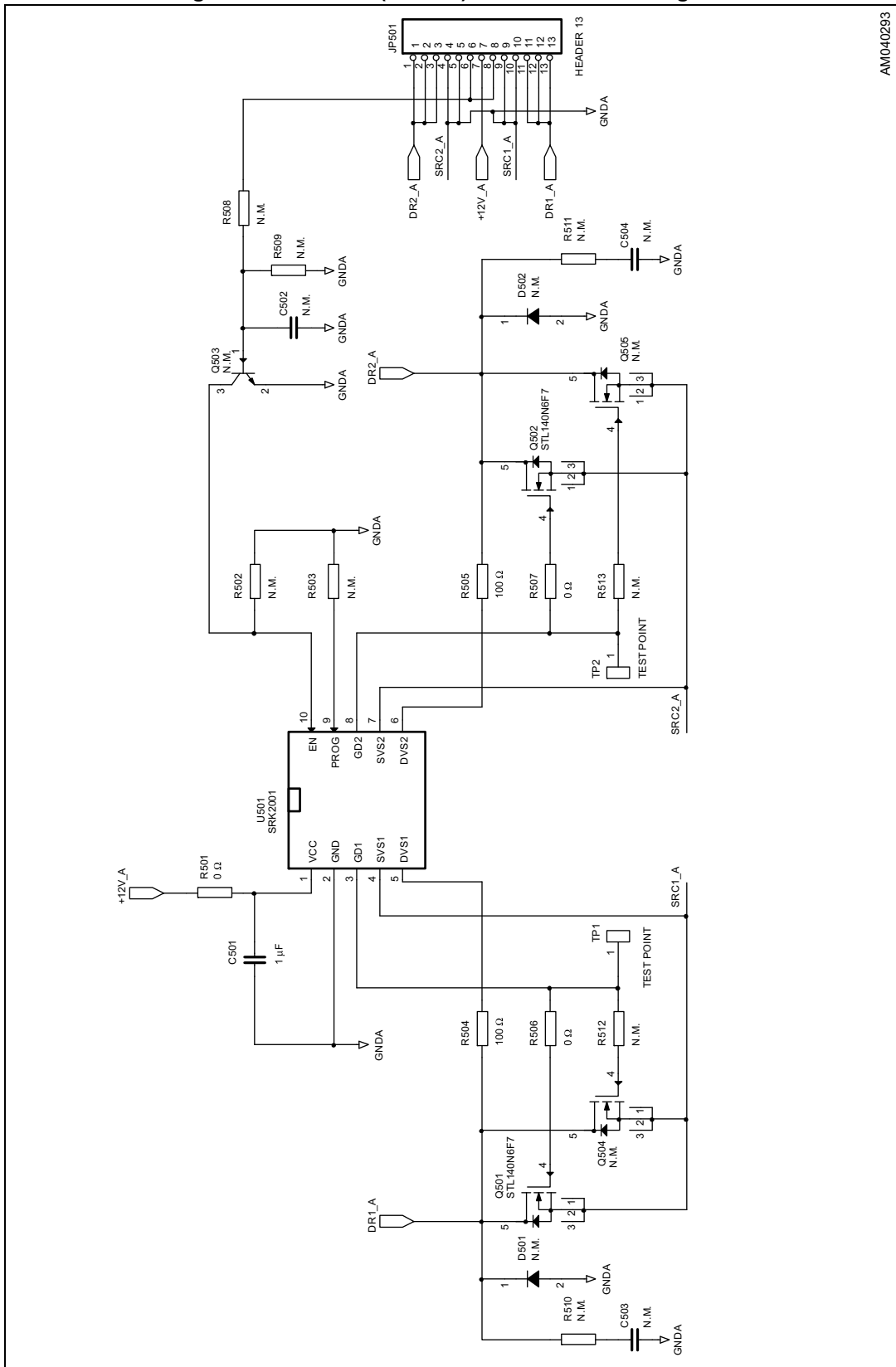
Figure 1. Mother board electrical diagram



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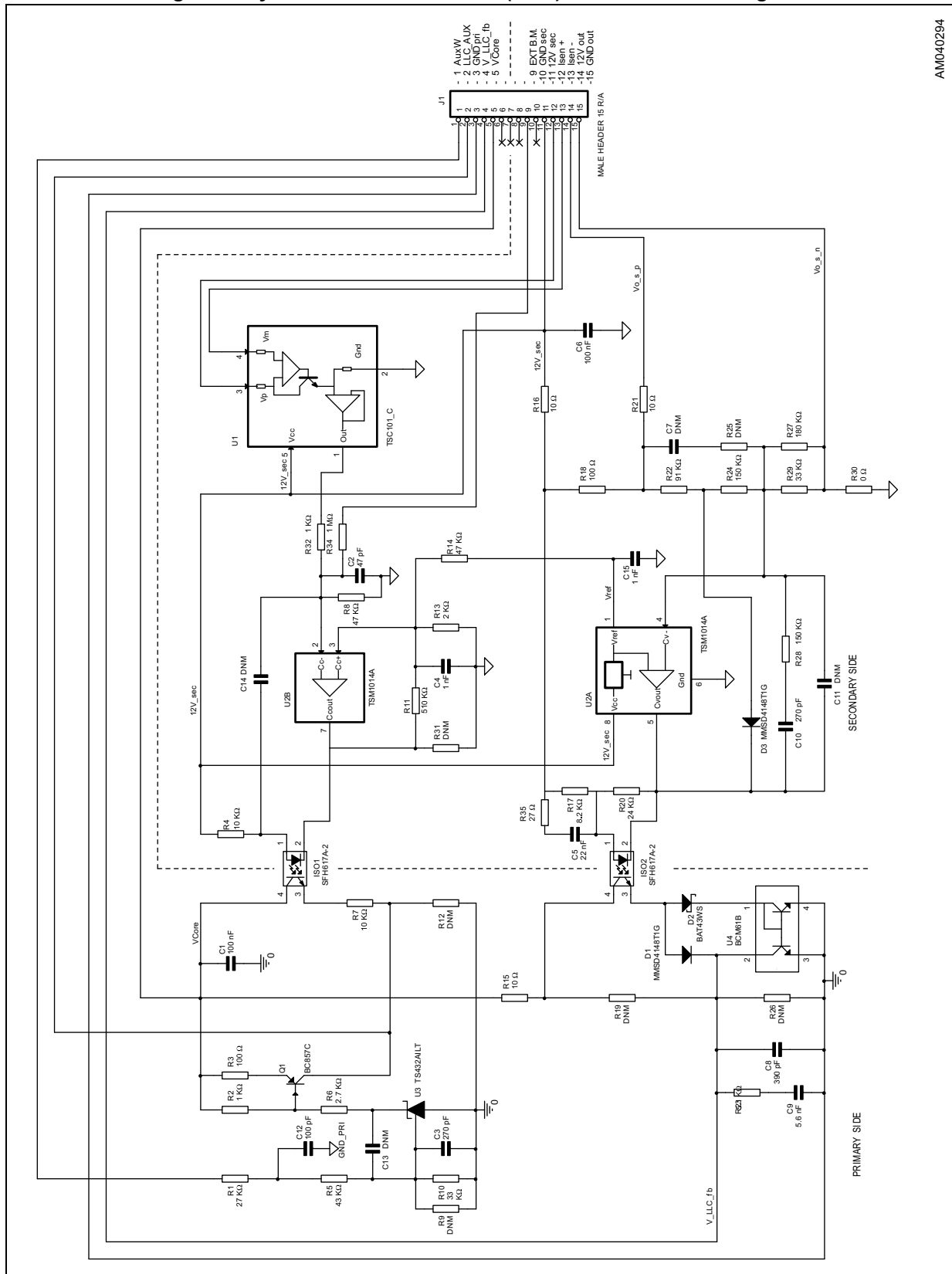
Figure 2. Feedback (control) board electrical diagram



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Figure 3. Synchronous rectification (SRK) board electrical diagram



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Revision history

Table 1. Document revision history

Date	Revision	Changes
14-Feb-2018	1	Initial release.