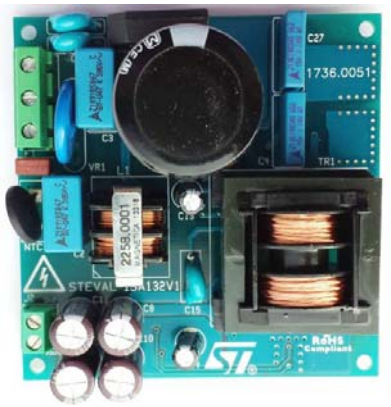
STEVAL-ISA132V1

300 W peak power (170 W continuous power) LLC resonant converter based on L6699, STB13N60M2 and STPS20M80CG

Data brief



Features

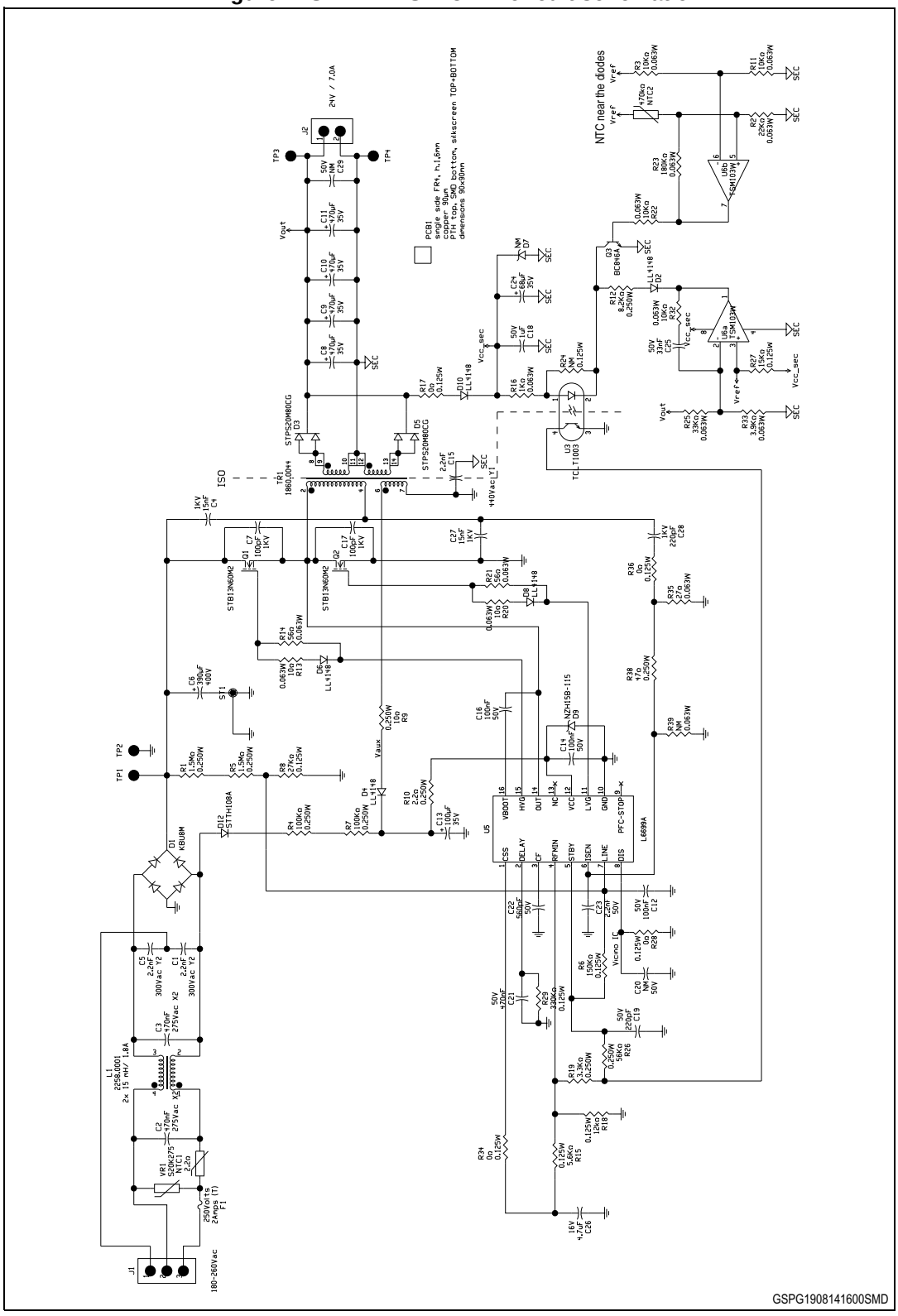
- Input mains range: 190 to 264 VAC - frequency 50 Hz
- Output voltage: 24 V 5%
- No-load consumption: < 0.6 W
- Efficiency @ 230 VAC > 92%
- EMI: within EN55022 Class-B limits conducted pre-compliance
- Safety: meets EN60950-1
- Dimensions: 90 x 90 mm, 50 mm component maximum height
- Safe startup procedure to avoid hard switching
- Hard switching prevention in overload condition and low load condition
- Burst mode in low load condition with smooth restart to prevent audible noise
- Evaluation board can deliver more than 300 W peak power for a limited time by a thermal protection NTC positioned near output diodes
- Continuous power at 30 °C ambient temperature:170 W
- The power MOSFETs and diodes are both in D²PAK packages

Description

The STEVAL-ISA132V1 evaluation board implements a converter capable of delivering 170 W of continuous power (V_{IN} = 190 VAC to 264 VAC, V_{OUT} = 24 V) and more than 300 W peak power for a limited time. The architecture of the board is based on a single-stage LLC resonant converter without PFC using the new L6699 resonant controller. The L6699 integrates some very innovative functions such as self-adjusting adaptive dead-time, anti-capacitive mode protection and proprietary “safe-start” procedure preventing hard switching at startup. High efficiency at full load (> 92%) and no load (< 0.6 W) is obtained thanks to the STB13N60M2 (600 V, 0.35 Ω typ., 11 A) MDmesh M2 power MOSFET in the half-bridge, and the STPS20M80CG (V_{RRM} = 80 V, I_F(AV) = 2 x 10 A) Schottky diode for secondary rectification.

1 Schematic diagram

Figure 1. STEVAL-ISA132V1 circuit schematic



2 Revision history

Table 1. Document revision history

Date	Revision	Changes
19-Aug-2014	1	Initial release.