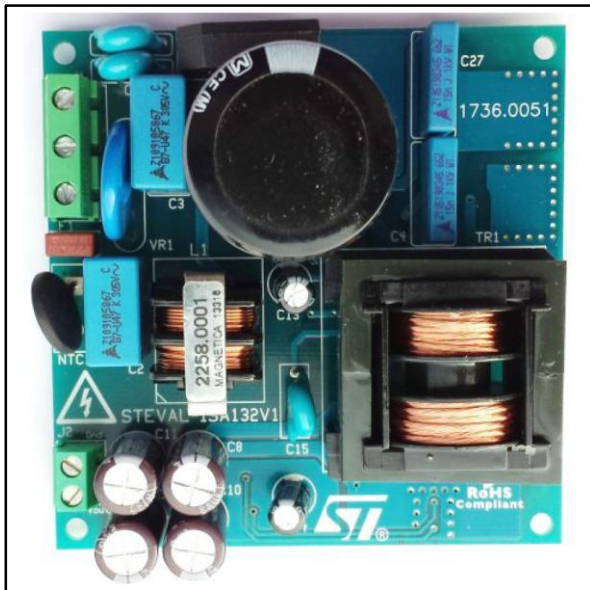


300 W peak power (170 W continuous power) LLC resonant converter based on L6699, STB13N60M2 and STPS20H100CG

Data brief



- Continuous power at 30 °C ambient temperature: 170 W
- The power MOSFETs and diodes are both in D²PAK packages
- RoHS compliant

Description

The STEVAL-ISA132V1 evaluation board implements a converter capable of delivering 170 W of continuous power ($V_{IN} = 190 \text{ VAC}$ to 264 VAC, $V_{OUT} = 24 \text{ V}$) 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 ($< 0.6 \text{ W}$) is obtained thanks to the STB13N60M2 (600 V, 0.35 W typ., 11 A) MDmesh M2 power MOSFET in the half-bridge, and the STPS20H100CG ($V_{RRM} = 100 \text{ V}$, $I_F(AV) = 2 \times 10 \text{ A}$) Schottky diode for secondary rectification.

Features

- Input mains range: 190 to 264 VAC - frequency 50 Hz
- Output voltage: 24 V 5%
- No-load consumption: $< 0.6 \text{ W}$
- 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

2 Revision history

Table 1: Document revision history

Date	Version	Changes
19-Aug-2014	1	Initial release.
29-May-2015	2	Updated: Figure 1 STEVAL-ISA132V1 circuit schematic.

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