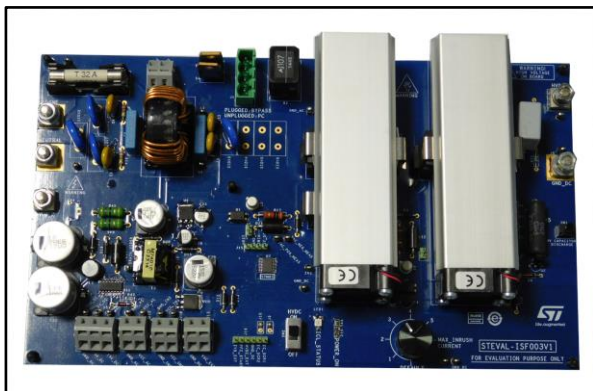


Low standby losses power front-end with inrush current-limitation

Data brief



Features

- Fully electronic solution without the need for an inrush current limiter resistor and its bulky bypass electromechanical relay
- DC bus disconnection at standby to reduce losses below 0.3 W
- Inrush current compliance with IEC61000-3-3
- Operation allowed with PFC (continuous or discontinuous)
- Compliant with EN 55015, IEC 61000-4-11
- Criteria A at 4 kV IEC 61000-4-5 and at 4 kV IEC 61000-4-4
- RoHS compliant

Description

The STEVAL-ISF003V1 evaluation board allows the inrush-current which charges a DC bus capacitor to be limited to comply with the IEC 61000-3-3 standard. This inrush-current limitation is based on a soft-start procedure of the mixed bridge diodes and SCRs rectifier using progressive phase control at board start-up.

This solution can also drastically reduce standby losses as the DC bus can be totally disconnected from the AC mains when it does not have to operate. DC bus deactivation is simply achieved by turning off SCRs, without requiring an additional relay to open the circuit in standby.

The steady-state losses are also reduced, thanks to the removal of the NTC / PTC resistor traditionally used to limit inrush-current. Therefore, no relay is required to bypass this resistor as it is no longer used.

Schematic diagrams

Figure 1: STEVAL-IFS003V1 power and insulated control schematic

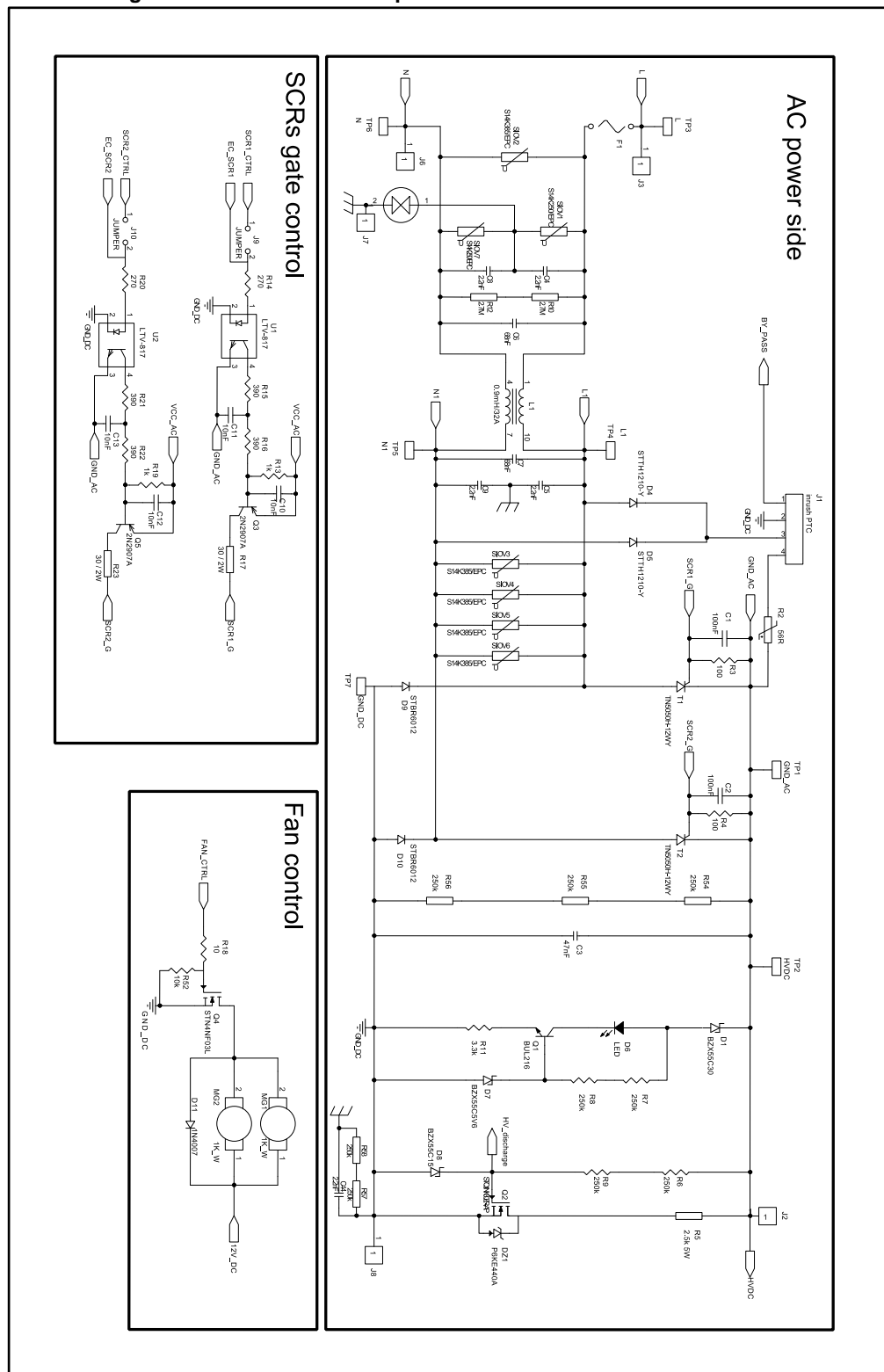


Figure 2: STEVAL-ISF003V1 control circuit schematic

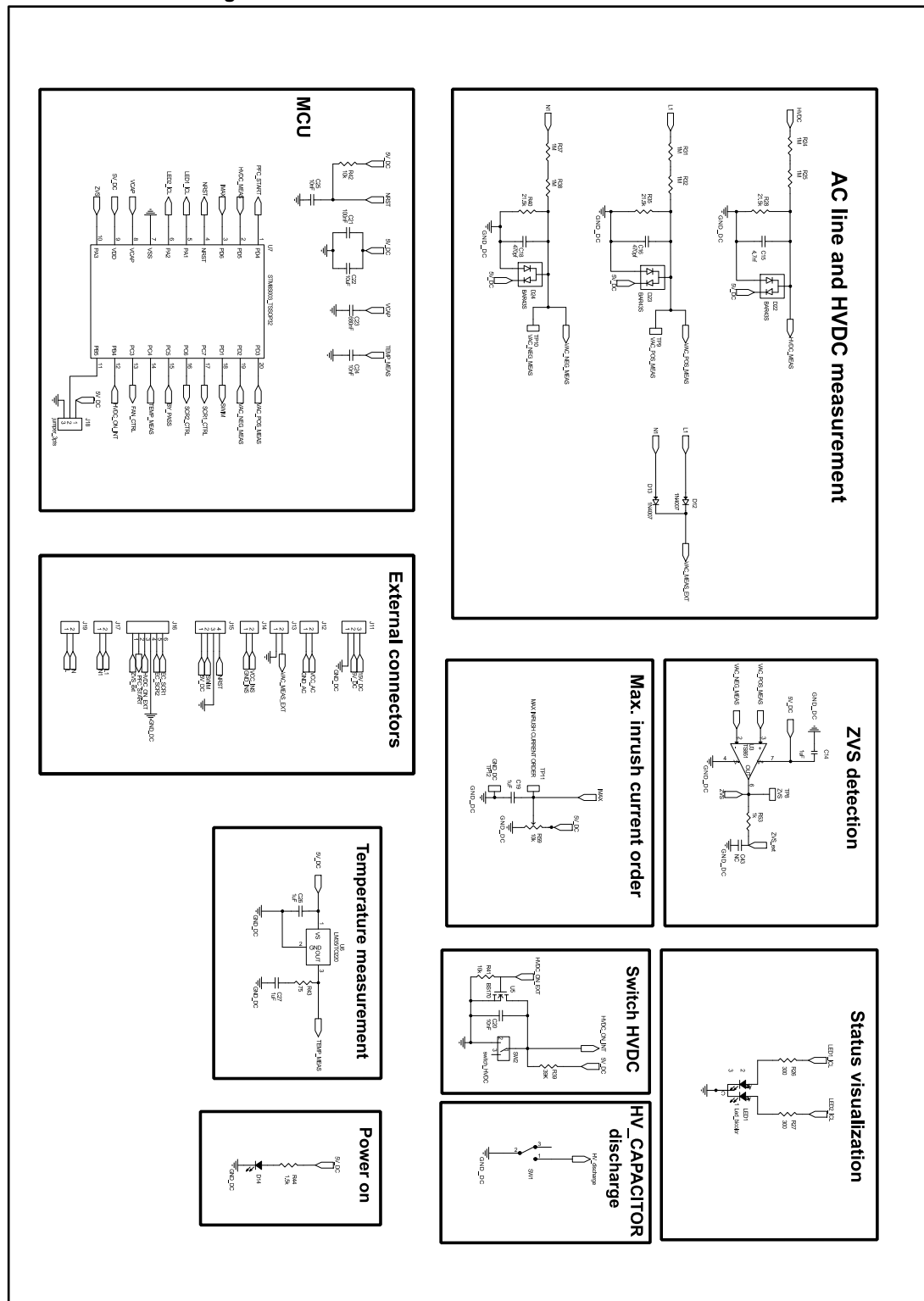
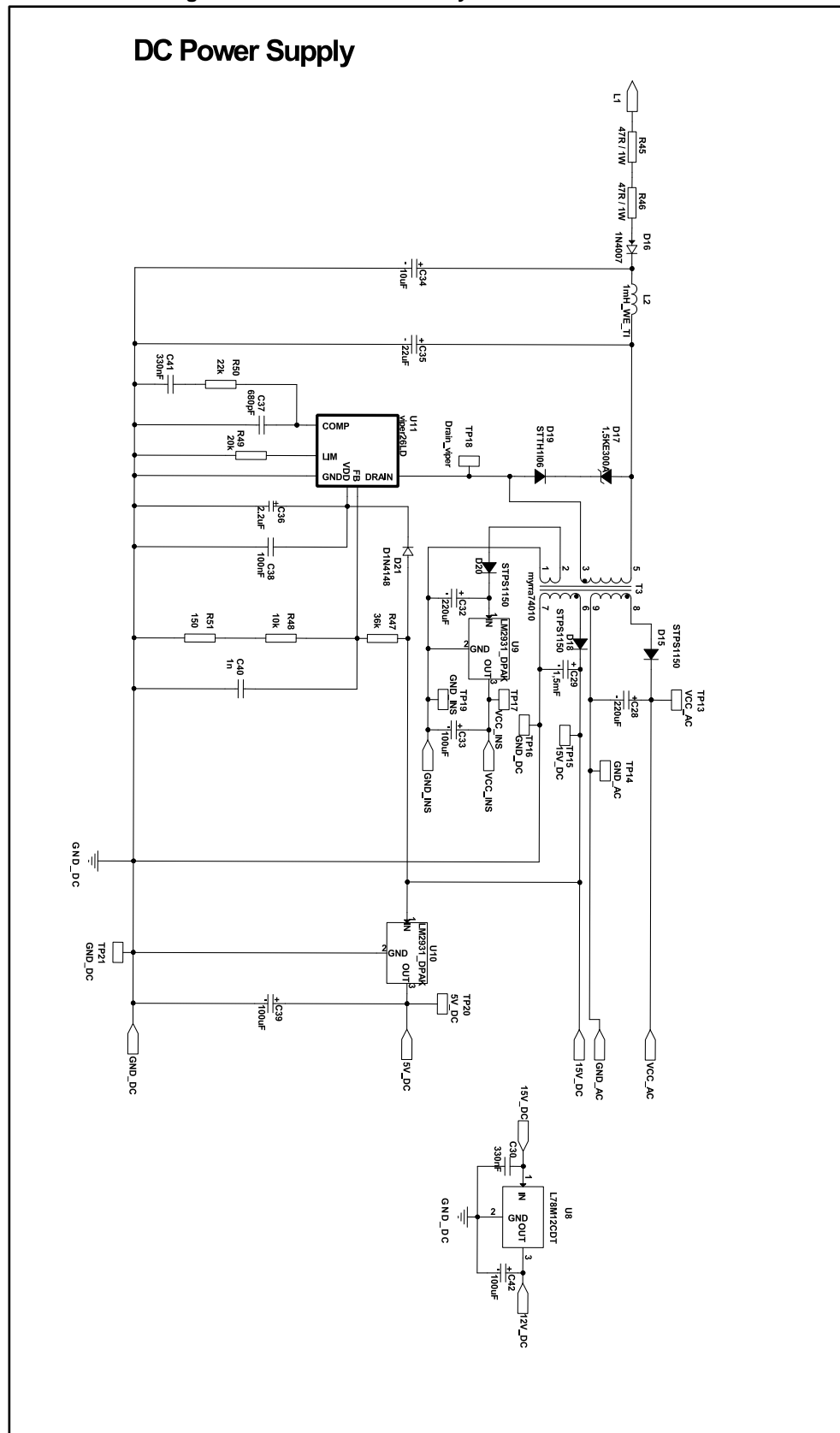


Figure 3: STEVAL-ISF003V1 flyback SMPS schematic



Revision history

Table 1: Document revision history

Date	Version	Changes
16-Jun-2016	1	Initial release.
18-Apr-2017	2	Updated Section: "Schematic diagrams" .

IMPORTANT NOTICE – PLEASE READ CAREFULLY

STMicroelectronics NV and its subsidiaries ("ST") reserve the right to make changes, corrections, enhancements, modifications, and improvements to ST products and/or to this document at any time without notice. Purchasers should obtain the latest relevant information on ST products before placing orders. ST products are sold pursuant to ST's terms and conditions of sale in place at the time of order acknowledgement.

Purchasers are solely responsible for the choice, selection, and use of ST products and ST assumes no liability for application assistance or the design of Purchasers' products.

No license, express or implied, to any intellectual property right is granted by ST herein.

Resale of ST products with provisions different from the information set forth herein shall void any warranty granted by ST for such product.

ST and the ST logo are trademarks of ST. All other product or service names are the property of their respective owners.

Information in this document supersedes and replaces information previously supplied in any prior versions of this document.

© 2017 STMicroelectronics – All rights reserved

Mouser Electronics

Authorized Distributor

Click to View Pricing, Inventory, Delivery & Lifecycle Information:

[STMicroelectronics:](#)

[STEVAL-ISF003V1](#)