

Power supply for STB based on L6565 (US-110 V)

Data Brief

Features

- Switch mode Quasi-Resonant Flyback Power Supply
- Input: 88 to 138 Vac (US version)
- Switching frequency: 50/60 Hz
- Output1: 12 V @ 500 mA delivering 6 W with $\pm 10\%$ of stability
- Output2: 8 V @ 40 mA delivering 0.32 W with $\pm 15\%$ of stability
- Output3: 5 V @ 1 A delivering 5 W with $\pm 5\%$ of stability
- Output4: 3.3 V @ 450 mA delivering 1.485 W with $\pm 2\%$ of stability
- Output5: 1.23 V @ 1 A delivering 5 W with $\pm 5\%$ of stability
- Output6: 2.5 V @ 0.7A delivering 1.75 W with $\pm 2\%$ of stability

General description

This document describes a reference design of a 17 W Switch Mode Power Supply dedicated to Set-Top Box applications. The board accepts US input voltages (90 to 265 Vrms) and delivers up to 6 W outputs. It is based on the L6565 quasi resonant SMPS controller, working in variable frequency mode.

The Quasi-resonant operation and the high flexibility of the L6565 make it a very suitable device, able to satisfy all the requirements with only few external components.

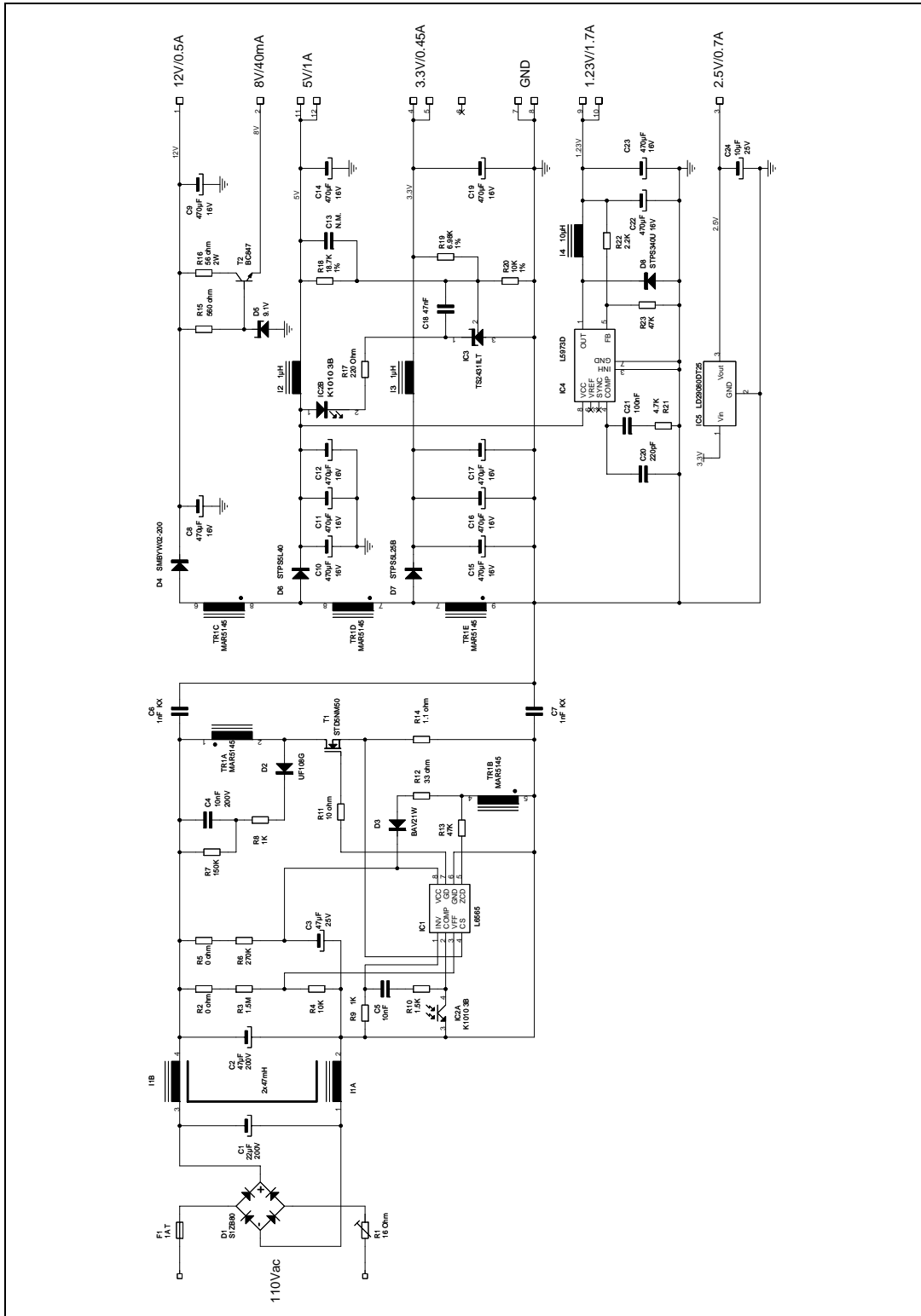


ST components

- STTH108 High Voltage Ultrafast Rectifier, 1 A, 800 V
- SMBYW02-200 High Efficiency Fast Recovery Rectifier Diode, 2 A, 200 V
- STPS5L40 Power Schottky Rectifier, 5 A, 40 V
- STPS5L25B low drop power Schottky Rectifier, 3 A, 40 V
- STPS340 Power Schottky Rectifier, 3 A, 40 V
- L6565 Quasi Resonant SMPS controller
- L5973D step down switching regulator up to 2.5 A
- LD29080DT25, 800 mA fixed and adjustable output, very low dropout voltage regulator
- STD5NK50Z, N-channel zener protected SuperMESH Power MOSFETs, 500 V, 1.22 Ohm, 4.4 A

1 Board schematic

Figure 1. Board schematic



2 Revision history

Table 1. Revision history

Date	Revision	Changes
09-Oct-2006	1	First issue
06-Feb-2007	2	Typo mistake on page 1
09-Mar-2007	3	Minor text change

Please Read Carefully:

Information in this document is provided solely in connection with ST products. STMicroelectronics NV and its subsidiaries ("ST") reserve the right to make changes, corrections, modifications or improvements, to this document, and the products and services described herein at any time, without notice.

All ST products are sold pursuant to ST's terms and conditions of sale.

Purchasers are solely responsible for the choice, selection and use of the ST products and services described herein, and ST assumes no liability whatsoever relating to the choice, selection or use of the ST products and services described herein.

No license, express or implied, by estoppel or otherwise, to any intellectual property rights is granted under this document. If any part of this document refers to any third party products or services it shall not be deemed a license grant by ST for the use of such third party products or services, or any intellectual property contained therein or considered as a warranty covering the use in any manner whatsoever of such third party products or services or any intellectual property contained therein.

UNLESS OTHERWISE SET FORTH IN ST'S TERMS AND CONDITIONS OF SALE ST DISCLAIMS ANY EXPRESS OR IMPLIED WARRANTY WITH RESPECT TO THE USE AND/OR SALE OF ST PRODUCTS INCLUDING WITHOUT LIMITATION IMPLIED WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE (AND THEIR EQUIVALENTS UNDER THE LAWS OF ANY JURISDICTION), OR INFRINGEMENT OF ANY PATENT, COPYRIGHT OR OTHER INTELLECTUAL PROPERTY RIGHT.

UNLESS EXPRESSLY APPROVED IN WRITING BY AN AUTHORIZED ST REPRESENTATIVE, ST PRODUCTS ARE NOT RECOMMENDED, AUTHORIZED OR WARRANTED FOR USE IN MILITARY, AIR CRAFT, SPACE, LIFE SAVING, OR LIFE SUSTAINING APPLICATIONS, NOR IN PRODUCTS OR SYSTEMS WHERE FAILURE OR MALFUNCTION MAY RESULT IN PERSONAL INJURY, DEATH, OR SEVERE PROPERTY OR ENVIRONMENTAL DAMAGE. ST PRODUCTS WHICH ARE NOT SPECIFIED AS "AUTOMOTIVE GRADE" MAY ONLY BE USED IN AUTOMOTIVE APPLICATIONS AT USER'S OWN RISK.

Resale of ST products with provisions different from the statements and/or technical features set forth in this document shall immediately void any warranty granted by ST for the ST product or service described herein and shall not create or extend in any manner whatsoever, any liability of ST.

ST and the ST logo are trademarks or registered trademarks of ST in various countries.

Information in this document supersedes and replaces all information previously supplied.

The ST logo is a registered trademark of STMicroelectronics. All other names are the property of their respective owners.

© 2007 STMicroelectronics - All rights reserved

STMicroelectronics group of companies

Australia - Belgium - Brazil - Canada - China - Czech Republic - Finland - France - Germany - Hong Kong - India - Israel - Italy - Japan - Malaysia - Malta - Morocco - Singapore - Spain - Sweden - Switzerland - United Kingdom - United States of America

www.st.com