

STEVAL-ISA125V1

5 V / 10 W, 60 kHz isolated flyback with extra power management based on the VIPer28LN

Data brief



Features

Input voltage range: 90 V_{RMS} - 265 V_{RMS}

Output voltage: 5 V

Max output current: I_{OUT} max = 2 A

Peak output current: I_{OUT} pk = 3 A

Precision of output regulation: ΔV_{OUT LF} ±5%

- High frequency output voltage ripple:
 ΔV_{OUT HF} = 50 mV
- Max ambient operating temperature: T_A = 60 °C
- 800 V avalanche-rugged power section
- PWM operation at 60 kHz with frequency jittering for lower EMI
- Limiting current with adjustable set point
- On-board soft-start
- Safe auto-restart after a fault condition; low standby power (< 50 mW at 265 V_{ac}).
- Adjustable, accurate overvoltage protection, thermal shutdown with hysteresis, delayed overload protection

Description

The STEVAL-ISA125V1 is a 5 V, 2 A demonstration application with 3.3 A peak current capability of 1.9 sec, using the new VIPer28LN offline high-voltage converter from STMicroelectronics.

In some applications, an SMPS can have load peaks which may be two or more times as high as the power it is supposed to deliver, though only for a short time compared to the thermal time constants of the power components. Typical examples of such loads include printers and audio systems.

In such cases, it is more cost-effective to thermally design the system for maximum continuous power and not for peak power demand, which is sustained only for a limited time.

Such a design is possible thanks to the EPT function of the VIPer28LN, which allows designers to fix the maximum time window during which the converter is able to manage the peak power and still maintain output voltage regulation. If the overload period exceeds the time window, the converter is automatically shut down and enters auto-restart mode until the overload is removed, thus preventing damage to the power components.

Schematic diagram STEVAL-ISA125V1

1 Schematic diagram

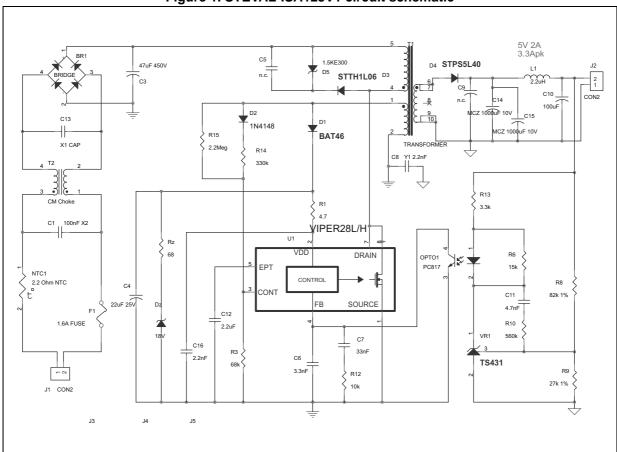


Figure 1. STEVAL-ISA125V1 circuit schematic

STEVAL-ISA125V1 Revision history

2 Revision history

Table 1. Document revision history

Date	Revision	Changes
18-Jun-2013	1	Initial release.

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.

ST PRODUCTS ARE NOT AUTHORIZED FOR USE IN WEAPONS. NOR ARE ST PRODUCTS DESIGNED OR AUTHORIZED FOR USE IN: (A) SAFETY CRITICAL APPLICATIONS SUCH AS LIFE SUPPORTING, ACTIVE IMPLANTED DEVICES OR SYSTEMS WITH PRODUCT FUNCTIONAL SAFETY REQUIREMENTS; (B) AERONAUTIC APPLICATIONS; (C) AUTOMOTIVE APPLICATIONS OR ENVIRONMENTS, AND/OR (D) AEROSPACE APPLICATIONS OR ENVIRONMENTS. WHERE ST PRODUCTS ARE NOT DESIGNED FOR SUCH USE, THE PURCHASER SHALL USE PRODUCTS AT PURCHASER'S SOLE RISK, EVEN IF ST HAS BEEN INFORMED IN WRITING OF SUCH USAGE, UNLESS A PRODUCT IS EXPRESSLY DESIGNATED BY ST AS BEING INTENDED FOR "AUTOMOTIVE, AUTOMOTIVE SAFETY OR MEDICAL" INDUSTRY DOMAINS ACCORDING TO ST PRODUCT DESIGN SPECIFICATIONS. PRODUCTS FORMALLY ESCC, QML OR JAN QUALIFIED ARE DEEMED SUITABLE FOR USE IN AEROSPACE BY THE CORRESPONDING GOVERNMENTAL AGENCY.

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.

© 2013 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 - Philippines - Singapore - Spain - Sweden - Switzerland - United Kingdom - United States of America

www.st.com

4/4 DocID024831 Rev 1