chanhvinh.com

STEVAL-ISA153V1

12 V, 15 W (20 W peak) isolated flyback converter based on the VIPER38LE

Data brief



Features

- Universal input mains range: 90 – 265 V_{AC} frequency: 50 - 60 Hz
- Output voltage/current: 12 V/1.25 A (1.65 A peak)
- Very compact size
- Standby mains consumption: lower than 30 mW at 230 V_{AC}
- Minimum active mode efficiency: 81.55%
- Minimum active mode at 10% load efficiency: 71.55%
- EMI: in accordance with EN55022-Class-B
- RoHS compliant

Description

The STEVAL-ISA153V1 product evaluation board implements a 12 V/1.25 A, 15 W (20 W peak) isolated flyback wide-range mains developed for general-purpose applications.

The core of the application is the VIPER38LE, the latest offline converter from the VIPerPlus family. The device is a high-voltage converter that smartly integrates an 800 V rugged power MOSFET with PWM current-mode control. The device features an adjustable extra power timer (EPT) that enables the IC to sustain overload conditions for a few seconds.

The main characteristics of the evaluation board are its small size and minimal BOM, high efficiency and low standby consumption. Extremely low consumption under no-load conditions is ensured thanks to burst mode operation which reduces the average switching frequency and minimizes all frequency-related losses.

The VIPER38LE operates at a fixed 60 kHz frequency. Frequency jittering is implemented, which helps the application meet electromagnetic disturbance standards.

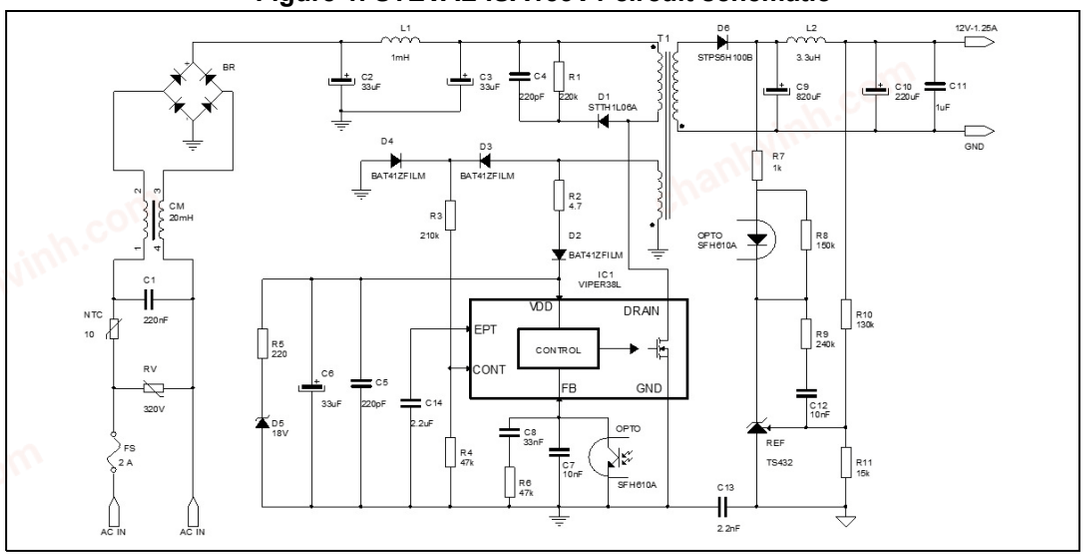
The IC includes high-level protection features such as dual-level OCP, output overvoltage, short-circuit, and thermal shutdown with hysteresis. After removal of a fault condition, the IC is automatically restarted.

For further information contact your local STMicroelectronics sales office. www.st.com

chanhvinh.com

1 Schematic diagram

Figure 1. STEVAL-ISA153V1 circuit schematic



chanhvinh.com

2 Revision history

Table 1. Document revision history

Date	Revision	Changes
16-May-2014	1	Initial release.

chanhvinh.com

chanhvinh.com

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 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.

© 2014 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