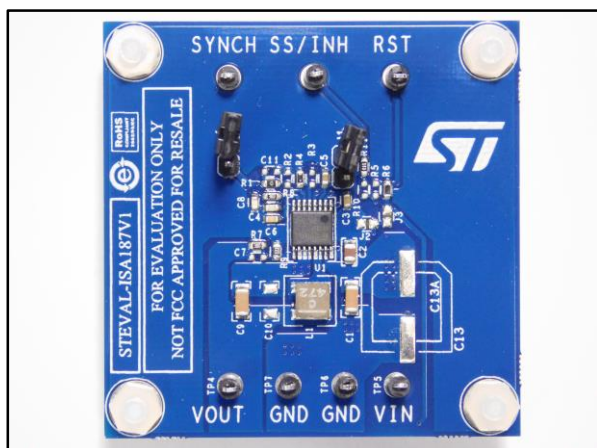


38 V, 0.5 A synchronous step-down switching regulator evaluation board based on A6985F

Data brief



Description

The STEVAL-ISA187V1 is a product evaluation board based on the ST synchronous step-down switching regulator A6985F, which can deliver up to 0.5 A and, with its 100% duty cycle ability to withstand cold crank events and wide input operating voltage range, represents the ideal choice for battery-powered automotive systems. Synchronous rectification helps achieve higher efficiency at full load as well as application compactness, while high-frequency switching (programmable up to 2 MHz) helps reduce the cost and size of power passive components while remaining outside the AM band.

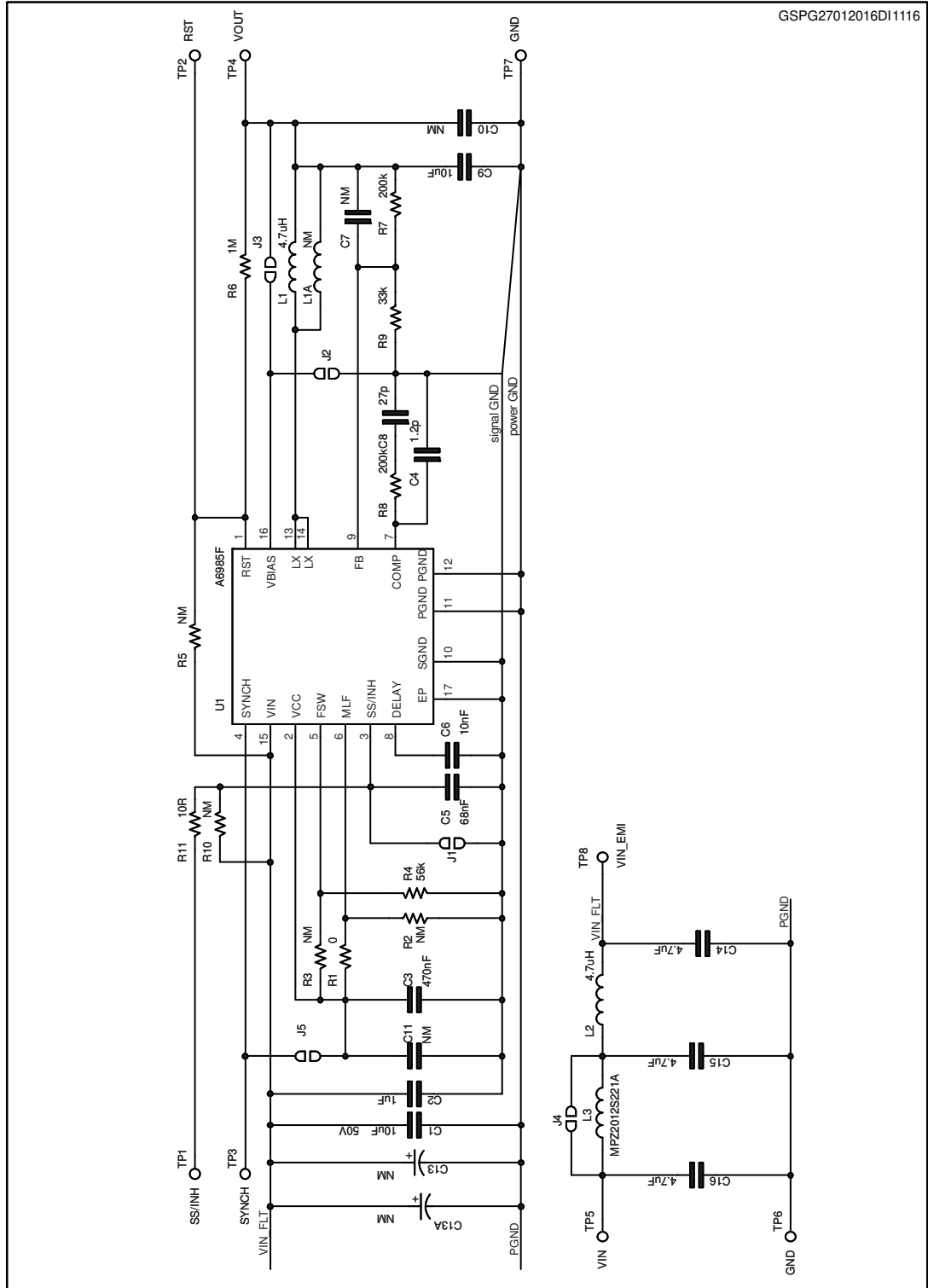
The device can operate in low consumption mode (LCM), with a quiescent current of 30 μA at $V_{\text{IN}}=12\text{ V}$ and $V_{\text{OUT}}=3.3\text{ V}$ that ensures high efficiency under light load, which is a requirement in typical car body applications that are active when a car is parked. A low noise mode (LNM) can be selected to meet the requirements of infotainment applications with forced PWM mode under all load conditions. The default board configuration is LCM active, 2 MHz switching frequency, high I_{SKIP} current and the switchover feature enabled, but all of these settings can be easily changed so the user can evaluate different application scenarios.

Features

- AECQ100 qualification
- 0.5 A DC output current
- 4 V to 38 V operating input voltage
- Low consumption mode or low noise mode
- Programmable I_{SKIP} current
- 30 μA I_{Q} at light load (LCM $V_{\text{IN}} = 12\text{ V}$ and $V_{\text{OUT}} = 3.3\text{ V}$)
- 8 μA $I_{\text{Q-SHTDWN}}$
- Adjustable f_{SW} (250 kHz - 2 MHz)
- Output voltage adjustable from 0.85 V to V_{IN}
- Embedded output voltage supervisor
- Synchronization
- Adjustable soft-start time
- Internal current limiting
- Overvoltage protection
- Output voltage sequencing
- Peak current mode architecture
- $R_{\text{DS(on)HS}} = 360\text{ m}\Omega$; $R_{\text{DS(on)LS}} = 150\text{ m}\Omega$
- Thermal shutdown
- RoHS compliant

1 Schematic diagram

Figure 1: STEVAL-ISA187V1 schematic circuit



2 Revision history

Table 1: Document revision history

| Date | Version | Changes |
|-------------|---------|------------------|
| 27-Jan-2016 | 1 | Initial release. |

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.

© 2016 STMicroelectronics – All rights reserved