



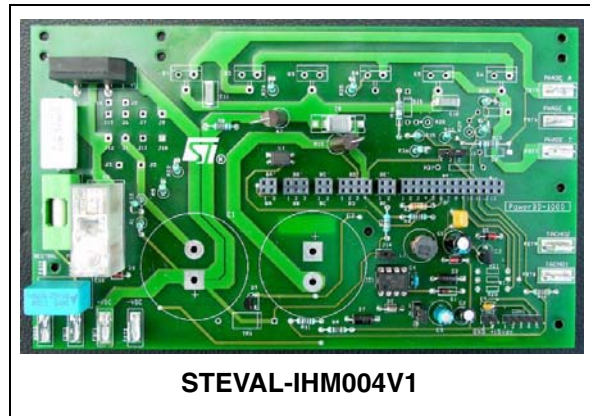
# STEVAL-IHM004V1

BLDC & AC motor control  
Power driver board 1 KW

Data Brief

## Features

- Quick to set up, to install and easy to run
- Inverter stage IGBT short circuit rugged based
- Design is re-usable (the ORCAD source files are available for free)
- Several kinds of applications with six-step commutation or 6-signal PWM (sine wave-modulated) outputs, including: 3 Phase AC Induction motor control, 3 Phase BLDC/AC PM motor control (6-step sensorless), 3 Phase BLAC PM motor control (sinusoidal driven, with Hall sensors)
- Optimized layout to provide very low level of interference between the Power and the Signal noise
- Modular approach with three different power board module (300W, 1kW, 3kW)



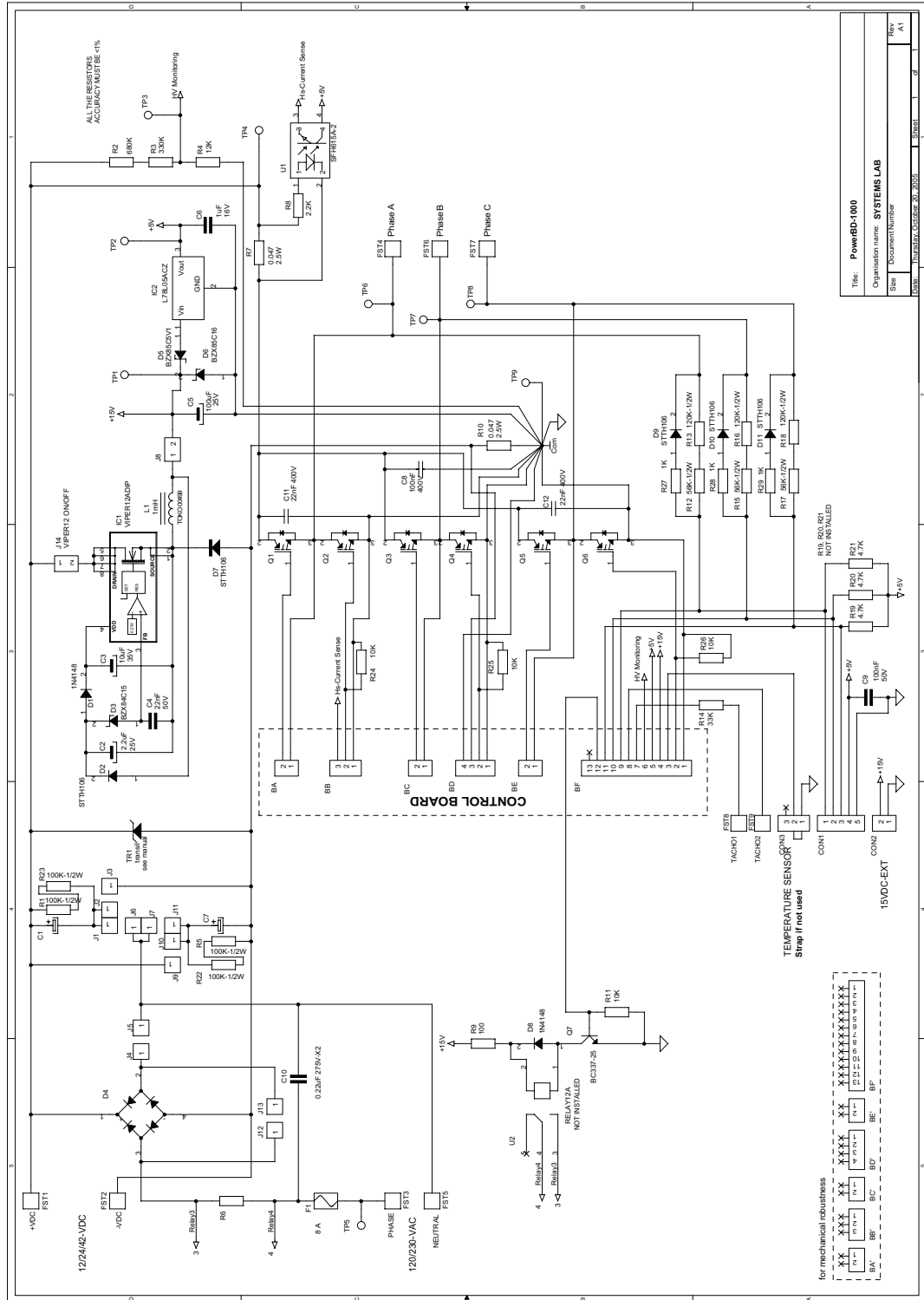
## Description

The general hardware architecture of the reference design kit is based on an Inverter topology suitable to efficiently drive three types of motors: "3 Phase BLDC/AC Permanent Magnet (in six-step mode)", "3 Phase AC Induction" and "3 Phase BLAC PM motor (sinusoidal driven)" plus a plug-in control board, based on ST7FMC MCU.

The inverter bridge is made by six IGBTs short circuit rugged rated at 10uS with different option of current capability in relationship to the power needed by the customer final application. The driving of the bridge is made by three IGBTs drivers (suited in the control board) with High Side/Low Side integrated functionality in a single chip with also several protections. The supply of the power is implemented using the Viper, a Vertical Intelligent Power Enhanced Regulators which combines an optimized, high voltage, Vertical Power MOSFET with state-of-the-art PWM circuitry.

# 1 Board schematic

Figure 1. Scheme



## 2 Revision history

**Table 1. Document revision history**

| Date        | Revision | Changes          |
|-------------|----------|------------------|
| 19-Jul-2007 | 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.**

**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](http://www.st.com)