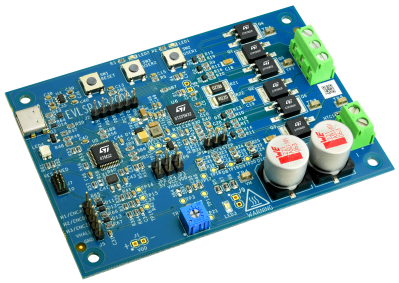
# EVLSPIN32G0B1

Data brief

## Brushless motor driver evaluation board based on STSPIN32G0B1



## Features

- Input voltage from 7 V to 45 V
- Output current up to 15 $A_{rms}$
- Power stage based on STD140N6F7 MOSFETs
- Single-shunt current sensing topology
- Current limiter with adjustable threshold
- 3.3 V buck regulator
- 12 V LDO regulator
- High precision reference voltage option (VREF+)
- Digital Hall sensors and encoder input
- Overcurrent comparator
- Bus voltage sensing
- PCB temperature sensing
- Embedded ST-LINK/V2-1 (Virtual COM + Mass storage + SWD debugger and programmer)
- Easy user interface with buttons and potentiometer

## Applications

- Power tools
- Battery powered home appliances
- Industrial automation
- Fans
- Robotics

| Product summary | |
|---|---|
| Brushless moto driver evaluation board based on STSPIN32G0B1 | EVLSPIN32G0B1 |
| Advanced brushless motor controller with embedded STM32G0 MCU | STSPIN32G0B1 |
| N-channel 60 V, 0.0031 Ohm typ., 80 A STripFET F7 Power MOSFET in a DPAK package | STD140N6F7 |
| STM32 Motor Control Software Development Kit (MCSDK) | X-CUBE-MCSDK |

## Description

The EVLSPIN32G0B1 is a 3-phase brushless motor driver board based on the STSPIN32G0B1.

The power stage is composed by six STD140N6F7 60 V MOSFETs in STripFET F7 technology that can operate up to 45 V and deliver up to 15 $A_{rms}$.

The board provides a single-shunt sensing topology, suitable for both Field Oriente Control and 6-step algorithms, and a full set of protections: voltage monitoring, PCB temperature monitoring, overcurrent comparator, current limiter, and UVLO on gate driver supplies.

A dedicated connector allows interfacing with both digital Hall-effect based position sensors and incremental encoders.

The user can program and debug the STSPIN32G0B1's embedded MCU firmware through the on-board STLINK V2-1 that also offers UART communication via virtual COM and direct binary download (mass storage peripheral).

The board, in combination with the STM32 Motor Control SDK, is designed to support engineers to test, develop, and validate motor control designs for applications such as power tools, home appliances, fans, and pumps.


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# 1 Specifications

**Table 1. EVLSPIN32G0B1 - specifications**

| Parameter | | Value |
|---|---|---|
| Supply voltage | Nominal | 36 V |
| | Full operating range | 7 V to 45 V |
| Maximum current | DC (1) | 15 A |
| | Peak (2) | 22 A |

1. *Actual maximum current could be limited by power dissipation*
2. *Limited by overcurrent protection*


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# 2 Safety and operating instructions



DANGER



HOT SURFACE

## 2.1 General terms

During assembly, testing, and operation, the evaluation board poses several inherent hazards, including bare wires, moving or rotating parts and hot surfaces.

**Warning:** *There is danger of serious personal injury or death due to electrical shock, property, damage and burn hazards if the kit or components are improperly used or installed incorrectly.*

In particular:

- Do not touch or modify the hardware when the power supply is present.
- Do not connect or disconnect the wirings when the power supply is present.
- Do not touch the components or the heatsink .
- Do not cover the board.
- Do not put the board in contact with flammable materials or with materials releasing smoke when heated.
- After operation, allow the board to cool down before touching it.

All operations involving transportation, installation use, and maintenance must be performed by skilled technical personnel able to understand and implement national accident prevention regulations. For the purposes of these basic safety instructions, “skilled technical personnel” are suitably qualified people who are familiar with the installation, use and maintenance of power electronic systems.

## 2.2 Intended use of evaluation board

The evaluation board is designed for demonstration purposes only and must not be used for electrical installations or machinery. Technical data and information concerning its usage are detailed in the documentation and should be strictly observed.


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# 3 Waste and recycling

**The evaluation board is not to be disposed of as an urban waste. At the end of its life cycle, differentiated waste collection must be followed**. Consult the local authorities for more information on the proper disposal channels and recycling centers. It is mandatory to collect separately the evaluation board and make sure it is delivered to the appropriate waste management and recycling centers. As of 15 August 2018, in all the countries belonging to the European Union, the evaluation board is subject to the requirements of WEEE Directive **2012/19/EU**, and therefore it is forbidden to dispose of the evaluation board as undifferentiated waste or with other domestic waste. Incorrect disposal of the evaluation board may cause damage to the environment and may incur fines based on specific countries' rules, regulations, and laws.


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## Revision history

Table 2. **Document revision history**

| Date | Version | Changes |
|---|---|---|
| 20-Sep-2024 | 1 | Initial release. |


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# Contents

1 **Specifications** . . . . . 2
2 **Safety and operating instructions** . . . . . 3
2.1 General terms . . . . . 3
2.2 Intended use of evaluation board . . . . . 3
3 **Waste and recycling** . . . . . 4
**Revision history** . . . . . 5
**List of tables** . . . . . 7


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# List of tables

Table 1. EVLSPIN32G0B1 - specifications . . . . . 2
Table 2. Document revision history . . . . . 5


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