STSPIN32F0 HIGH VOLTAGE

3-phase Motor Controllers with Embedded STM32 MCU

STSPIN32 3-phase BLDC controllers extended to high voltage applications with 250V and 600V options

Four pin-to-pin Controllers integrate an STM32 Cortex-M0 MCU and high-voltage 3-phase gate drivers, with embedded smartShutDown™ and outstanding robustness against below-ground. Available for applications running up to 250 V and 600 V, at respectively two different gate currents of 0.35 A and 1 A. Home appliances and industrial applications designers can now easily design and reuse their current hardware and firmware in all applications fitting main voltage supplies (110 VAC & 220 VAC), without having to change PCB.

KEY FEATURES & BENEFITS

- 250V and 600V Three-phase gate drivers
- $I_{\text{gate}}$ up to 1A to drive MOSFETs / IGBTs
- Outstanding robustness against below-ground phenomena; can resist down to -120V
- Patented smartShutDown (smartSD) ensures fast and fail-proof protection
- Integrated bootstrap diodes
- 1.8 mm creepage with new QFN package option
- STM32F0 MCU with ARM® Cortex®-M0 core
- 48 MHz, 4-Kb SRAM and 32-Kb Flash memories
- 12-bit ADC and 6 timers
- 21 GPIOs and Bootloader available
- Ready to use development ecosystem
- Eight general purpose evaluation boards
- Full support of FOC (1 and 3 shunts) and 6-step sensorless and sensored control algorithms
- Integrated in Motor Control Software Development Kit (MCSDK) for easy FW writing and fine-tuning
- Available in TQFP 64L 10x10 mm and QFN 72L 10x10 mm, with high creepage

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STSPIN32F0 HIGH VOLTAGE 3-phase Motor Controllers with Embedded STM32 MCU

**KEY APPLICATIONS**
- Refrigerators compressors
- Industrial drives, pumps and fans
- HVAC
- Corded power and garden tools
- Battery operated and 110 Vac supplied home appliances
- Industrial automation

**STSPIN32F0 High Voltage Main internal blocks**

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**Product table**

<table>
<thead>
<tr>
<th>Order code</th>
<th>Description</th>
<th>Vin min (V)</th>
<th>Vin max (V)</th>
<th>Vout max (V)</th>
<th>IGATE (A)</th>
<th>Related documents</th>
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<tbody>
<tr>
<td>STSPIN32F0251/Q</td>
<td>250V 3-phase driver with STM32 MCU</td>
<td>9</td>
<td>20</td>
<td>250V</td>
<td>0.35</td>
<td>EVSPIN32F0251S1 / EVSPIN32F02Q1S1 products evaluation boards, STSW-SPIN32F0251 firmware for fast and easy evaluation of BLDC 1-shunt six-steps control</td>
</tr>
<tr>
<td>STSPIN32F0252/Q</td>
<td>1 STEVAL-PTool2v1 reference design for power tools up to 80V. One-shunt six-step firmware for hands-on start-up</td>
<td>9</td>
<td>20</td>
<td>600V</td>
<td>1</td>
<td>STSW-SPIN32F0601S3 / EVSPIN32F06Q1S3 product evaluation board to be paired with X-CUBE-MCSDK software development kit for fast and easy evaluation of PMSM 3-shunt field-oriented control</td>
</tr>
<tr>
<td>STSPIN32F0601/Q</td>
<td>600V 3-phase driver with STM32</td>
<td>9</td>
<td>20</td>
<td>600V</td>
<td>0.35</td>
<td>EVSPIN32F0601S1 / EVSPIN32F06Q1S1 product evaluation board STSW-SPIN32F0601 firmware for fast and easy evaluation of BLDC 1-shunt six-steps control</td>
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<tr>
<td>STSPIN32F0602/Q</td>
<td>1 EVSPIN32F0602S1 / EVSPIN32F06Q2S1 product evaluation board STSW-SPIN32F0602 firmware for fast and easy evaluation of BLDC 1-shunt six-steps control</td>
<td>9</td>
<td>20</td>
<td>1</td>
<td>1</td>
<td>EVSPIN32F0602S1 / EVSPIN32F06Q2S1 product evaluation board STSW-SPIN32F0602 firmware for fast and easy evaluation of BLDC 1-shunt six-steps control</td>
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