
Design made easy with DC & BLDC motor driver tools

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Main components	
L6205	PowerSPIN: DMOS dual full bridge driver with 2.8A capability
L6206, L6206Q	PowerSPIN: DMOS dual full bridge driver with diagnostics and 2.8A capability
L6207, L6207Q	PowerSPIN: DMOS dual full bridge driver with PWM current controller with 2.8A capability
L6225	PowerSPIN: DMOS dual full bridge driver with 1.4A capability
L6226, L6226Q	PowerSPIN: DMOS dual full bridge driver with diagnostics and 1.4A capability
L6227, L6227Q	PowerSPIN: DMOS driver full bridge driver with PWM current controller with 1.4A capability
L6230	PowerSPIN: DMOS driver for three-phase brushless DC motor suitable for sensor or sensorless control
L6234	PowerSPIN: DMOS driver for three-phase brushless DC with 6 inputs
L6229, L6229Q, L6235, L6235Q	PowerSPIN: DMOS driver for three phase with PWM current control and hall effect decoding logic

Purpose and benefits

Designing with the STSpin DC & BLDC motor drivers can be easily accomplished using the PractiSPIN or PractiSPIN 2 software and associated evaluation tools. These tools are presented to show what is needed to get started for implementing motor control designs which offer significant design flexibility and integration.

Description

The STSpin ecosystem allows real-time evaluation of the entire motion control system, including first-cut thermal analysis. The ecosystem consists of an EVAL62xx demo board specific to each driver, the EVALPRACTISPIN or STEVAL-PCC009V2 interface board, and the PractiSPIN or PractiSPIN 2 software.

Two separate evaluation platforms, with very similar features, are available for working with these parts. The choice of evaluation system depends on the package type of the parts. For parts based on ST's VFQFPN (Very thin profile Fine pitch Quad Flat Package and No lead) package, the PRACTISPIN 2 platform is to be used. These part numbers all have a Q suffix. Other parts are to be evaluated using the PRACTISPIN platform.

Section 1: Using the L62xxQ – VFQFPN packaged powerSPIN devices

The PRACTISPIN 2 platform requires the PractiSPIN 2 evaluation software, a STSpin demonstration board, and an interface board.

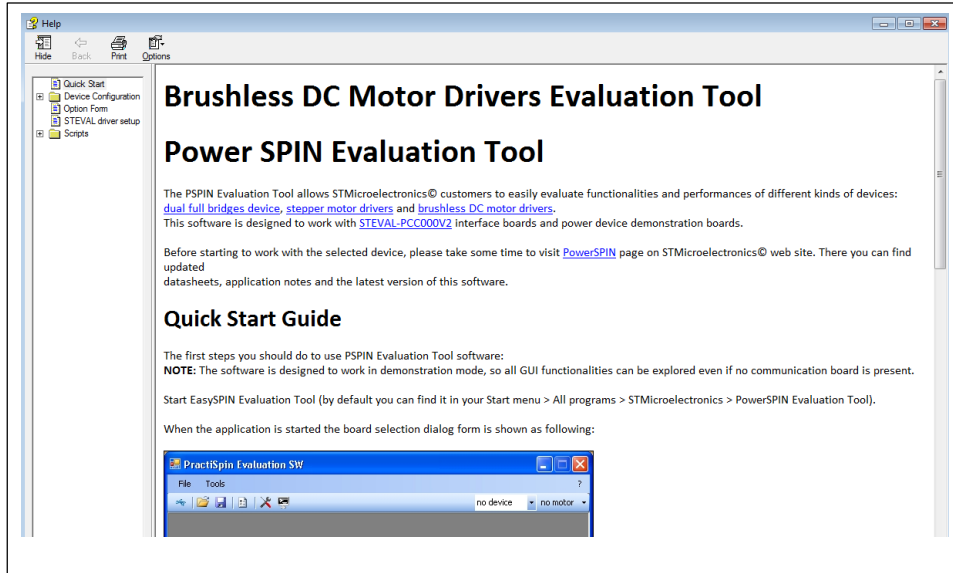
The PractiSPIN 2 evaluation software, STSW-SPIN003, supports the STSpin L62xxQ device family, runs on a Windows-based PC, and can be downloaded at no charge from st.com under Support->Tools and Software->Software->Software Development Suites for Motor Control ICs. Included in this software is a great online reference and help guide consisting of a “Quick Start” guide, “Device Configuration” for DC and BLDC motor drivers, “STEVAl driver setup”, and software “scripts”. To access this online help guide, click on the “?” on the upper right corner of the PractiSPIN 2 evaluation software as shown in figure 1.

Figure 1. PractiSPIN 2 online help guide:



When “Topics” is selected, a full Quick Start Guide comes up for assistance per figure 2.

Figure 2. Full Quick Start Guide:



Each EVAL62xxQ demonstration board allows the user to fully test the functionality of the powerSPIN device chosen. It includes the power connections and all required external components for the device. Along with the demonstration boards, the data brief, schematics, BOM, and gerber files are available to be downloaded from st.com. The boards are driven by the STEVAL-PCC009V2 communication board and the PractiSPIN 2 evaluation software.

The STEVAL-PCC009V2 motor control interface board, based on the STM32, provides PC control of the evaluation board control inputs via a standard USB port connection. The system uses in application programming of the STM32 flash to provide the flexibility to support many devices or applications. Each device or application has its own dedicated firmware that can be downloaded into the flash memory. The PractiSPIN 2 system will automatically determine if the appropriate firmware is loaded.

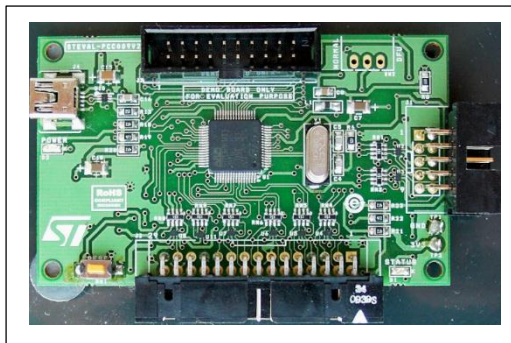
Available with the interface board is the data brief as well as the STSW-PCC009V2FW firmware, the STSW-PCC009V2 Rapid Test, and the gerber files, BOM and board schematics.

The EVAL6207Q evaluation board and the STEVAL-PCC009V2 interface board are shown here in figures 3 and 4.

Figure 3. EVAL6207Q evaluation board



Figure 4. STEVAL-PCC009V2 interface board



Section 2: Using the L62xx – powerSPIN devices in Power SO, SO, or PDIP packages (PD, D or N suffix)

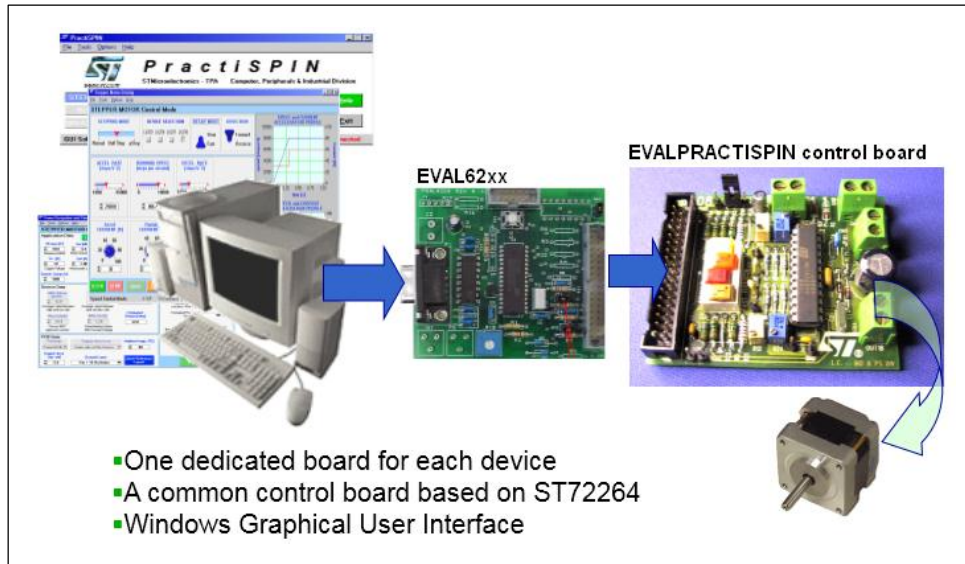
The PRACTISPIN platform requires the PractiSPIN evaluation software, a STSpin demonstration board, and an interface board.

The PractiSPIN evaluation software or STSW-PSPIN001 supports the STSpin L62xx device family in the Power SO, SO, and PDIP on a Windows-based PC. It is available to be downloaded at no charge from st.com under Support->Tools and Software ->Software->Software Development Suites for Motor Control ICs. . Also available is the application note AN1794 “PractiSPIN evaluation system configuration and set up guide” which looks at using the PractiSPIN evaluation software along with the target evaluation and interface boards.

The target evaluation board, the EVAL62xxPD or EVAL62xxN for each supported device, includes the power connections and all required external components. It is driven by the EVALPRACTISPIN hardware interface board, based on the ST72264 microcontroller and the PractiSPIN evaluation software. Each board allows the user to fully test the functionality of the powerSPIN device chosen. Along with the demonstration boards, the

databrief, schematics, BOM, and gerber files are available to be downloaded from st.com. Please see figure 5 which shows the PractiSPIN ecosystem.

Figure 5 - PractiSPIN Architecture



The EVALPRACTISPIN interface board communicates with the user interface across an RS232 link to the PC and generates real time control signals for the driver ICs. Note that either a RS232 port on a PC is used, or a USB to RS232 adapter is needed for the EVALPRACTISPIN. The PC-based software sends all of the commands to the ST7 across the RS232, allowing it to be able to update the firmware in the ST7. The system uses this in application programming of the ST7 flash to provide the flexibility to support many devices or applications. Each device or application has its own dedicated firmware that can be downloaded into the flash memory. The PractiSPIN system will automatically determine if the appropriate firmware is loaded in the ST7. The gerber files and board schematics are available for the EVALPRACTISPIN interface board on www.st.com.

Support material

Related design support material
<p>Product / system Evaluation boards:</p> <p>EVAL6205N, EVAL6206N, EVAL6206PD, EVAL6207N, EVAL6208N, EVAL6208PD,, EVAL6227PD, EVAL6227, EVAL6229PD, EVAL6235N, EVAL6235PD: STSpin evaluation boards for the Power SO, SO, and PDIP packages</p> <p>EVAL6206Q, EVAL6207Q, EVAL6208Q, EVAL6226QR, EVAL6227QR, EVAL6228QR, EVAL6229QR, EVAL6230QR, EVAL6235Q: STSpin device evaluation boards for the Q package</p> <p>Note: Available for evaluation board is the associated databrief, gerber files, BOM, and schematic</p>
<p>Interface Boards:</p> <p>EVALPRACTISPIN: PractiSPIN interface board for the powerSPIN devices in Power SO, SO and PDIP packages</p> <p>STEVAL-PCC009V2: PractiSPIN 2 interface board for powerSPIN in Q package</p> <p>Note: Available for the STEVAL-PCC009V2 are the associated software: STSW-PCC009V2: IBUUI Rapid Test and the STSW-PCC009V2FW: Firmware</p>
<p>Software:</p> <p>STSW-SPIN001: PractiSPIN / Evaluation software for powerSPIN devices in Power SO, SO, and DIP packages</p> <p>STSW-SPIN003: PractiSPIN 2 / Evaluation software for powerSPIN devices in Q package</p>
<p>Gerber files:</p> <p>EVALPRACTISPIN PCB layout</p> <p>STEVAL-PCC009V2 Gerber files</p>
<p>Bill of Materials:</p> <p>STEVAL-PCC009V2 BOM</p>
<p>Schematics:</p> <p>EVALPRACTISPIN board schematic</p> <p>STEVAL-PCC009V2 board schematics</p>
Documentation
<p>Datasheets:</p> <p>L6205 - DMOS dual full bridge driver</p> <p>L6206, L6206Q - DMOS dual full bridge driver</p> <p>L6207, L6207Q – DMOS dual full bridge driver with PWM current controller</p> <p>L6225 – DMOS dual full bridge driver</p> <p>L6226, L6226Q – DMOS dual full bridge driver</p> <p>L6227, L6227Q – DMOS dual full bridge driver with PWM current controller</p> <p>L6229, L6229Q – DMOS driver for three-phase brushless DC motor</p> <p>L6230 – DMOS driver for three-phase brushless DC motor</p> <p>L6234 – DMOS driver for three phase motor driver</p> <p>L6235, L6235Q – DMOS driver for three-phase brushless DC motor</p>
<p>Application Notes:</p> <p>AN1794: PractiSPIN evaluation system configuration and set up guide</p>

Revision history

Date	Version	Changes
24-May-2015	1	Initial release

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