Advanced Motor Control Solution

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The building blocks at the core of smart industry

Distributed intelligence, decentralized diagnostics
Communication and flexibility to adapt in real-time to external events
Higher efficiency and safety at all points in power usage
ST Solutions for Motion Control
Leading Smart Industry
Motor Drivers

Leading integration, performance, efficiency

System-in-package driver
POWERSTEP01

Monolithic
L6470, L6472, L6474
L622x
L620x

Controllers STSPIN32F0, L6480, L6482

Monolithic low voltage
STSPIN220, STSPIN230
STSPIN240, STSPIN250

Portable, Battery Powered

Medical, Security, ATM, Vending, 3D Printers, Domotics

Stage Lighting

Industrial, Factory Automation
For All Types of Motors

- Power MOSFET
- Control core
- H-bridge

Motor Types:
- DC motors
- Stepper motors
- Brushless DC motors
When you Think of STSPIN, Think

...
System-in-Package Technology
High added-value SiP solutions

ST’s excellence integrated into a standard footprint package

High added-value system-in-package solution
Intelligence, application-specific control, power, galvanic isolation, communication peripherals

- System level of functionality
- Reduced development effort
- Application compactness and reduced costs of ownership
- Ideal for space constrained applications

Driving the mechatronic evolution
System-in-Package Technology
High added-value SiP solutions

Programmable controller and 8 MOSFET 16 mΩ rated in 15 mm QFN

Power Transistors

Motor Control

500W / cm² power density
High Added-Value SiP Solutions

System level of functionality, reduced development effort, application compactness and reduced costs of ownership
System-in-Package Technology
High added-value SiP solutions

Advanced 3-phase BLDC controller with embedded STM32 MCU in 7 mm QFN
Motor driver IC integrating an advanced BLDC controller and a 32-bit MCU in a 7x7 mm footprint

STSPIN32F0 press release
Datasheet
Evaluation board
Flyer
Selection guide
Blogpost

AN4999 Application note: STSPIN32F0 overcurrent protection
UM2154 User manual for STEVAL-SPIN3201: advanced BLDC controller with embedded STM32 MCU evaluation board
STSW-SPIN3201 Firmware example for field oriented motor control (FOC)
UM2152 User manual for Getting started with the STSPIN32F0 FOC firmware example STSW-SPIN3201
STSW-STM32100 Library: STM32 PMSM FOC Software Development Kit
UM2168 User manual: Using ST MC Workbench with STSPIN32F0
IAR-EWARM Integrated development environment supported (IDE)
From rapid prototyping to digital manufacturing

New STSPIN enable high-end performance for professional 3D printing

- Unrivalled position resolution and smoothness of motion -256 µsteps-
- Silent, fast, support multiple extruders and heated beds for large printing surface
- Controllable by portable devices thanks to embedded Wi-Fi module

Reference design using dedicated STSPIN platform
Solutions for Fast-Prototyping

Flexible, easy and affordable way to develop innovative applications using ST components

An exhaustive offer of plug & play reference design

A Complete Offering

- Affordable expansion boards for STM32 Nucleo development boards
- Broad range of stackable ST solution covering all your needs
- Complete software ecosystem and pre-integrated applications

Visit us at www.st.com/3dprint
STSPIN – Perfect fit for Drone

STSPIN (L6230)
- 52V 3-ph motor driver

STDRIVE (L6387)
- Half Bridge Gate Driver

TARGET
- In production

STSPIN830
- 45V 3-ph motor driver

STSP32F0A SiP 3 Phase LV
- 60V Driver FOC
- STM32 Cortex M4

2017

STSPIN230 / STSPIN233
- 10V 3-ph motor driver

2018
MOSFET & IGBT Gate Drivers

Outstanding robustness, noise immunity and design flexibility
MOSFET / IGBT Gate Drivers

A future-proof portfolio for a wide range of applications

- Electric/ Hybrid vehicles
- 1200 V inverters
- Server, UPS
- Compressors
- Factory automation
- White goods
- Solar
- E-bikes

Low and high voltage, single and multiple channel:
- TD35 family
- L649 family
- L639 family
- L638 family

Galvanic isolated STGAP

1 kW
50 W
200 W
1 kW
4 kW
When you Think of STDRIVE, Think …

FANs
HID
UPS
Industrial Robot
Motor drivers
e-bikes

Industrial drives
Power supply
Stage Lighting
Factory automation
AC/DC converters
Solar inverters

Home appliances
Compressors
Induction heating

Power tools
Ev/HEV
System-in-Package Technology
High added-value SiP solutions

On-chip galvanic isolation

Enhanced system reliability eliminating failures of the optocoupler
Reduced PCB estate, simple design and easy production flow

- Transmission based on pulse transformer
- On-chip oxide isolation layer
- Isolation voltage up to 6 kV
- High Data rate ~ 100 Mbps
- Very good CMTI immunity
- Lower power consumption

Pulse transformer technology
Maximum robustness, immunity and safety up to 6000 V
Outstanding robustness, noise immunity and design flexibility

Galvanic separation between input and control stage from high current gate driving and diagnostics

Inductive coupling transfers the logic signal across the isolation for the highest signal integrity and fast propagation
STDRIVE for SiC MOSFET

STGAP1S, Full-Featured Galvanically Isolated Driver

Key requirements for driving a SiC MOSFET

- Positive gate drive: +20V
- Negative gate drive: -3V ÷ -5V
  and / or Miller Clamp
- High current capability: 2.5A min.
- ST SiC MOS $V_{(BR)DSS}$ 650V, 1200V, 1700V

TD350 with external push-pull transistors

STGAP2S, STGAP2D
Simple Isolated Driver with Miller Clamp
ST has all the ingredients to be an ideal technology partner

Key to succeed
- Mix of technologies
- Heterogeneous integration
- Enhanced functionalities
- Protected IPs
- High power density
- Flexibility
- Miniaturization & cost-effectiveness
- Partnership with key players

Combining IPs and technologies for a comprehensive future-proof portfolio of products
Smart Industry

http://smarter.st.com.smart-industry