Драйверы двигателей STSPIN
Технические характеристики

Motor Drivers

Overview

ST, a pioneer in the field of motor and motion control, offers a wide range of **motor drivers** covering the requirements of **brushed DC motors**, **stepper motors** and **brushless DC motors** over an extensive range of voltage and current ratings.

State-of-the-art motor drivers

Our line-up of **STSPIN motor drivers** embeds all the functions needed to drive motors efficiently and with the **highest accuracy**, and include an advanced motion profile generator to relieve the host microcontroller, while ensuring robustness and reliability thanks to a comprehensive set of protection and diagnostic features.

Operating from a supply voltage as low as 1.8 V, the portfolio has been extended with the introduction of **low-voltage STSPIN motor drivers** which enable power savings in battery-powered smart devices thanks to the best-in-class standby current of less than 80 nA.

The benefit of our 10 and 15 year longevity program is available for our industrial grade STSPIN motor drivers.

STSPIN motor drivers

Stepper motor drivers

Scalable and robust stepper motor drivers, featuring accurate positioning and smooth motion profile with up to 256 micro-steps per step.

Brushed DC motor drivers

Simple, reliable and cost-effective solution to drive one or more brushed DC motors over a wide current and voltage range.

Brushless DC (BLDC) motor drivers

Extensive diagnostics and fully-protected to reduce the number of external components, cost and complexity.

Gate Drivers

Gate Drivers

Include integrated high-voltage half-bridge, single and multiple low-voltage gate drivers.

A complete ecosystem is provided to support design-in and shorten time-to-market

Designing motor control applications becomes much easier with the outstanding performance, features and full support of **STSPIN motor driver ICs** that make brushed DC, stepper and brushless motor control designs more efficient in a variety of applications.

In addition, STSPIN motor drivers can be easily evaluated in combination with an STM32 32-bit microcontroller in an open, flexible and affordable development environment to enable fast prototyping that can quickly be transformed into final designs. Discover now your STM32 Ecosystem for Motor Control.

The comprehensive development environment includes:

- **STM32 Nucleo development boards** with a comprehensive range of affordable development boards for all STM32 microcontroller series.
- **STM32 Nucleo expansion boards** based on STSPIN motor drivers, the expansion boards can be plugged on top of the STM32 Nucleo development boards. More complex functionalities can be achieved by stacking additional expansion boards.

The expansion boards are equipped with standardized interconnections such as an Arduino Uno R3 connector or a morpho connector for a higher level of connectivity.
Each expansion board is supported by STM32-based software modules.

Simplify cordless power tool development with plug-and-play STSPIN32 reference designs

Use our design prototypes for compact cordless home and garden power tools with low standby current, complete with six-step motor control logic using Hall-effect rotor-position sensing to ensure low torque ripple and very high efficiency.

- STEVAL-PTOOL1V1: compact reference design for low voltage brushless power tools based on STSPIN32F0B
- STEVAL-PTOOL2V1 - Compact reference design for battery-operated brushless power tools based on STSPIN32F0252

Compact STSPIN Motor Drivers for Low- to Mid-Power Applications

ST has extended its portfolio of **STSPIN monolithic motor drivers** with the introduction of STSPIN8 series, that simplify design solutions and boosts motor efficiency. This is achieved thanks to its wide application range (from 7 to 45 V), its standby mode in idle state, its $R_{DS(ON)}$ as low as 500 mΩ and a full set of integrated protection functions, all in a compact 4 x 4 mm QFN package.

STSPIN8 series includes:

- STSPIN820: advanced 256-microstep stepper motor driver with step-clock and direction interface
- STSPIN830: versatile three-phase BLDC motor driver with dedicated Mode input pin
- STSPIN840: compact dual brushed DC motor driver with dedicated parallel input pin

Brushed DC Motor Drivers

Overview

ST’s STSPIN motor drivers for brushed DC motors integrate a dual current control core and a dual full-bridge power stage to drive two brushed DC motors.

Available in a large selection of space-saving, thermally-enhanced packages, STSPIN brushed DC motor driver ICs provide a ready-to-use, optimized solution for motor and motion control systems in a wide range of voltage and current ratings.

The STSPIN portfolio comes with extensive evaluation hardware and software as well as a technical documentation toolbox to help minimize time to market.

The benefit of our 10 and 15 years longevity program is available for our industrial grade STSPIN motor drivers.

Motor Drivers/Brushed DC Motor Drivers

Part Number	General Description	$R_{DS(on)}$ (Ω) typ	Supply Voltage (V) min	Supply Voltage (V) max	Output Current-Max (A) RMS max	Output Current-Max (A) max peak	Integrated FETs	Interface	Operating Temperature (°C) min	Operating Temperature (°C) max	Package
L2293Q	Push-pull four channel driver with diodes	2.2	2.8	36	0.6	1.2	true	Parallel	-40	150	VFQFPN 32 5x5x1.0 mm
L293B	Push-Pull Four Channel Drivers	2.2	4.5	36	1	2	true	Parallel	-40	150	PDIP 16
L293D	Push-Pull Four Channel Drivers with Diodes	2.2	4.5	36	0.6	1.2	true	Parallel	-40	150	PDIP 16,SO-20
L298	Dual Full Bridge Driver	0.93	4.5	36	2	-	true	Parallel	-40	150	MW 15L,PowerSO-20
L6201	DMOS Full Bridge Driver	0.3	12	48	1	5	true	Parallel	-40	150	PowerSO-20,SO-20
L6203	DMOS Full Bridge Driver	0.3	12	48	1	10	true	Parallel	-40	150	MW 11L
L6205	DMOS DUAL FULL BRIDGE DRIVER	0.3	8	52	2.8	7.1	true	Parallel	-40	150	PDIP 20,PowerSO-20,SO-20
L6206	DMOS dual full bridge driver	0.3	8	52	2.8	7.1	true	Parallel	-40	150	PowerSO 36,SO-24
L6206Q	DMOS dual full bridge driver	0.3	8	52	2.5	7.1	true	Parallel	-40	150	VFQFPN 48 7x7x1.0 mm
L6207	DMOS dual full bridge driver with PWM current controller	0.3	8	52	2.8	7.1	true	Parallel	-40	150	PowerSO 36,SO-24
L6207Q	DMOS dual full bridge driver	0.3	8	52	2.8	7.1	true	Parallel	-40	150	VFQFPN 48 7x7x1.0 mm
L6225	DMOS DUAL FULL BRIDGE DRIVER	0.7	8	52	1.4	3.55	true	Parallel	-40	150	PDIP 20,PowerSO-20,SO-20
L6226	DMOS dual full bridge driver	0.7	8	52	1.4	3.55	true	Parallel	-40	150	PowerSO 36,SO-24
L6226Q	DMOS dual full bridge driver	0.7	8	52	1.4	3.55	true	Parallel	-40	150	VFQFPN 32 5x5x1.0 mm
L6227	DMOS dual full bridge driver with PWM current controller	0.7	8	52	1.4	3.55	true	Parallel	-40	150	PowerSO 36,SO-24
L6227Q	DMOS dual full bridge driver with PWM current controller	0.7	8	52	1.4	3.55	true	Parallel	-40	150	VFQFPN 32 5x5x1.0 mm
L6229	DMOS driver for three-phase brushless DC motor	0.7	8	52	1.4	3.55	true	Parallel	-40	150	PowerSO 36,SO-24
L6229Q	DMOS driver for three-phase brushless DC motor	0.7	8	52	1.4	3.55	true	Parallel	-40	150	VFQFPN 32 5x5x1.0 mm
L6230	DMOS driver for three-phase brushless DC motor	0.7	8	52	1.4	3.55	true	Parallel	-40	150	PowerSO 36,VFQFPN 32 5x5x1.0 mm
L6234	Three phase motor driver	0.3	7	52	2.8	5	true	Parallel	-40	150	PowerSO-20
L6235	DMOS driver for 3-phase brushless DC motor	0.3	8	52	2.8	7.1	true	Parallel	-40	150	PowerSO 36,SO-24
L6235Q	DMOS driver for 3-phase brushless DC motor	0.3	8	52	2.5	7.1	true	Parallel	-40	150	VFQFPN 48 7x7x1.0 mm
L6452	Dual 13X16 Matrix InkJet Heads Drivers	-	10.5	12.5	-	-	-	-	0	70	PQFP 100 14x20x2.7
PWD13F60	High-density power driver - high voltage full bridge with integrated gate driver	0.32	6.5	17	8	32	true	Parallel	-40	125	QFN 10X13
PWD5F60	High-density power driver - High voltage full bridge with integrated comparators	1.38	10	20	3.5	14	true	Parallel	-40	125	QFN.150.70.10-46L
STSPIN230	Low voltage triple half-bridge motor driver for BLDC motors	0.2	1.8	10	1.3	2	true	Parallel	-40	150	VFQFPN 16 3x3x1.0
STSPIN233	Low voltage three phase and three sense motor driver	0.4	1.8	10	1.3	2	true	Parallel	-40	150	VFQFPN 16 3x3x1.0
STSPIN240	Low voltage dual brush DC motor driver	0.2	1.8	10	1.3	-	true	Parallel	-40	150	VFQFPN 16 3x3x1.0
STSPIN250	Low voltage brush DC motor driver	0.1	1.8	10	2.6	4	true	Parallel	-40	150	VFQFPN 16 3x3x1.0
STSPIN32F0	Advanced BLDC controller with embedded STM32 MCU	-	8	45	-	0.6	false	I2C,SPI,UART	-40	125	VFQFPN 48 7x7x1.0 mm
STSPIN32F0251	250 V three-phase controller with MCU	-	9	250	-	0.35	false	I2C,SPI,UART	-40	125	TQFP 64 10x10x1.0,VFQFPN 10X10X0.95 72L PITCH 05
STSPIN32F0252	250 V three-phase controller with MCU	-	9	250	-	1.48	false	I2C,SPI,UART	-40	125	TQFP 64 10x10x1.0,VFQFPN 10X10X0.95 72L PITCH 05
STSPIN32F0601	600V three-phase controller with MCU	-	9	600	-	0.35	false	I2C,SPI,UART	-40	125	TQFP 64 10x10x1.0,VFQFPN 10X10X0.95 72L PITCH 05

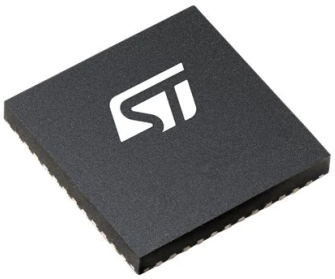
STSPIN32F0602	600V three-phase controller with MCU	-	9	600	-	1.48	false	I2C,SPI,UART	-40	125	TQFP 64 10x10x1.0,VFQFPN 10X10X0.95 72L PITCH 05
STSPIN32F0A	Advanced BLDC controller with embedded STM32 MCU	-	6.7	45	-	0.6	false	I2C,SPI,UART	-40	125	VFQFPN 48 7x7x1.0 mm
STSPIN32F0B	Advanced single shunt BLDC controller with embedded STM32 MCU	-	6.7	45	-	0.6	false	I2C,SPI,UART	-40	125	VFQFPN 48 7x7x1.0 mm
STSPIN32G4	High performance 3-phase motor controller with embedded STM32G4 MCU	-	5.5	75	-	1	false	I2C,SPI,UART	-40	125	VFQFPN9X9X1.0 64 PITCH 0.5 ROUTA
STSPIN830	Compact and versatile three-phase and three-sense BLDC motor driver	0.5	7	45	1.5	3.5	true	Parallel	-40	150	TFQFPN 24L 4X4X1.05
STSPIN840	Compact dual brushed DC motor driver	0.5	7	45	1.5	2.5	true	Parallel	-40	150	TFQFPN 24L 4X4X1.05
STSPIN948	Scalable 4.5 A dual full-bridge driver for brushed DC motors	-	-	-	-	-	-	-	-	-	VFQFPN 48 7x7x1.0 mm
STSPIN958	Scalable 5 A full-bridge driver for brushed DC motors	-	-	-	-	-	-	-	-	-	VFQFPN 32 5x5x1.0 mm
L293E	Push-Pull Four Channel Drivers	2.2	4.5	36	1	2	true	Parallel	-40	150	PDIP 20
L6202	DMOS Full Bridge Driver	0.3	12	48	1	10	true	Parallel	-40	150	PDIP 18

Brushless DC Motor Drivers

Overview

ST's STSPIN drivers for 3-phase brushless DC (BLDC) motors includes power drivers in a 3-phase bridge configuration and integrated solutions with built-in decoding logic for Hall-effect sensors.

Our BLDC motor controllers also feature a PWM current controller to autonomously drive a BLDC motor through motion commands coming from the motor or motion control system host – a microcontroller, DSP or FPGA.



In addition to the integration of the power MOSFET and the associated driving circuitry, they include **protection and diagnostic features** for over-temperature, over-current and under-voltage conditions, resulting in robust and reliable designs.

Available in a wide selection of space-saving, thermally-enhanced packages, STSPIN **3-phase BLDC motor driver ICs** provide a **ready-to-use** and **optimized solution** for motor and motion control systems in a wide range of voltage and current ratings.

Turnkey motor control modules that provide all the functions required such as speed, position and current loop execution and real-time connectivity to the master, are also available. With their compactness, these modules are ideal for direct installation on a permanent magnet synchronous motor (PMSM).

The STSPIN portfolio comes with extensive evaluation hardware and software as well as a technical documentation toolbox **to help minimize time to market**.

The benefit of our 10 and 15 years longevity program is available for our industrial grade STSPIN motor drivers.

STSPIN32F0: 3-phase BLDC controllers extended to high-voltage applications with 250V and 600V options

ST extends the flexibility of STM32-based motor controllers to high-voltage applications. Four pin-to-pin systems-in-package integrate an STM32 Cortex-M0 MCU and high-voltage 3-phase gate drivers, with embedded smartShutDown™. STSPIN32F0 high-voltage series includes:

250V 3-phase driver with MCU	600V 3-phase driver with MCU
STSPIN32F0251	STSPIN32F0601
STSPIN32F0252	STSPIN32F0602

Motor Drivers/Brushless DC Motor Drivers

Part Number	General Description	$R_{DS(on)}$ (Ω) typ	Supply Voltage (V) min	Supply Voltage (V) max	Output Current-Max (A) RMS max	Output Current-Max (A) max peak	Integrated FETs	Interface	Operating Temperature (°C) min	Operating Temperature (°C) max	Package	Grade
L6229	DMOS driver for three-phase brushless DC motor	0.7	8	52	1.4	3.55	true	Parallel	-40	150	PowerSO 36,SO-24	Industrial
L6229Q	DMOS driver for three-phase brushless DC motor	0.7	8	52	1.4	3.55	true	Parallel	-40	150	VFQFPN 32 5x5x1.0 mm	Industrial
L6230	DMOS driver for three-phase brushless DC motor	0.7	8	52	1.4	3.55	true	Parallel	-40	150	PowerSO 36,VFQFPN 32 5x5x1.0 mm	Industrial
L6234	Three phase motor driver	0.3	7	52	2.8	5	true	Parallel	-40	150	PowerSO-20	Industrial
L6235	DMOS driver for 3-phase brushless DC motor	0.3	8	52	2.8	7.1	true	Parallel	-40	150	PowerSO 36,SO-24	Industrial
L6235Q	DMOS driver for 3-phase brushless DC motor	0.3	8	52	2.5	7.1	true	Parallel	-40	150	VFQFPN 48 7x7x1.0 mm	Industrial
STSPIN230	Low voltage triple half-bridge motor driver for BLDC motors	0.2	1.8	10	1.3	2	true	Parallel	-40	150	VFQFPN 16 3x3x1.0	Industrial
STSPIN233	Low voltage three phase and three sense motor driver	0.4	1.8	10	1.3	2	true	Parallel	-40	150	VFQFPN 16 3x3x1.0	Industrial
STSPIN32F0	Advanced BLDC controller with embedded STM32 MCU	-	8	45	-	0.6	false	I2C,SPI,UART	-40	125	VFQFPN 48 7x7x1.0 mm	Industrial
STSPIN32F0251	250 V three-phase controller with MCU	-	9	250	-	0.35	false	I2C,SPI,UART	-40	125	TQFP 64 10x10x1.0,VFQFPN 10X10X0.95 72L PITCH 05	Industrial
STSPIN32F0252	250 V three-phase controller with MCU	-	9	250	-	1.48	false	I2C,SPI,UART	-40	125	TQFP 64 10x10x1.0,VFQFPN 10X10X0.95 72L PITCH 05	Industrial
STSPIN32F0601	600V three-phase controller with MCU	-	9	600	-	0.35	false	I2C,SPI,UART	-40	125	TQFP 64 10x10x1.0,VFQFPN 10X10X0.95 72L PITCH 05	Industrial
STSPIN32F0602	600V three-phase controller with MCU	-	9	600	-	1.48	false	I2C,SPI,UART	-40	125	TQFP 64 10x10x1.0,VFQFPN 10X10X0.95 72L PITCH 05	Industrial
STSPIN32F0A	Advanced BLDC controller with embedded STM32 MCU	-	6.7	45	-	0.6	false	I2C,SPI,UART	-40	125	VFQFPN 48 7x7x1.0 mm	Industrial
STSPIN32F0B	Advanced single shunt BLDC controller with embedded STM32 MCU	-	6.7	45	-	0.6	false	I2C,SPI,UART	-40	125	VFQFPN 48 7x7x1.0 mm	Industrial
STSPIN32G4	High performance 3-phase motor controller with embedded STM32G4 MCU	-	5.5	75	-	1	false	I2C,SPI,UART	-40	125	VFQFPN9X9X1.0 64 PITCH 0.5 ROUTA	Industrial
STSPIN830	Compact and versatile three-phase and three-sense BLDC motor driver	0.5	7	45	1.5	3.5	true	Parallel	-40	150	TFQFPN 24L 4X4X1.05	Industrial

Gate Drivers

Overview

A necessary companion for discrete power **MOSFETs and IGBTs** as well as digital – microcontrollers, DSPs and FPGs – or analog controllers in any switched-mode power converter, **STDRIVE** gate drivers generate the necessary voltage and current level required to **accurately** and **efficiently** activate the power stage in industrial, consumer, computer and automotive applications.

With a range spanning from single- to half-bridge and multiple-channel drivers rated for either low- or high-voltage (up to 1500 V) applications, ST also offers galvanically-isolated gate driver ICs for safety and functional requirements, System-in-Package (SiP) solutions integrating high- and low-side gate drivers and MOSFET-based power stages, responding to the industrial market trend towards higher levels of integration and **lower development costs**.

In many cases, there is an **STDRIVE** perfectly designed to fit your switched-mode power converter design. **STDRIVE** comes with extensive evaluation hardware and software as well as a technical documentation toolbox to help **minimize time-to-market**.

Motor Drivers/Gate Drivers

Part Number	General Description	Number of Channels nom	Package	Supply Voltage (V) max	Protection Option Type nom	Key features nom	Output Current-Max (A) nom	Input configuration	Grade	Undervoltage lockout (V) (@ V_{CC} ON) nom	Undervoltage lockout (V) (@ V_{CC} OFF) nom	Undervoltage lockout (V) nom	Operating Temperature (°C) min	Operating Temperature (°C) max
A6387	High-voltage high and low side driver for automotive applications	2	SO-8	17	Interlocking function,	Bootstrap diode	0.65	HIN,LIN	Automotive	6	5.5	-	-40	125
L6384E	High voltage high and low side driver with bootstrap diode	2	SO-8	17	Undervoltage lockout,	Adjustable deadtime,Bootstrap diode	0.65	SD,Single IN	Industrial	12	10	-	-40	125
L6385E	HV high and low side driver with embedded bootstrap diode	2	SO-8	17	Undervoltage lockout,	Bootstrap diode	0.65	HIN,LIN	Industrial	9.6	8.3	9.5	-40	125
L6386AD	HV High and low side driver with embedded comparator and bootstrap diode	2	SO-14	17	Undervoltage lockout, Comparator,	Bootstrap diode	0.65	HIN,LIN,SD	Industrial	9.6	8.3	-	-40	125
L6386E	HV high and low side driver with embedded comparator and bootstrap diode	2	SO-14	17	Undervoltage lockout, Comparator,	Bootstrap diode	0.65	HIN,LIN,SD	Industrial	12	10	11.9	-40	125
L6387E	High voltage high and low-side driver	2	SO-8	17	Undervoltage lockout, Interlocking function,	Bootstrap diode	0.65	HIN,LIN	Industrial	6	5.5	-	-40	125
L6388E	HV high and low side driver with embedded bootstrap diode	2	SO-8	17	Undervoltage lockout, Interlocking function,	Adjustable deadtime,Bootstrap diode	0.65	HIN,LIN	Industrial	9.6	8.3	9.5	-40	125
L6389E	High voltage high and low-side driver	2	SO-8	17	Undervoltage lockout, Interlocking function,	Adjustable deadtime,Bootstrap diode	0.65	HIN,LIN	Industrial	9.6	8.3	9.5	-40	125
L6390	High voltage high/ low-side driver	2	SO-16	20	Undervoltage lockout, Interlocking function, Comparator, Smart shutdown,	Adjustable deadtime,Bootstrap diode,Operational amplifier	0.43	HIN,LIN,SD	Industrial	12	10.5	11.5	-40	125
L6391	High voltage high and low-side driver	2	SO-14	20	Undervoltage lockout, Interlocking function, Comparator, Smart shutdown,	Adjustable deadtime,Bootstrap diode	0.43	HIN,LIN,SD	Industrial	12	10.5	11.5	-40	125
L6392	High voltage high and low-side driver	2	SO-14	20	Interlocking function,	Adjustable deadtime,Bootstrap diode,Operational amplifier	0.43	HIN,LIN,SD	Industrial	12	10.5	11.5	-40	125
L6393	Half bridge gate driver	2	SO-14	20	Comparator,	Adjustable deadtime,Bootstrap diode	0.43	SD	Industrial	9.5	8	9	-40	125
L6395	High voltage high and low-side driver	2	SO-8	20	-	Bootstrap diode	0.43	HIN,LIN	Industrial	9.5	8.8	8.6	-40	125
L6398	High voltage high and low-side driver	2	SO-8	20	Interlocking function,	Bootstrap diode	0.43	HIN,LIN	Industrial	9.5	8.8	9	-40	125
L6399	High voltage high and low-side driver	2	SO-8	20	Interlocking function,	Bootstrap diode	0.43	HIN,LIN	Industrial	9.5	8	9	-40	125
L6491	High voltage high and low-side 4 A gate driver	2	SO-14	20	Interlocking function, Comparator, Smart shutdown,	Adjustable deadtime,Bootstrap diode	4	HIN,LIN,SD	Industrial	9.3	8.7	8.6	-40	125
L6494	High voltage high and low-side 2 A gate driver	2	SO-14	20	Undervoltage lockout,	Adjustable deadtime,Bootstrap diode	2	HIN,LIN,SD	Industrial	9.3	8.7	8.6	-40	125
L6498	High voltage high and low-side 2 A gate driver	2	SO-14,SO-8	20	Undervoltage lockout, Interlocking function,	Bootstrap diode	2	HIN,LIN,SD	Industrial	9.3	8.7	8.6	-40	125
STDRIVE601	Triple half-bridge high-voltage gate driver	3	SO-28	20	Shutdown protection, Undervoltage lockout, Interlocking function	Bootstrap diode,Overcurrent protection	0.35	-	Industrial	8.5	8	8	-40	125
STGAP1BS	Automotive galvanically isolated single gate driver	1	SO-24	36	-	-	5	SD	Automotive	-	-	-	-40	125
STGAP2D	Galvanically isolated 4 A half-bridge dual channel gate driver	2	SO-16	26	Shutdown protection	Thermal Shutdown	4	SD	Industrial	9.1	8.4	-	-40	125
STGAP2GS	Galvanically isolated 3 A single gate driver for Enhancement mode GaN FETs	1	SO 8 WIDE 300	-	Active Miller clamp, Shutdown protection	Thermal Shutdown	-	SD	Industrial	-	-	-	-40	125
STGAP2GSN	Isolated 3 A single gate driver for Enhancement mode GaN FETs	1	SO-8	-	Active Miller clamp, Shutdown protection	Thermal Shutdown	-	SD	Industrial	-	-	-	-40	125
STGAP2HD	Galvanically isolated 4 A dual gate driver	2	SSOP 32 LEAD 300 MIL PKG .0315 P	26	Active Miller clamp, Undervoltage lockout, Thermal shutdown, Interlocking function	-	4	Brake,SD	Industrial	9.1	8.4	-	-40	125
STGAP2HS	Galvanically isolated 4 A single gate driver	1	SO 8 WIDE 300	26	Active Miller clamp, Undervoltage lockout, Thermal shutdown, Interlocking function	-	4	SD	Industrial	9.1	8.4	-	-40	125
STGAP2S	Galvanically isolated 4 A single gate driver	1	SO-8	26	Active Miller clamp, Shutdown protection	Thermal Shutdown	4	SD	Industrial	9.1	8.4	-	-40	125
STGAP2SICD	Galvanically isolated 4 A dual gate driver	2	SSOP 32 LEAD 300 MIL PKG .0315 P	26	Shutdown protection	Thermal Shutdown	4	SD	Industrial	-	-	-	-	-
STGAP2SICS	Galvanically isolated 4 A single gate driver for SiC MOSFETs	1	SO 8 WIDE 300	26	Active Miller clamp, Undervoltage lockout, Thermal shutdown, Interlocking function	-	4	SD	Industrial	15.5	14.8	-	-40	125
STGAP2SICSA	Galvanically isolated 4 A single gate driver for SiC MOSFETs	1	SO 8 WIDE 300	-	Active Miller clamp, Undervoltage lockout, Thermal shutdown, Interlocking function	-	4	SD	Automotive	-	-	-	-	-
STGAP2SICSAN	Galvanically isolated 4 A single gate driver for SiC MOSFETs	1	SO-8	-	Active Miller clamp, Undervoltage lockout, Thermal shutdown, Interlocking function	-	4	SD	Automotive	-	-	-	-	-
STGAP2SICSN	Galvanically isolated 4 A single gate driver for SiC MOSFETs	1	SO-8	26	Undervoltage lockout, Thermal shutdown, Miller clamp option,	-	4	HIN,LIN	Industrial	15.5	14.8	-	-40	125
STGAP4S	Automotive advanced isolated gate driver for IGBTs and SiC MOSFETs	1	SSOP 36 LD 300 MIL .0315 PITCH	32	Active Miller clamp, Desaturation detection, Overcurrent detection, VCE Clamp protection, Temperature warning, shutdown protection, Undervoltage lockout, Overvoltage lockout	Adjustable deadtime,Diagnostic,Overcurrent protection,Programmable dead-time,Thermal Shutdown	-	-	Automotive	2.9	2.85	-	-40	125
TD310	Triple IGBT/MOS driver with current sense	3	SO-16	16	Undervoltage lockout, Comparator	Operational amplifier	-	-	Industrial	-	-	-	-40	125
TD350E	Advanced IGBT/MOSFET driver	1	SO-14	26	Undervoltage lockout, Active Miller clamp, 2-level turn-off, Desaturation detection,	-	2.3	-	Industrial	-	-	-	-40	125
TD351	Advanced IGBT/MOSFET driver	1	SO-8	26	Undervoltage lockout, Active Miller clamp, 2-level turn-off,	-	1.7	-	Industrial	-	-	-	-40	125
TD352	Advanced IGBT/MOSFET driver	1	SO-8	26	Undervoltage lockout, Active Miller clamp, Desaturation detection	Adjustable deadtime	1.7	-	Industrial	-	-	-	-40	125
STGAP1AS	Automotive galvanically isolated single gate driver	1	SO-24	36	Active Miller clamp, Desaturation detection, Overcurrent detection, 2-level turn-off, VCE overvoltage protection, Temperature warning, shutdown protection, Undervoltage lockout, Overvoltage lockout,	Adjustable deadtime,Thermal Shutdown	5	SD	Automotive	4.1	3.8	-	-40	125

Stepper Motor Drivers

Overview

ST's portfolio of STSPIN **stepper motor drivers** spans from relatively simple ICs with current control and phase generation to more complex solutions.

They combine in a **single chip** all that is needed to autonomously drive a stepper motor using high-level motion commands coming from the motor or motion control system host – a microcontroller, DSP or FPGA.

Available in a large selection of space-saving, thermally-enhanced packages, STSPIN stepper motor drivers provide a **ready-to-use**, **optimized solution** for motor and motion control systems in a wide range of voltage and current ratings.

ST also offers a **system-in-package** (powerSTEP01) integrating both the control circuitry and a complete power stage (8 N-channel 16 mOhm MOSFETs) in a QFN package for compact, high-power stepper motor applications (85 V and 10 A).

The STSPIN portfolio comes with extensive low-cost evaluation hardware and software as well as a technical documentation toolbox to help **minimize time to market**.

The benefit of our 10 and 15 year longevity program is available for our industrial grade STSPIN motor drivers.

Smooth & silent stepper motor driver

STSPIN820 256 µsteps capable, and 45 V rated stepper motor driver perfectly suits new-generation applications, thanks to:

- Extreme position accuracy and motion smoothness: with up to 1/256 microsteps per full step
- Integration of the PWM control and the power stage made by 500 mΩ RDS(ON) MOSFETs guarantees one of the best performance-cost trade-offs
- Easy step-clock and direction interface
- 7 to 45 V operating voltage for wide range of applications
- Maximum reliability: UVLO, over-current and thermal protections
- Compact 4 x 4 mm QFN makes it the smallest integrated microstepping driver with these ratings

Motor Drivers/Stepper Motor Drivers

Part Number	General Description	$R_{DS(on)}$ (Ω) typ	Supply Voltage (V) min	Supply Voltage (V) max	Output Current-Max (A) RMS max	Output Current-Max (A) max peak	Stepping mode	Integrated FETs	Interface	Operating Temperature (°C) min	Operating Temperature (°C) max	Package
L297	Stepper Motor Controller	-	4.5	7	-	-	Full step,Half step,Micro step	false	Parallel	-40	150	PDIP 20,SO-20
L6208	DMOS driver for bipolar stepper motor	0.3	8	52	2.8	7.1	Full step,Half step,Micro step	true	Parallel	-40	150	PowerSO 36,SO-24
L6208Q	DMOS driver for bipolar stepper motor	0.3	8	52	2.8	7.1	Full step,Half step	true	Parallel	-40	150	VFQFPN 48 7x7x1.0 mm
L6219	Stepper Motor Driver	1.5	10	46	0.75	1	Full step,Half step	true	Parallel	-20	85	SO-24
L6219DSA	Stepper Motor Driver, Injection control	1.5	10	46	0.75	1	Full step,Half step	true	Parallel	-40	125	SO-24
L6219R	Stepper Motor Driver	2	4.5	30	0.5	1	Full step,Half step	true	Parallel	-20	85	SO-24
L6228	DMOS driver for bipolar stepper motor	0.7	8	52	1.4	3.55	Full step,Half step,Micro step	true	Parallel	-40	150	PowerSO 36,SO-24
L6228Q	DMOS driver for bipolar stepper motor	0.7	8	52	1.4	3.55	Full step,Half step,Micro step	true	Parallel	-40	150	VFQFPN 32 5x5x1.0 mm
L6258	PWM CONTROLLED - HIGH CURRENT DMOS UNIVERSAL MOTOR DRIVER	0.6	12	36	1.5	2	1/16 microstepping,Full step,Half step	true	Parallel	0	150	PowerSO 36
L6258E	PWM controlled high current DMOS universal motor driver	0.6	12	40	1.5	4	1/16 microstepping,Full step,Half step	true	Parallel	-40	150	PowerSO 36
L6258EA	PWM-controlled, high-current DMOS universal motor driver	0.6	4.75	5.25	1.5	2	1/16 microstepping,Full step,Half step	true	Parallel	-40	135	PowerSO 36
L6258EP	PWM-controlled, high-current DMOS universal motor driver	0.6	4.75	5.25	1.3	2	1/16 microstepping,Full step,Half step	true	Parallel	0	150	PowerSSO 36
L6258EX	PWM-controlled, high-current DMOS universal motor driver	0.6	4.75	5.25	1.5	2	1/16 microstepping,Full step,Half step	true	Parallel	0	150	PowerSO 36
L6470	Fully integrated microstepping motor driver with motion engine and SPI	0.3	8	45	3	7	1/128 microstepping,Full step,Half step	true	SPI	-40	150	HTSSOP28,PowerSO 36
L6472	Fully integrated microstepping motor driver with motion engine and SPI	0.3	8	45	3	7	1/16 microstepping,Full step,Half step	true	SPI	-40	150	HTSSOP28,PowerSO 36
L6474	Stepper motor driver with up to 16 microsteps with SPI and advanced current control	0.3	8	45	3	7	1/16 microstepping,Full step,Half step	true	Parallel,SPI	-40	150	HTSSOP28,PowerSO 36
L6480	Fully integrated microstepping motor controller with motion engine and SPI	-	7.5	85	-	-	1/128 microstepping,Full step,Half step	false	SPI	-40	150	TSSOP-38L
L6482	Fully integrated microstepping motor controller with motion engine and SPI	-	7.5	85	-	-	1/16 microstepping,Full step,Half step	false	SPI	-40	150	TSSOP-38L
L6506	Current Controller For Stepping Motors	-	4.5	7	-	-	Full step,Half step	false	Parallel	0	125	PDIP 18,SO-20

STSPIN220	Low voltage stepper motor driver	0.2	1.8	10	1.3	-	1/256 microstepping,Full step,Half step	true	Parallel	-40	150	VFQFPN 16 3x3x1.0
STSPIN820	Advanced 256 microsteps integrated motor driver with step-clock and direction interface	0.5	7	45	1.5	2.5	1/256 microstepping,Full step,Half step	true	Parallel	-40	150	TFQFPN 24L 4X4X1.05
TEA3718	Stepper Motor Driver	1.5	10	45	1.5	-	Full step,Half step	true	Parallel	0	70	PDIP 16,SO-20
powerSTEP01	System-in-package integrating microstepping controller and 10 A power MOSFETs	0.016	7.5	85	10	-	1/128 microstepping,Full step,Half step	true	SPI	-40	150	QFN 11X14

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