



STSPIN9 MOTOR DRIVERS

Unprecedented level of flexibility
for brushed and stepper motors



STSPIN948 and STSPIN958 offer flexible power stages, tunable driving modes and fast dynamic response along with a full evaluation toolbox

Covering the need to drive multiple types of brushed DC and stepper motors, STSPIN9 devices target high-end industrial, residential and professional appliances.

Available in a compact QFN package, STSPIN9 high-current monolithic motor drivers integrate both the control logic and a fully protected low $R_{DS(on)}$ power stage, making them ideal to meet the stringent requirements of demanding industrial applications. In addition, their adjustable slew rate ensures the best ratio between performance and EMI.

This makes STSPIN9 devices the best choice to drive high-current motors while saving space on the PCB.

KEY FEATURES

- Flexible to drive multiple motors with different ratings in several configurations
- Programmable output stage slew rate in four different configurations
- Selectable current control based on PWM with fixed off-time or programmable current threshold
- Integrated amplifiers for current sensing

MAIN APPLICATIONS

- Industrial and home automation
- Robotics
- Home appliances
- Stage lighting
- Antenna control
- Textile machines
- Medical process control
- Vending machines



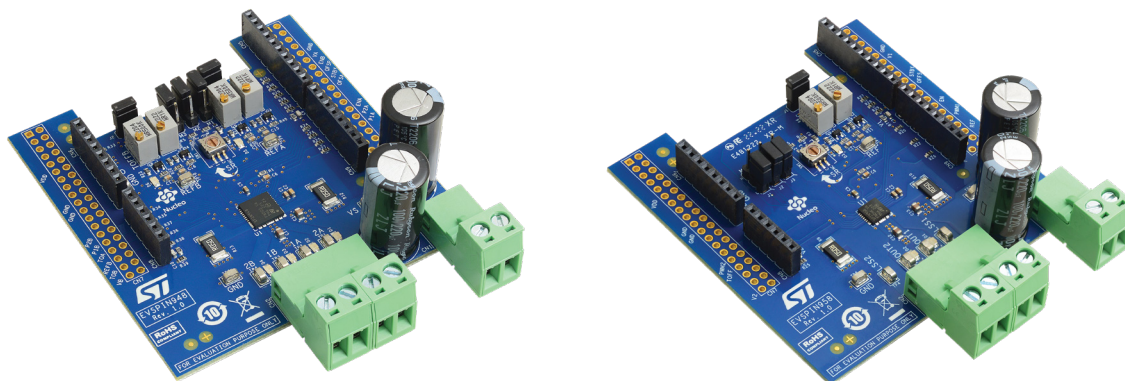
Product details

The 4.5 A STSPIN948 and 5.0 A STSPIN958 integrate PWM control logic and a 58 V power stage with system protection and two operational amplifiers for current sensing. Suitable for driving brushed DC motors and bipolar stepper motors, both ICs allow flexibility and scalability while streamlining the bill of materials. The STSPIN958 contains a single full-bridge that can be configured to drive two unidirectional motors, one bidirectional brushed DC motor, or one higher-current unidirectional motor by parallelizing the outputs. Thanks to a choice of current control based on PWM with fixed off-time or a programmable current threshold, as well as dual half-bridge, single full-bridge, and single half-bridge parallel connections, this IC supports seven different driving modes. With a 5.0 A

rating, the STSPIN958 is housed in a 32-pin VFQFPN (5 x 5 mm) package. The STSPIN948 contains two full-bridges that can be configured to work in different modes, giving designers the flexibility to drive multiple motors with different ratings in several configurations. With the same choice of current control based on PWM with fixed off-time or a programmable current threshold, the STSPIN948 supports five different driving methods. This 4.5 A IC is available in a 48-pin VQFPN (7 x 7 mm) package. With their wide operating voltage range and flexibility, the STSPIN948 and STSPIN958 motor drivers can be used in a variety of industrial applications. Both drivers allow the designer to program the output transistors' slew rate to 0.3, 0.6, 1.2, or 2 V/ns using an external resistor, ensuring the best trade-off between power consumption and electromagnetic compatibility targets.

Dead time is built in to prevent shoot-through, and the power stage's on-resistance of only 200 mΩ helps maximize operating efficiency. The very short propagation delay, at 300 ns, ensures fast dynamic response to system commands. Each IC benefits from a complete set of protection features including overcurrent, overtemperature and short-circuit protection, and low bus-voltage detection with under-voltage lockout (UVLO). Affordable and easy-to-use evaluation boards are available to accelerate development using these devices. The EVSPIN948 drives up to two motors using the STSPIN948, while the EVSPIN958 drives up to two motors with the STSPIN958. Each board is designed for use as an expansion card and is compatible with most STM32 Nucleo boards, as well as the Arduino® UNO R3 connector.

Evaluation boards



Product	Description	$V_{in \text{ min}}$ (V)	$V_{in \text{ max}}$ (V)	$R_{DS(on)} (\Omega)$ HS+LS	$I_{OUT \text{ max}}$ (A _{rms})
STSPIN948	Dual full bridge driver	5	58	0.36	4.5
STSPIN958	Full bridge driver	5	58	0.33	5



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