

Smooth & silent stepper motor driver



The STSPIN820 is the world's smallest 256 micro-steps motor driver, with 45V operating voltage and optimized for new-generation applications

Able to work in a wide voltage range from 7 to 45 V with a current level up to 1.5 A, meeting the operating conditions of most industrial applications, the STSPIN820 achieves a resolution of up to 256 microsteps, guaranteeing very precise positioning as well as smooth and silent motion. In a miniaturized 4 x 4 mm QFN package, the STSPIN820 monolithic stepper motor driver integrates the expertise and excellence of ST's motor drivers for integration and performance.

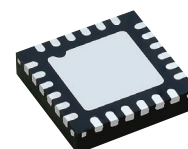
KEY FEATURES & BENEFITS

- Extreme position accuracy and motion smoothness: with up to 1/256 microsteps per full step
- Integration of the PWM control and the power stage with a total resistance of 1 Ω (low-side + high-side) 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

IDEAL FOR

Bipolar stepper motors in applications from 7 to 45 V such as:

- CCTV, security and dome cameras
- 3D printers
- Textile and sewing machines
- ATM and cash handling machines
- Medical equipment
- Industrial 2D printers
- Office and home automation
- Points of sale (POS)
- Robotics



STEPPER MOTOR CONTROL WAS NEVER SO SMOOTH & SILENT

The STSPIN820 features a resolution of up to 256 microsteps and works over a wide voltage range from 7 to 45 V. This capability together with a high-performance current control with a programmable off time guarantees high smoothness and silent motion.

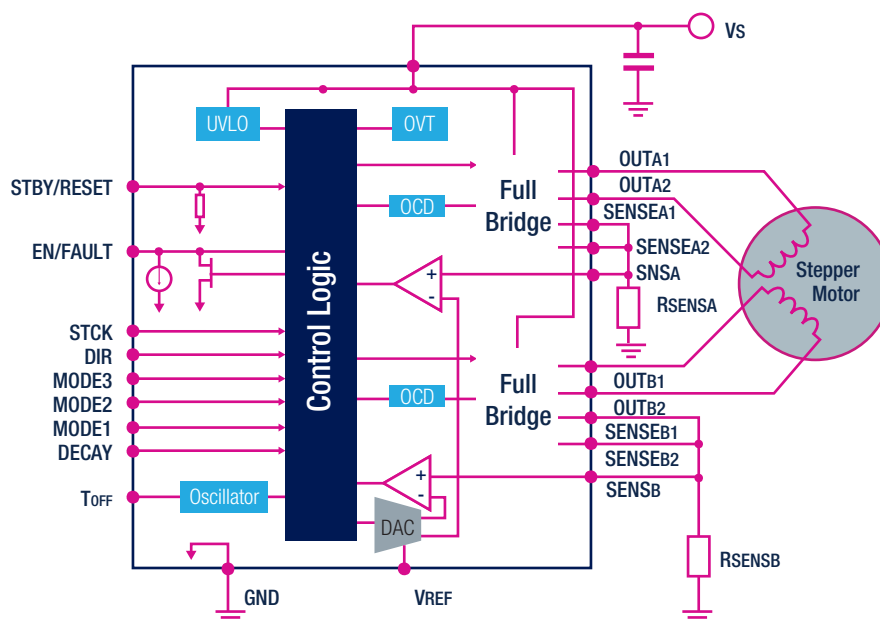
The device can be controlled by an MCU through the traditional step-clock and direction input pins. Thanks to ST's new proprietary Smart Power technology, it integrates both precise PWM current control circuitry and the power stage made by MOSFETs with a total resistance of 1 Ω (low-side + high-side), guaranteeing an exceptional performance-cost trade-off.

Designed to operate in a wide temperature range of -40 to 150 °C, STSPIN820 matches most motor control application requirements. Through a dedicated pin, the device can be put in Standby mode allowing significant power-saving and making it ideal for energy-conscious applications.

A complete set of protections is present including non-dissipative over-current, over-temperature and short-circuit, making it a bullet-proof solution for demanding applications, especially in harsh industrial environments, and helping to further reduce the number of external components, the cost and complexity.

All this comes in a compact 4x4 mm QFN package, making it the world's smallest integrated and advanced microstepping driver with these ratings, allowing customers to significantly save space and BOM count in their applications.

STSPIN820 MAIN INTERNAL BLOCKS



DEVICE SUMMARY

Order code	Package	Packing
STSPIN820	VFQFPN32	Tape & reel

DEVELOPMENT ENVIRONMENT

Order code	Description
EVALSP820-XS	Compact evaluation board for STSPIN820 stepper motor driver Fully compatible with open source 3D Printing RAMPS platforms, plug-and-play motor driving shield
X-NUCLEO-IHM14A1	Stepper motor driver expansion board based on STSPIN820 for STM32 Nucleo
X-CUBE-SPN14	Stepper motor driver expansion software for STM32Cube



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