

L6258 stepper motor driver

DMOS solution for precise positioning



Based on the state-of-the-art design, the L6258 from **STMicroelectronics** offers the most complete solution for any kind of precise positioning currently available.

Based on a unique closed-loop current control design, it can eliminate any kind of errors – whatever the source.

The L6258 family is supported a suite of development tools that fulfill any customer requirements, working either as stand-alone boards or in a PC-based environment.

Key features

- Can drive both windings of a bipolar stepper motor, or two DC motors
- Output current up to 1.5A per winding
- Wide voltage range: 12 to 40V
- Four-quadrant current control ideal for microstepping and DC motor control
- Precision PWM control
- No need for recirculation diodes
- TTL/CMOS compatible inputs
- Cross-conduction protection
- Thermal shutdown
- Multiple package offer (PowerSO36 and PowerSSO36)

Main applications

- Office automation
 - Printers
 - Scanners
- POS
- Fax

L6258 architecture is a dual full bridge for motor control applications, realized in BCD technology, able to drive both windings of a bipolar stepper motor or the bidirectional control of two DC motors.

With a few external components, the L6258 forms a complete control and drive circuit. It has high-efficiency phase shift chopping that gives very low current ripple at the lowest current control levels, making it ideal for steppers as well as for DC motors.

The core of the chip is based on a unique closed loop current control design which can eliminate any kind of error whatever the source (i.e. BEMF, supply voltage, etc). Fast and slow decays are applied to the motor, proportional to the difference between the winding current value and the selected target, reducing the error by a factor of $1 + \text{loop gain}$

Current sensing is done by an external resistor and a differential amplifier built into the device. The loop's

frequency-gain characteristic may be set by a user-selected network to couple with the motor-load system.

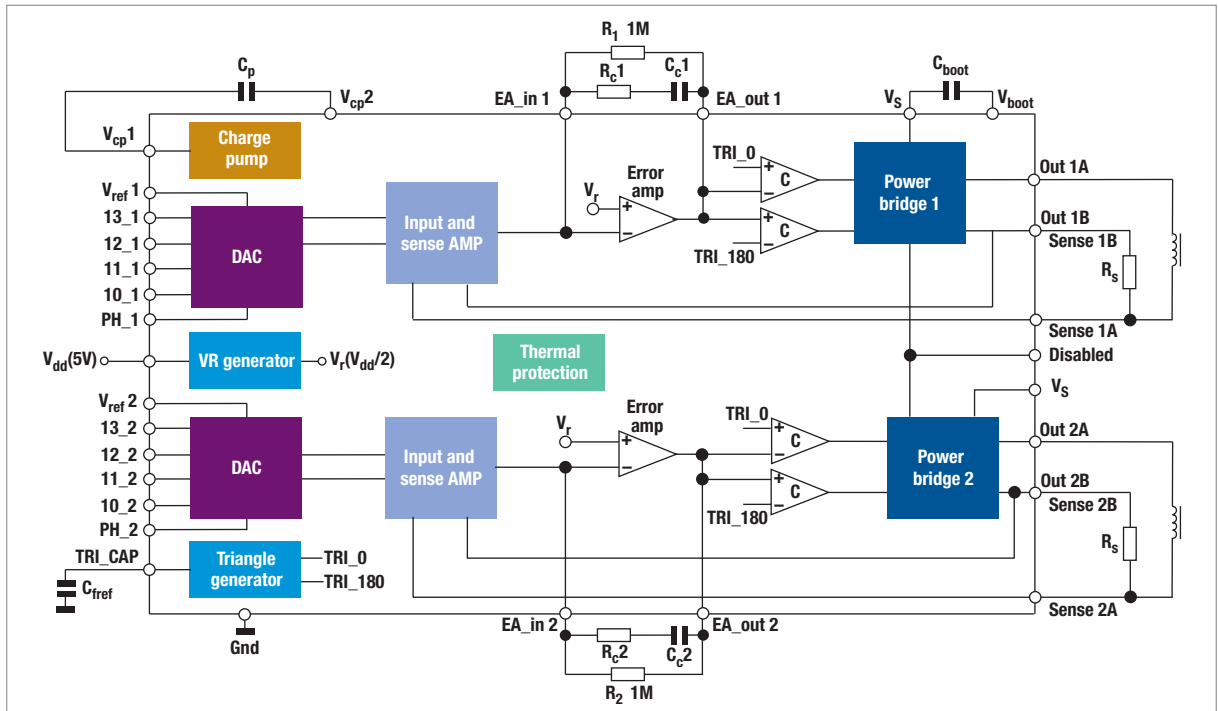
The power stage is a dual DMOS full bridge capable of sustaining up to 40V, and which includes the diodes for current recirculation.

The output current capability can sustain up to 1.5A (per winding in continuous mode), with peak start-up current up to 2A (with the PowerSO36 package).

Thermal protection circuitry disables the outputs if the chip temperature exceeds the limits.

Extensions are also available. The PowerSO36 offers guaranteed performance down to -40°C , and the PowerSSO36 – a new package from ST – offers the optimum trade off between thermal behavior, dimension and cost.

Part number	Order code	I_{out} (A)	V_{supply} (V)	Lead-free	Package	Note
L6258EX	E-L6258EX	1.5A	40V	Yes	PowerSO36	
L6258EA	E-L6258EA	1.5A	40V	Yes	PowerSO36	Extended low temperature range (-40°C)
L6258EP	E-L6258EP	1.3A	40V	Yes	PowerSSO36	New package



© STMicroelectronics - October 2005 - Printed in Italy - All rights reserved

The STMicroelectronics corporate logo is a registered trademark of the STMicroelectronics group of companies. All other names are the property of their respective owners.

For selected STMicroelectronics sales offices fax:

France +33 1 55489569; Germany +49 89 4605454; Italy +39 02 8250449; Japan +81 3 57838216; Singapore +65 6481 5124; Sweden +46 8 58774411; Switzerland +41 22 9292900; United Kingdom and Eire +44 1628 890391; USA +1 781 861 2678

Full product information at www.st.com