

AMI Semiconductor

AMIS-30622 Stepper Motordriver & Controller with I²C Bus & Microstepping Features

Key Features

Motordriver

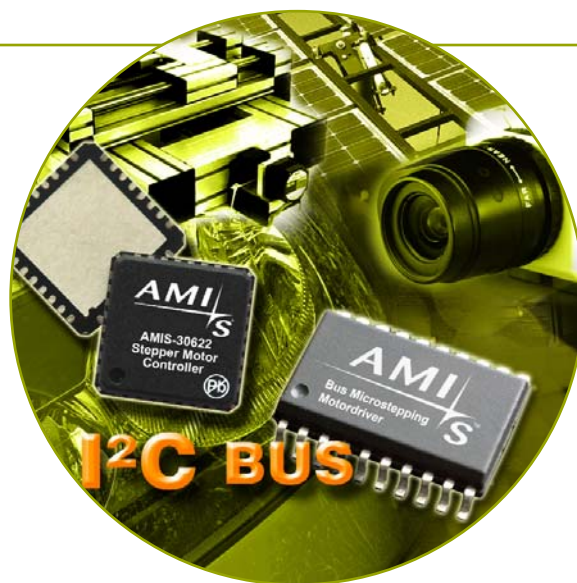
- Microstepping (1/2, 1/4, 1/8, 1/16)
- Programmable peak current up to 800mA
- 20kHz PWM current control
- Automatic selection of fast and slow decay mode
- Internal fly-back FETs
- Fully integrated current sense
- 8V-29V supply voltage
- Automotive compliant
- Full diagnostics and status information
- 5V reference voltage pin

Programmable Controller

- Position controller
- Configurable speeds, acceleration and deceleration
- Programmable hold current
- Programmable 'safe position'
- Customized default setting in non-volatile memory (OTP)
- Movement/position sensor input

Protection and Diagnostics

- Over-current protection
- Under-voltage management
- Over-voltage protection
- High-temp warning and shutdown
- Low-temp warning
- Detection of open and shorted motor coils
- Management of safe position



Serial Bus Interface

- 2-wire I²C serial interface
- 5V microcontroller compatible
- Up to 32 node addresses

EMI Compatibility

- Power drivers with slope control

Product Description

The AMIS-30622 is a stepper motordriver with position controller and control/diagnostics interface integrated in one single chip.

The product is ready to be connected as a peripheral device to a microcontroller with minimal loading of the microcontroller. The chip receives high level positioning instructions through the I²C interface and subsequently drives the motor coils until the desired position is reached. The on-chip position controller is configurable for different

motor types, positioning ranges and parameters for speed, acceleration, deceleration, hold current, safe position. Six OTP bytes are available to set default values, and can be overruled by values programmed through the I²C bus.

The AMIS-30622 acts as a slave on the serial bus and the master can fetch specific status information like actual position, error flags, etc. from each individual slave node.

Applications and Benefits

The AMIS-30622 is ideally suited for small positioning applications. Target markets include automotive, industrial equipment and building automation. Applications of interest have typically multiple axes.

The high abstraction level of the product's command set reduces the load of the processor on the master side. Scaling of the application towards number of axes is straight-forward: hardware and software designs are extended in a modular way, without severely affecting the

demands on the master microcontroller. The I²C bus structure simplifies PCB track-layout and/or wiring architectures.

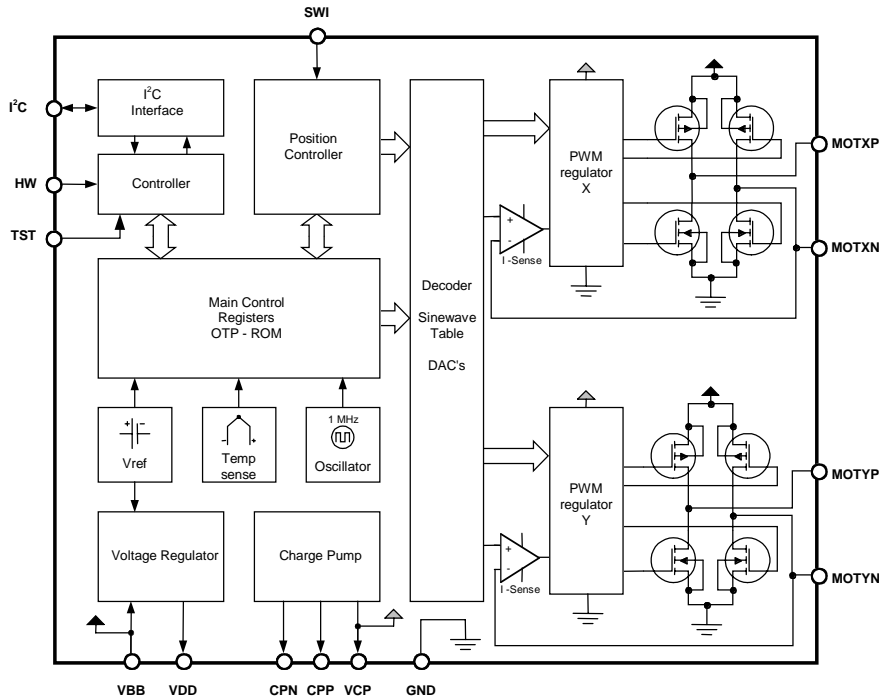
Microstepping operation removes the design trade-off between minimal operation speed and avoiding the risk of noise and step loss due to resonance phenomena.

All these benefits result in reduced system cost and time-to-market and improved technical performance.

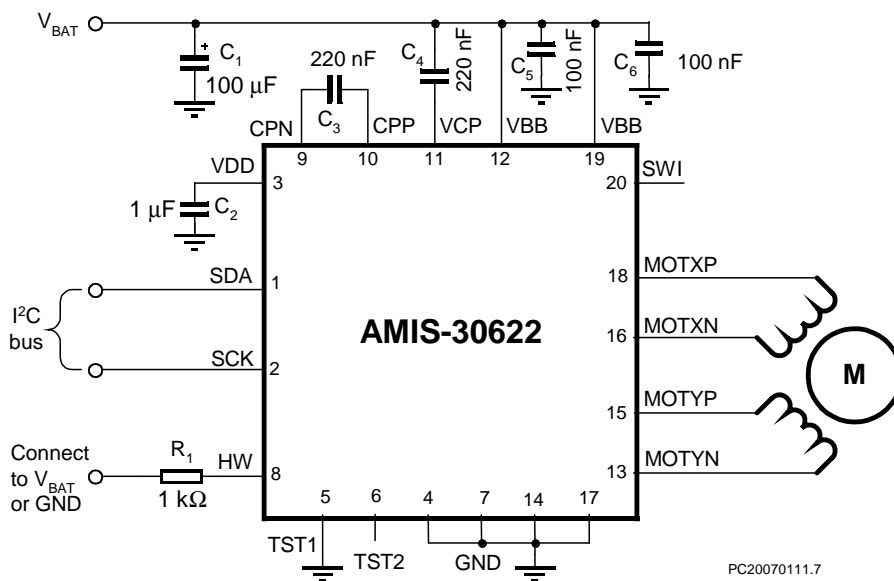
Ordering Codes

Part N°	Package	Peak Current at Max. Temp.	Ambient Temperature	Ordering Code - Tube	Ordering Code - Tape
AMIS-30622-AGA	SOIC-20	800mA	-40°C...125°C	0C622-003-XTD	0C622-003-XTP
AMIS-30622-ANA	NQFP-32 (7mm x 7mm)	800mA	-40°C...125°C	0C622-004-XTD	0C622-004-XTP

Functional Block Diagram



Typical Application



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Stepper Motor Driver & Controller Feature Sheet