



TRINAMIC MOTION CONTROL

2010-4-16 最新发布

最新推出史上最高性能步进驱动芯片系列

集多种专利技术于一体，革命性的芯片产品-**CoolStep**

TMC26X



革命性的创新技术

● sensorless load measurement (10bit) – **stallGuard2™** (失速检测功能)

高精度无传感器负载检测专利技术，可用于闭环位置控制，避免电机飞车，碰撞。可实现微笑力矩控制

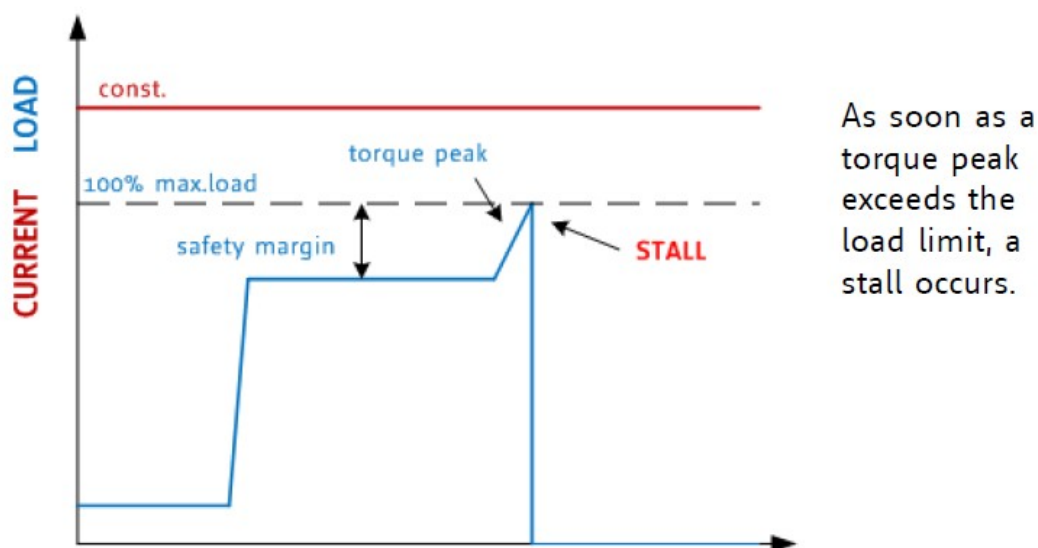
- load dependent current control – **coolStep™** (电流闭环动态调节功能)

根据电机不同负载驱动输出的电流可动态调节自动增加或减少，更好控制热量和能量，不会出现丢步



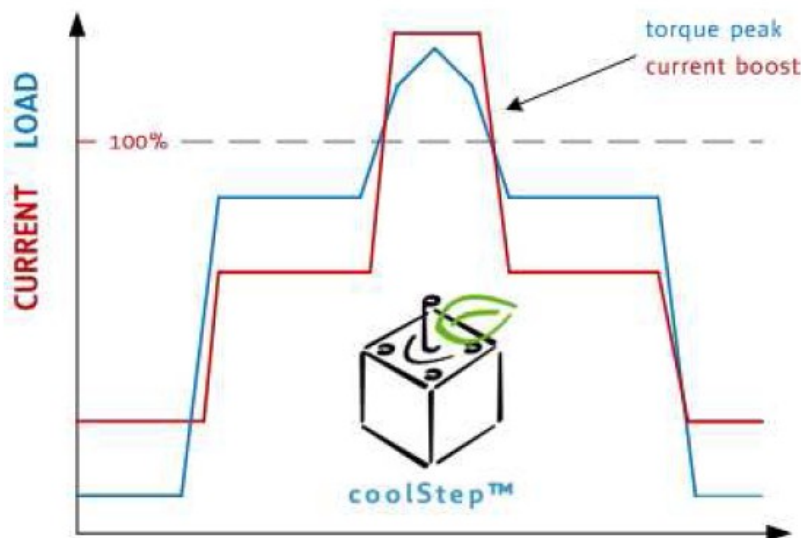
■ 革命性创新技术-----CoolStep™（电流闭环动态调节功能）应用

---通常的驱动器采用的恒流控制，一旦负载或速度增加电机容易出现丢步或堵转



-COOLSTEP™:的技术可以使电流根据不同负载动态调节控制，因此电机不会出现发热，功耗损失，丢步，堵转等弊端问题

COOLSTEP™: LOAD DEPENDENT CURRENT CONTROL



As soon as the load value reaches a programmed limit the current rises. The motor current can temporarily exceed the nominal value.

TMC26X 系列芯片的优势

- highest resolution & improved smoothness

自带 256 高细分数-改善电机运行更加平稳

- higher dynamic

更高的速度控制-可以使步进电机速度达到 5000RPM

- easy to use

使用更加便捷-集成了加，减速控制，step/dir 和 SPI 控制接口

- maximized motor performance

最大化呈现步进电机的性能

- higher system reliability

使系统更加可靠-外围电路比较简单，热量更小



TMC26X 系列芯片的优势

■ highest resolution & improved smoothness

自带 256 高细分数-改善电机运行更加平稳

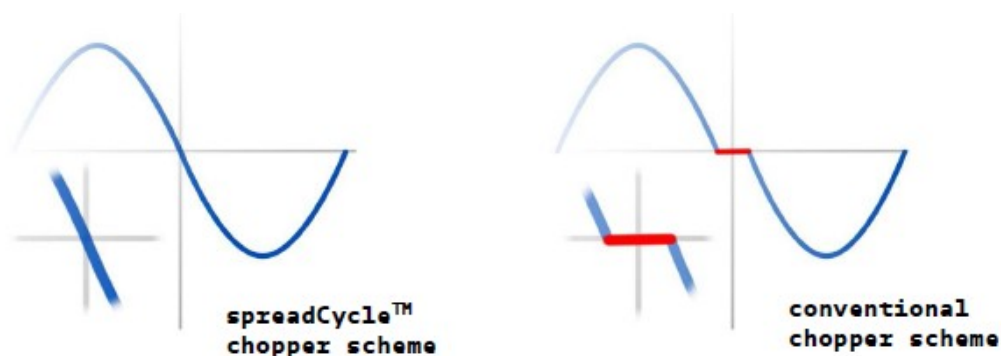
- up to 256 equidistant microsteps (51200 pos/rev)

自带最大细分 256 (51200 脉冲/转)

● new pat. filed **spreadCycle** hysteresis PWM chopper scheme with optimized zero crossing performance

and non deformed waveform during resonances

新的专利技术 **spreadCycle** 优化 PWM 磁滞断路器控制，优化控制电流波形穿越零点的性能，使其在电机抖动中也不会影响电流波形



■ higher dynamic

更高的速度控制-可以使步进电机速度达到 **5000RPM**

- up to 60V power supply: **48V(+10%)** industry standard powers supply compatible

驱动电流可以达到60V，适应工业标准应用



- new pat. filed **spreadCycle** hysteresis PWM chopper scheme allows high speed operation: up to 5000 rpm with a standard 42mm motor

SpreadCycle 专利技术很好控制零点电流波形，因此很容易实现高速度控制，如驱动普通的 42mm 电机可以达到 5000RPM



■ easy to use

使用更加便捷-集成了加，减速控制， **step/dir** 和 **SPI** 控制接口

- Step & Direction interface (+ SPI for feedback)

Step/dir 控制信号输入接口适合通用性；SPI 接口可实现信息反馈虚拟反馈

● **microPlyer** 16 to 256 μ Step multiplier:

256 μ Step performance with low step frequency

微步细分从 16 到 256

- Stall / load output with programmable threshold

堵转检测和负载检测输出可编程控制其限制值

■ maximized motor performance

最大化呈现步进电机的性能

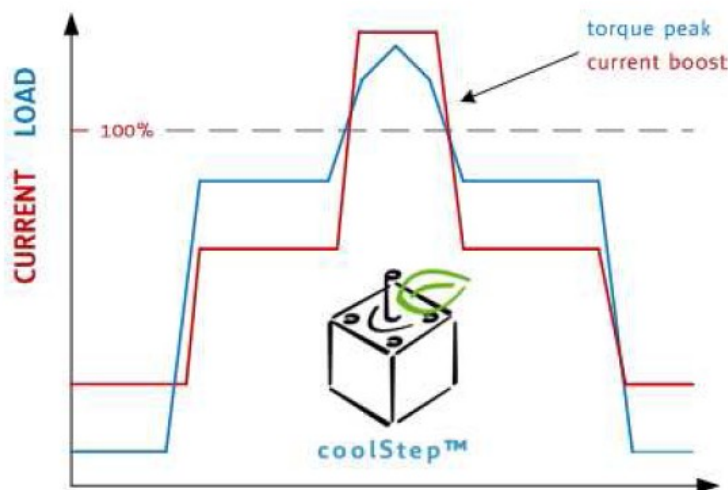
coolStep™ - load dependent current control

- › › no safety margin necessary (>20% more power)

在选择电源功率的时候不需要考虑额外的安全范围

- › › automatic current boost: torque peak without stall or step loss

电流自动推进或减少，不会发生堵转或失步



■ higher system reliability

使系统更加可靠-外围电路比较简单，热量更小

stallGuard2™ - sensorless load measurement 无传感器负载检测

-> real time system feedback 实时系统反馈

-> auto diagnosis (system scan) possible 系统可以自动诊断

coolStep™ - load dependent current control 电流自行调节

-> automatic current boost:

torque peak without stall or step loss

- protection and diagnostics:

-> over current, short-2-ground, under voltage 各种诊断和检测功能

■ ENERGY EFFICIENT 能量节省

- **coolStep™** - load dependent current control

-> save up to 75% energy 和普通相比节省75%的能量

-> reduce system temperature 减少热量产生

synchronous rectification reduces transistor heating



TMC260: up to 1.7A (peak) / 38.5V (10mm x 10mm TQFP-44)

TMC261: up to 1.7A (peak) / 60V (10mm x 10mm TQFP-44)

TMC262: up to 6A (peak) / 60V with ext. N&P MOSFET (5mm QFN32)



available
06-2010



available
07-2010



available
04-2010

COMPETITION

Vendor	supply	resolution max.	stall detection	load dependent current control
TRINAMIC	60V	256	Y	coolStep™
Allegro	50V	64	N	N
ST Micro	45V	128	Y	N
Onsemi/Amis	40V	32	Y	N

TRUST TRINAMIC 

TMC262-EVAL开发板

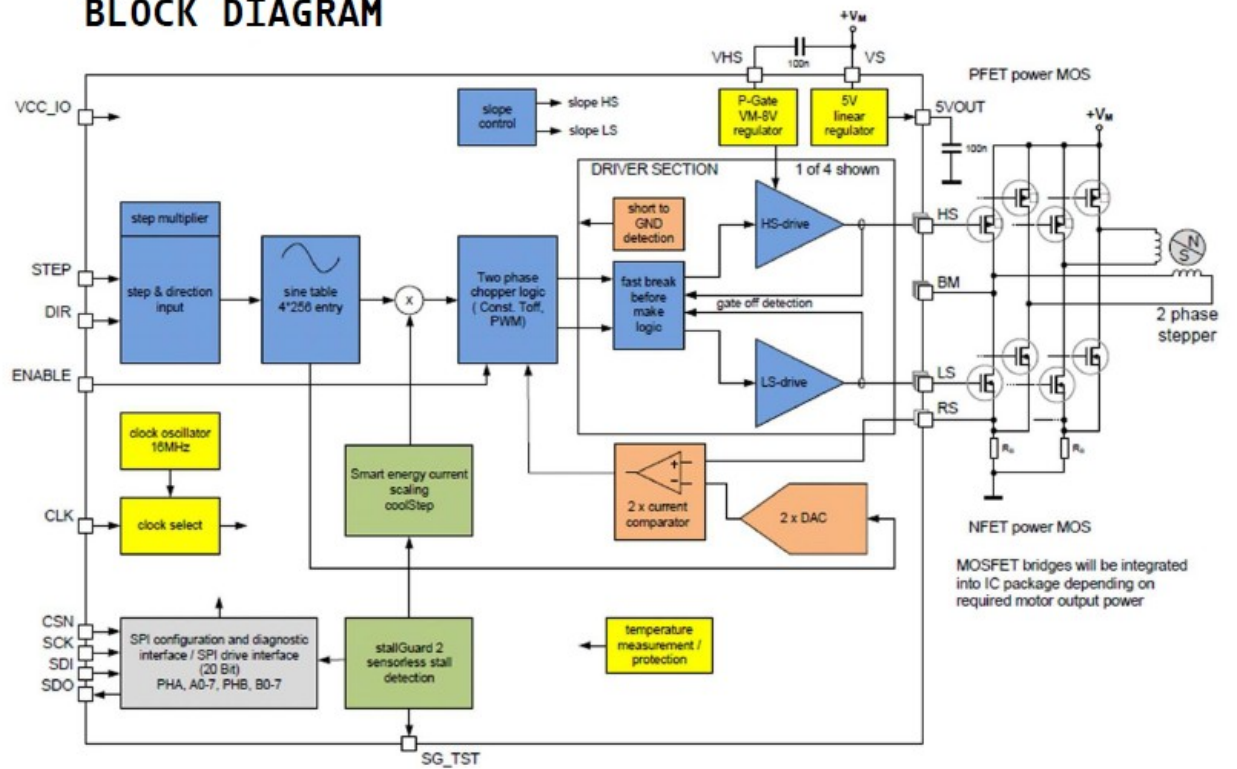
FIRST PROTO-BOARD

- RS232 interface, Step & Direction input
- TMC262 with external MOSFETs
- PC WIN test software





BLOCK DIAGRAM



TMC26x: NEW DRIVER FAMILY



DIFFERENCE TO TMC23x & TMC24x

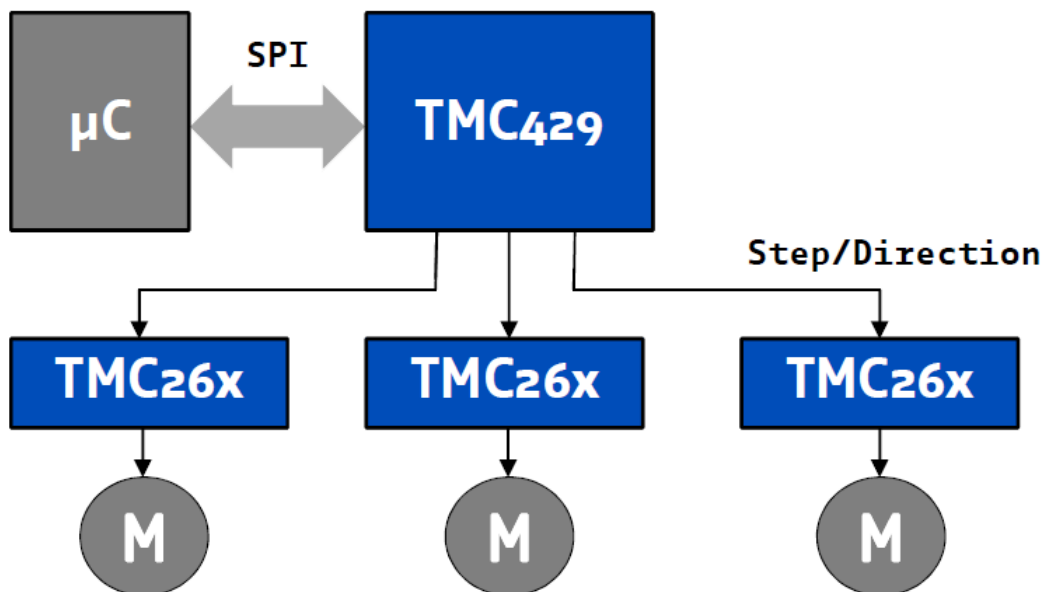
- higher microstep resolution & supply voltage
- optimized stallGuard™ feature: coolStep™
- optimized mixed decay chopper scheme (spreadCycle™)
- mixed decay portion can be optimized
- less dissipation in PMOS transistors
- Step/Direction interface with selectable microstep resolution
- no analog stand alone mode
- digital slope control using two bits for gate current control
- high and low side MOSFET gate current can be controlled separately
- internal +5V regulator as additional feature.
- short to GND protection without additional external sense resistor
- stall / load detection output



PREVIEW: TMC429 Motion Controller



STEP & DIRECTION CHIPSET



更多详情联系: Gavy 13812617052 nicegaowei@yahoo.com.cn