

## 产品简介

# iMOTION™ IMM100

## 面向直流无刷电机控制的全集成智能IPM

iMOTION™ IMM100是一系列全集成智能IPM, 可针对永磁同步电机 (PMSM) 进行无传感器磁场定向控制 (FOC)。iMOTION™运动控制引擎 (“T”系列型号) 结合栅极驱动器和6个MOSFET, 构成一个完备的电机驱动系统, 其利用紧凑式12 x 12mm<sup>2</sup>表面贴装封装, 最大限度地减少了外接元件数量, 缩小了电路板占板面积。

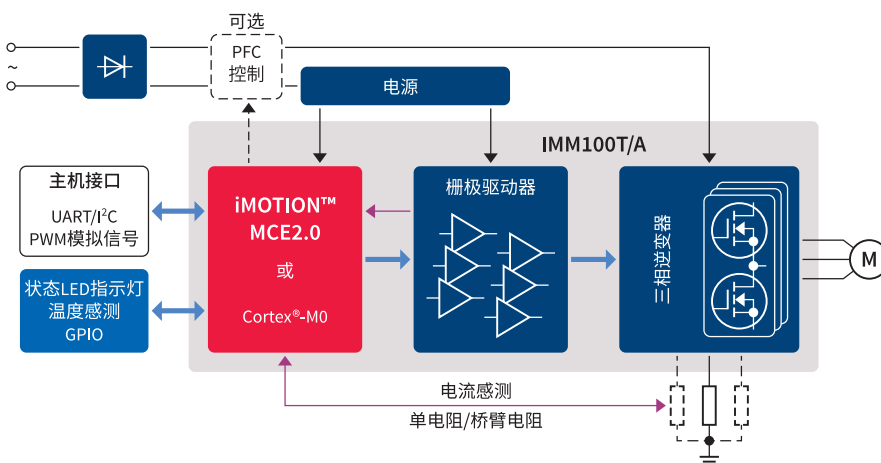
英飞凌已获专利的运动控制引擎 (MCE) 历经实践检验, 借助直流负母线单电阻或桥臂双电阻电流反馈实现无传感器磁场定向控制 (FOC), 并采用空间矢量PWM和正弦波信号, 以达到最高能效。强大的PC工具, 如MCEWizard和MCEDesigner等, 减少了实现变速驱动的工作量, 仅需对相应的电机进行简单的MCE配置。作为补充, Script引擎提升了系统层面的灵活性。此外, IMM100的“A”系列型号具备充分的灵活性, 可在ARM® Cortex®-M0内核上运行自有电机控制软件, 同时兼具硬件集成的优点。

集成式栅极驱动器具备自举功能, 增加了信号滤波, 并且提供多种硬件保护机制, 如死区时间插入和防止击穿、过电流、过压/欠压保护和故障报告等。

IMM100系列无需配备散热片, 额定输出功率高达30 W/60 W/80 W, 最高直流电压为600 V, 可满足电机驱动要求。

- > IMM10xT/A-015M – 额定输出: 500 V/6 Ω R<sub>DS(on)</sub>
- > IMM10xT/A-046M – 额定输出: 600 V/1.4 Ω R<sub>DS(on)</sub>
- > IMM10xT/A-056M – 额定输出: 600 V/0.95 Ω R<sub>DS(on)</sub>

### 应用框图



### 关键益处

#### 为客户创造非凡价值

- > 最低物料成本
  - 控制器、栅极驱动器和MOSFET功率级
  - 单电流反馈
  - 集成自举二极管
  - 无需散热片
- > “T”系列型号配备iMOTION™运动控制引擎
  - 快速将产品推向市场
  - 无需编程
  - 无传感器磁场定向控制
  - 低损耗空间矢量PWM
  - 多电机支持
  - 灵活的主机接口选项
- > “A”系列型号采用行业标准ARM® Cortex®-M0内核
  - 128 kB闪存、16 kB RAM
  - 48 MHz/96 MHz CPU时钟
  - 专用电机控制模块
- > 集成保护功能
  - 过压/欠压
  - 过电流、过热
  - 死区时间、防直通
  - 堵转保护
- > PowerQFN 12 x 12 mm<sup>2</sup>封装

### 目标应用

- > 风扇、泵
- > 家用电器
- > 吊扇
- > ...任何其他无刷直流电机驱动



## iMOTION™工具

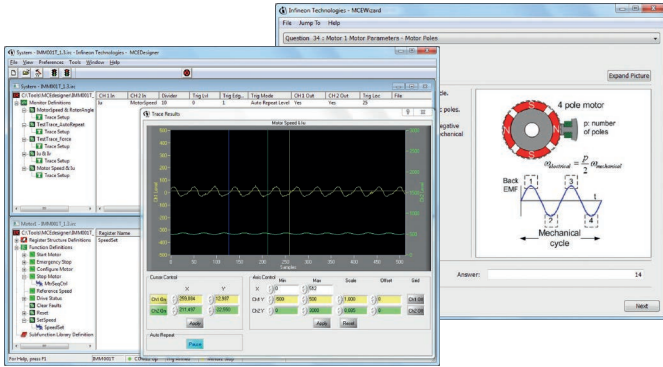
**MCEWizard**可以通过回答几个显而易见的问题,帮助开发人员创建初步的电机配置。

**MCEDesigner**可用于加载电机参数并进行细调,充分满足应用要求。

**iMOTION™**脚本允许为“T”系列型号添加系统层面的应用功能。

### MCEWizard

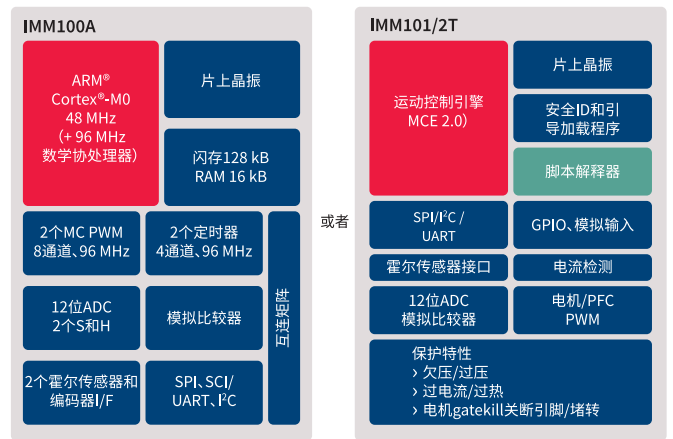
根据电机和硬件技术规格,生成驱动控制参数。



### MCEDesigner

驱动细调软件工具,具备波形追踪功能,可调节和观察内部变量。

## IMM100系列概览



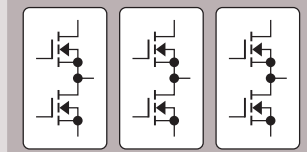
### 集成栅极驱动器

- > 自举功能
- > 欠压闭锁
- > 故障报告
- > 集成最小死区时间
- > 防止直通



### 集成功率级MOSFET

- > 500 V/6 Ω
- > 600 V/1.4 Ω
- > 600 V/0.95 Ω



## 订购信息

产品型号	MOSFET功率级	MCE 2.0/ARM® Cortex®	特性	封装
IMM101T-015M	500 V/6 Ω R <sub>DS(on)</sub>	MCE 2.0	三相逆变器	PowerQFN 12 x 12 mm <sup>2</sup>
IMM101T-046M	600 V/1.4 Ω R <sub>DS(on)</sub>	MCE 2.0	三相逆变器	PowerQFN 12 x 12 mm <sup>2</sup>
IMM101T-056M	600 V/0.95 Ω R <sub>DS(on)</sub>	MCE 2.0	三相逆变器	PowerQFN 12 x 12 mm <sup>2</sup>
IMM102T-015M	500 V/6 Ω R <sub>DS(on)</sub>	MCE 2.0	三相逆变器+ PFC	PowerQFN 12 x 12 mm <sup>2</sup>
IMM102T-046M	600 V/1.4 Ω R <sub>DS(on)</sub>	MCE 2.0	三相逆变器+ PFC	PowerQFN 12 x 12 mm <sup>2</sup>
IMM102T-056M	600 V/0.95 Ω R <sub>DS(on)</sub>	MCE 2.0	三相逆变器+ PFC	PowerQFN 12 x 12 mm <sup>2</sup>
IMM100A-015M	500 V/6 Ω R <sub>DS(on)</sub>	ARM® Cortex®-M0	可编程器件	PowerQFN 12 x 12 mm <sup>2</sup>
IMM100A-046M	600 V/1.4 Ω R <sub>DS(on)</sub>	ARM® Cortex®-M0	可编程器件	PowerQFN 12 x 12 mm <sup>2</sup>
IMM100A-056M	500 V/0.95 Ω R <sub>DS(on)</sub>	ARM® Cortex®-M0	可编程器件	PowerQFN 12 x 12 mm <sup>2</sup>

Published by  
Infineon Technologies AG  
81726 Munich, Germany

© 2019 Infineon Technologies AG.  
All Rights Reserved.

### Please note!

THIS DOCUMENT IS FOR INFORMATION PURPOSES ONLY AND ANY INFORMATION GIVEN HEREIN SHALL IN NO EVENT BE REGARDED AS A WARRANTY, GUARANTEE OR DESCRIPTION OF ANY FUNCTIONALITY, CONDITIONS AND/OR QUALITY OF OUR PRODUCTS OR ANY SUITABILITY FOR A PARTICULAR PURPOSE. WITH REGARD TO THE TECHNICAL SPECIFICATIONS OF OUR PRODUCTS, WE KINDLY ASK YOU TO REFER TO THE RELEVANT PRODUCT DATA SHEETS PROVIDED BY US. OUR CUSTOMERS AND THEIR TECHNICAL DEPARTMENTS ARE REQUIRED TO EVALUATE THE SUITABILITY OF OUR PRODUCTS FOR THE INTENDED APPLICATION.

WE RESERVE THE RIGHT TO CHANGE THIS DOCUMENT AND/OR THE INFORMATION GIVEN HEREIN AT ANY TIME.

### Additional information

For further information on technologies, our products, the application of our products, delivery terms and conditions and/or prices, please contact your nearest Infineon Technologies office ([www.infineon.com](http://www.infineon.com)).

### Warnings

Due to technical requirements, our products may contain dangerous substances. For information on the types in question, please contact your nearest Infineon Technologies office.

Except as otherwise explicitly approved by us in a written document signed by authorized representatives of Infineon Technologies, our products may not be used in any life-endangering applications, including but not limited to medical, nuclear, military, life-critical or any other applications where a failure of the product or any consequences of the use thereof can result in personal injury.