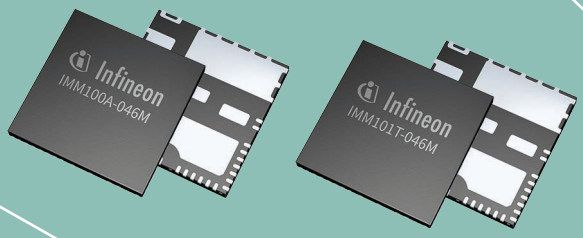


Product brief

iMOTION™ IMM100

Fully integrated Smart IPM for BLDC motor control

iMOTION™ IMM100 is a series of fully integrated Smart IPMs implementing sensorless Field Oriented Control (FOC) of a Permanent Magnet Synchronous Motor (PMSM). The combination of the iMOTION™ Motion Control Engine (“T”- variants) with the gate driver and six MOSFETs offers a complete motor drive system in a compact 12 x 12 mm² surface mount package, minimizing external components count and PCB area.

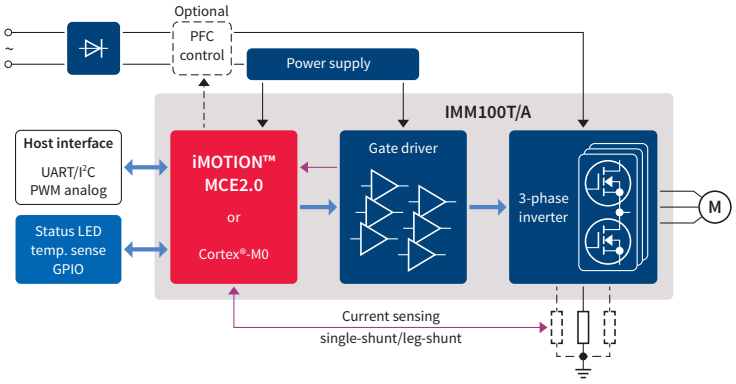
Infineon’s field-proven Motion Control Engine (MCE) implements sensorless Field Oriented Control (FOC) with single or leg-shunt current feedback and uses space vector PWM with sinusoidal signals to achieve the highest energy efficiency. Additionally, IMM100 can take over the boost Power Factor Correction (PFC) control. Powerful PC tools like MCEWizard and MCEDesigner reduce the implementation effort for a variable speed drive to a simple configuration of the MCE for the respective motor, complemented by script engine for more system-level flexibility. Alternatively, “A”- variants of IMM100 offer full flexibility of running own motor control software on ARM® Cortex®-M0 core, while taking additional advantage of the complete hardware integration.

The integrated gate driver provides the bootstrap capability, adds signal filtering and offers several hardware protection mechanisms, e.g. dead-time insertion and shoot-through prevention, overcurrent, over-/undervoltage protection and fault reporting.

The IMM100 series does not require a heatsink and addresses motor drives with a rated output power up to 30 W/60 W/80 W with 600 V maximum DC blocking voltage.

- IMM10xT/A-015M – output rating: 500 V/6 Ω $R_{DS(on)}$
- IMM10xT/A-046M – output rating: 600 V/1.4 Ω $R_{DS(on)}$
- IMM10xT/A-056M – output rating: 600 V/0.95 Ω $R_{DS(on)}$

Application block diagram



www.infineon.com/iMOTION

Key benefits

- Lowest BOM cost
  - Controller, gate driver plus MOSFET power stage
  - Single shunt current feedback
  - Integrated bootstrap diodes
  - No heatsink required
- iMOTION™ Motion Control Engine available in “T”- variants
  - No programming required
  - Sensorless Field Oriented Control
  - Low loss space vector PWM
  - Multiple motor support
  - Flexible host interface options
  - Optional boost PFC control
- Industry-standard ARM® Cortex®-M0 available in “A”- variants
  - 128 kB flash, 16 kB RAM
  - 48 MHz CPU/96 MHz peripheral clock
  - Dedicated motor control blocks
- Integrated protection features
  - Over-/undervoltage
  - Over-current, over-temperature
  - Dead time, shoot through
  - Rotor lock protection
- PowerQFN 12 x 12 mm² package

Target applications

- Fans, pumps
- Home appliances
- Ceiling fans
- … any other BLDC drive

iMOTION™ tools

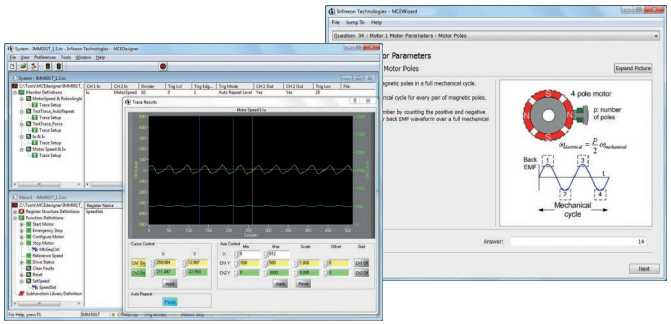
MCEWizard helps to create the initial motor configuration by guiding the developer through several self-explanatory questions.

MCEDesigner is used to load the motor parameter sets and fine-tune them to best meet the application requirements.

iMOTION™ script enables adding system-level features to "T"-variant devices

MCEWizard

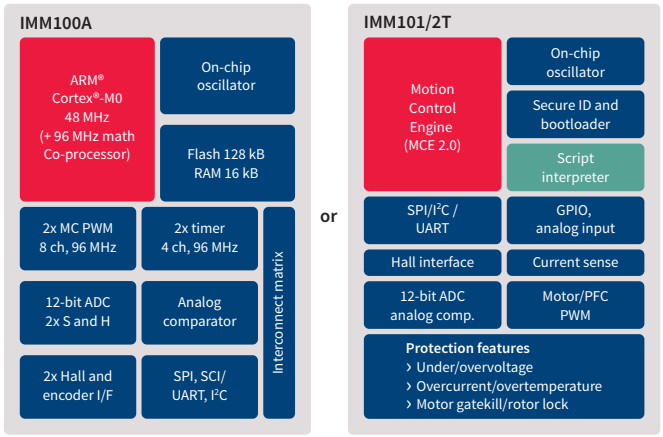
Generates drive control parameters from motor and hardware specifications



MCEDesigner

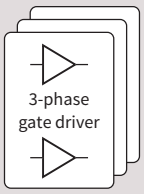
Drive tuning software tool with trace features to adjust and observe internal variables

IMM100 series overview



Integrated gate driver

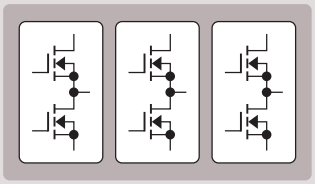
- Bootstrap functionality
- Undervoltage lockout
- Fault reporting
- Integrated minimum deadtime
- Shoot-through prevention



Integrated power stage

MOSFETs

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



Ordering information

Product	MOSFET power stage	MCE 2.0/ARM® Cortex®	Features	Package
IMM101T-015M	500 V/6 Ω $R_{DS(on)}$	MCE 2.0	3-phase inverter	PowerQFN 12 x 12 mm²
IMM101T-046M	600 V/1.4 Ω $R_{DS(on)}$	MCE 2.0	3-phase inverter	PowerQFN 12 x 12 mm²
IMM101T-056M	600 V/0.95 Ω $R_{DS(on)}$	MCE 2.0	3-phase inverter	PowerQFN 12 x 12 mm²
IMM102T-015M	500 V/6 Ω $R_{DS(on)}$	MCE 2.0	3-phase inverter + PFC	PowerQFN 12 x 12 mm²
IMM102T-046M	600 V/1.4 Ω $R_{DS(on)}$	MCE 2.0	3-phase inverter + PFC	PowerQFN 12 x 12 mm²
IMM102T-056M	600 V/0.95 Ω $R_{DS(on)}$	MCE 2.0	3-phase inverter + PFC	PowerQFN 12 x 12 mm²
IMM100A-015M	500 V/6 Ω $R_{DS(on)}$	ARM® Cortex®-M0	Programmable device	PowerQFN 12 x 12 mm²
IMM100A-046M	600 V/1.4 Ω $R_{DS(on)}$	ARM® Cortex®-M0	Programmable device	PowerQFN 12 x 12 mm²
IMM100A-056M	600 V/0.95 Ω $R_{DS(on}$	ARM® Cortex®-M0	Programmable device	PowerQFN 12 x 12 mm²

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Date: 03 / 2019

Компания «ЭлектроПласт» предлагает заключение долгосрочных отношений при поставках импортных электронных компонентов на взаимовыгодных условиях!

Наши преимущества:

- Оперативные поставки широкого спектра электронных компонентов отечественного и импортного производства напрямую от производителей и с крупнейших мировых складов;
- Поставка более 17-ти миллионов наименований электронных компонентов;
- Поставка сложных, дефицитных, либо снятых с производства позиций;
- Оперативные сроки поставки под заказ (от 5 рабочих дней);
- Экспресс доставка в любую точку России;
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- Система менеджмента качества сертифицирована по Международному стандарту ISO 9001;
- Лицензия ФСБ на осуществление работ с использованием сведений, составляющих государственную тайну;
- Поставка специализированных компонентов (Xilinx, Altera, Analog Devices, Intersil, Interpoint, Microsemi, Aeroflex, Peregrine, Syfer, Eurofarad, Texas Instrument, Miteq, Cobham, E2V, MA-COM, Hittite, Mini-Circuits,General Dynamics и др.);

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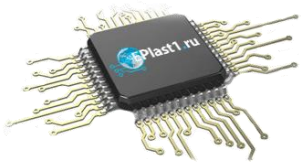
- Подбор оптимального решения, техническое обоснование при выборе компонента;
- Подбор аналогов;
- Консультации по применению компонента;
- Поставка образцов и прототипов;
- Техническая поддержка проекта;
- Защита от снятия компонента с производства.



Как с нами связаться

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