

## Product Brief

# iMOTION™ IMC100

## High performance motor control IC series

iMOTION™ IMC100 is a series of highly integrated ICs for the control of variable speed drives. By integrating both the required hardware and algorithm to perform control of a Permanent Magnet Synchronous Motor (PMSM) they provide the shortest time to market for any motor system at the lowest system and development cost.

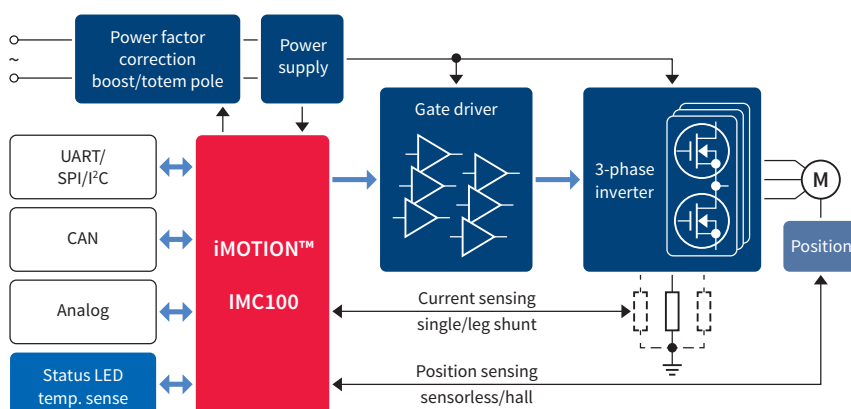
Infineon's patented and field-proven Motion Control Engine (MCE) implements Field Oriented Control (FOC) using single or leg shunt current feedback and uses space vector PWM with sinusoidal signals to achieve highest energy efficiency. It also integrates multiple protection features like over- and undervoltage, overcurrent, rotor lock etc. Powerful 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.

The IMC100 series takes advantage of a new hardware platform that brings a comprehensive set of innovative analog and motor control peripherals.

The next generation of the MCE not only further improves the performance of the control algorithm but also adds functionality like sensor support for accurate rotor positioning, ready-to-use PFC algorithms as well as more and faster host interface options.

The IMC100 series is offered in several device variants ranging from single motor control to motor control plus PFC. All devices can be used in applications requiring functional safety acc. to IEC 60335 ('Class B'). With this wide application scope the IMC100 series is the perfect choice for any highly efficient variable speed drive.

### Application block diagram



[www.infineon.com/iMOTION](http://www.infineon.com/iMOTION)

### Key benefits

Ready-to-use solution for variable speed drives based on Field Oriented Control (FOC) of Permanent Magnet Synchronous Motors (PMSM).

#### Outstanding customer benefits

- > Fastest time to market
  - No programming required
  - Easy motor parametrization and tuning
- > Lowest BOM cost
  - Integrated ADC and comparators
  - Sensorless FOC algorithm (hall sensors optional)
  - Internal oscillator
- > Integrated protection features
- > Next generation of field proven Motion Control Engine (MCE 2.0)
  - Single or leg shunt
  - Optional hall/encoder support
  - Boost or totem pole PFC
  - Flexible host interface options
  - Support for IEC 60335 ('Class B')
- > Multiple package options

### Potential applications

- > Refrigerators
- > Home appliances
- > Pumps, fans
- > ... any other PMSM drive



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

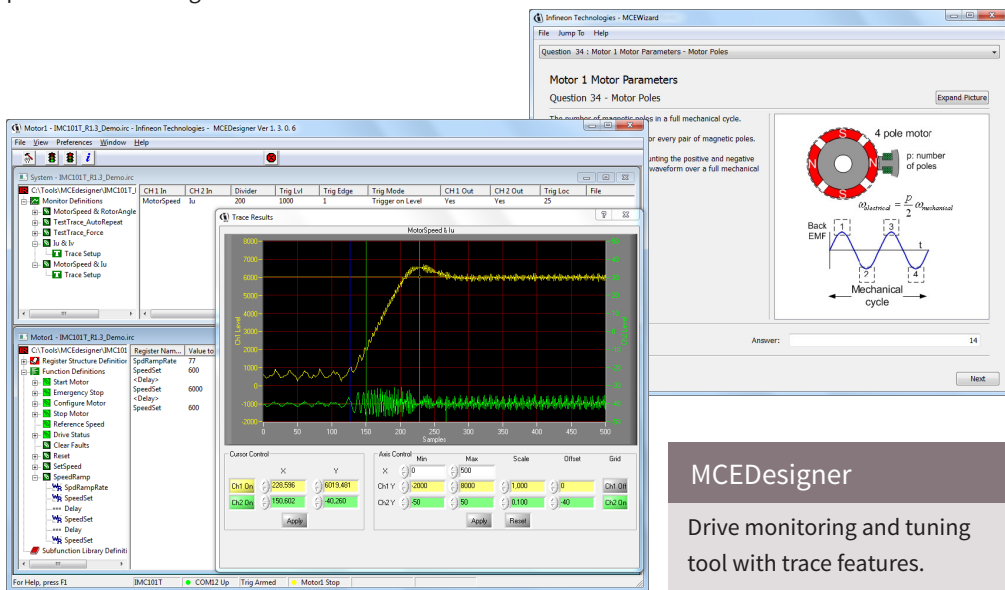
The MCEDesigner is used to program the motor parameters and fine-tune the drive to best meet the application requirements.

The flash memory in the IMC100 series provides high flexibility in handling updates of the MCE itself as well as for the motor and power board configurations stored.

The IMC100 devices provide highly flexible communication interfaces to be used by the application host to control the speed of the motor and report back the status of the drive inverter:

- › UART, SPI, I<sup>2</sup>C, analog or frequency input and even CAN.

Additional application flexibility is provided via digital and analog IOs that are under user control and can be utilized e.g. for reading temperature values or driving an LED.



**MCEWizard**  
Generate drive control parameters from motor and hardware specifications

**MCEDesigner**  
Drive monitoring and tuning tool with trace features.

### Ordering information

Product	Package	Application	Position sensing	PFC	Communication
IMC101T-T038	TSSOP-38	Single motor	Sensorless, hall switch/ hall elements	-	UART, I <sup>2</sup> C, SPI
IMC101T-Q048	VQFN-48	Single motor	Sensorless, hall switch/ hall elements	-	UART, I <sup>2</sup> C, SPI
IMC101T-F048	TQFP-48	Single motor	Sensorless, hall switch/ hall elements	-	UART, I <sup>2</sup> C, SPI
IMC101T-F064	LQFP-64	Single motor	Sensorless, hall switch/ hall elements	-	UART, I <sup>2</sup> C, SPI
IMC102T-F048	TQFP-48	Single motor + PFC	Sensorless, hall switch/ hall elements	boost, totem pole	UART, I <sup>2</sup> C, SPI
IMC102T-F064	LQFP-64	Single motor + PFC	Sensorless, hall switch/ hall elements	boost, totem pole	UART, I <sup>2</sup> C, SPI

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