Battery powered applications

Highest performance in motor control

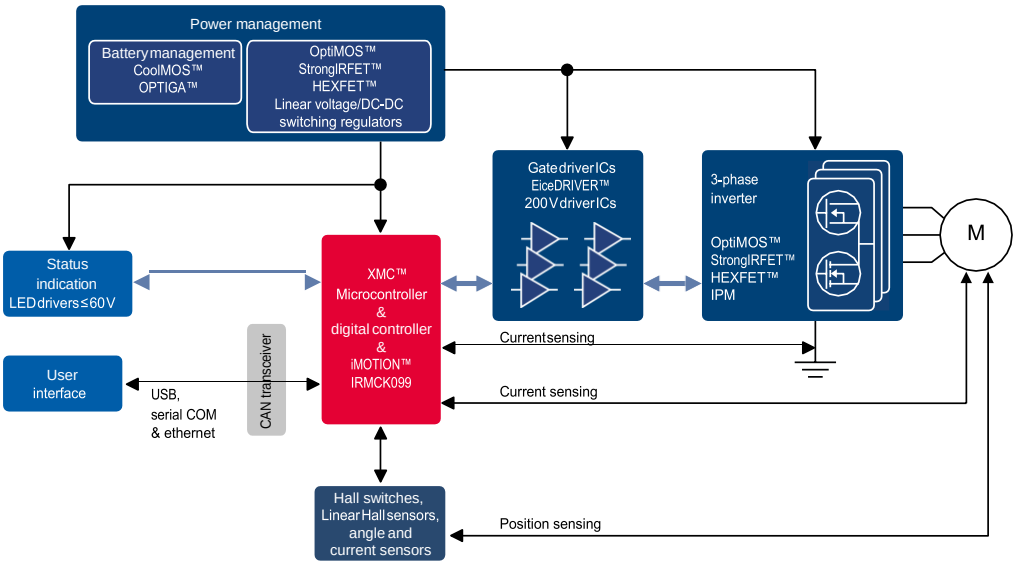
Based on industry leading technology, highest quality and manufacturing expertise, Infineon provides a variety of innovative power semiconductors which enable designers to develop highly reliable and efficient solutions. Through our comprehensive portfolio we can address a broad range of battery powered motor control applications, such as power tools, forklifts, all kinds of light electric vehicles including e-skateboards, e-scooters, pedelecs, low speed cars and many others. Infineon offers an excellent selection of devices for power management and consumption, as well as voltage regulation – such as power MOSFETs (e.g. CoolMOS™ and OptiMOS™), XMC™ microcontrollers, EiceDRIVER™ gate drivers and more.

Key enabling products are:

- Low voltage power MOSFETs – OptiMOS™ and StrongIRFET™
- Small Signal products
- High voltage power MOSFETs – CoolMOS™
- EiceDRIVER™/Half-bridge and three-phase gate driver ICs
- Magnetic sensors and voltage regulators
- Microcontrollers – XMC™
- Motion control ICs – iMOTION™ IRMCK099
- Authentication IC OPTIGA™ Trust B

Home and professional	Consumer robotics	Light electric vehicle
 	 	 
Power tools, gardening tools, commercial multicopters, cordless home appliance, cordless vacuum cleaners, healthcare equipment	Consumer multicopters, vacuum robots, RC toys, service robotics, household robotics and other consumer robots	eScooter, eBike, electric wheelchair, electric forklift, low speed cars (LSEV), electric motorcycle, other battery vehicles

Typical battery powered three-phase system: a one-stop-shop for battery powered drives



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A complete set of components that ensure system-cost competitiveness and high performance solution

	Consumer robotics	Home and professional	Light electric vehicles
MOSFETs	StrongIRFET™ 20 V-300 V		
	OptiMOS™ 25 V-80 V		OptiMOS™ 80 V-300 V
	CoolMOS™ P7 (standard grade)[1]		CoolMOS™ P7 (industrial grade)[1]
Gate driver ICs	EiceDRIVER™/Half-bridge and three-phase gate driver ICs		
	200 V to 600 V gate driver ICs		
IPM	CIPOS™ Nano		
Microcontrollers	XMC1300/XMC1400		
	iMOTION™	XMC4500/XMC4400	
Microcontroller & driver supply	Linear voltage and DC-DC switching regulators		
CAN transceivers	IFX1050, IFX1051		
Magnetic sensors	Hall and xMR sensors		
Authentication	OPTIGA™ Trust B		

Infineon product offering		Consumer robotics	Home and professional	Light electric vehicles
Supply voltage		12 V-48 V	10.8 V-56 V	24 V-144 V
MOSFET OptiMOS™ StrongIRFET™	**Voltage**	25 V-100 V	20 V -100 V	60 V-300 V
	Package	SuperSO8/PQFN 3x3/DirectFET™ S/M-Can	SuperSO8/PQFN 3x3/DirectFET™ S/M/L-Can TOLL/TO-220/DPAK/D²PAK	TO-220/DPAK/D²PAK/D²PAK 7pin/TOLL/ DirectFET™ L-Can
HV MOSFETs CoolMOS™ P7	**Voltage**	600 V – 700 V*	600 V – 700 V*	600 V**
Gate driver ICs		6EDL04N02PR/2EDL05N06PF/IRS2005,7,8 IRS2301/IRS2136/IRS21867/IRS2334	1EDN/2EDN/6EDL04N02PR/2EDL05N06PF IRS2005,7,8 /IRS2301/IRS2136/IRS21867/IRS2334	
IPM – CIPOS™ Nano		IRSM836-0x4MA (x=2,4,8) IRSM808-204MH	IRSM005-800MH IRSM005-301MH	
Authentication IC)**		OPTIGA™ Trust B	OPTIGA™ Trust B	OPTIGA™ Trust B
Microcontroller XMC		XMC1100	XMC1300	XMC1300
iMOTION™		IRMCK099M	IRMCK099M	XMC4400/4500
Microcontroller & driver supply		IFX1763/IFX54441/IFX54211/IFX30081/ IFX90121/IFX91041	IFX1763/IFX54441/IFX54211/IFX30081/ IFX90121/IFX91041	IFX1763/IFX54441/IFX54211/IFX30081/ IFX90121/IFX91041
CAN transceivers		IFX1050, IFX1051	IFX1050, IFX1051	IFX1050, IFX1051
Sensors		Hall switches (TLE496X), Angle sensor (TLI5012B), 3D magnetic sensor (TLV493D)	Hall switches (TLE496X), Angle sensor (TLI5012B), 3D magnetic sensor (TLV493D)	Hall switches (TLE496X), Angle sensor (TLE5012B), 3D magnetic sensor (TLV493D)

Application requirements

- Efficiency: reduction of overall system energy consumption, increasing battery operating and life time, optimized thermal management
- Reliability: reliable operating in harsh environments and avoiding system downtime
- Maintenance: low maintenance and long lifetime of components
- Size and cost: reduction of overall system size and cost
- Time-to-market: reduction of development time and cost

Benefits of Infineon components

- Portfolio: complete portfolio out of one hand –enables scalability
- Reliability: increased lifetime due to Infineon's reliability and quality
- Size and cost: smallest area required for highest power density and BOM cost reduction due to lowest $R_{DS(on)}$
- Time-to-market: complete eco-system: simulations, documentation and demoboard solution for high-end solutions available

To shorten customer development cycle time and cost we offer a complete portfolio of low voltage motor control application kits:

XMC1000 motor control application kit	XMC4000 motor control application kit	iMOTION™ modular application design kit (MADK)	40 V Medium Can ME/MF DirectFET™ 3-phase BLDC motor drive demo board (DEMO-PTOOL-300W-M)
			

1) If the necessary package/$R_{DS(on)}$ combination is not available in the new CoolMOS™ P7 series yet, the previous CoolMOS™ CE and P6 series are the preferred series
* standard grade
** industrial grade