

Infineon Technologies New Products Introduction

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600 V CoolMOS™ P7 power MOSFET

Power MOSFET with optimized balance of ease-of-use and highest energy efficiency



The new 600 V CoolMOS™ P7 offers a perfect balance between performance, ease-of-use, price and portfolio granularity. It brings efficiency gains of up to 1.5% in various topologies, and up to 4.2°C thermal benefits compared to the competition.

Features

- > Outstanding commutation ruggedness
- > Optimized balance between efficiency and ease-of-use
- > Significant reduction of switching and conduction losses
- > Excellent ESD robustness >2 kV (HBM) for all products
- > Better $R_{DS(on)}$ /package products compared to competition enabled by a low $R_{DS(on)} \times A$ (below $1 \Omega \times \text{mm}^2$)
- > Large portfolio with granular $R_{DS(on)}$ selection qualified for a variety of industrial and consumer grade applications

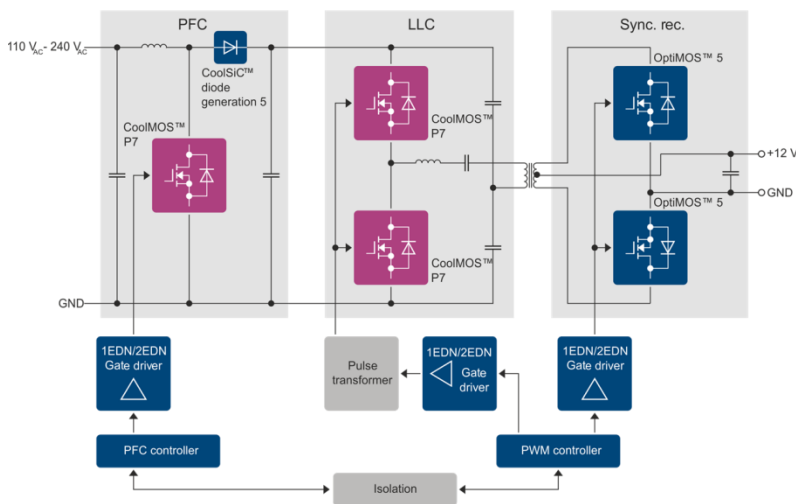
Benefits

- > Suitable for hard and soft switching (PFC and LLC)
- > Ease-of-use and fast design-in through low ringing tendency and usage across PFC and PWM stages
- > Simplified thermal management due to low switching and conduction losses
- > Higher manufacturing quality due to >2 kV ESD protection
- > Increased power density solutions enabled by using products with smaller footprint
- > Suitable for a wide variety of applications and power ranges

Target applications

- > Server, telecom, PC power, solar, EV charging, lighting and TV

Block diagram



Product collaterals / online support

- > Product landing [page](#)
- > Product datasheet pages
 - [IPD60R360P7](#)
 - [IPD60R180P7](#)
 - [IPL60R185P7](#)
 - [IPP60R180P7](#)
 - [IPW60R037P7](#)
 - [IPZ60R037P7](#)
 - [IPD60R600P7](#)
 - [IPL60R365P7](#)
 - [IPP60R600P7](#)
 - [IPP60R360P7](#)
 - [IPW60R180P7](#)
 - [IPA60R360P7](#)
 - [IPA60R180P7](#)
 - [IPAW60R180P7S](#)
 - [IPAW60R360P7S](#)

600 V CoolMOS™ C7 Gold (G7) in TOLL package

The new CoolMOS™ C7 Gold technology in latest SMD TO-Leadless (TOLL) package



The new 600 V CoolMOS™ C7 Gold (G7) for PFC & LLC circuits combines the benefits of the C7 Gold technology and superior thermal properties of the TOLL package resulting in new best-in-class products. The 4pin Kelvin source configuration minimizes switching losses, offering efficiency gains of 0.6% at full load in PFC circuits.

Features

CoolMOS™ C7 Gold

- > Gives best-in-class FOM $R_{DS(on)} \times E_{oss}$ and $R_{DS(on)} \times Q_G$
- > Enables best-in-class $R_{DS(on)}$ in smallest footprint

TOLL package

- > Inbuilt 4th pin Kelvin source configuration and low parasitic source inductance (~1 nH)
- > Is MSL1 compliant, total Pb-free, has easy visual inspection grooved leads
- > Enables improved thermal performance R_{th}

Benefits

- > FOM $R_{DS(on)} \times Q_G$ is 16 percent better than previous 600 V C7 enabling higher efficiency
- > Power density through best-in-class 28 mΩ in TOLL 115 mm² footprint
- > Reducing parasitic source inductance by Kelvin source improves efficiency and ease-of-use
- > TOLL package is easy to use and has the highest quality standards
- > Improved thermals enable SMD TOLL package to be used in higher current designs than has been previously possible

Target applications

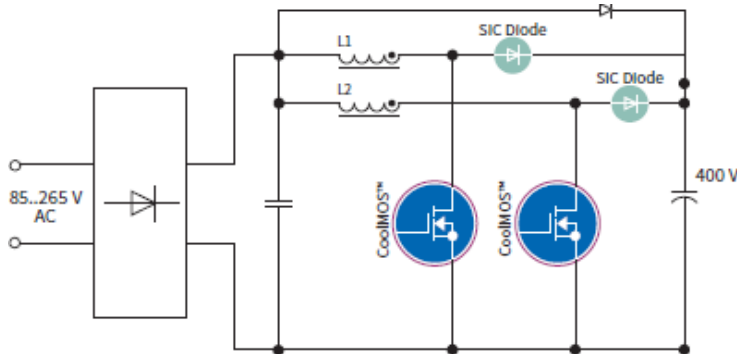
- > Telecom, server, solar, industrial SMPS

Product collaterals / online support

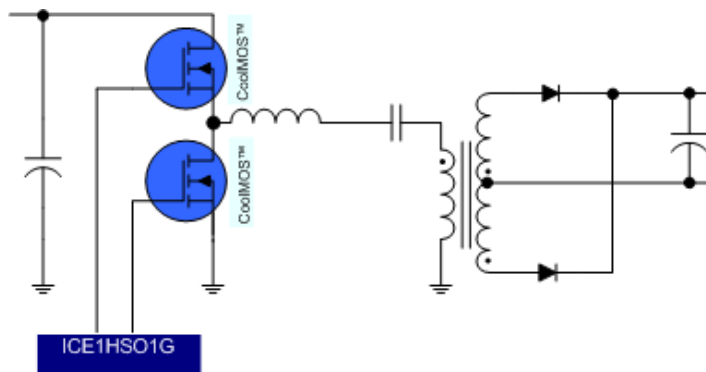
- > Product family [page](#)
- > Product datasheet pages
[IPT60R150G7](#)
[IPT60R102G7](#)
[IPT60R125G7](#)
- > Upcoming parts – available in May 2017
[IPT60R028G7](#)
[IPT60R080G7](#)
[IPT60R050G7](#)

Block diagram

Interleaved PFC

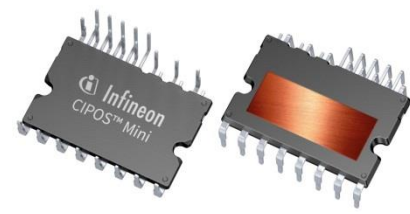


LLC



CIPOS™ Mini-DCB

IFCM20U60GD, IFCM30U65GD, IFCM20T65GD, IFCM30T60GD



2 phase and 3 phase interleaved PFC topology in a Dual In-Line molded package, with 650V voltage rating, targeting for 2~6kW power.

Features

- > Dual In-line molded module
- > Targeting for 2 ~ 6 kW power
- > 650V voltage rating, 20A and 30A
- > 2 phase and 3 phase interleaved topology
- > Switching frequency up to 60kHz
- > Low switching loss by Infineon new chip technology (TrenchStop5 IGBT and Rapid switching emitter controlled diode)
- > Rugged SOI gate driver technology with stability against transient
- > Over current shutdown
- > Under-voltage lockout
- > All of 2/3 switches turn off during protection
- > Excellent thermal performance with DCB substrate
- > Providing easy PCB footprint design
- > UL certificated thermistor (85kΩ)
- > Lead-free terminal plating; RoHS compliant

Target applications

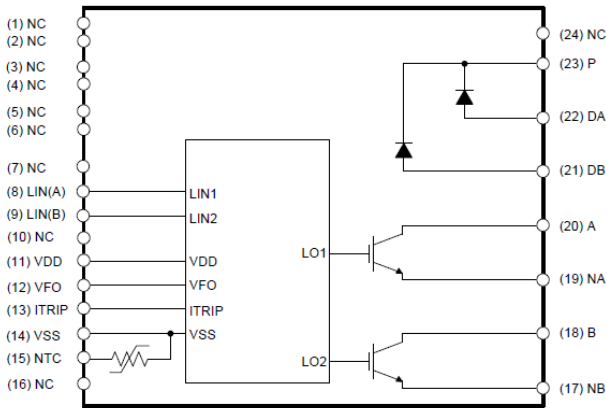
- > MHA, Aircon, Drives

Application examples

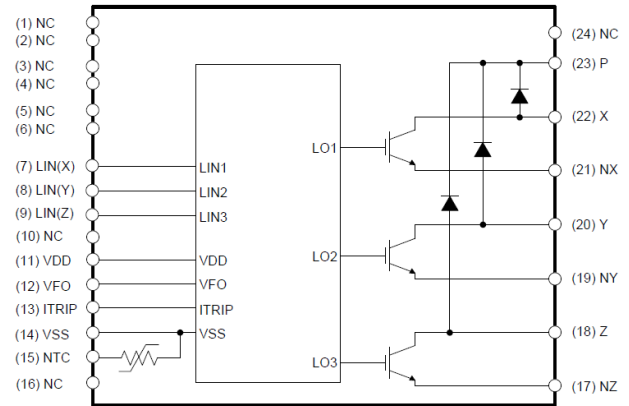
- > Air conditioner, treadmill, heat pump, industrial drives

Block diagram

2 phase 20A and 30A



3 phase 20A and 30A



Benefits

- > Enhance the system efficiency
- > Less assembly
- > No isolation sheet
- > Smaller choke
- > Smaller heatsink
- > Smaller PCB size
- > Provides benefit to use a smaller inductor to save cost

Product collaterals / online support

- > Intelligent Power Modules (IPM) [page](#)
- > Product landing pages
 - [IFCM20T65GD](#)
 - [IFCM20U65GD](#)
 - [IFCM30T65GD](#)
 - [IFCM30U65GD](#)
- > Product datasheet pages
 - [IFCM20T65GD](#)
 - [IFCM20U65GD](#)
 - [IFCM30T65GD](#)
 - [IFCM30U65GD](#)

OPTIGA™ Trust B SLE 95250

Best things come in small packages



The new OPTIGA™ Trust B is the smallest pin and package solution, whilst keeping the powerful features of the OPTIGA™ Trust family. OPTIGA™ Trust B is a robust cryptographic solution for embedded systems requiring easy-to-integrate, reliable authentication features. This security solution is designed to help system and device manufacturers safeguard the authenticity, integrity and safety of their original products. As a turnkey solution, it provides enhanced protection against aftermarket counterfeit replacements, thus helping to maintain OEM authenticity and safeguard the user experience.

Features

- > Strong cost efficient asymmetric cryptography with ECC 131-bit key length
- > OPTIGA™ Digital Certificate (ODC) with device personalization (unique key pair per chip)
- > Turnkey solution including host-side software for easy integration
- > 512 bit user NVM
- > Easy-to-implement single-wire host interface
- > Size-optimized TSNP-6-9 package (1.1 x 1.5 mm)

Target applications

- > Battery authentication
- > IoT edge devices
- > Consumer accessories
- > IP & PCB design protection
- > Original replacement parts
- > Medical & diagnostic equipment

Application examples

- > Battery authentication e.g. drones, cameras, smartphones, power tools
- > Accessory authentication e.g. power banks, docking stations
- > Disposals authentication e.g. water filter cartridges, medical consumables

Benefits

- > Lower system costs due to single- chip solution
- > Increased security with asymmetric cryptography and chip-individual keys
- > Easy integration thanks to full turnkey design

Product collaterals / online support

- > Product family [page](#)
- > Product landing [page](#)
- > Product brief [page](#)
- > Product datasheet [page](#)

Evaluation board *available in ISAR from early May 2017

- > OPTIGA™ Trust B SLE95250 Evaluation Kit [page](#)

TLE4922-XAN-F

An active mono cell hall sensor ideally suited for detecting the motion and position

Highly robust, easy-to-use mono-Hall speed sensor with Twist Independent Mounting (TIM) mounting for 2-wheeler, automotive vehicle speed and industrial application.



Features

- > Low cost speed sensor
- > Low jitter (<0,08° jitter) over 0.5 – 3.2mm airgap
- > True zero speed up to 8kHz signal frequency
- > Protection against harsh environment due to
 - Short-circuit current limitation at output
 - Over temperature shutdown at output
 - Reverse voltage protection
- > Fits all kinds of magnets and both magnet polarities for Twist independent mounting (TIM)
- > Workaround for 2-wire current I/F
- > Infineon proven quality
- > Enabling low power applications with $I_{dd} = 5\text{mA}$ at $V_{dd} = 9\text{V}$
- > Large operating voltage from 4.5V to 18V
- > EMC&ESD robustness up to 3kV HBM
- > Wide operating temperature range from -40 to 155°C
- > Small thin PG-SSO-4-1 package

Benefits

- > Easy mounting and low total cost of ownership due to
 - Large operating air gap capability
 - Twist independent mounting (TIM) “enables one sensor fits all”
 - Fits all kinds of magnets and both magnet polarities
- > Replacement of VR solutions with better performance at same cost
 - Future proof - Better sensing accuracy enable upcoming emission and efficiency standards
 - Eased manufacturing tolerances by better airgap performance

Product collaterals / online support

- > Product landing [page](#)
- > Product datasheet [page](#)

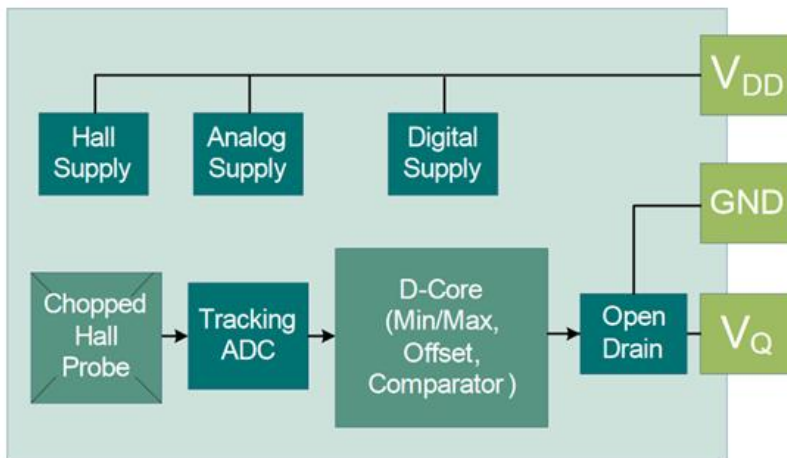
Target applications

- > Small engines (2- and 3 wheeler) applications
- > Crankshaft speed and position sensing
- > Transmission speed on output shaft
- > Speedometer applications

Support / Tools / Software

- > Speed-To-GO-KIT - Software download [here](#)

Block diagram



DC Motor Shield with TLE94112EL for Arduino

Integrated multi half-bridge driver ICs



The DC Motor Shield is a small evaluation board equipped with TLE94112EL for use with Arduino. The TLE94112EL is capable to drive up to 6 small DC motors in parallel mode or up to 11 DC motors in cascaded mode. All outputs can drive up to 0.9A. The outputs can be used stand-alone or combined to increase driving capability up to 3.6A.

Features

- > Driver with 12 half-bridge outputs to drive DC motors, resistive or inductive loads
- > Driver is protected against over-temperature, over-current, over-voltage, under-voltage and enables diagnosis of over-current, over-voltage, under-voltage
- > SPI interface with zero clock diagnosis
- > Enhanced EMC performance
- > Integrated PWM generator with 3 different frequencies (80Hz, 100Hz, 200Hz)

Benefits

- > Shield enables compact design for multi-motor applications
- > Cost efficient design for multi-motor applications
- > Less communication with μ C through integrated PWM generator and zero clock diagnosis
- > Lower cost by reducing external components to meet EMS requirements

Target applications

- > Multi-motor applications
- > DC motors and voltage controlled bipolar stepper motors
- > Toys
- > HVAC systems

Product collaterals / online support

- > Product landing [page](#)
- > TLE94112EL datasheet [page](#)
- > Shields for Arduino [page](#)
- > DC Motor Control Shield with TLE94112EL UserManual [here](#)
- > More about Infineon multi half-bridge [here](#)
- > How to drive easily small DC Motors with the new TLE94xyz multi half bridges family [video](#)

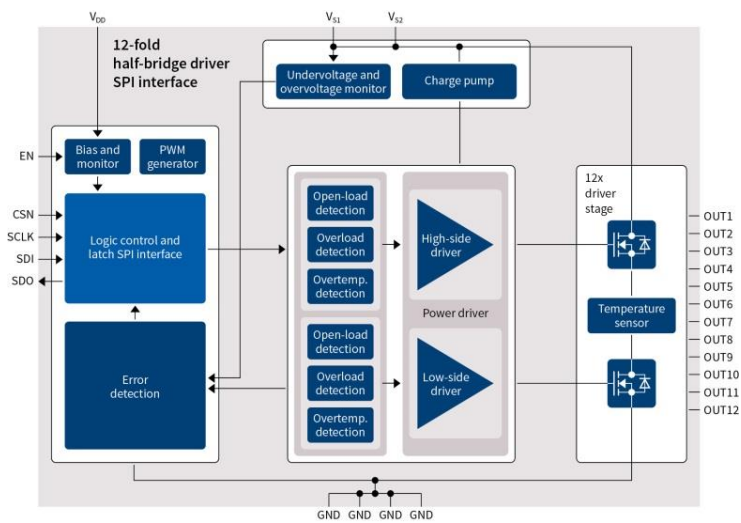
Application examples

- > Toy roboter, Automotive HVAC systems, Wing mirror systems

Completing products (P2S)

- > XC8xx, XC22x & XMC™ microcontrollers, System Basis Chips

Block diagram



Infinion® Embedded Power IC - Grade 0 variants

TLE9873QXW40, TLE9877QXW40, TLE9879QXW40 and TLE967QXW20



The TLE9873QXW40, TLE9877QXW40 and TLE9879QXW40 are the new members of the TLE987x product family. They are qualified in accordance to the AEC-Q100 Grade 0 automotive qualification standard to support under-the-hood applications like engine cooling fans, water pumps and oil pumps.

The TLE987x family is part of the Infineon® Embedded Power IC portfolio. The TLE987x is a single chip 3-phase motor driver that integrates the industry standard ARM® Cortex M3® core, enabling the implementation of advanced motor control algorithms such as field-oriented control. A Grade-0 variant of the TLE986x, the TLE9867QXW20, is also available to support 2-phase motor control applications.

Features

- > Operating supply voltage $V_S = 5.5$ to 28 V, maximum rating 40 V
- > Extended operating range $V_S = 3.0$ to 28 V, MCU/flash fully functional
- > ESD performance up to 2 kV / handling on all pins
- > 4 kV @ HV inputs
- > 6 kV @ LIN pin
- > Overvoltage device clamp (load dump ruggedness) up to 40 V
- > Wide operating temperature range: T_j : -40°C up to 150°C for Grade 1 variants
- > Extended operating temperature range: T_j : -40°C up to 175°C for Grade 0 variants

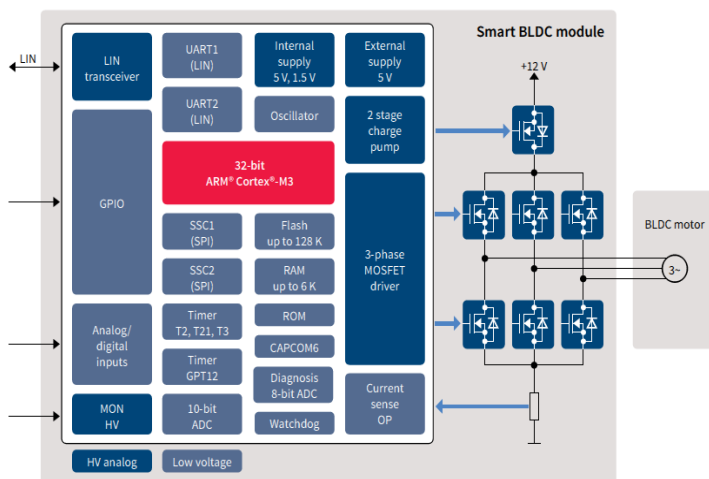
Target applications

- > Engine Cooling Fans
- > Water Pumps
- > Oil Pumps
- > Exhaust Flaps

Product collaterals / online support

- > Automotive Embedded Power ICs [page](#)
- > Product landing pages
[TLE9873QXW40](#)
[TLE9877QXW40](#)
[TLE9879QXW40](#)
[TLE9867QXW20](#)

Block diagram



Benefits

- > One scalable product platform for a wide range of 2-phase (DC) and 3-phase (Brushless DC) motor control application for both Grade-1 and Grade-0 applications
- > Single Chip solution that reduces the Bill of Material as oppose to at least 2 chip solutions that use an external uC and a bridge driver
- > It delivers 32 bit performance in an application space that it is typically associated with 16-bit processors
- > A space efficient solution enabling integration of electronics close the motor for true mechatronic applications
- > Operation up to Junction Temperature 175°C at no additional PCB cost, as the product platform scaling enables cost efficient thermal designs using a leadless „small footprint“ package that is Grade-0 qualified

Completing products (P2S)

- > All IFX MOSFETs with a total gate charge of up to 100nC per NFET, for example:
 IPB= D2PAK, IPD=DPAK, IPZ=S308 (TSDSON), IPC=SS08 (TDSON), IPG=SS08 Dual (TDSON)

Evaluation boards

- > TLE9879 EVALKIT [page](#)
- > TLE987X EVALB_JLINK [page](#)
- > TLE9869 EVALKIT [page](#)

IRS2008S

New 200 V half-bridge driver



Infineon offers a family of 200 V gate driver ICs tailored for low voltage (24 V, 36 V, and 48 V) and mid-voltage (60 V, 80 V, and 100 V) motor drive applications. These MOSFET drivers provide full driver capability with fast switching speeds, designed-in ruggedness, and low power dissipation. The 200 V drivers ICs are offered in standard packages and pin-out configurations with various logic input options for high design flexibility and fast time-to-market. IRS2008S is the latest addition to the 200 V gate driver ICs.

Features

- > Fully operational to +200 V offset voltage
- > 290 / 600 mA sink/source current
- > Undervoltage lockout protection for both VCC and VBS
- > Logic operational for VS of -8 V
- > 3.3 V, 5 V, 15 V input logic compatible
- > Tolerant to negative transient voltage, dV/dt immune
- > Floating channel designed for bootstrap operation
- > Matched propagation delay for both channels
- > Deadtime and cross-conduction prevention logic
- > Shutdown input turns off both channels
- > Available in small 8-pin SOIC

Benefits

- > Higher power efficiency
- > Fast and reliable switching with protection under abnormal operation assures increased device reliability
- > Low-cost bootstrap power supply for BOM savings
- > Easy-to-use, straight-forward design for quick design-in and fast time to market

Support / Tools / Software

- > IRS200x 200 V IC Family promo [page](#)
- > Design tip using monolithic high voltage gate drivers [here](#)
- > Find your right product for the right application [here](#)

Target applications

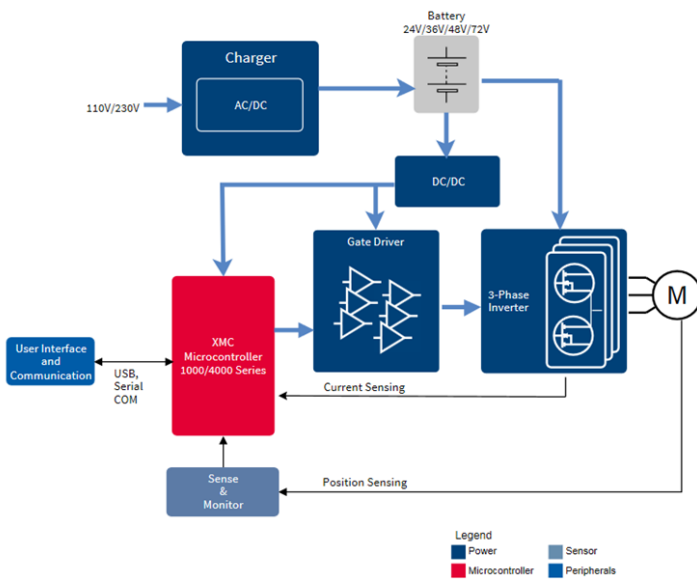
- > Servo Drives, Inverters, Micro Inverter Drives, Small Appliance Motors, General Purpose Three-Phase and Half-Bridge Inverters, LEV and Battery Driven Applications (E-Bikes, Drones, Power Tools, Vacuum robots and Multi-copters)

Product collaterals / online support

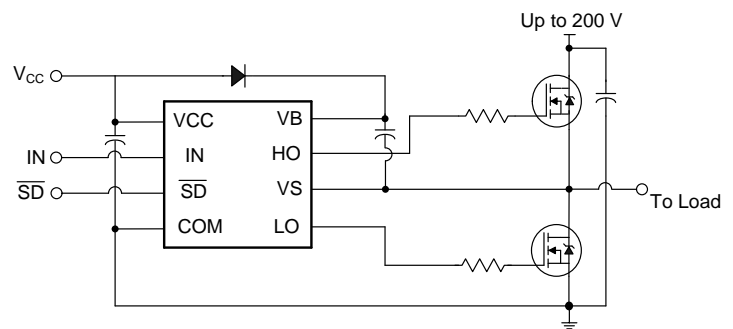
- > Product landing [page](#)
- > Product datasheet [page](#)

Application diagram

E-bike



Block diagram



34 mm Solder Bond DD-Module with higher blocking voltages

The cost effective alternative to the well known high reliable pressure contact technology



Infineon Technologies Bipolar extended their Eco Line with the second generation of 34 mm rectifier modules in solder bond technology. These modules are now available for high production volumes in 1800V, 2000V and 2200V – additionally to the 1600V portfolio. Solder bond modules are ideal for applications where the high robustness of pressure contact technology is not necessarily a must. Typical applications for the 34 mm modules are drives, power supplies, UPS and welding.

Features

- > Current 192A
- > Blocking Voltages: 1600V, 1800V, 2000V, 2200V
- > Industrial standard package
- > Electrically insulated copper base plate

Benefits

- > Cost and performance optimized
- > One stop shop due to complete module technology portfolio
- > Predictably high performance and lifetime due to 100% x-ray monitoring
- > Excellent technical support

Target applications

- > Drives, power supplies, UPS and welding

Product collaterals / online support

- > Solder bond promo [page](#)
- > Product landing pages
[DD180N18S](#)
[DD180N20S](#)
[DD180N22S](#)
- > Product datasheet pages
[DD180N18S](#)
[DD180N20S](#)
[DD180N22S](#)