New Product Introduction

March 2020

OptiMOS™ IPOL with fast Constant-On-Time (COT)

CoolSiC™ automotive schottky diodes

CoolSiC™ Schottky diode G5 1200 V in D2PAK real 2-pin

iMOTION™ IMC300 series

EiceDRIVER™ 1ED44175N01B

IPP60R360CFD7 – 600 V CoolMOS™ CFD7 superjunction MOSFET with integrated fast body diode in TO-220 package

600 V CoolMOS™ S7 – the high-voltage superjunction MOSFET family

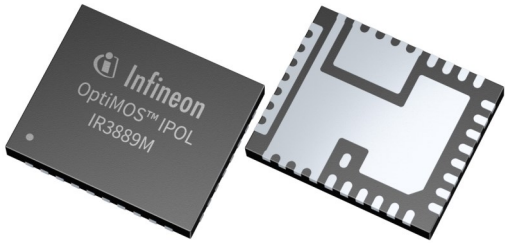
TLD5099EP - Single-Channel Multitopology DC/DC Controller with Spread Spectrum and PMW engine

XMC4200 Platform2Go

OptiMOS™ 5 80 V/100 V automotive MOSFET in SSO8 and S3O8 packages for 48 V applications

OptiMOS™ IPOL with fast Constant-On-Time (COT)

The IR388X OptiMOS™ IPOL is an easy-to-use, fully integrated DC-DC buck regulator. The onboard PWM controller and OptiMOS™ MOSFETs with integrated bootstrap diode make the IR3888 a small footprint solution, providing high-efficient power delivery. Furthermore, it uses a fast Constant-On-Time (COT) control scheme, which simplifies the design efforts and achieves fast control response.



Features

- Infineon's fast Constant-On-Time engine with floor control
- Latest Infineon MOSFETs (OptiMOS™ 5) for enhanced efficiency
- Thermally capable of 30 A in small 4mm x 5mm footprint
- High switching frequency (f_{max} 2 MHz) for density

Benefits

- Benchmark efficiency and excellent thermals
- Smallest 30 A IPOL in the market
- Faster load transient response and enhanced output voltage regulation
- Easy design (no external compensation)

Target applications

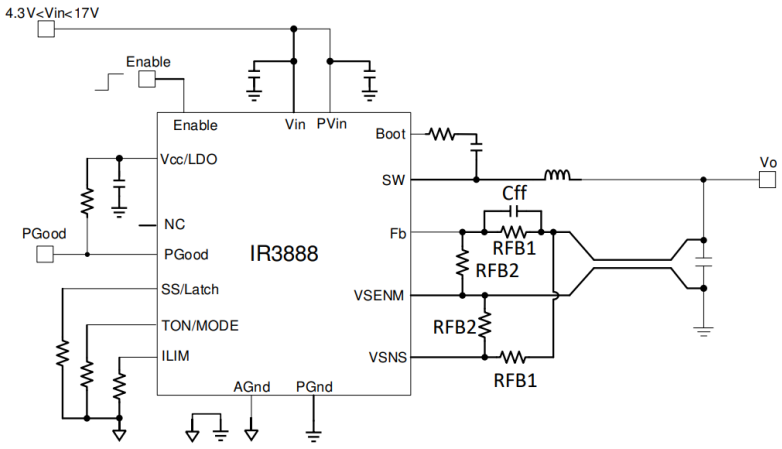
- Single 4.3 V to 17 V input voltage applications or wide input voltage range from 2.0 V to 17 V with external V_{cc}
- Output voltage 0.6 V – 5 V
- Load current 12 A - 30 A
- Servers, enterprise storage, netcom router and switches, datacom, telecom base stations, distributed POL

Competitive advantage

Compared to alternative solutions in the same price range (and Infineon's previous Gen3) the devices offer higher efficiency to save power, support cool operation without heatsink or airflow at high ambient temperature in thermally challenged applications and enable operations at 1MHz for higher density with good efficiency and thermals (up to 50% pcb size saving estimated for > 1MHz operations vs. 600KHz).

Enhanced Output Voltage regulation and faster transient response reduces the number of output capacitors for reduced BOM.

Block diagram



Product overview incl. data sheet link

OPN	SP Number	Package
IR3889MTRPBFAUMA1	SP001821820	PG-IQFN-36
IR3888MTRPBFAUMA1	SP001821814	PG-IQFN-22

Product collaterals / Online support

Product page IR3889MTRPBF

Product page IR3888MTRPBF

Product Brief

CoolSiC™ automotive schottky diodes

The 5th Generation CoolSiC™ Automotive Schottky Diode and represents Infineon leading edge technology for Silicon Carbide Schottky Barrier diodes. Thanks to a compact design and a technology based on thin wafers, this family of products shows improved efficiency over all load conditions resulting from both its thermalcharacteristics and low figure of merit (Qc x Vf). This product family has been designed to complement Infineon's IGBT and CoolMOS™ portfolio. This ensures meeting the most stringent application requirements inthe 650 V voltage class.

Features

- VBR at 650 V
- Excellent figure of merit (Qc x VF)
- No reverse recovery charge
- Improved surge current capability
- Temperature independent switching behavior
- Operating temperature up to Tjmax = 175°C
- AEC-Q101 qualified
- SMD package D2PAK (TO263-2)

Benefits

- Improved efficiency over all load conditions
- Highly stable switching performance
- Temperature independent switching
- Best match with CoolMOS™ and IGBT devices products
- Highest automotive robustness regarding humidity and corrosion
- Better quality control due to automated processes

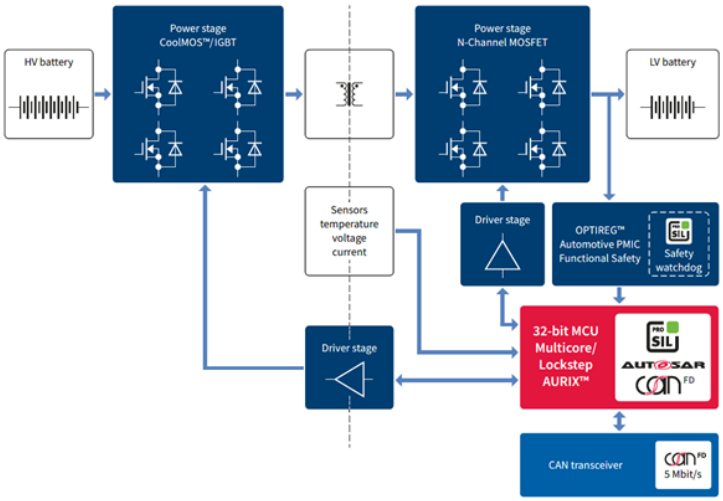
Target applications

- On-board chargers
- DC-DC converters
- DC-AC converters

Competitive advantage

- SMD package
- Better quality control due to automated process

Application diagram: DCDC topology



Product overview incl. data sheet link

OPN	SP Number	Package
AIDK08S65C5ATMA1	SP001725146	PG-TO263-2
AIDK10S65C5ATMA1	SP001725150	PG-TO263-2
AIDK12S65C5ATMA1	SP001725244	PG-TO263-2

Product collaterals / Online support

Product Familiy Page

Application Note

CoolSiC™ Schottky diode G5 1200 V in D2PAK real 2-pin package

Trends in system compact designs call for high efficiency while using a small device package. The CoolSiC™ Schottky diode generation 5 1200 V is now available in D2PAK real2pin package with current ratings from 2 A to 20 A. Combined with a Si IGBT or super-junction MOSFET, for example in a Vienna rectifier stage or PFC boost stage used in 3-phase conversion systems, a CoolSiC™ diode raises efficiency up to 1% compared to next best Si diode alternative. The output power of PFC and DC-DC stages can thus be substantially increased, by 40% or more. Other than negligible switching losses – the signature feature of SiC Schottkys – CoolSiC™ generation 5 products come with best-in-class forward voltage (VF), the slightest increase of VF with temperature and highest surge current capability. The result is a series of products delivering market-leading efficiency and more system reliability at an attractive price.

Features

- Zero Qrr leading to no reverse recovery losses
- High surge current capability
- Real two-pin package with 4.7 mm creepage and 4.4 mm clearance distances
- Tight forward voltage distribution
- Temperature-independent switching behavior
- Low forward voltage even at high operating temperature

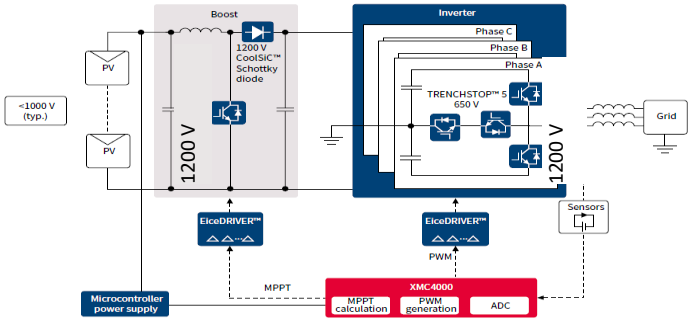
Benefits

- Enabling higher frequency / increased power density in compact designs
- System size/cost saving due to reduced heatsink requirements and smaller magnetics
- Reduce a risk of partial discharge on the surface (real 2-pin)
- System efficiency improvement over Si diodes
- System reliability improvement
- Reduced EMI
- RoHS II standard compliant (Pb-free die attach)

Target applications

- Solutions for solar energy systems
- Motor control and drives
- Uninterruptible power supply (UPS)
- Industrial SMPS
- Fast EV-Charging
- Industrial heating and welding
- Commercial, construction and agricultural vehicles (CAV)

Application diagram



Product overview incl. data sheet link

OPN	SP Number	Package
IDK02G120C5XTMA1	SP002739618	PG-TO263-2
IDK05G120C5XTMA1	SP002739622	PG-TO263-2
IDK08G120C5XTMA1	SP002739626	PG-TO263-2
IDK10G120C5XTMA1	SP002739630	PG-TO263-2
IDK16G120C5XTMA1	SP002739638	PG-TO263-2
IDK20G120C5XTMA1	SP002739646	PG-TO263-2

Product collaterals / Online support

Familiy Page

Application Notes

iMOTION™ IMC300 series

The iMOTION™ IMC300 series is a family of motor control ICs with an additional user programmable microcontroller. It is suitable for variable speed motor control systems in Major and Small Home Appliances, and in motor drives requiring high application flexibility. The IMC300 series combines the iMOTION™ Motion Control Engine (MCE 2.0) with an additional microcontroller based on the Arm® Cortex®-M0 core. The MCE provides ready-to-use motor and optional PFC control and integrates all required components for a minimal BOM. It integrates multiple protection features, can be configured for almost any motor and achieves highest energy efficiency.The additional microcontroller (MCU) provides a flexible peripheral set and multiple communication interfaces. It runs fully independent from the MCE and can be used for configuration, command and control via an internal high speed interface. IMC300 devices can be used in applications requiring functional safety acc. to UL/IEC 60730 ('Class B').

Features

- Next generation Motion Control Engine (MCE 2.0) offers a ready -to-use solution
- Single or leg shunt current measurement
- Sensor less Field Oriented Control (FOC)
- Optional hall sensor support
- Flexible host interface options
- Option for boost or totem pole PFC (IMC302)
- Integrated protection features such as under/over-voltage, over-current or rotor-lock
- Scripting engine for application flexibility
- Pin-compatibility to IMC100 series
- Additional user programmable microcontroller based on ARM® Cortex®-M0 core

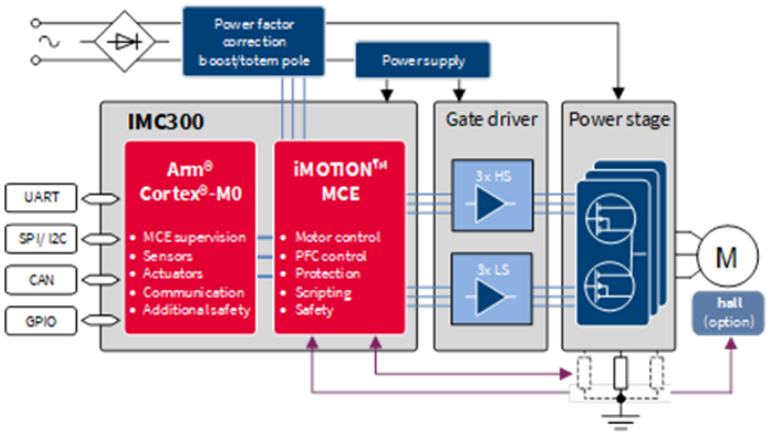
Target applications

Major and Small Home Appliances: Refrigerators and Air conditioners, Variable Speed Drives with custom functions and communications

Benefits

- Fastest time-to-market
- No software development required
- Easy motor parametrization and tuning for variable speed motor control
- Lowest BOM cost and minimized inductor size
- Integrated ADC and comparators
- No need for additional PFC controller
- No need for external OpAmp for current sensing
- Internal oscillator
- Highest Flexibility
- Configurable for almost any motor
- MCE with scripting engine
- Additional MCU for customer additions
- Easy scaling between IMC100 and IMC300 series
- MCE and MCU run independently, MCU can be debugged while the motor is still running

Application diagram



Competitive advantage

Field proven MCE 2.0, that undergoes continuous improvement

Product overview incl. data sheet link

OPN	SP Number	Package
IMC301AF064XUMA1	SP003021932	PG-LQFP-64
IMC302AF064XUMA1	SP003021936	PG-LQFP-64

Product collaterals / Online support

Familiy Page

Software Package

Application Note

EiceDRIVER™ 1ED44175N01B

Infineon Technologies expands its low-side gate driver portfolio with 1ED44175N01B - a 25 V, single-channel low-side gate driver with integrated over-current protection (OCP), fault reporting, and enable functionality.

OCP is typically implemented using a current measurement circuit with a comparator such as LM293 and a network of resistors and capacitors. 1ED44175N01B can provide up to 20 percent cost and 50 percent space savings by integrating the OCP comparator, which features an accurate current sensing threshold tolerance of ±5 percent. In addition, 1ED44175N01B combines fault output reporting to the controller and driver enable functionality on the same pin. This dual functioning pin allows for a compact IC design to fit into a tiny PG-SOT23 6-pin package.

Features

- 0.246 V over-current threshold with accurate ±5% tolerance
- Over-current detection with negative voltage input
- Single pin for fault output and enable
- Programmable fault clear time
- Under voltage lockout
- CMOS Schmitt-triggered inputs
- 3.3 V, 5 V and 15 V input logic compatible
- Output in phase with input
- -10 Vdc negative Input capability of OCP pin
- 3 kV ESD HBM

Benefits

- Integrated over-current protection and single-pin fault output and enable function provide potential space and cost savings
- OCP threshold tolerance of ±5% provides accurate sensing
- Flexible fault clear time set-up
- Under-voltage lock out provides protection at low supply voltage
- Industry standard package

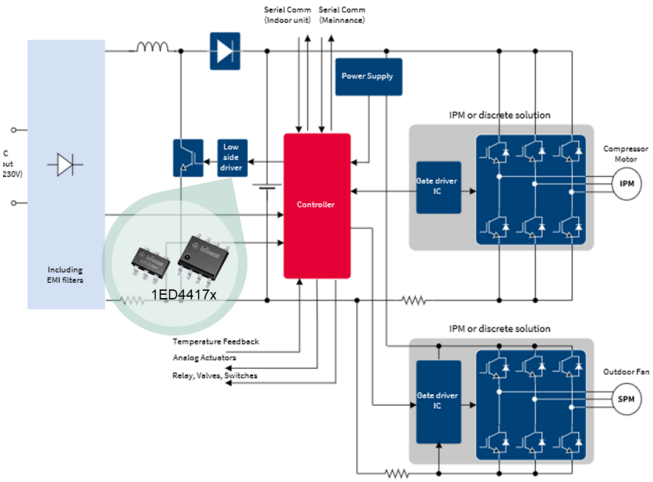
Competitive advantage

- 1ED44175N01B is the only low-side gate driver with integrated overcurrent protection in a tiny SOT23 6-pin package.
- OCP threshold tolerance of ±5% provides accurate sensing compared to other gate drivers with integrated overcurrent protection.

Target applications

- Home appliances
- Room air conditioners
- Refrigerators
- Small home appliances
- Induction cooker
- Induction rice cooker
- Microwave oven
- Power supplies (SMPS)

Application diagram PFC in home appliance



Product overview incl. data sheet link

OPN	SP Number	Package
1ED44175N01BXTSA1	SP002835878	PG-SOT23-6

Product collaterals / Online support

Product Page

Application Note

Product Selection Guide

IPP60R360CFD7 – 600 V CoolMOS™ CFD7 superjunction MOSFET with integrated fast body diode in TO-220 package

Infineon's CoolMOS™ CFD7 superjunction MOSFET IPP60R360CFD7 in 600 V is ideally suited for resonant topologies in high-power SMPS, such as server, telecom and EV charging stations, where it enables significant efficiency improvements.

As successor to the CFD2 SJ high-voltage power MOSFET family it comes with reduced gate charge, improved turn-off behavior and up to 69 percent reduced reverse recovery charge compared to competitors.

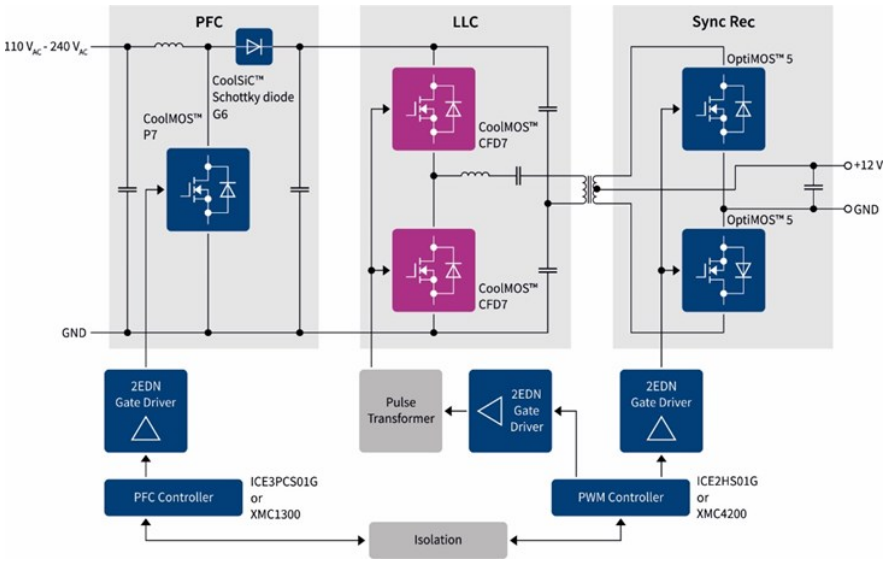
Features

- Ultrafast body diode
- Best-in-class reverse recovery charge (Q_{rr})
- Improved reverse diode dv/dt and dif/dt ruggedness
- Lowest FOM $R_{DS(on)}$ x Q_g and E_{oss}
- Best-in-class $R_{DS(on)}$ /package combinations

Benefits

- Best-in-class hard commutation ruggedness
- Highest reliability for resonant topologies
- Highest efficiency with outstanding ease-of-use/performance trade-off
- Enabling increased power density solutions

Application diagram



Target applications

- Server
- Telecom
- EV-charging
- SMPS
- PC power

Product overview incl. data sheet link

OPN	SP Number	Package
IPP60R360CFD7XKSA1	SP002621078	PG-TO220-3

Product collaterals / Online support

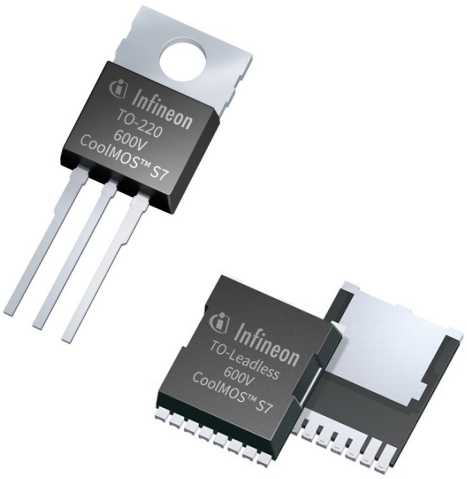
Product Page

Product Brief

Application Note

Product Selection guide

600 V CoolMOS™ S7 – the high-voltage superjunction MOSFET family delivering the best price/performance for low-frequency switching applications



With the introduction of the 600 V CoolMOS™ S7 SJ MOSFET family - uniquely fitting a 22 mΩ chip into an innovative SMD package - Infineon is not only setting a new benchmark for power density, but also is addressing new markets. The S7 is providing a breakthrough in solid-state relay and smart circuit breaker design. It offers an unprecedentedly low $R_{DS(on)}$ x A figure of merit at a price point that meet the needs of designers and their end markets. What's more, a solid-state relay will be far smaller than an electromechanical alternative, leading to a reduction in volume of over 95%.

Static switching applications, like active bridge rectification, inverter stages, in-rush relays, PLCs, solid-state circuit breakers and relays benefit from low conduction losses at the best price/performance.

Features

- Best-in-class $R_{DS(on)}$ in SMD packages
- Best superjunction MOSFET $R_{DS(on)}$
- Optimized for conduction performance
- Improved thermal resistance
- High pulse current capability
- Body diode robustness at AC line commutation

Benefits

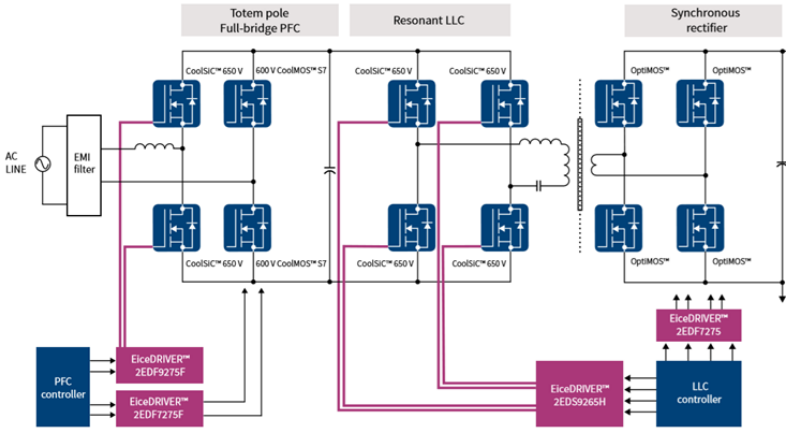
- Minimize conduction losses
- Increase energy efficiency
- More compact and easier designs
- Eliminate or reduce heat sink in solid-state design
- Lower TCO cost or BOM cost

Target applications

- Solar
- SMPS
- UPS
- PLC
- LSEV

Application diagram

High efficiency CoolSiC™ totem pole PFC in server switched mode power supply (SMPS)



Product overview incl. data sheet link

OPN	SP Number	Package
IPT60R022S7XTMA1	SP003330410	PG-HSOF-8
IPP60R022S7XKSA1	SP003393028	PG-TO220-3
IPT60R040S7XTMA1	SP003393022	PG-HSOF-8
IPT60R065S7XTMA1	SP003393016	PG-HSOF-8

Product collaterals / Online support

Product Family Page

Product Brochure

Product Selection Guide

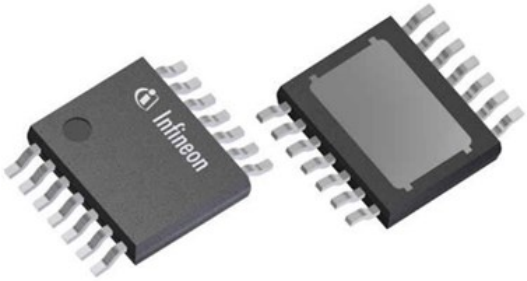
Product Brief

Application Note

TLD5099EP - Single-Channel Multitopology DC/DC Controller with Spread Spectrum and PMW engine

The TLD5099EP is the newest member of the well established LITIX Power Family. It is a LED boost controller with built in protection features. The controller concept of the TLD5099EP allows multiple configurations such as Boost, Buck, Buck-Boost, SEPIC and Flyback by simply adjusting the external components. Thanks to this the TLD5099EP is a quite easy to use and flexible device that comes without SPI but still with a quite powerful feature set. Main difference to the other family members TLD5097EP and TLD5098EP are the integrated Spread Spectrum and the integrated PWM engine.

TLD5099EP is a perfect choice when diagnostic as well as advanced dimming functionality like analog and digital dimming are required and where a DC/DC boost concept is needed like for Day-time-running lights or combined Low-/High-Beams.



Features

- Constant current or constant voltage regulation
- Switching frequency range from 100 kHz to 500 kHz
- Synchronization with external clock source
- Analog dimming and PWM dimming feature (embedded or external) to adjust average LED current
- Integrated PWM Engine and spread spectrum feature
- PWMO gate driver for PWM dimming and output disconnection
- Open circuit detection, short to GND protection, output overvoltage protection
- Internal soft start, over temperature shutdown

Benefits

- Flexibility (topologies to address different LED architectures/ applications)
- High EMC performance
- Increased LED current accuracy
- Automotive Grade

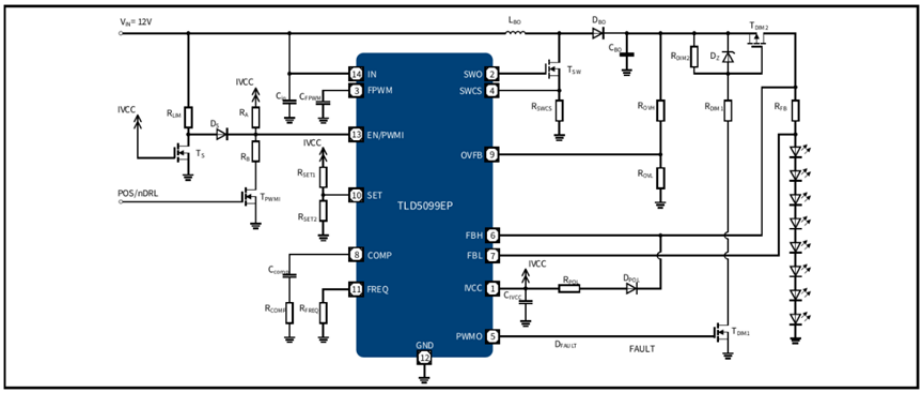
Target applications

- Automotive interior and exterior lights
- LED daytime running lights, low beam, high beam or combined low- and high-beams
- Pre-regulator e.g. for rear light applications

Competitive advantage

High EMC performance thanks to integrated Spread Spectrum feature, together with built in protection and diagnostic features. Operating in constant current or constant voltage regulation, PWM and analog dimming. Integrated PWM engine ease the usage of the device without microcontroller or with limited resource of available micro on BCM.

Application diagram: Boost LED driver



Product overview incl. data sheet link

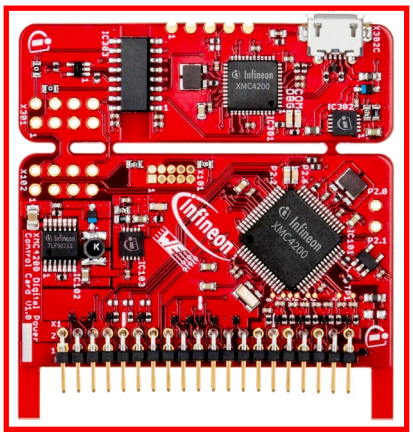
OPN	SP Number	Package
TLD5099EPXUMA1	SP004006890	TSDSO-14

Product collaterals / Online support

Product Page

Application Note

XMC4200 Platform2Go



Kit Platform2GO XTREME XMC4200 kit – this kit has the XMC4200 device with debugger plus CAN, ARDUINO, MikroBUS and Shields2Go form factor.

Equipped with an ARM® Cortex®-M4 based XMC™ Microcontroller from Infineon Technologies AG, the XMC4200 Platform2Go is designed to evaluate the capabilities of Infineon's XMC4200 Microcontroller. It can be used with a wide range of development tools including Infineon's free of charge Eclipse based IDE DAVE.

Features

- XMC™4200 (ARM® Cortex™-M4)
- ARDUINO Uno compatibility
- Shields2Go connectivity
- Ethernet-enabled communication option
- Additional voltage level shifters
- Available in four different assembly versions: 3.3V Shields (Lite), 5 V (Lite)
- CAN connectivity

Target applications

- Motor control
- Switched mode power supplies

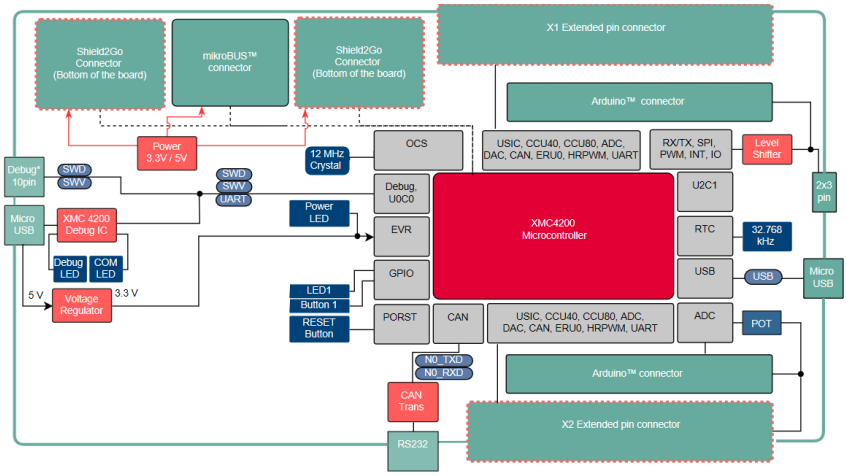
Benefits

- The XMC4200 Platform2Go Kit can be used with a wide range of development tools including Infineon's free of charge Eclipse based IDE DAVE
- The XMC4200 Platform2Go features an Ethernet-enabled communication option
- Additional voltage level shifters and Arduino connection header on the XMC4200 Platform2Go allow the usage of Arduino shields with 3.3 V or 5 V logic level
- The XMC4200 Platform2Go is available in four different assembly versions: 3.3 V Shields, 3.3 V Shields Lite, 5 V Shields, 5 V Shields Lite

Competitive advantage

- Easy of use; offers a great variety of features

Application diagram



Product overview incl. User Manual

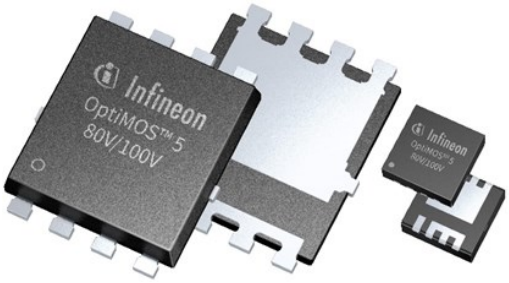
OPN	SP Number	Package
KITXMCPLT2GOXMC4200TOBO1	SP005405966	board

Product collaterals / Online support

Product Page

OptiMOS™-5 80 V/100 V automotive MOSFET in SSO8 and S3O8 packages for 48 V applications

Infineon is extending its product family of 80 V and 100 V MOSFETs based on OptiMOS™-5 Silicon technology. The MOSFET family is offered in SSO8 package with its 5x6 mm² footprint for medium power and the smaller S3O8 for lower power applications, such as 48V auxiliaries, but also automotive LED lighting.The new MOSFETs have tightened VGS thresholds in order to support designs with parallel MOSFETs, providing a very low system level $R_{DS(on)}$. Next to the low $R_{DS(on)}$ types, a broad selection of 80 V and 100 V MOSFETs with higher $R_{DS(on)}$ is on offer.



Features

- $R_{DS(on)}$ down to 3.1 mOhm (80 V) and 4.0 mOhm (100 V) in SSO8 package
- Higher $R_{DS(on)}$ variants in 80 V and 100 V in small S3O8 package

Benefits

- Reduced conduction losses
- Optimized switching performance
- Reduced form factor compared to traditional SMD packages

Target applications

- 48 V-12 V DC-DC converter
- 48 V battery management systems and power distribution
- 48 V e-booster, e-compressor and e-suspension
- 48 V auxiliaries

Competitive advantage

- best in class $R_{DS(on)}$
- Lower package resistance and inductance
- Broad MOSFET portfolio offering with various package options

Product overview incl. data sheet link

OPN	SP Number	Package
IAUC100N10S5N040ATMA1	SP001646990	PG-TDSON-8
IAUC100N08S5N043ATMA1	SP001780758	PG-TDSON-8
IAUC70N08S5N074ATMA1	SP001780762	PG-TDSON-8
IAUC90N10S5N062ATMA1	SP001468520	PG-TDSON-8
IAUC100N10S5L040ATMA1	SP001646988	PG-TDSON-8
IAUC100N08S5N031ATMA1	SP001780754	PG-TDSON-8
IAUS300N08S5N014ATMA1	SP001792358	PG-HSOG-8
IAUS240N08S5N019ATMA1	SP001792360	PG-HSOG-8
IAUS200N08S5N023ATMA1	SP001792362	PG-HSOG-8
IAUZ20N08S5L300ATMA1	SP002016352	PG-TSDSON-8
IAUZ30N10S5L240ATMA1	SP002143552	PG-TSDSON-8
IAUC24N10S5L300ATMA1	SP002143554	PG-TDSON-8
IAUZ18N10S5L420ATMA1	SP002143556	PG-TSDSON-8
IAUZ40N10S5N130ATMA1	SP002143558	PG-TSDSON-8
IAUC28N08S5L230ATMA1	SP002669400	PG-TDSON-8

Product collaterals / Online support

Product Family Page