New Product Introduction

September 2020

XENSIV™ - TLI493D-W2BW latest generation 3D magnetic Hall sensor

XDP™ digital power XDPL8219

Discrete 650 V TRENCHSTOP™ IGBT7 T7

650 V CoolMOS™ CFD7A - HV SJ MOSFETs for automotive applications

600 V CoolMOS™ PFD7 superjunction MOSFETs in ThinPAK 5x6 package

600 V CoolMOS™ CFD7 in TO-leadless package

sTOLL - new 7 x 8mm2 Power MOSFET Package

CIPOS™ Micro Intelligent Power Module (IPM) IM240 series

CIPOS™ Tiny SIP with covered lead series, IM393-x6FP

EiceDRIVER™ 25 V, low-side gate driver series - 1ED4417x

CoolSiC™ hybrid modules - EasyPACK™ with CoolSiC™ Schottky diode

EasyPACK™ CoolSiC™ Automotive MOSFET - FF08MR12W1MA1_B11A

HybridPACK™ DC6i FS650R08A4P2

MERUS™ DEMO_BASSAMP_60W_MA12070

MERUS™ KIT_ARDMKR_AMP_40W

UPS demo board - DEMO_850W_12VDC_230VAC

Auxiliary power supply reference board with 1700 V CoolSiC™ MOSFET

AURIX™ TC275 lite kit

AURIX™ TC377TX - Secure ethernet gateway evaluation kit

Engine Cooling Fan Reference Design - REF_ENGCOOLFAN1KW

LITIX™ LEDFRONTHBLB_REF

Motor drives evaluation board with CoolSiC™ MOSFET in TO-247

XENSIV™ - TLI493D-W2BW latest generation 3D magnetic Hall sensor

The Infineon XENSIV™ TLI493D-W2BW uses the latest 3D Hall generation from Infineon and is housed in an extremely small wafer-level package. With an 87 percent smaller footprint and 46 percent less height than previous comparable products, the sensor opens up completely new design options.

Features

- 3D (X, Y, Z) magnetic flux density sensing up to ±160 mT
- Programmable sensitivity up to typ. 30.8 LSB12/mT
- Extremely small form factor: typ. 1.13 mm * 0.93 mm * 0.59 mm
- Power down mode with 7 nA (typ.) power consumption
- Wake-Up mode
- 12-bit data resolution for each measurement direction plus 10-bit temperature sensor
- Variable update frequencies and power modes (configurable during operation)
- Temperature range Tj = -40°C…125°C, supply voltage range = 2.8 V… 3.5 V
- Triggering by external microcontroller possible via I2C protocol
- X-Y angular measurement mode
- Interrupt signal to indicate a valid measurement to the microcontroller
- Pb-free (RoHS compliant) and halogen free package

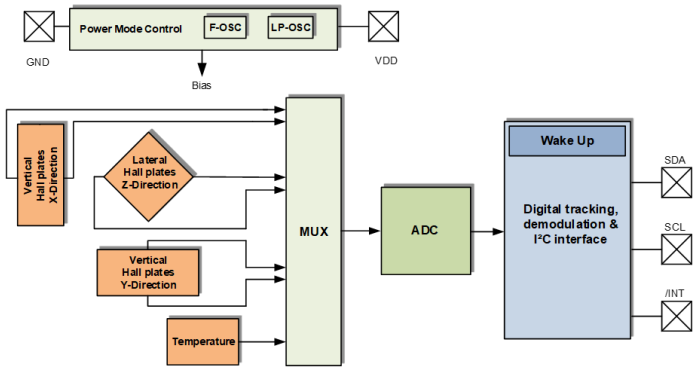
Benefits

- Component reduction due to 3D magnetic measurement principle
- Small sensor form factor allows for very compact system designs
- Wide application range addressable due to high flexibility
- Platform adaptability due to device configurability
- Very low system power consumption due to multiple Power down modes in combination with Wake-Up mode resulting in extended system battery runtime
- Disturbance of smaller stray fields are neglectable compared to the high magnetic flux measurement range

Target applications

- Multi-function knobs
- Joysticks and gimbals
- White good applications (washing, dryer machines, ...)
- Robotics position sensing
- Mobile camera lens position sensing for focus and zoom
- Angle measurement in end of shaft and out of shaft configurations

Application diagram



Competitive advantage

- Extremely small size with new WLB package
- Wake up function
- Power down mode (7nA)
- Temperature sensing Integrated

Product overview incl. data sheet link/ User manual

OPN	SP Number	Package
TLI493DW2BWA0XTMA1	SP005409964	SG-WFWLB-5-2
TLI493DW2BWA1XTMA1	SP005409966	SG-WFWLB-5-2
TLI493DW2BWA2XTMA1	SP005409968	SG-WFWLB-5-2
TLI493DW2BWA3XTMA1	SP005409970	SG-WFWLB-5-2
TLI493DW2BWA0XTMA1	SP005414803	SG-WFWLB-5-2
TLI493DW2BWA1XTMA1	SP005414805	SG-WFWLB-5-2
TLI493DW2BWA2XTMA1	SP005414807	SG-WFWLB-5-2
TLI493DW2BWA3XTMA1	SP005414809	SG-WFWLB-5-2
S2GO3DTLI493DW2BWA0TOBO1	SP005410385	board

Product collaterals / Online support

Product page

Product brief

XDP™ digital power XDPL8219

The XDP™ digital power XDPL8219 is a high-performance secondary-side regulated flyback controller with high power factor and constant voltage output. The device operates in quasi-resonant mode (QRM) to maximize the efficiency and minimize the electromagnetic interference (EMI) over a wide load range. It enters active burst mode (ABM) at light load to prevent audible noise from being heard, while achieving no-load standby power as low as <100mW.

The XDPL8219 detects the input voltage type (AC or constant DC) and adjusts its proprietary voltage- mode pulse modulator accordingly to enhance the system performance. For AC input, it adjusts the pulse modulation for achieving a high power factor (PFC >0.9) as well as low total harmonic distortion (THD <10%). For a constant DC input, it adapts the pulse modulation, thereby adjusting the switching frequency to reduce EMI over the entire operating range.

Features

- Flyback controller with enhanced power factor correction (PFC)
- Enhanced total harmonic distortion (THD) correction
- Standby power 100mW
- Reporting of parameters via uni-directional UART communication
- Digitally configurable parameters
- UL1310 safety feature

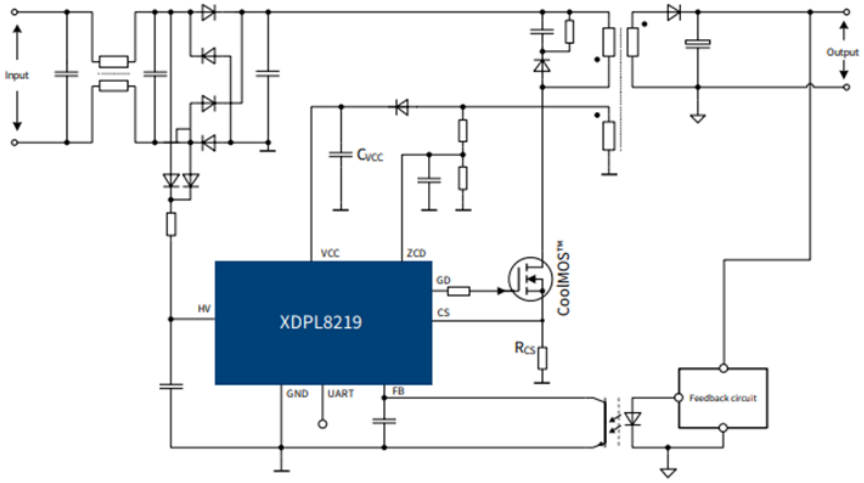
Benefits

- High-performance and robust LED designs
- Increased flexibility with minimized BoM, hence shortened time-to-market
- Added intelligence through UART reporting

Target applications

- LED lighting
- ACDC power supply

Block diagram



Product collaterals / Online support

Product page

Product brief

Application note

Product overview incl. data sheet link

OPN	SP Number	Package
XDPL8219XUMA1	SP002990946	PG-DSO-8
IFBOARDDPGEN2TOBO1	SP001260696	board

Discrete 650 V TRENCHSTOP™ IGBT7 T7

TRENCHSTOP™ IGBT7 is now also available in the TO-247 package with current classes ranging from 20 to 75 A.

The 7th generation of TRENCHSTOP™ IGBTs brings higher break down voltage (650 V), best-in-class price performance and efficiency, with an easy plug&play solution.

IGBT7 T7 is primarily targeting the industrial motor drive applications, PFC and PV/UPS applications.

Features

- Low Vce(sat) ≤1.35 V
- Improvement EMI
- Improved humidity ruggedness
- High collector emitter voltage at 650 V and 3 uS SC rating
- Low IGBT saturation and low diode forward voltage

Benefits

- 20% lower case temp due to lowest losses
- Superior controllability
- Soft fully rated diode (EC7)
- 100% dynamic tested
- Ruggedness improvement
- Available in TO-247

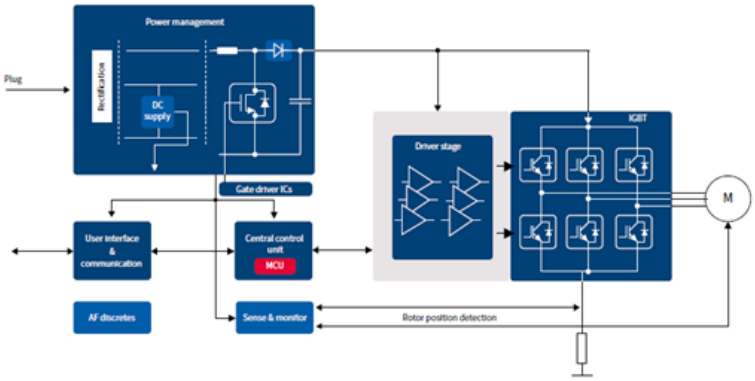
Target applications

- Industrial motor drive applications
- PFC
- PV/UPS applications

Competitive advantage

- Best-in-class price/performance
- Higher power density enable lower cooling requirement
- Reduced system costs
- Easy to design products – drop in replacement
- High system reliability

Application diagram: Embedded inverter



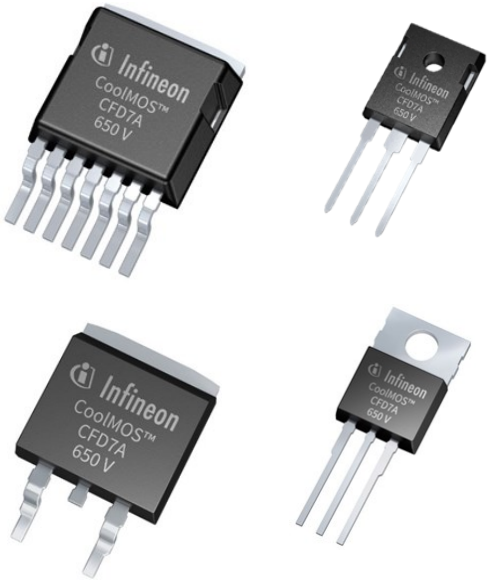
Product overview incl. data sheet link

OPN	SP Number	Package
IKW20N65ET7XKSA1	SP005348286	TO-247
IKW30N65ET7XKSA1	SP005348289	TO-247
IKW40N65ET7XKSA1	SP005403468	TO-247
IKW50N65ET7XKSA1	SP005348292	TO-247
IKW75N65ET7XKSA1	SP005348294	TO-247

Product collaterals / Online support

Product family page

650 V CoolMOS™ CFD7A - high-voltage superjunction MOSFETs for automotive applications



Infineon's silicon-based 650 V CoolMOS™ high-voltage SJ power MOSFETs CFD7A are specifically optimized to meet the requirements for electric-vehicle applications such as on-board chargers, HV-LV DC-DC converters, and auxiliary power supplies. With more than 10 years of automotive experience, CoolMOS™ CFD7A combines highest quality going well beyond the AEC-Q101 standards with unrivalled technology expertise.

The CoolMOS™ CFD7A family is manufactured on the highly automated 300 mm production line, which contributes to reach the zero-defect target in mass production while fulfilling the growing market demand.

Features

- Battery voltages up to 475 V without compromising on reliability standards
- Efficiency improvements in hard- and soft-switching topologies up to 98.4%
- Kelvin-source concept for further efficiency improvement
- Intrinsic fast body diode with -30% lower Q_{rr} compared to CoolMOS™ CFDA

Benefits

- Highest reliability in the field meeting automotive lifetime requirements
- Enabling higher power density designs
- Scalable as designed for use in PFC and DC-DC stage
- Granular portfolio available

Target applications

- On-board charger
- Hard-switching topologies (with SiC diode)
- PFC boost stages
- DC-DC stage of OBC
- HV-LV DC-DC converter
- LLC or full-bridge phase shift (ZVS)
- Auxiliary power supplies

Product overview incl. data sheet link

OPN	SP Number	Package
IPBE65R075CFD7AATMA1	SP005344082	PG-TO263-7
IPBE65R050CFD7AATMA1	SP005339090	PG-TO263-7
IPBE65R099CFD7AATMA1	SP002561844	PG-TO263-7
IPB65R099CFD7AATMA1	SP005324310	PG-TO263-3
IPBE65R230CFD7AATMA1	SP005344079	PG-TO263-7
IPP65R050CFD7AAKSA1	SP003793132	PG-TO220-3
IPP65R099CFD7AAKSA1	SP005324316	PG-TO220-3
IPP65R115CFD7AAKSA1	SP003793168	PG-TO220-3
IPW65R115CFD7AXKSA1	SP003793162	PG-TO247-3
IPW65R099CFD7AXKSA1	SP005324286	PG-TO247-3
IPW65R075CFD7AXKSA1	SP005324280	PG-TO247-3
IPW65R050CFD7AXKSA1	SP003793156	PG-TO247-3
IPW65R035CFD7AXKSA1	SP005324274	PG-TO247-3
IPWS65R035CFD7AXKSA1	SP005405804	PG-TO247-SL
IPWS65R050CFD7AXKSA1	SP005405805	PG-TO247-SL
IPWS65R075CFD7AXKSA1	SP005405806	PG-TO247-SL

Product collaterals / Online support

Product family page

Product brief

Application note

Video

Simulation models

600 V CoolMOS™ PFD7 superjunction MOSFETs in ThinPAK 5x6 package

The 600 V CoolMOS™ PFD7 MOSFET series sets a new benchmark in 600 V superjunction (SJ) technologies, dedicated to ultrahigh power density designs. The PFD7 high-voltage N-channel MOSFET series combines best-in-class performance with state-of-the-art ease of use, shaped by Infineon's experience of more than 20 years in pioneering in Superjunction technology innovation. The products come with an integrated fast body diode ensuring a robust device and in turn reduced BOM for the customer.

Features

- Very low FOM $R_{DS(on)}$ x Eoss
- Integrated robust fast body diode
- Up to 2 kV ESD protection
- Wide range of $R_{DS(on)}$ values
- Excellent commutation ruggedness
- Low EMI

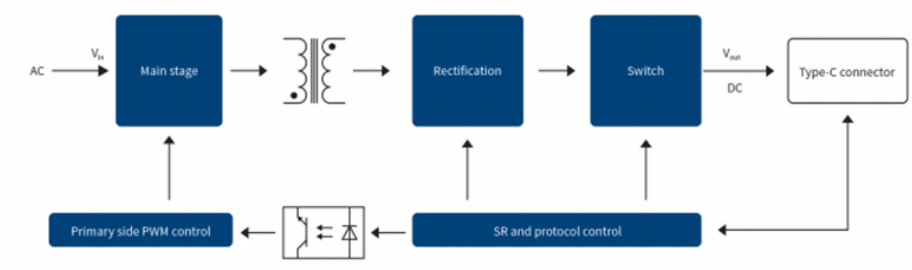
Benefits

- Minimized switching losses
- Power density improvement compared to latest CoolMOS™ charger technology
- Increased efficiency and improved thermal behavior compared to CoolMOS™ CE technology for low power drives applications
- BOM cost reduction and easy manufacturing
- Robustness and reliability
- Easy to select the right parts for design fine-tuning

Target applications

- Consumer
- Charger
- Adapter

Application diagram



Product overview incl. data sheet link

OPN	SP Number	Package
IPLK60R1K5PFD7ATMA1	SP004748878	PG-TDSON-8-52
IPLK60R1K0PFD7ATMA1	SP005354001	PG-TDSON-8-52
IPLK60R360PFD7ATMA1	SP004854666	PG-TDSON-8-52
IPLK60R600PFD7ATMA1	SP004748882	PG-TDSON-8-52

Product collaterals / Online support

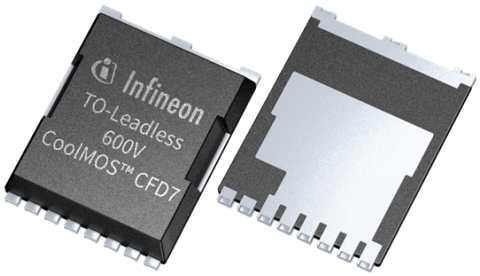
Product family page

Product brief

Application note

Video

600 V CoolMOS™ CFD7 in TO-leadless package



The 600V CoolMOS™ CFD7 SJ MOSFET is Infineon's latest high-voltage superjunction MOSFET technology. It comes with reduced gate charge (Q_g), improved turn-off behavior and a reverse recovery charge (Q_{rr}) of up to 69% lower compared to the competition, as well as the lowest reverse recovery time (t_{rr}) in the market. Due to these features the devices offer highest efficiency and best-in-class reliability in soft-switching topologies such as LLC and ZVS phase-shift full-bridge.

Features

- Ultra-fast 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

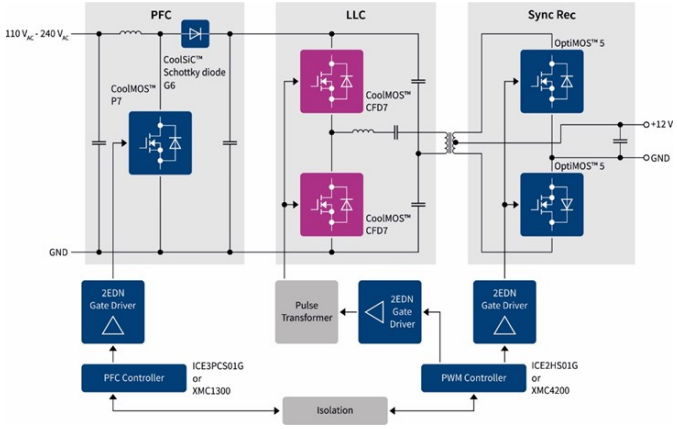
Benefits

- 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

Target applications

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

Application diagram



Product overview incl. data sheet link

OPN	SP Number	Package
IPT60R145CFD7XTMA1	SP001962924	PG-HSOF-8
IPT60R075CFD7XTMA1	SP001962930	PG-HSOF-9
IPT60R035CFD7XTMA1	SP001962936	PG-HSOF-10
IPT60R045CFD7XTMA1	SP005346345	PG-HSOF-11
IPT60R055CFD7XTMA1	SP005346346	PG-HSOF-12
IPT60R105CFD7XTMA1	SP005346347	PG-HSOF-13
IPT60R125CFD7XTMA1	SP005346348	PG-HSOF-14
IPT60R090CFD7XTMA1	SP005346354	PG-HSOF-15

Product collaterals / Online support

Product family page

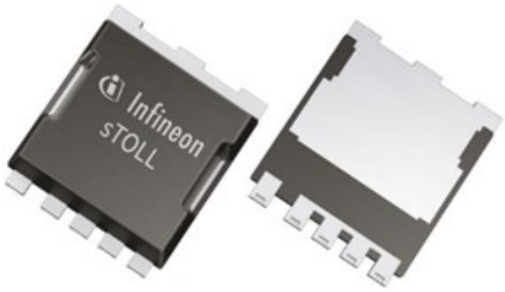
Product brief

Application note

Video

sTOLL - new 7 x 8mm^2 Power MOSFET Package

The latest benchmark products IST006N04NM6 (40 V, 0.60 mΩ, 475 A, sTOLL) and IST007N04NM6 (40 V, 0.70 mΩ, 440 A, sTOLL) are optimized for very low $R_{DS(on)}$ and high current capability. Combined with Infineon's well-known quality for robust industry packages, sTOLL is the ideal solution for various battery applications including industry robotics, power and gardening tools.



The very low $R_{DS(on)}$ and high I_D ratings, continuous and pulsed, enable increased battery run time and high power density. The product portfolio consists of normal-level gate threshold voltage (NL) providing higher immunity, even at high temperatures, against induced turn-on, providing customers sufficient design margin and flexibility.

Features

- High current capability per 7.0 x 8.0 mm² footprint
- Leadless package with low package resistance and minimized stray inductance
- Industry's lowest $R_{DS(on)}$ [0.6 mΩ and 0.7 mΩ] and FOM
- Grooved gate and source pins
- Latest OptiMOS™ 6 MOSFET technology

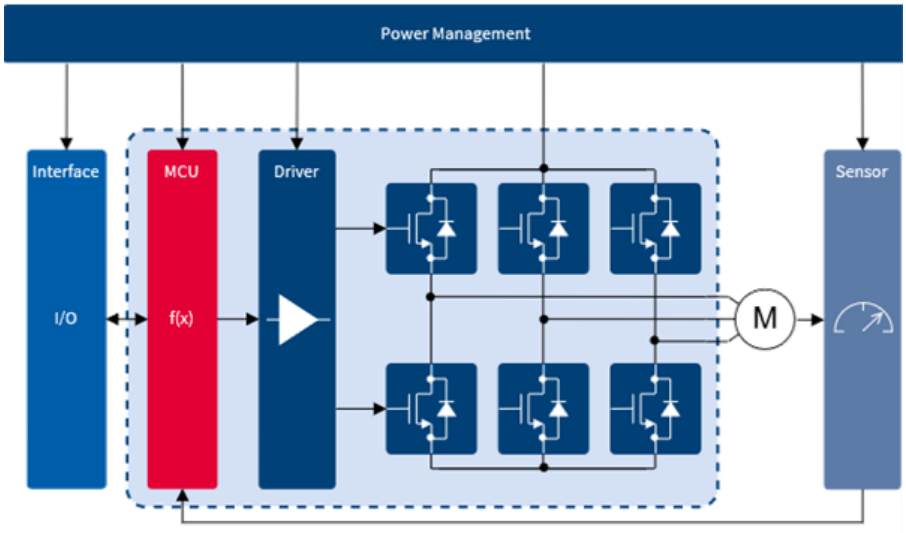
Benefits

- Excellent thermal performance in compact form factor
- Reduced form factor compared to traditional DPAK/D^{2}PAK
- Minimized conduction losses
- Lowest switching losses and less device paralleling
- Allows for simple automatic optical inspection

Target applications

- Battery Powered Applications (BPA)
- Power and gardening tools
- Battery Management Systems (BMS)
- Industry Robotics

Application diagram - Battery powered motor drive



Product overview incl. data sheet link/ User manual

OPN	SP Number	Package
IST006N04NM6AUMA1	SP005405153	PG-HSOF-5
IST007N04NM6AUMA1	ISP005405157	PG-HSOF-5

Product collaterals / Online support

Product family page

Product brief

CIPOS™ Micro Intelligent Power Module (IPM) IM240 series

CIPOS™ Micro is a family of compact IPMs for low power motor drive applications. The IM240 series is the latest member in this family. It is a cost-effective power solution featuring RC-DF IGBTs, 3 -phase half-bridge gate drivers and NTC thermistor.

The reverse-conducting IGBT within the IM240 series offers a power capability of 80 W without heat sink and 240 W with heat sink.

Customers can choose between different package variations: surface mount (SOP 29x12F), standard through-hole (DIP 29x12F) or through-hole with long VB pins. This gives designers a high degree of flexibility when designing systems, such as refrigerator compressors, room air conditioner or hood fans or other home appliances.

Features

- 600 V, 3 A (IM240-S6) & 4A (IM240-M6)
- RC-DF IGBT
- UL-certified temperature sense (NTC)
- Compact package with three lead-form options available (DIP, DIPF, SOP)
- Integrated NTC thermistor for temperature sensing
- Protection features e.g. shoot-through protection

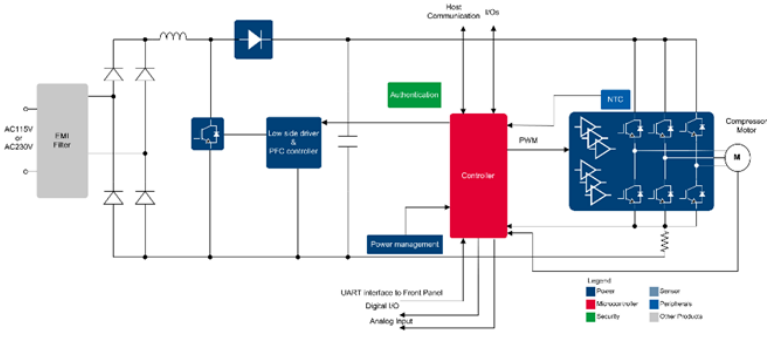
Benefits

- Increased power capability of up to 240 W with heat sink
- High level of integration for easy design and space savings
- High degree of design flexibility
- Temperature feedback

Target applications

- Refrigerator compressors
- Room air conditioner fans
- Hood fans
- Small home appliances
- Motor control for industrial automation
- Heating ventilation and air conditioning (HVAC)

Application diagram



Product overview incl. data sheet link

OPN	SP Number	Package
IM240M6Y1BAKMA1	SP002290838	PG-DIP-23
IM240M6Y2BAKMA1	SP002290842	PG-DIP-23
IM240M6Z1BALMA1	SP002290846	PG-DIP-23
IM240S6Y1BAKMA1	SP002290850	PG-DIP-23
IM240S6Y2BAKMA1	SP002290854	PG-DIP-23
IM240S6Z1BALMA1	SP002290858	PG-DIP-23
EVALM1IM240ATOBO1	SP005407676	Board

Product collaterals / Online support

Product family page

Application note

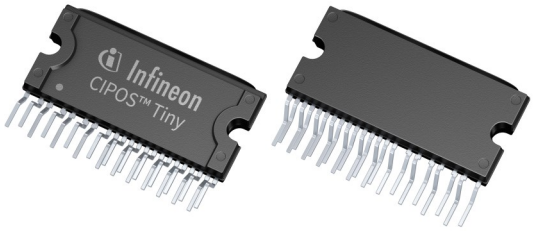
Simulation tool

Community

Video

CIPOS™ Tiny SIP with covered lead series, IM393-x6FP

The IM393-x6FP series are 600 V three-phase IPMs in a new fully isolated Single In-line package (SIP). CIPOS™ Tiny's SIP allows maximimum flexibility in design and minimize the required system size as follow.



> **Minimize system-size:**

CIPOS™ Tiny SIP and SIP with covered lead series enable customers to vertically mount IPMs to the PCB, and this allows customers to reduce the required footprint by 70% compared to what is required for CIPOS™ Tiny Dual In-line package (DIP).

> **Flexibility in design:**

CIPOS™ Tiny SIP and SIP with covered lead series offer a wide range of current ratings from 6 A to 20 A in a very compact package plaform. The series of the products are one of the most compact single In-line package available in the market. The wide range of current rating in a compact platform enable customers to board their design requirements, while supporting a power range maximum of up to 1.5 kW.

> **Potential system-cost saving:**

Besides system-size reduction, customer can potentially replace their metal case as heatsink if they adopt SIP in their system. And, with this simplified system design, customers could potentially save their manufacturing process as well as their cost.

Features

- Based on low $V_{CE(sat)}$ TRENCHSTOP™ IGBT6 for best efficiency
- Compact IPM with current rating up to 20 A
- Single three-phase HVIC for complete system protection
- Under-voltage lockout
- Anti-cross conduction
- Rated maximum Tcase of 125°C
- UL-certified

Benefits

- Suitable to mount vertical to PCB
- Maximum design flexibility and system size reduction with Single In-line package

Target applications

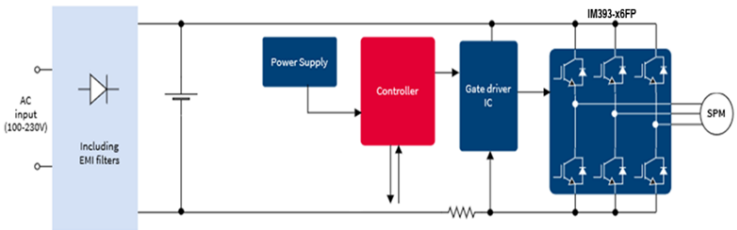
- Motor control and drives
- Motor control for industrial applications
- Washing machines
- Room air conditioners
- Small home appliances

Competitive advantage

System-cost saving through simplifying design and manufacturing process

Wide range of current ratings from 6 A to 20 A in a thermally enhanced compact package

Application diagram



Product overview incl. data sheet link/ User manual

OPN	SP Number	Package
IM393S6FPXKLA1	SP003014062	SIP 34x15
IM393M6FPXKLA1	SP003014066	SIP 34x15
IM393L6FPXKLA1	SP003014070	SIP 34x15
IM393X6FPXKLA1	SP003014076	SIP 34x15

Product collaterals / Online support

Product family page

Application note

Simulation tool

Video

EiceDRIVER™ 25 V, low-side gate driver - 1ED44173N01B

The 1ED4417x family of single-channel low-side gate drivers integrates fast over-current protection (OCP), fault reporting, and enable functionality. 1ED44173N01B is the latest addition to the series with dedicated features for MOSFETs.

1ED44173N01B combines fault output reporting to the controller, adjustable fault clear timer, and driver enable functionality on the same pin (EN/FLT). This multi-functioning pin allows for a compact IC design to fit into a tiny PG-SOT23 6-pin package, enabling a cost-effect solution for implement over-current protection and protecting the power switch

Features

- Overcurrent protection threshold voltage with ±5% tolerance
- Single pin for fault output and enable
- Programmable fault clear time
- 25 V Max VCC supply voltage
- Under voltage lockout (UVLO) protection
- CMOS Schmitt-triggered inputs
- 3.3 V, 5 V and 15 V input logic compatible
- Output in phase with input
- 3 kV ESD HBM
- 6-pin SOT23 package

Target applications

- Home appliances
- Small home appliances
- Power supplies (SMPS)
- Battery Chargers for power tools and outdoor power equipment

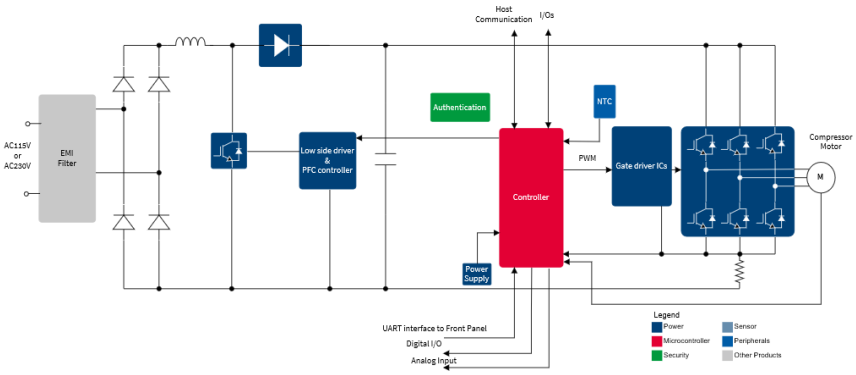
Benefits

- 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

- 1ED44173N01B is the only low-side gate driver with fast 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.
- Fast OCP sensing to output driver shutdown of less than 1 us protects low or zero short circuit rated switches
- 25 V maximum supply voltage (VCC max) for increased operating headroom and power supply noise immunity

Application diagram



Product overview incl. data sheet link/ User manual

OPN	SP Number	Package
1ED44173N01BXTSA1	SP003252784	PG-SOT23-6
EVAL1ED44173N01BTOBO1	SP005427168	board

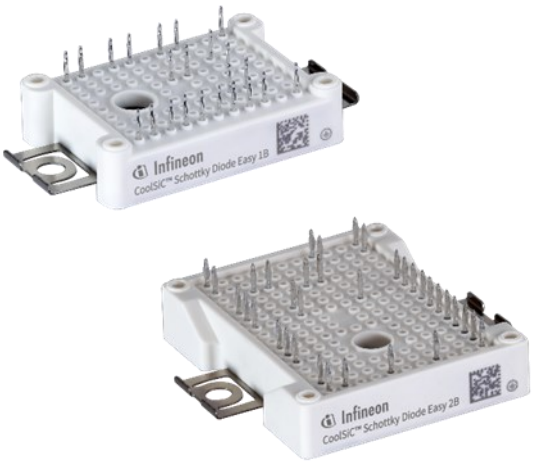
Product collaterals / Online support

Product page

Application note 1ED44173N01B

Simulation models

CoolSiC™ hybrid modules - EasyPACK™ power modules with CoolSiC™ Schottky diode



The combination of a Silicon-based switch and a CoolSiC™ schottky diode is called a “hybrid solution”.
The CoolSiC™ hybrid modules form the ideal bridge between purely Silicon-based and Silicon Carbide solutions. They combine IGBT chips with SiC diodes to further extend the capacity of the IGBT technology.
The hybrid modules in the well-known EasyPACK™ come in booster as well as 3-level configuration. The portfolio consists of power modules where SiC diodes and IGBT chips form an ideal pair leveraging the best available performance in the targeted applications, such as solar energy systems.
Compared to Silicon IGBT solutions, the turn-on losses can be reduced. In addition higher switching frequency and higher current handling capability can be realized.

Features

- TRENCHSTOP™ 5 H5 or High Speed IGBT H3 and CoolSiC™ Schottky diode
- EasyPACK™ 1B, 2B housing
- Booster or 3-level configuration
- Reduced EMI
- Available with pre-applied Thermal Interface Material (TIM)

Benefits

- Reduction of IGBT turn-on losses
- Optimized development cycle time and cost
- Configuration flexibility
- System efficiency improvement
- Reduced cooling requirements
- Enables higher frequency to increase power density
- Switching loss independent from load current, switching speed

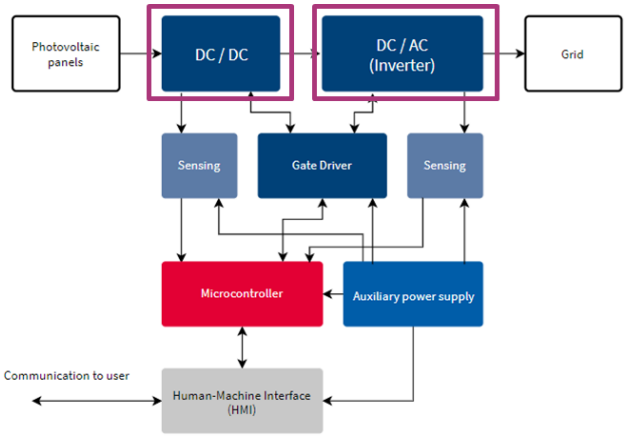
Target applications

- Solar Energy Systems
- UPS

Competitive advantage

Extensive product portfolio to target the whole range of solar inverter power class rating while using latest TRENCHSTOP™ 5 technology

Application diagram - PV/Solar



Product overview incl. data sheet link/ User manual

OPN	SP Number	Package
DF100R07W1H5FPB54BPSA2	SP001650156	AG-EASY1B-1
DF100R07W1H5FPB53BPSA2	SP001629710	AG-EASY1B-2
FS3L30R07W2H3FB11BPSA2	SP001602690	AG-EASY2B-2
FS3L50R07W2H3FB11BPSA1	SP001602696	AG-EASY2B-2
F43L50R07W2H3FB11BPSA2	SP001602702	AG-EASY2B-2
DF80R12W2H3FB11BPSA1	SP001602664	AG-EASY2B-2
FS3L40R07W2H5FB11BOMA1	SP001713486	AG-EASY2B-2
F3L200R07W2S5FB11BOMA1	SP003597026	AG-EASY2B-2

Product collaterals / Online support

Product family page

Simulation tool

Community

EasyPACK™ CoolSiC™ Automotive MOSFET-FF08MR12W1MA1_B11A

EasyPACK™ 1B, 7.33 mΩ halfbridge module combining the new CoolSiC™Automotive MOSFET 1200V technology, a NTC temperature sensor and the proven PressFIT contact technology.

With the full automotive qualification, the field of applications for CoolSIC™ is now extended to high voltage automotive applications with high efficiency and switching frequency requirements, such as HV/HV DC-DC step-up converters, multiphase inverters and fast-switching auxiliary drives like fuel-cell compressors.

Features

- High gate threshold voltage preventing parasitic turn-on(Vth = 4.4 V)
- IGBT compatible driving voltage (VGS = -5/+15 V)
- Intrinsic diode with low reverse recovery
- $R_{DS(on)}$ = 7.33 mΩ (typical)
- Low stray inductance 5 nH
- Blocking voltage 1200 V
- Low switching losses
- Low Qg and Crss
- Tvjop = 150°C
- Integrated NTC temperature sensor
- RoHS compliant

Target applications

- Hybrid und Battery Electric Vehicles
- Commercial, Construction and Agriculture Vehicles
- HV/HV DC-DC Converter
- Main Inverter
- Auxiliary Drives

Benefits

- Easy system assembly (PressFIT contact technology for solder-less mounting)
- Easy design (Integrated module solution with optimized thermal management)
- Superior reliability (gate oxide and cosmic ray robustness)
- Flexibility (half bridge concept for flexible inverter design)
- Automotive qualified according AQG 324

Competitive advantage

Product Reliability: High gate threshold voltage (V_{th} 4.4.V) - Preventing parasitic turn-on

Product Reliability: Superior gate oxide – Lower field failure rates (esp. than planar technology) --> see fighting guide for more details

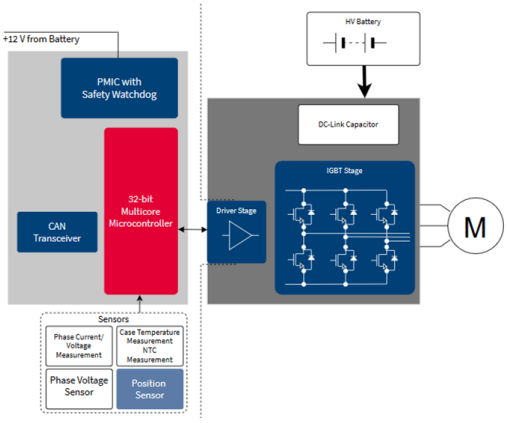
Product Reliability: best-in-class FOM - Operation at lower gate -oxide field strengths

Product Reliability: Cosmic ray and short-circuit robustness

Performance-based design, low $R_{DS(on)}$*A -> Very low conduction losses, especially under partial load conditions

Low stray inductance of 5nH

System diagram



Product collaterals / Online support

Product page

Product brief

3D-model

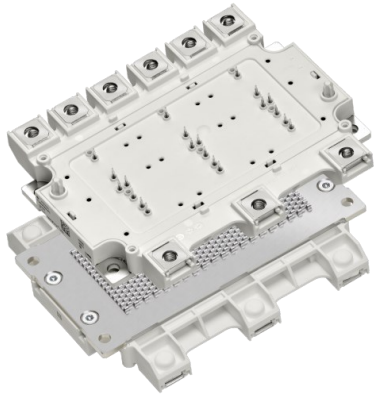
Application note

Product overview incl. data sheet link

OPN	SP Number	Package
FF08MR12W1MA1B11ABPSA1	SP002314006	EasyPACK™ 1B

HybridPACK™ DC6i FS650R08A4P2

HybridPACK™ DC6i 750 V, 650 A sixpack automotive qualified IGBT module. The HybridPACK™ DC6i is a very compact six-pack module (750 V / 650 A) optimized for hybrid and electrical vehicles. This power module combines the benchmark EDT2 IGBT generation with Direct Cooled Base Plate with Ribbon Bonds (WAVE baseplate), NTC temperature sensor and PressFIT contact technology. It offers an upgrade path for HybridPACK™ 1 and DC6 modules enabling inverter designs around 100 kW power range at 400 Arms and 500V DC capability*.



*Estimated power range - depending on customer design.

Features

Electrical:

- Blocking voltage 750 V
- Ic nom 650 A
- Tvj op = 150°C
- Short-time extended Operation Temperature Tvj op = 175°C
- EDT2 chip technology optimized in the range of 10kHz switching frequencies
- 2.5kW AC 1min @ 50Hz

Mechanical:

- Direct Cooled Base Plate with Ribbon Bonds
- Guiding elements for PCB
- Integrated NTC temperature sensor
- RoHS compliant

Benefits

- Very compact design (25% lower size than HybridPACK™ Drive) with benchmark current density (direct cooling via Ribbon Bond structure for improved heat dissipation)
- Superior efficiency by EDT2 technology for excellent light load power losses (20% improved compared to IGBT3)
- Highest reliability by short circuit ruggedness and increased blocking voltage
- Easy and fast assembly through PressFIT Contact Technology (solder-less mounting) and guiding elements
- Fully qualified for Automotive (AQG324)

Target applications

- Main Inverter
- Hybrid and Battery Electric Vehicles
- Commercial, Construction and Agriculture Vehicles

Competitive advantage

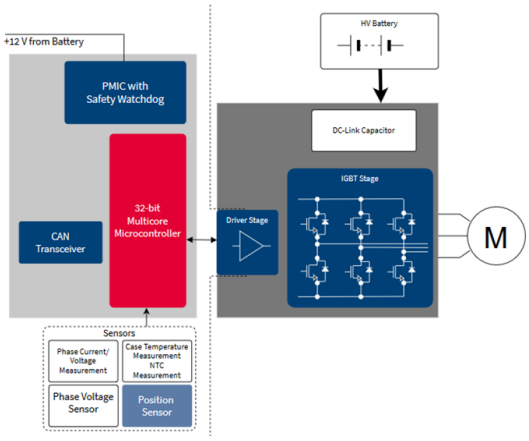
Off-the shelf solution for short time to market

Compact design: 25% smaller than HybridPACK™ Drive and and comparable competitor footprints, e.g. OnSemi VE-Trac™ Direct frame modules

Platform concept - scalability over DC6 family for different power levels (with DC6 – DC6 Wave – DC6i)

Cost-optimized system: (a) Highest power density enabled by EDT2 technology and (b) PressFIT Contact Technology for solder-less mounting

System diagram



Product collaterals / Online support

Product page

Product brief

Application note - assembly instuctions

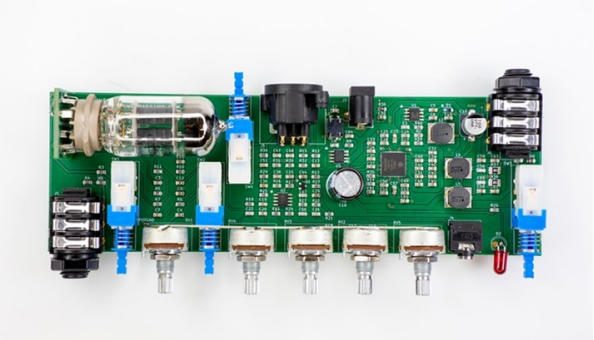
Application note - technical information

Product overview incl. data sheet link

OPN	SP Number	Package
FS650R08A4P2BPSA1	SP001714512	HybridPACK™ DC6i

MERUS™ - DEMO_BASSAMP_60W_MA12070

The MA12070 musical instrument bass amplifier is a wall-adaptor or battery powered, 60 watt, professionally featured and ultra-efficient fits-in-your-pocket bass instrument amplifier. It is modelled after classic vacuum-tube bass amplifier topology and utilizes the exceptional audio quality and best-in-class efficiency of Infineon´s MERUS™ amplifier technology to amplify every nuance of a genuine vacuum-tube pre-amplifier.



Features

- 1 x 60W at 4Ω speaker output
- Powered by off-the-shelf regulated wall adapter
- 12AU7 vacuum-tube preamplifier
- Stereo 3.5 mm AUX input
- XLR D.I. output with ground lift switch
- Bright switch for slap-bass sound
- Low idle power consumption

Benefits

- Superior sound quality
- Modelled after classic bass amplifier topology
- Genuine vacuum-tube pre-amplifier
- Small size and scalable platform
- Excellent efficiency

Target applications

- Audio

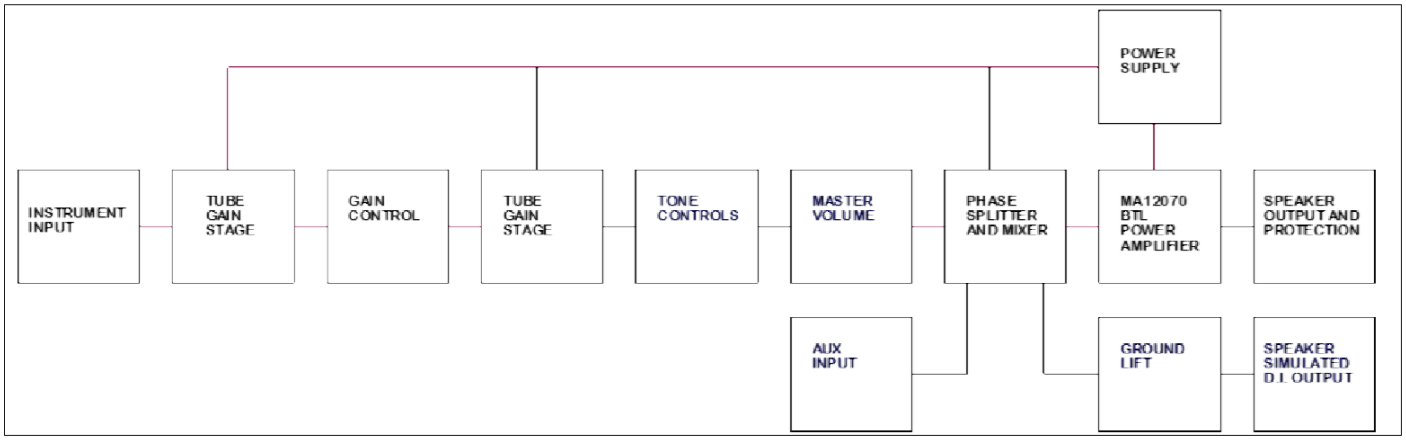
Product collaterals / Online support

Product page

User manual

Video

Block diagram



Product overview incl. data sheet link

OPN	SP Number	Package
DEMOBASSAMP60W1270TOBO1	SP005429347	Board

MERUS™ - KIT_ARDMKR_AMP_40W

The MERUS™ amplifier KIT is the world's first 100 percent self-contained Arduino audio board offering standalone audio at boom box power levels in such a small form factor. This audio power amplifier board brings the Infineon proprietary multilevel technology to Arduino users and makers. It is intended for loudspeaker building and standalone music playback with minimum size and consumption, state-of-the-art power efficiency and good audio quality.

The MERUS™ amplifier KIT is equipped with the MA12070P class D multilevel amplifier which can provide up to 40W peak power from an off the shelf USB-C supply. Furthermore, there is no need for extra power supplies, the MERUS™ Audio amplifier is powered directly from the same supply the Arduino board is running from. The MERUS™ amplifier KIT is directly compatible with Arduino MKRZERO and MKR1000 WIFI boards.

Features

- Equipped with MERUS™ MA12070P proprietary multilevel amplifier
- Power input: 5V/2.5A - sourced from the same single USB-C power supply or battery pack
- No need for external or extra power supplies
- Up to 40W instantaneous peak output power with a USB-C power supply or battery pack

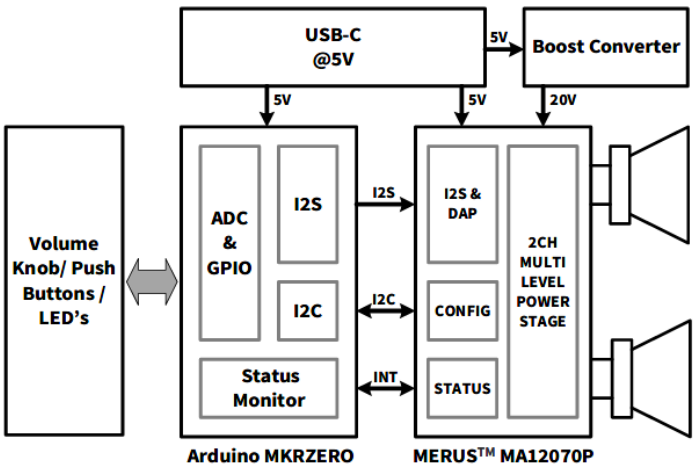
Benefits

- Compatible with Arduino MKRZERO and MKR1000 WIFI
- Full hardware control and customization
- Error monitoring through Arduino programming framework

Target applications

- Audio
- Maker projects

System diagram



Product collaterals / Online support

Product page

Application note

Product overview incl. data sheet link

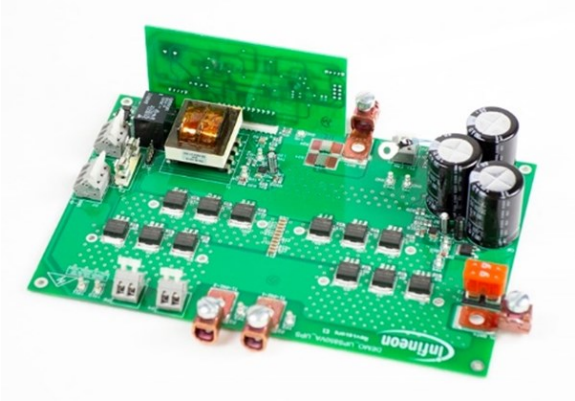
OPN	SP Number	Package
KITARDMKRAMP40WTOBO1	SP005446518	board

UPS demo board - DEMO_850W_12VDC_230VAC

The DEMO_850W_12VDC_230VAC is a home and small office UPS solution based on a bidirectional full bridge topology. It is intended for use with low frequency iron core transformers. This solution is designed around an XMC1300 series microcontroller with firmware and source code provided. Functionality includes AC power failure detection, alarm, generation of regulated sine wave output voltage and protection against battery faults.

This demo board demonstrates a fully functional UPS using SMD MOSFETs and including a heat sinking concept designed around them. It includes a main power board and detachable control card. It is designed for a 12V nominal DC lead-acid battery. The AC input/output line/load voltage is 220 to 240VRMS with frequency selectable to 50 or 60Hz. A soft start function is included to prevent high inrush current. During switch over the drop out time is less than 20ms.

Overload and short circuit protection are also included with thermal shutdown if system overheating occurs. Fast and slow battery charging modes are included for lead-acid batteries.



Features

- SMD MOSFET heat sinking concept
- Infineon 2EDL half-bridge gate drivers for high sink/source currents
- Infineon XMC™ microcontroller

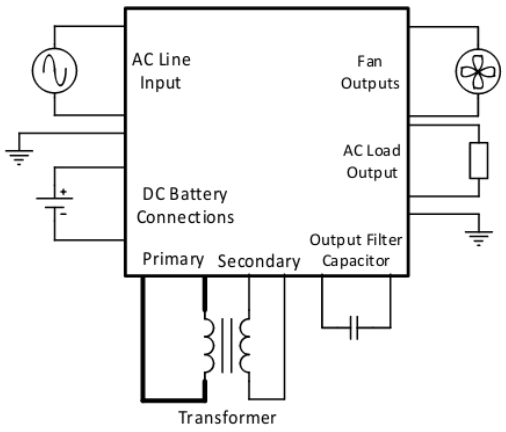
Benefits

- Demonstrates a practical UPS design based on SMD MOSFETs
- Full system solution (hardware and firmware)
- Offers reduced time to market for UPS design

Target applications

- Consumer UPS

Connection diagram



Product collaterals / Online support

Product page

Application note

Product overview incl. data sheet link

OPN	SP Number	Package
DEMO850W12VDC230VACTOBO1	SP005428287	board

Auxiliary power supply reference board with 1700 V CoolSiC™ MOSFET

The reference board was developed to support customers designing auxiliary power supplies for three-phase converters using the 1700 V CoolSiC™ MOSFET in TO-263 7 package and in a single-ended flyback topology. The board has three outputs of +15 V, -15 V and +24 V with up to 62.5 W output power working in a wide input voltage range from 200 VDC to 1000 VDC.

Features

- Adjustable output over voltage protection
- Overload/open loop protection
- Current limit protection
- Auto restart for over temperature protection
- VCC overvoltage and under voltage protection

Benefits

- High efficiency
- Simple design single-ended flyback topology
- No heatsink required
- No Gate driver is needed to control the board

Target applications

- Auxiliary power supplies

Competitive advantage

High efficiency

Simple design single-ended flyback topology

No heatsink required

Board top view - connectors

1- Input voltage V_{DC} connector CN1
2- Output voltage +/-15V connector CN2
3- Output voltage +24V connector CN3
4- 1700V SiC MOSFET IMBF170R1K0 M1

Product collaterals / Online support

Product page

Community

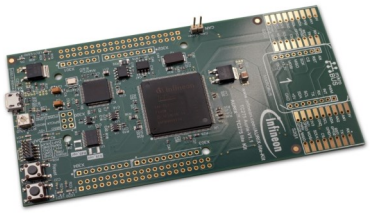
Application note

Product overview incl. data sheet link

OPN	SP Number	Package
REF62WFLY1700VSICTOBO1	SP005422632	board

AURIX™ TC275 lite kit

AURIX™ TC275 lite kit is equipped with a 32-Bit Single-Chip AURIX™ TriCore™ based-microcontroller AURIX™ TC275. It can be used with a range of development tools including AURIX™ Development Studio, Infineon's free of charge Eclipse based IDE, or the Eclipse based "FreeEntryToolchain" from Hitex/ PLS/Infineon



Features

- Arduino Connector/Arduino ICSP Connector
- 2 x Shield2GO Connector for Infineon Maker Shields
- Voltage Regulator 5V to 3.3V
- CAN connector
- CAN transceiver TLE9251VSJ

Benefits

- DAP Debug connector
- Enabling ASIL-D systems
- 20 MHz Crystal for AURIX™ and 12 MHz Crystal for OCDS

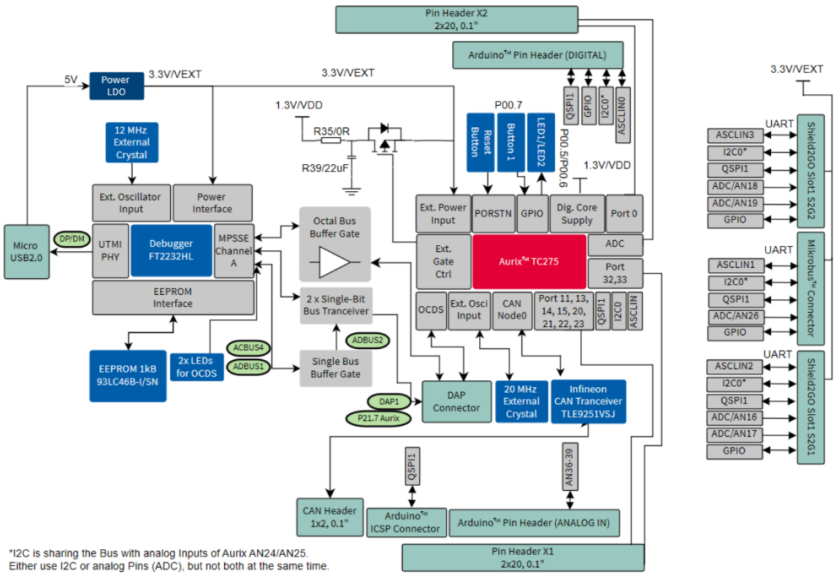
Target applications

- Motor control
- Drones
- Elevators
- CAV
- Lighting
- Safety

Competitive advantage

Low cost TriCore™ kit with high performance supported by our new IDE (AURIX™ Development studio) including codes examples and trainings.

Block diagram



Product collaterals / Online support

Product page

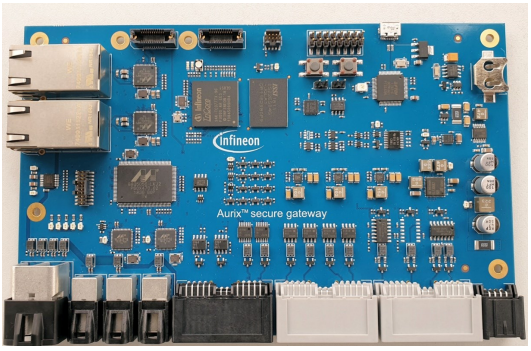
User manual

Product overview incl. data sheet link

OPN	SP Number	Package
KITAURIXTC275LITETOBO1	SP005431309	board

AURIX™ TC377TX - Secure Ethernet Gateway evaluation kit

The Secure Gateway offers a huge range of application use cases. With the AURIX™ TC377TX in combination with Marvell's 88Q5050 switch and 88Q2112 1000Base-T1 PHY future in vehicle networks can be addressed and evaluated.



Features

AURIX™ – TC3xx family

- Full Evita embedded security
- Up to 3 CPUs at 300 MHz
- Up to 6 MB internal Flash/4 MB internal SRAM
- 2x Gbit Ethernet QoS MAC with 8 Tx and 8 Rx DMA channel/ queues
- Support of Ethernet standards IEEE 802.1AS-2011 and 802.1-Qav-2009, 802.1AS – EEE 1588-2008
- A standby controller to support low power modes

Marvell 88Q5050 8-port Ethernet Switch

- 4 fixed 100Base-T1 ports, 1 x 100Base-T1 and 1 x 1000Base-T1, one RGMII port to AURIX™
- Trusted Boot functionality
- Deep packet inspection (DPI)
- AEC-Q100 Grade 2 qualified
- Integrated ARM Cortex-M7 CPU, 250 MHz

Benefits

The Automotive Gateway provides the capability to combine the legacy in vehicle networks with the upcoming Ethernet based high bandwidth networks.

Competitive advantage

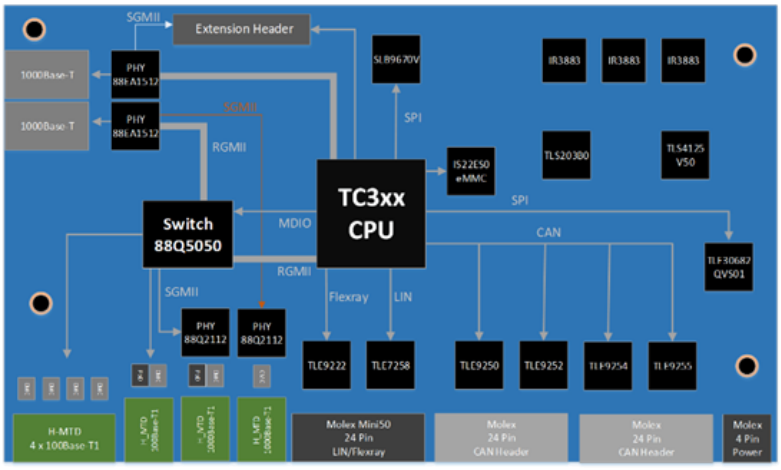
Secure boot capability on AURIX and Ethernet switch

Fast 2x 1Gbs ETH interphases

Target applications

Secure Ethernet Gateway

Block diagram



Product collaterals / Online support

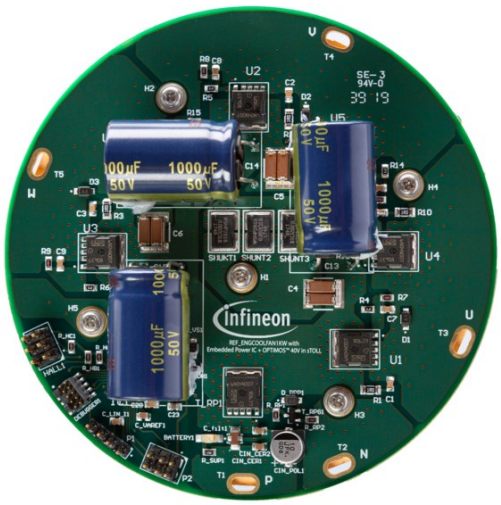
Product page

Product brief

Product overview incl. data sheet link

OPN	SP Number	Package
KITA2GTC377SECGTWTOBO1	SP005410889	board

Engine Cooling Fan Reference Design REF_ENGCOOLFAN1KW



The reference design is an automotive 3-phase motor drive for engine cooling fan application using MOSFETs with a gate charge > 100nC presents the current capability via the first worldwide integrated bridge driver capable to drive 1kW motors at 12V. The main components used in the reference are:

TLE9879QXW40: This device is a part of Embedded Power IC family and it is a single chip 3-phase motor driver, System-on-Chip (SoC) solution.

IAUA250N04S6N007: This is an OptiMOS™-6 40 V MOSFET in high-power leadless sTOLL package, providing higher current capability in smaller form factor of 7x8 mm² without sacrificing thermal performance.

The reference design is optimized in terms of EMC and thermal behavior. Moreover, it includes comprehensive support material including layout and schematic files (Altium), EMC tests, thermal analysis and detailed documentation.

Features

- Embedded Power IC TLE9879, System-on-Chip (SoC) for motor control based on Arm® Cortex®-M3 core
- OptiMOS™-6 40 V MOSFETs (IAUA250N04S6N007) in tiny sTOLL package
- SWD port for debug connection
- Hall sensor, LIN, ADC ports
- High-temperature FR4 PCB with 2oz, 6-layer Copper
- Single-side component mounting
- Extensive documentation (including layout files, schematics, getting started guide, hardware design guideline, EMC measurement report, thermal analysis, example software)

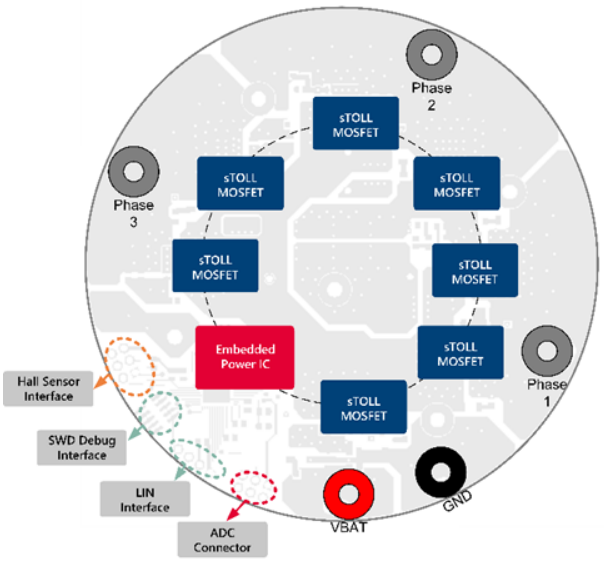
Benefits

- Reduced time to market
- State of the art components and scalability of Embedded Power IC
- Optimized BOM and PCB size (ø100mm)
- Optimized thermal behavior

Target applications

- Engine cooling fan
- radiator fan
- 1 kW BLDC motor for 12V application

Block diagram



Competitive advantage

- Optimized BOM and PCB size
- Optimized thermal behavior
- Extensive documentation (including layout files, schematics, getting started guide, hardware design guideline, EMC measurement report, thermal analysis, example software)

Product collaterals / Online support

Product page

Product brief

Webinar

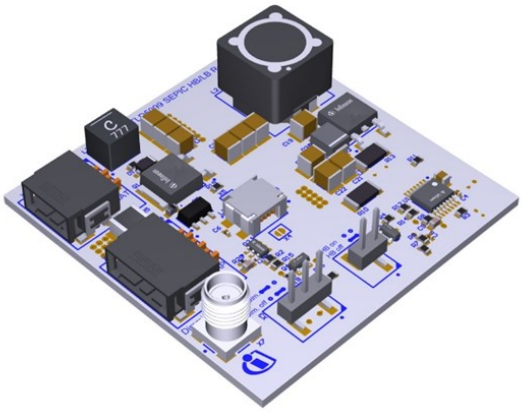
Reference design guide preview

Product overview incl. data sheet link

OPN	SP Number	Package
REFENGCOOLFAN1KWTOBO1	SP005431282	board

LITIX™ LEDFRONTHBLB_REF

This Infineon Reference Design realizes an implementation of an automotive front light high beam / low beam combination using the flexible multitopoly DC-DC controller TLD5099EP of the LITIX™ Power family in current controlled buck-boost SEPIC configuration. One single DC-DC channel is used to drive the high beam and low beam. The high beam can be activated in conjunction with the low beam or the low beam can be activated standalone. This represents a cost saving approach especially suitable for entry level LED headlamps. A PWM dimming feature enables furthermore control of brightness and enables derating in extreme operating conditions. State of the art diagnosis is provided as well as transient robustness. Compliant EMC performance is verified according to the CISPR25 standard. Thermal performance information is provided and discussed.



Features

- Current controlled buck-boost SEPIC topology
- PWM dimming for brightness control and thermal de-rating
- System efficiency > 86% for typical operation condition
- Nominal input voltage range 8 V – 16 V, extended 4.5 V – 35 V
- Switching frequency of 310 kHz with spread spectrum modulation
- Reverse polarity protection based on P-channel MOSFET
- EMC optimized layout
- 2 layer board with small form factor

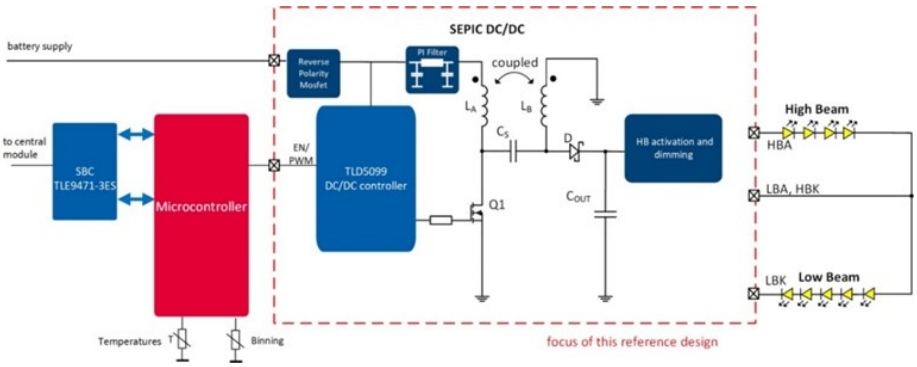
Benefits

- Two light functions addressed with single channel DC-DC
- Transient Pulse tested
- EMC compliance
- Focus on cost optimized design

Target applications

- Automotive LED front light: High beam, low beam Daytime running light, turn indicator
- Motorcycle headlamp

Block diagram



Product collaterals / Online support

Product page

User manual

Product overview incl. data sheet link

OPN	SP Number	Package
LEDFRONTHBLBREFTOBO1	SP005427168	board

Motor drives evaluation board with CoolSiC™ MOSFET in TO-247

The MADK board EVAL-M5-IMZ120R-SiC is optimized for general purpose & servo drives with very high fsw. It includes a B6 inverter using 6x CoolSiC™ MOSFET in IMW12012R045M1 / IMZ120R045M1and gate driver IC 1EDI20H12AH.

It is equipped with all assembly groups for sensorless Field Oriented Control (FOC), over-temperature and over-current protection as well as short circuit protection.

In combination with a control board equipped with the M5 32-pin interface connector such as the XMC DriveCard 4400, it features and demonstrates the outstanding performance of CoolSiC™ MOSFETs in general purpose and servo drives.

Features

- CoolSiC™ MOSFET 1200 V in TO-247-3/4 pin package
- Overload and short-circuit hardware protection
- Low inductive design
- Over-temperature hardware protection
- Rugged gate driver technology with stability against transient and negative voltage
- Measurement test points compatible with standard oscilloscope probes
- Isolated sensing with ΔΣ-ADC

Benefits

- Equipped with all assembly groups for sensorless field oriented control (FOC)
- Over-temperature and over-current protection as well as short-circuit protection
- Ease-of-use due to plug-and-play drive card assembly

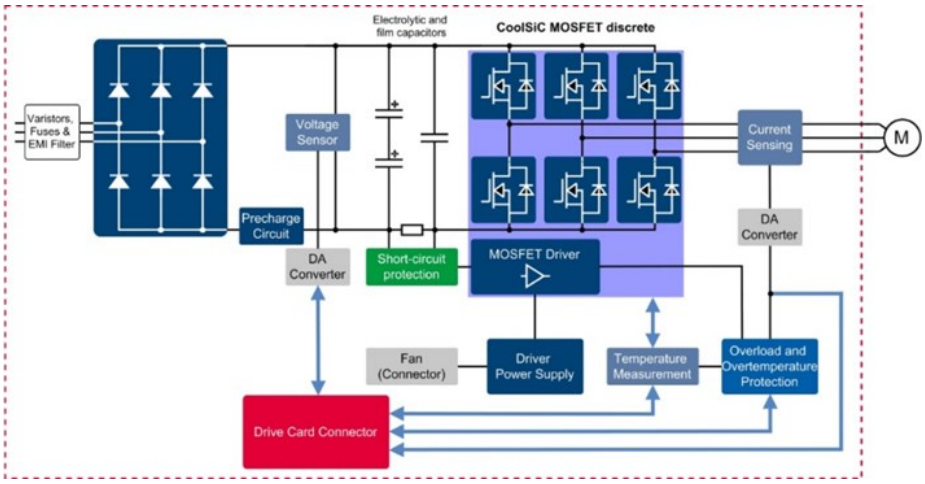
Target applications

- General purpose drives
- Servo motor

Competitive advantage

Infineon's CoolSiC™ MOSFET offer a superior gate oxide reliability enabled by state-of-the-art trench design

Block diagram



Product collaterals / Online support

Product page

Application note

Bill of Material (BOM)

Layout

PCB Project Files

Schematics

Product overview incl. data sheet link

OPN	SP Number	Package
EVALM5IMZ120RSICTOBO1	SP005420476	board