



New Product Introduction

June 2019

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MERUS™ class D audio amplifier IC's

Infineon's MERUS™ family of class D audio amplifiers consists of four fully integrated monolithic amplifier ICs based on Infineon's proprietary multilevel switching technology.

Two versions, MA12040 and MA12040P, with 2x40 W peak output (with a maximum PVDD of 18 V) and either an I2S digital input or analog input with a pre-selectable gain.

Two versions, MA12070 and MA12070P, with 2x80 W peak output (with a maximum PVDD of 26 V) and the same two input options as the two slightly lower power versions.

Common to all four integrated multilevel audio amplifiers is unparalleled power efficiency and exceptional audio quality.



Features

- > Multilevel switching technology with 3-level and 5-level modulation
- > Fourth order closed loop feedback error control
- > Low idle power dissipation
- > Low THD+N (0.003%)
- > Low EMI emission
- > 64-pin thermally enhanced QFN package with pad-down exposed thermal pad (EPAD)

Target applications

- > Portable audio (battery operated speakers, on-the-go Bluetooth speakers, docking speakers, boom boxes, wearable speakers)
- > Home audio (multi-room systems, television, soundbars, home theater systems, stand-alone components)
- > Pro audio (active monitor speakers, power-over-ethernet (PoE), multi-channel systems)
- > Voice controlled audio

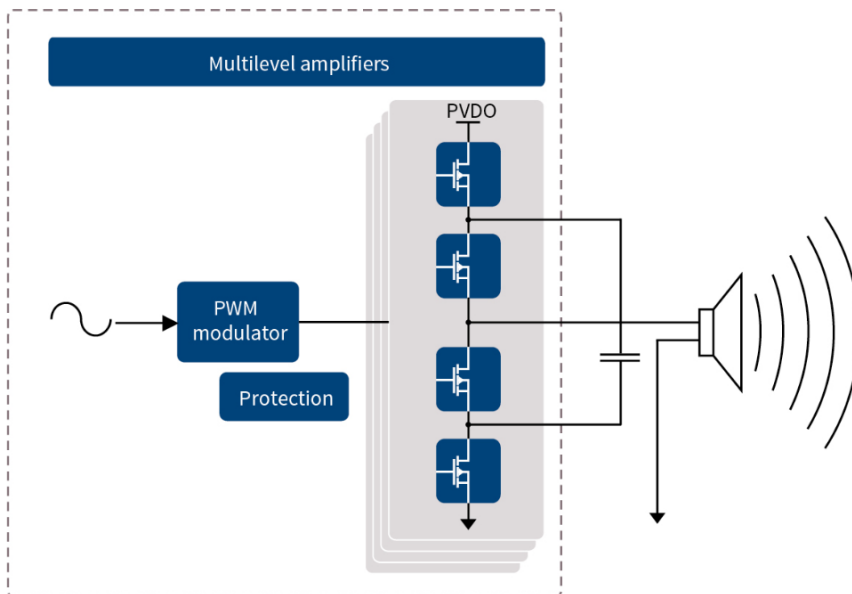
Benefits

- > Ultrahigh power efficiency and filterless amplification
- > HD audio quality and suppression of supply voltage disturbance
- > BoM reductions through filterless, heatsink-free operation

Competitive advantage

- > Unparalleled power efficiency and exceptional audio quality at lower system costs

System diagram: Filterless topology with “flying capacitor” of an integrated class D IC



Product overview incl. data sheet link

OPN	SP Number	Package
MA12040XUMA1	SP002478940	PG-VQFN-64
MA12040PXUMA1	SP002478950	PG-VQFN-64
MA12070XUMA1	SP002478958	PG-VQFN-64
MA12070PXUMA1	SP002478966	PG-VQFN-64

Product collaterals / Online support

- > [Product family page](#)
- > [Product brief](#)
- > [Whitepaper](#)
- > [Application brochure](#)

EiceDRIVER™ 1EDS-SRC family

The new SRC EiceDRIVER™ family, which includes 1EDS20I12SV, 1EDU20I12SV, and 1EDI20I12SV, serves the latest generation of highly efficient low-EMI electric drive systems with lower EMI and improved efficiency. Based on the Infineon coreless transformer technology, it is the first high-voltage isolated gate driver on the market with dynamic Slew Rate Control (SRC) which allows on-the-fly dV/dt control of electric drives through precise gate current control, providing the best trade-off between minimum power dissipation and minimum EMI depending on operating conditions. To turn on the IGBT, the driver works as an adjustable current source in conjunction with an external PMOS transistors and a sense resistor. To turn off the IGBT, the driver uses a 2 A MOSFET output stage.



The 1EDx20I12SV family is tailored for industrial drive applications such as those using 1200 V power modules for currents up to 900 A like the EconoDUAL™ 3. The “S” version [1EDS20I12SV](#) provides reinforced galvanic isolation certification according to VDE 0884-10 and UL 1577. The “U” version [1EDU20I12SV](#) is UL 1577 certified with an isolation rating of VISO = 5000 V_(rms) for 1 minute. The “I” version [1EDI20I12SV](#) provides functional isolation.

Features

- > Slew rate control
- > Single-channel isolated IGBT Driver
- > Supports IGBT up to 1200 V
- > IGBT off-state: 2 A pull down to rail
- > Overcurrent protection for sense IGBTs and conventional IGBTs
- > Desaturation detection
- > Soft turn-off shut down: 1 A pull down to rail
- > Two-level turn-off
- > Operation at high ambient temperature up to 105°C
- > Compatible PWM inputs for 3.3 V, 5 V, and 15 V logic voltages

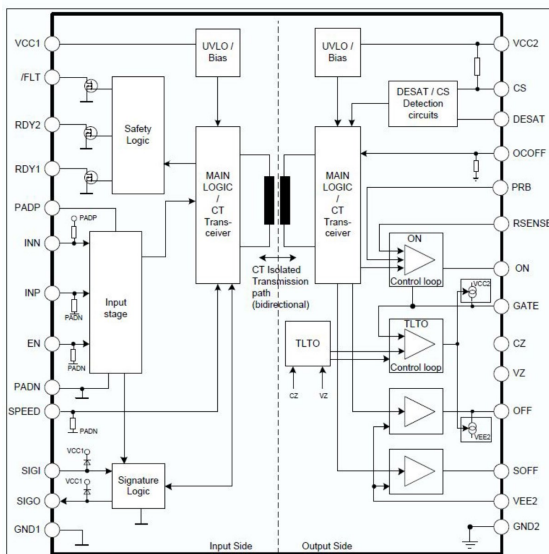
Benefits

- > Optimized short circuit control for 3-level inverters
- > Online adjustable current source slew rate control during IGBT turn-on
- > Reduce turn-on losses up to 30% or reduce motor maintenance cycle time
- > Improved controllability of the system

Target applications

- > AC and brushless DC motor drives
- > High-voltage DC-DC converters
- > UPS systems
- > Servo drives

Diagram



Competitive advantage

- > Unparalleled power efficiency and exceptional audio quality at lower system costs

Product overview incl. data sheet link

OPN	SP Number	Package
1EDI20I12SVXUMA1	SP001585168	DSO-36
1EDU20I12SVXUMA1	SP001689604	DSO-36
1EDS20I12SVXUMA1	SP001039292	DSO-36

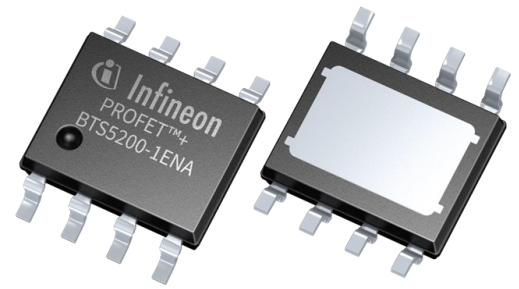
Product collaterals / Online support

- > [Product brief](#)
- > [Product finder](#)
- > [Application note](#)
- > [Selection guide](#)

PROFET™+ 12 V – BTS5200-1ENA

The BTS5200-1ENA is the new single-channel 200 mΩ device in the PROFET™+ family and replaces the BTS5200-1EJA. Compared to the other PROFET™+ devices, the BTS5200-1ENA comes in the TDSO-8 exposed pad package, which is pin compatible to the PROFET™+ 12 V and PROFET™+ 24 V families. Based on this compatible footprint, maximum design flexibility is secured to change loads and devices without major modification of the board layout.

The new single-channel high side driver BTS5200-1ENA offers comprehensive protective functions such as overtemperature protection with restart, overvoltage protection with external components or enhanced short circuit operation. The device has also diagnostic functions like overtemperature switch off detection and stable diagnostic signal during short circuit.



Features

- > Operating Voltage 5...28 V
- > PWM capability up to 200-300 Hz
- > Open load detection and diagnosis in ON and OFF state
- > Improved kILIS accuracy
- > Thermal shutdown with auto restart

Benefits

- > 100% pin compatibility across the devices of the PROFET™+ 12 V and PROFET™+ 24 V family

Qualification

- > Automotive qualified Q100

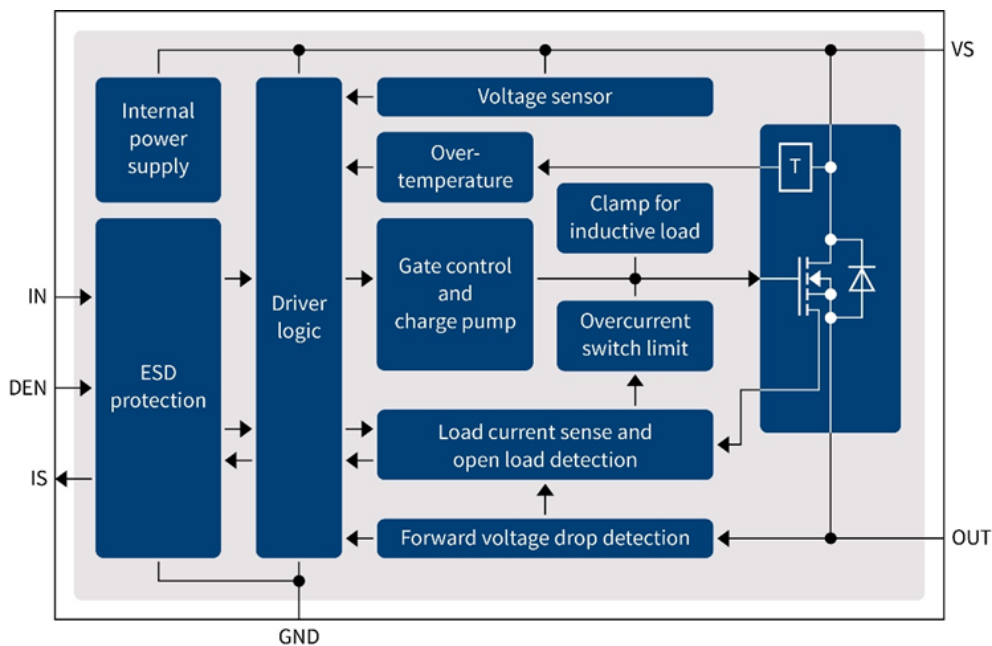
Competitive advantage

- > Maximum design flexibility

Target applications

- > LEDs and bulbs up to 10 W
- > Electromechanical relay and fuse replacement
- > 12 V high side grounded loads

Block diagram



Product overview incl. data sheet link

OPN	SP Number	Package
BTS52001ENAXUMA1	SP001597284	PG-TDSO-8

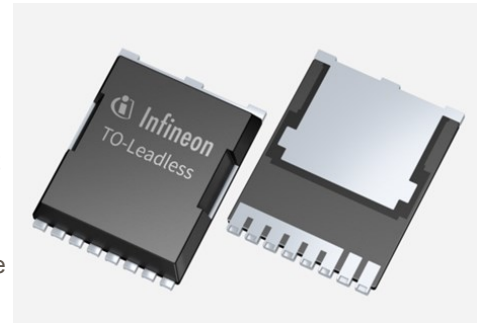
Product collaterals / Online support

- > [Product page](#)
- > [Product brief](#)

IRL40T209 - 40 V StrongIRFET™ Power MOSFET

The IRL40T209 is a 40 V Logic Level StrongIRFET™ power MOSFET featuring high current capability and typical $R_{DS(on)}$ of 0.59 mOhm in a 10 x 11 mm TO-Leadless package.

The StrongIRFET™ power MOSFET family is optimized for low $R_{DS(on)}$ and high current capability. The devices are ideal for low frequency applications requiring performance and ruggedness such as battery powered circuits, brushed and brushless DC (BLDC) motor drives used in end-applications including power tools, light electric vehicles and e-bikes that demand a high level of energy efficiency.



Features

- > Very low $R_{DS(on)}$
- > High current carrying capability
- > 175°C operating temperature
- > Product validation according to JEDEC standard

Benefits

- > Improved gate and avalanche ruggedness
- > Fully characterized capacitance and avalanche SOA
- > Improved ID rating
- > Pb-free; RoHS compliant ; Halogen-free

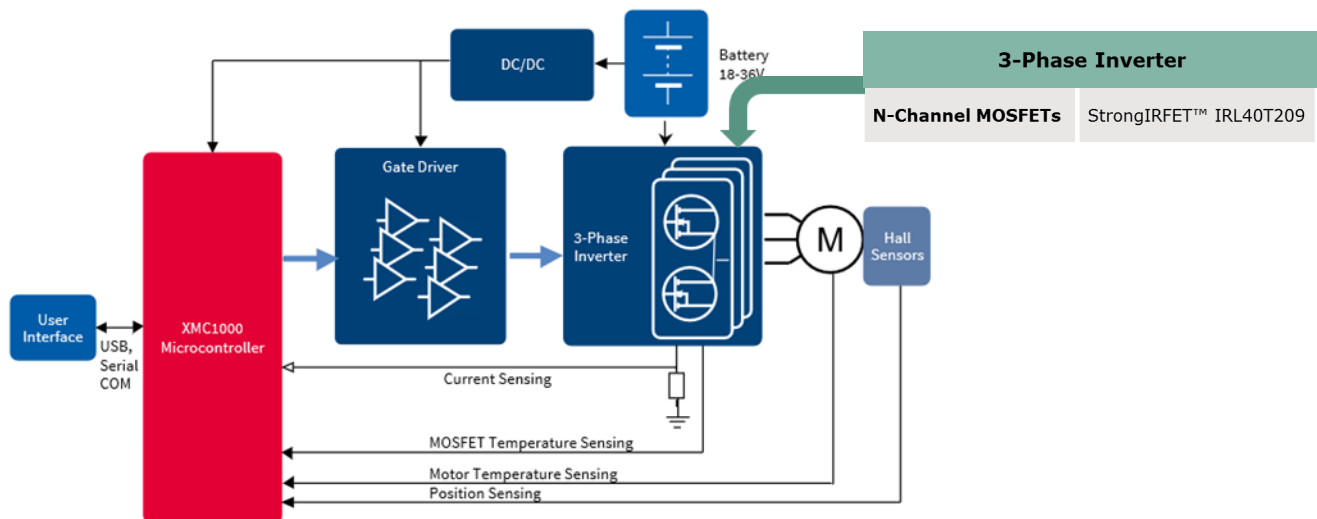
Target applications

- > Brushed motor drive applications
- > BLDC motor drive applications
- > Battery powered circuits
- > Half-bridge and full-bridge topologies
- > Synchronous rectifier applications
- > Resonant mode power supplies
- > OR-ing and redundant power switches
- > DC-DC and AC-DC converters
- > DC-AC Inverters

Competitive advantage

- > Reduction in conduction losses
- > Drive MOSFETs with 5 V gate drive
- > Improved I_D rating
- > Reduction in board space compared to traditional D²PAK 7pin package

Application diagram - cordless power tools



Product overview incl. data sheet link

OPN	SP Number	Package
IRL40T209ATMA1	SP001648026	PG-HSOF-8

Product collaterals / Online support

- > [Product page](#)
- > [Application brief](#)

OPTIGA™ TPM SLI 9670 automotive security solution

The OPTIGA™ TPM SLI 9670 is a quality hardened Trusted Platform Module (TPM) for special use in automotive applications and based on a tamper resistant secured micro-controller using advanced hardware security technology.

As turn-key solution it is flashed with a securely coded firmware according to latest TCG family 2.0 specifications offering a rich feature set of security functions, like key management, authentication, signature functions (signing/verifying), encryption/decryption, secured logging and secured time.

The SLI 9670 is qualified according to the automotive AEC-Q100 standard making it an ideal solution for automotive applications in telematics, gateway, multimedia head units and other ECUs with strong security requirements. This TPM is also security certified according to Common Criteria EAL4+.

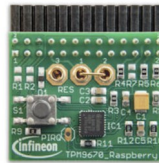


Features

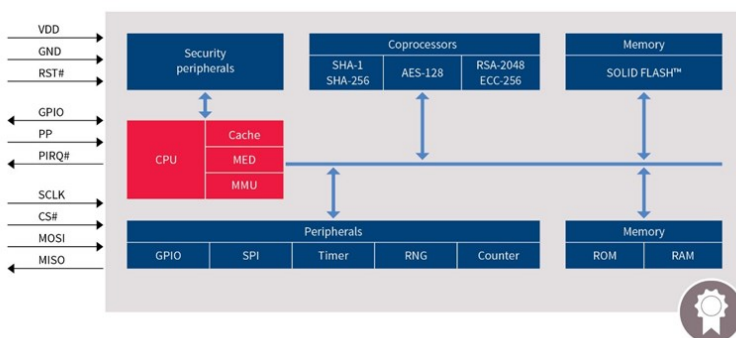
- > Standardized and market approved turn-key security solution (TCG standard TPM 2.0)
- > High-end tamper resistant security controller with advanced cryptographic algorithms (RSA-2048, ECC-256, AES-128, SHA-256) and enhanced security features (shielding, security sensors, TRNG and other security design measures) implemented in hardware
- > Highly reliable NVM technology
- > SPI interface
- > Extended temperature range (-40°C to 105°C)
- > Full system integration support
- > Automotive qualification according to AEC-Q100
- > Security certification according Common Criteria EAL4+

Evaluation board: [IRIDIUM SLI 9670 TPM2.0](#)

Infineon TPM SLI 9670 Iridium add-on board for Raspberry Pi. For integration into the corresponding platform OS (Linux, Win10IoT, etc.).



Diagram



Benefits

- > High-end tamper resistant security solution based on market leading security expertise protecting most sensitive assets (keys, IP, data and business cases)
- > Reduced security risk based on proven technology (TCG standard TPM 2.0))
- > High flexibility thanks to a wide range of integrated security functions
- > Secured key store and management: secured personalization (key injection in secured environment) realizes cost savings in the logistical chain
- > Updatability of TPM firmware offers long-term crypto agility and sustainability
- > Easy and cost efficient system integration through available open source drivers (e.g. for LINUX)

Target applications

- > Car sharing
- > Remote car access
- > Fleet management
- > SW & FW over-the-air update
- > Remote diagnostics & service call
- > Audio/video streaming
- > Feature/service activation
- > Mobile phone integration
- > Data marketplace & vehicle data analytics

Product overview incl. product page link

OPN	SP Number	Package
SLI9670AQ20FW1311XUMA1	SP002676668	PG-VQFN-32
IRIDIUMSLI9670TPM20TOBO1	SP004232000	board

Product collaterals / Online support

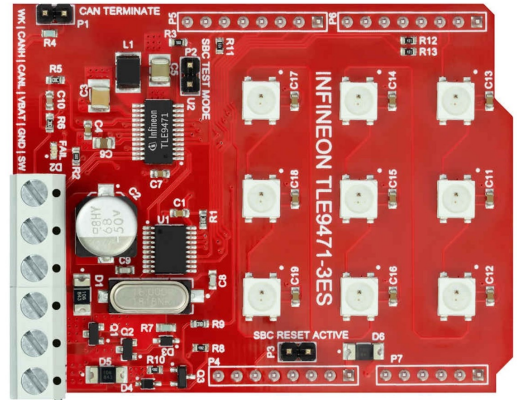
- > [Product page](#)
- > [Application note](#)
- > [Product brief](#)
- > [Software](#)

Lite DCDC SBC Shield for Arduino

The Lite DCDC SBC Shield for Arduino with TLE9471-3ES is designed drive the main functions of the System Basis Chip and accelerates the design-in phase. It is populated with the representative product families' superset component TLE9471-3ES, 9 pcs RGB LEDs and a microchip CAN-SPI controller. The integrated buck converter drivers supplied the 9 LEDs, moreover you can use the SPI interface, system interrupt and reset, the integrated charge pump, the CAN transceiver and the fail-output.

Features

- > Supply voltage range 9 to 12 V
- > 9 WS2812B LEDs powered by the integrated buck converter of the Lite SBC
- > Microchip MCP2515 SPI-CAN protocol handler for CAN communication
- > Power mosfets driven by the integrated charge pump of the Lite SBC to switch loads up to 2.5 amps. An external freewheeling diode allows switching of inductive loads
- > High voltage level input for wake signalization and/or standard high voltage input
- > Switchable 120 Ohm CAN termination
- > Switchable SBC test mode and Arduino reset



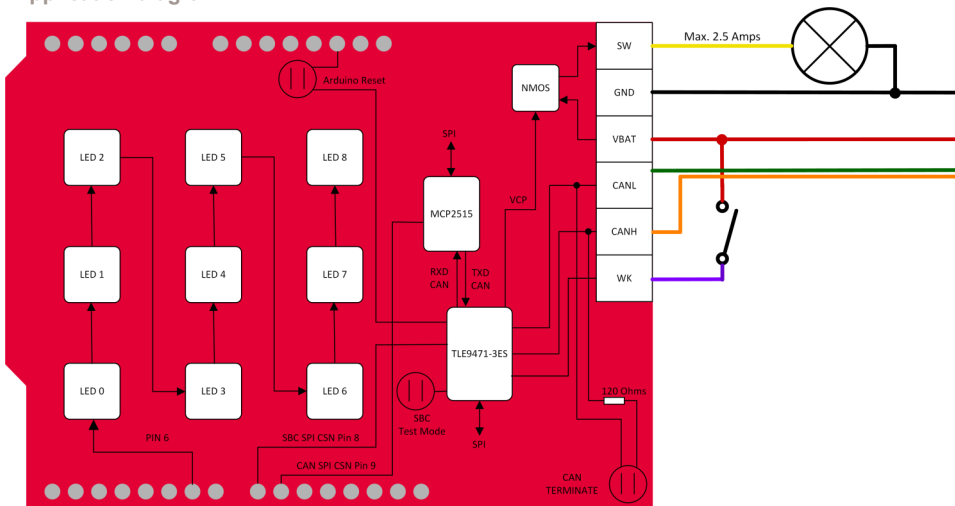
Benefits

- > Easy to use reference code examples for CAN communication, LED control and configuration of Lite SBC
- > Lite SBC Microcontroller library based on Config Wizard available for easy device initialization

Target applications

- > Intelligent room lighting
- > Connected LED pixel arrays
- > RC applications
- > IO node for CAN bus networks
- > Distributed power control for motors, heating, lighting

Application diagram



Product overview incl. data sheet link

OPN	SP Number	Package
SBCSHIELDTLE9471TOBO1	SP004854706	board

Product collaterals / Online support

- > [Product page](#)
- > [Product brief](#)
- > [User manual](#)
- > [Video](#)
- > [Tools & Software](#)

3-Level 1200 V CoolSiC™ MOSFET Module

The F3L11MR12W2M1_B65 is the new 11 mΩ 3-level module with CoolSiC™ MOSFET, NTC and PressFIT Contact Technology. It extends the EasyPACK™ 2B family with a 3-level Active Neutral Point Clamped (ANPC) topology.

The EasyPACK™ 2B module F3L11MR12W2M1_B65 offers full 1500 Vdc capability with 1200 V switches at a maximum efficiency of 99.2%, high current density as well as best in class switching and conduction losses.

Customers see an advantage to using silicon carbide as opposed to other solutions such as SiC 5-level topologies: the reduced number of switches used in the SiC 3-level topology leads to a reduced risk of field failures.

In addition, thanks to the high efficiency device, customers can reduce their cooling effort and thus the overall system cost, in particular in solar energy systems and energy storage applications.



Features

- > Full 1500 Vdc capability (with 1200 V switches)
- > High current density
- > Best in class switching and conduction losses
- > Low inductive design
- > Integrated NTC temperature sensor
- > PressFIT contact technology
- > RoHS-compliant modules

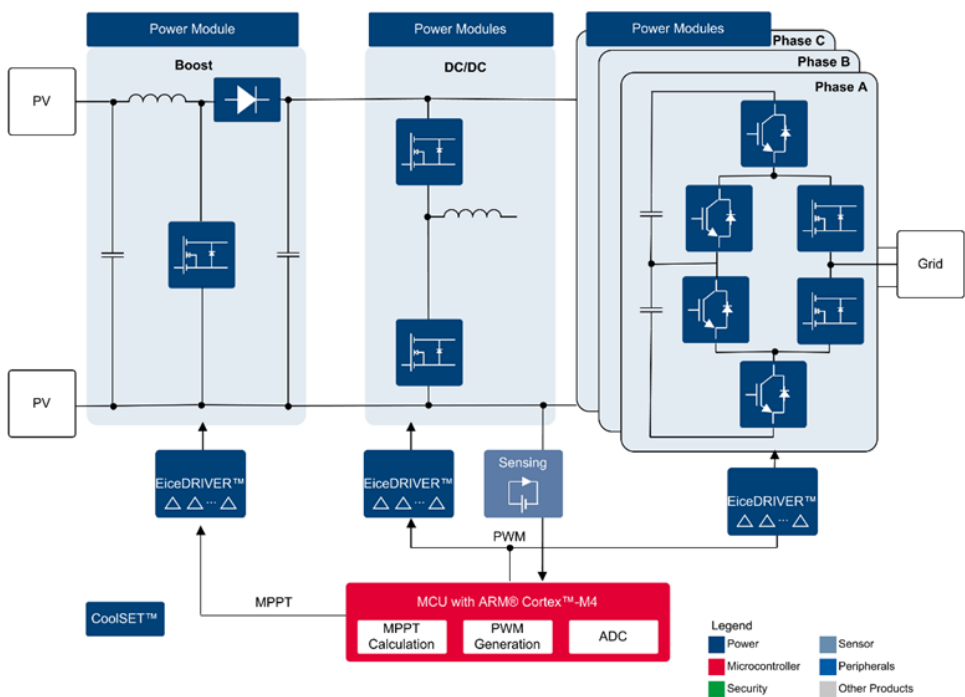
Benefits

- > Highest efficiency for reduced cooling effort
- > Higher frequency operation
- > Increased power density
- > Optimized customer's development cycle time and cost

Target applications

- > Solutions for solar energy systems
- > Energy Storage

Application diagram: Solar-String-Inverter



Product overview incl. data sheet link

OPN	SP Number	Package
F3L11MR12W2M1B65BOMA1	SP001684176	AG-EASY2BM-2

Product collaterals / Online support

- > [Product page](#)
- > [Product family page](#)
- > [Application note](#)
- > [Editorial](#)

AURIX™ Wireless Power Controller

The SAK-TC212S-8F133SC AC belongs to the Aurix 1st Generation TC21xSC family. Its innovative multicore architecture, based on up to three independent 32-bit TriCore CPUs, has been designed to meet the highest safety standards, while simultaneously increasing performance significantly. The TC21xSC family belongs to the TC2xx Aurix 1st generation. Equipped with a TriCore with 133 MHz, a single voltage supply of 3.3V and a Powerful Generic Timer Module (GTM), the TC21xSC series aim for a reduced complexity, best-in-class power consumption and significant cost savings.



Features

- > TriCore with 133 MHz/ DSP functionality
- > 0.5 MB flash w/ECC protection
- > 64 KB EEPROM at 125 k cycles
- > Up to 56 KB RAM w/ECC protection
- > 16x DMA channels
- > 24x 12-bit SAR ADC converter
- > Powerful Generic Timer Module (GTM)
- > 4x SENT sensor interfaces
- > State of the art connectivity: 2x LIN, 4x QSPI, 3x CAN including data rate enhanced CAN FD
- > Single voltage supply 3.3 V
- > TQFP-80 package
- > ambient Temperature range -40°...+125°
- > Including wireless charging SW IP and support

Benefits

- > Better EMI performance than competing solutions (CISPR-25 Class 4)
- > Better FOD performance than competing solutions (WPC Qi v1.2.4 FOD)
- > Future path to Device Authentication (WPC Qi v1.3)
- > Total front-to-back solution ensures maximum efficiency, minimal thermal impact and ease of certification
- > Single MCU supports wireless charging system, CAN and NFC interface
- > Built in security functionality (HSM) meets latest automotive requirements
- > Proven fixed frequency hardware and software architecture
- > Field-programmable software-based flexibility for future-proof products

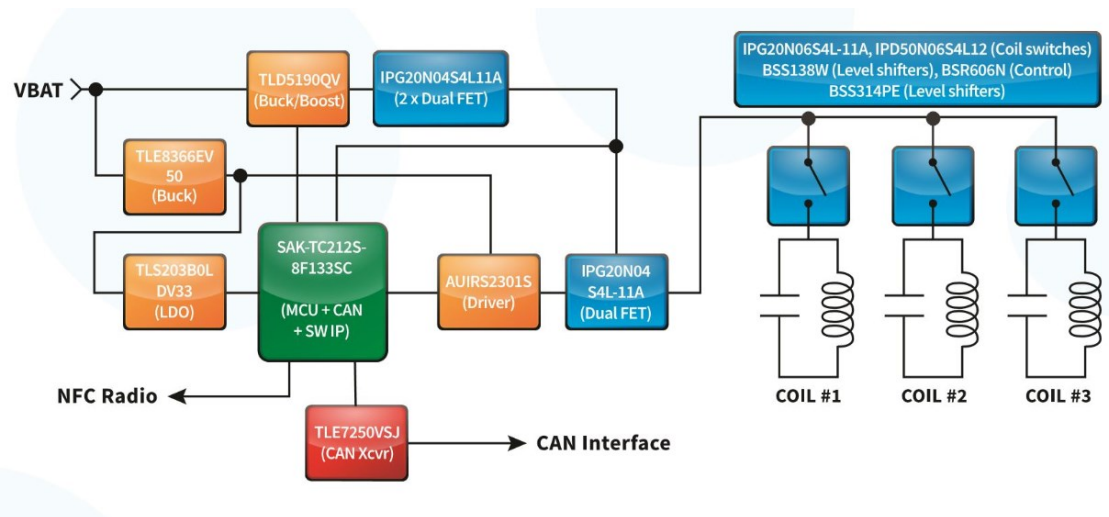
Qualification

- > Industrial
- > Consumer

Target Applications

- > Automotive
- > EV charging
- > In Car charging

System diagram



Product overview incl. web page link

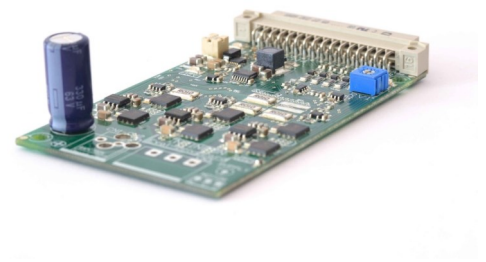
OPN	SP Number	Package
TC212S8F133SCACKXUMA1	SP001936928	PG-TQFP-80

Product collaterals

- > [Product page](#)
- > [Software](#)

3-phase DC Motor Control Power Card

DriveCards are microcontroller boards with isolated debug 3 interface best suited for motor control applications. This Card has been designed to operate in various configurations and conditions, such input voltages and control algorithms. The “3-phase motor control Power Card” is compatible with XMC DriveCards, XMC1000, XMC4000 and DAVE™. The board is specifically designed to work under several supply voltage levels (24V, 250W) and provides flexibility to adopt many different control algorithms and configurations with the provided DC- link shunts.



Your Drivecard of XMC MCU can easily be connected to your DAVE 4 development tool. A Large selection of DAVE applications are also available and free of charge.

Features

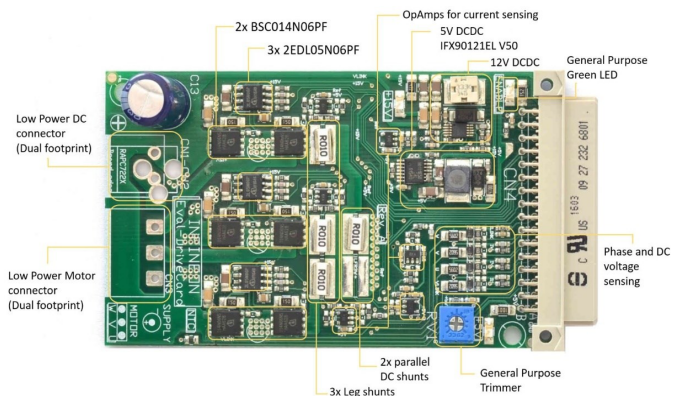
- > SwitchedMode DC/DC buck converter IFX90121EL V50 for 5 V supply
- > SwitchedMode DC/DC buck converter for 12 V supply
- > Low-voltage motor drive system either in H-Bridge or in 3-Phase full bridge configuration.250 W @ 24 V
- > The 3-phase bridge is composed by three Half-Bridges with SO8 gate driver IC and SSO8 power MOSFETs
- > Shunts to sense leg currents and DC-link current, with OpAmps for conditioning to XMC

Benefits

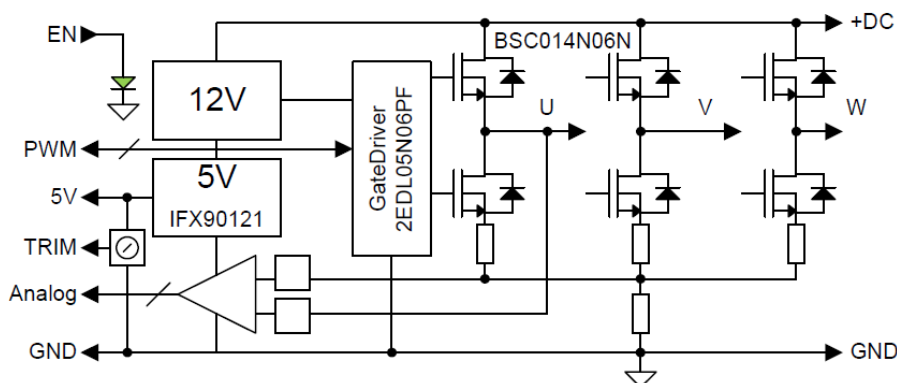
- > Additional general purpose trimmer to XMC
- > 3-phase motor drive bridge, equipped with 6x BSC014N06N from OptiMOS™ 80 V family, 1.4 mOhm (max) power MOSFETs in SSO8 package

Target Applications

- > Motor control
- > Home appliance
- > Home & building automation
- > Industrial automation
- > Power tools



Block diagram



Product overview incl. web page link

OPN	SP Number	Package
KITMOTORD-C250W24VTOBO1	SP003339154	board

Product collaterals / Online support

- > [Product page](#)
- > [Software](#)

XMC-SC Wireless Power Controller

Conceived to help next generation wireless charging systems meet strict safety, environmental and regulatory requirements. The XMC-SC Wireless Power Controllers work with Infineon's power devices in a scalable architecture to provide a complete charging solution for everything from a fast charge smartphone, to a 20 W robot, to a 60 W drone and beyond.



Features

- > Support Qi, AirFuel or proprietary protocols driving single or multi-coils with CCU8
- > Analog front end for measuring and detecting foreign objects: ADC, DAC, analog comparators
- > Synchronized ADC measurements
- > Up to 105°C junction temperature
- > Secure bootloader allows firmware updates for future standards

Benefits

- > Full power 15 W without exotic thermal management
- > Foreign Object Detection (FOD) with improved accuracy quality-factor monitoring
- > Charging rates equivalent to wired charging
- > custom charging profiles and industry standards on the same hardware

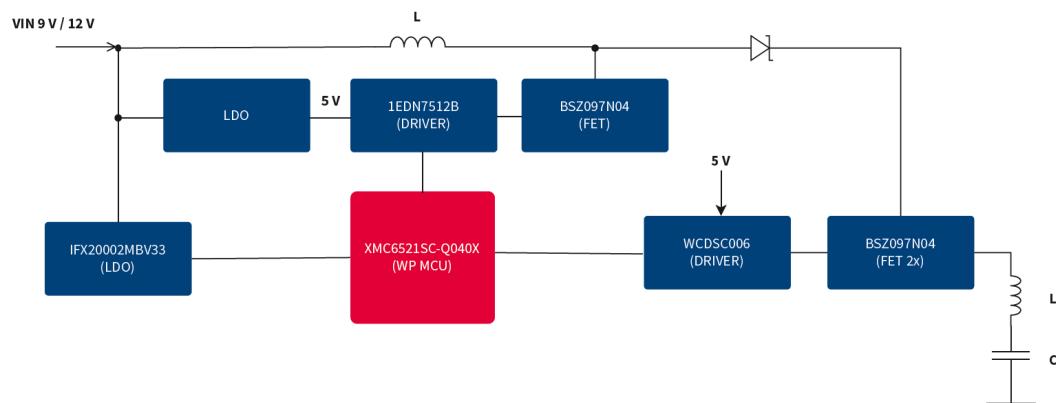
Target Applications

- > In cabin charging
- > Wearables
- > Smart Home
- > Service robots
- > Multicopter
- > Medical
- > Electric toys

Qualification

- > Industrial
- > Consumer

Solution diagram



Product overview incl. web page link

OPN	SP Number	Package
XMC6521SCQ040XAAXUMA1	SP003038016	PG-VQFN-40

Product collaterals

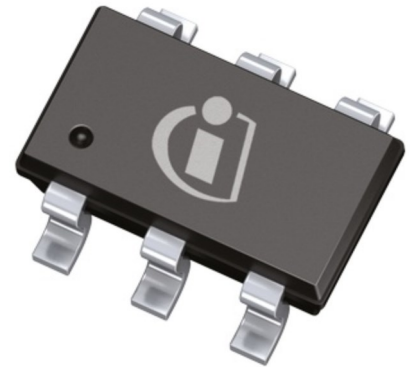
- > [Product page](#)
- > [Product brief](#)

TLI4966G - XENSIV™ double Hall switch

Infineon's new TLI4966G Hall sensor is a double Hall switches with two output pins for applications with a rotating pole wheel. The sensor provides a speed and direction signal at the interface pins. This information can be directly used to realize a robust index counting system for anti-pinch prevention. The standard solution for index counting is realized by two Hall Latches. The TLI4966G comprises two integrated Hall plates enabling a small and cost effective system with only one sensor.

The fixed distance of the Hall plates ensures the optimal solution to cancel out mounting uncertainties and reduces overall system tolerances. The built in direction detection is reliable and provides with each index step a valid direction signal. Additional development of algorithms for direction detection becomes obsolete.

The speed and direction signals of the XENSIV™ TLI4966G can be fed directly into the capture/compare unit of a standard μ Controller. This ensures a fast and easy system set up. The speed signal comes directly from the two integrated Hall elements, while the direction detection is calculated by a μ Controller. The monolithic solution ensures minimal tolerances and a highly reliable system.



Features

- > 2.7 V to 24 V supply voltage operation
- > Operation from unregulated power supply
- > High sensitivity and high stability of the magnetic switching points
- > High resistance to mechanical stress by active error compensation
- > Reverse battery protection (-18 V)
- > Superior temperature stability
- > Peak temperatures up to 125°C without damage
- > Low jitter (typ. 1 μ s)
- > Digital output signals
- > Excellent matching between the 2 Hall probes
- > Hall plate distance 1.45 mm
- > Direction & speed information
- > SMD package PG-TSOP6-6-9

Benefits

- > Allows for smaller designs and overall system cost reduction
- > Ensures highly energy efficient systems
- > Guarantees best-in-class field quality and OEM satisfaction

Competitive advantage

- > High supply voltage range (2.7 Volt to 24 Volt)
- > Low power consumption
- > Infineon best-in-class field quality

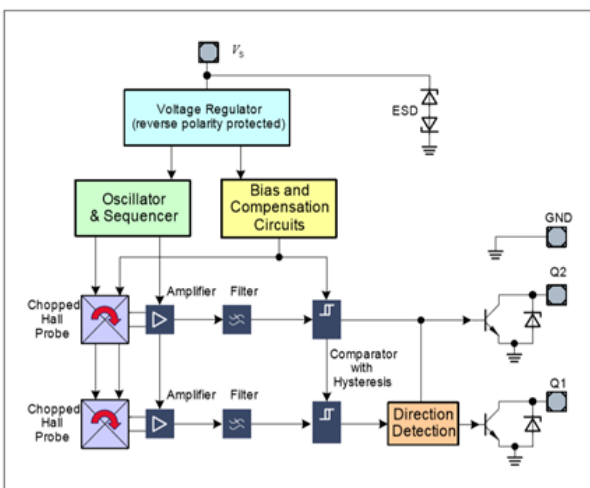
Qualification

- > Qualified according to JEDEC47

Target applications

- > Power closure systems for Anti-pinch detection
 - Garage doors
 - Electric shutters
 - Sun blinds
 - Automated doors

Block diagram



Product overview incl. data sheet link

OPN	SP Number	Package
TLI4966GHTSA1	SP003330332	PG-TSOP6-6-9

Product collaterals / Online support

- > [Product page](#)
- > [Product family page](#)
- > [XENSIV™ pocket guide](#)
- > [Simulation tool](#)