



New Product Introduction

September 2022

[x16 256-Mbit HYPERRAM™ pseudo static random - access memories](#)

[EasyPACK™ 4B power module 950 V with TRENCHSTOP™ IGBT7 and 1200 V CoolSiC™ Schottky Diode](#)

[40 A / 25 A OptiMOS™ IPOL with digital interface](#)

[800 V / 950 V CoolSET™ - fixed-frequency AC-DC integrated power](#)

[Battery charging IC ICC80QSG](#)

[EiceDRIVER™ gate driver ICs \(1ED44171N01B\) – Single-channel low-side driver with fault-reporting](#)

[StrongIRFET™ 2 power MOSFETs 60 V in TO-220](#)

[CIPOS™ Mini Intelligent Power Module IM523 series](#)

[Smart analog high-side MOSFET gate driver for 12 V / 24 V automotive applications 2ED2410-EM](#)

[600 V CoolMOS™ S7 in QDPAK and TO-220 package](#)

[Power Disc AMPT T1400N16H75 & T1700N16H75](#)

[OPTIGA™ TPM SLB 9673 FW26.xx](#)

[OPTIGA™ Trust M Express](#)

[EZ-PD™ Barrel Connector Replacement \(BCR\)](#)

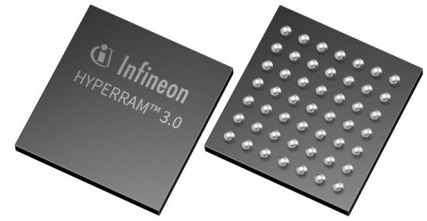
[EZ-USB™ Serial Bridge Controller](#)

[EZ-USB™ SX3 Explorer Kit for SuperSpeed USB - CYUSB3KIT-004](#)

x16 256-Mbit HYPERRAM™ pseudo static random - access memories

HYPERRAM™ is a high speed, low pin count, low power self refresh Dynamic RAM (DRAM) for high-performance embedded systems requiring expansion memory for scratchpad or buffering purposes.

HYPERRAM™ 3.0 supports an extended version of the HYPERBUS™ interface. Enabled by a 16-bit I/O, HYPERRAM™ 3.0 offers a read / write bandwidth of up to 800 MBps in DDR mode. It comes in a 49-ball BGA package and offers an extended operating temperature range (-40° C to +105° C). Industrial & extended industrial temperature grades are currently available. These products support 1.8 V option.



Features

- > Operating voltage range: 1.7 V - 2.0 V
- > HYPERBUS™ extended I/O (16-bit)
- > Access time: 35 ns (max), Clock rate: 200 MHz
- > Double data rate (DDR) read / write bandwidth: 800 MBps
- > Configurable burst modes (linear burst, wrapped length burst and hybrid burst)
- > Configurable output drive strength
- > Deep power down: 12 µA (max) and hybrid deep sleep: 140 µA at 85° C
- > Partial memory array refresh feature to optimize battery performance
- > Package: 49-ball BGA 8 mm x 8 mm
- > Densities: 256 Mb

Benefits

- > High performance - doubles throughput from existing HYPERRAM™ devices to 800 MBps
- > Small package - ensures lower footprint on board
- > Low power - suitable for battery operated applications

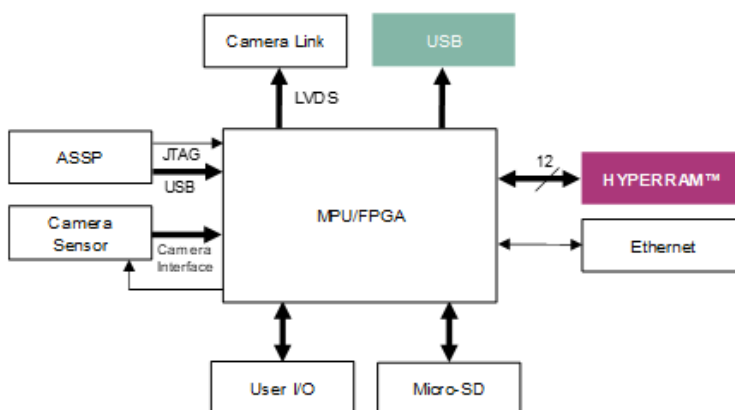
Target applications

- > Machine vision
- > Factory automation

Competitive advantage

- > High throughput - 800 MBps

Block diagram



Product collaterals / Online support

[Product page S80KS2564GACHI040](#)

[Product page S80KS2564GACHV040](#)

[Product brief](#)

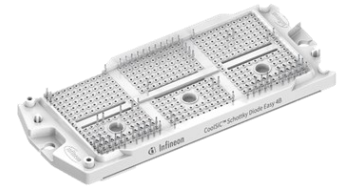
[Product selection guide](#)

[Application note](#)

Product overview incl. data sheet link

OPN	MOQ	Package
S80KS2564GACHI040	260	49-FBGA
S80KS2564GACHV040	260	49-FBGA

EasyPACK™ 4B power module 950 V with TRENCHSTOP™ IGBT7 and 1200 V CoolSiC™ Schottky Diode



With the launch of the F3L600R10W4S7F_C22, the Easy family is now extended to an Easy 4B housing.

The F3L600R10W4S7F_C22 features the latest TRENCHSTOP™ IGBT7 chip generation as well as a CoolSiC™ Schottky Diode. Thanks to the ANPC topology inside, it is a perfect fit for 1500 V_{DC} solar string inverters and can achieve up to 350 kW in a single module configuration.

Since the module features the same height of 12 mm as the rest of the Easy family, customers can easily upgrade their designs. In addition, system-cost can be reduced as less cables and other components are needed.

Features

- > New Easy 4B housing
- > ANPC topology
- > 950 V TRENCHSTOP™ IGBT7 and 1200 V CoolSiC™ Schottky Diode
- > PressFIT pins

Benefits

- > Extended Easy family in 12 mm height for scaling
- > Suitable for 1500 V_{DC} solar string inverters
- > Platform - based design with simple PCB mounting
- > Power density of up to 350 kW
- > Reduction in system cost and mounting effort due to less cabling

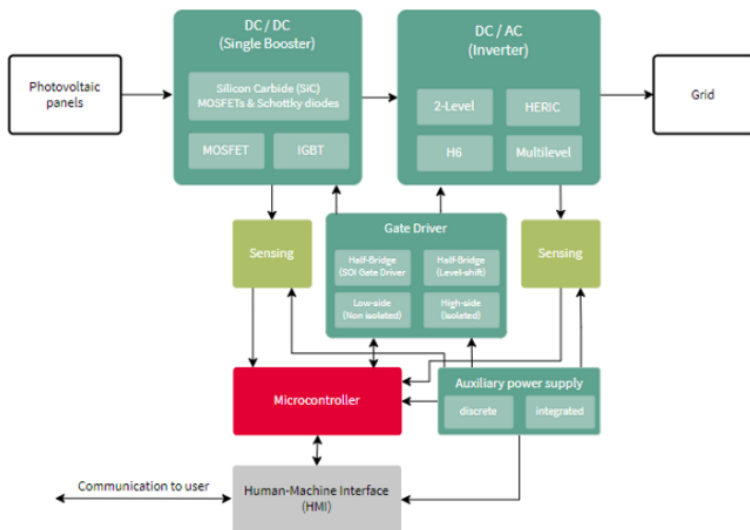
Competitive advantage

- > First Easy 4B package for scaling designs

Target applications

- > Solar string inverter

Block diagram



Product collaterals / Online support

- [Product page](#)
- [SiC hybrid modules page](#)
- [Easy family page](#)
- [Press article](#)

Product overview incl. data sheet link

OPN	SP Number	Package
F3L600R10W4S7FC22BPSA1	SP005434947	AG-EASY4B-7011

40 A / 25 A OptiMOS™ IPOL with digital interface

The TDA38640 / 740 / 725 is an easy-to-use, fully integrated, and highly efficient DC-DC regulator with Intel SVID and I2C/PMBus interfaces. The controller utilizes Infineon's fast COT engine, which simplifies design effort and achieves a faster transient response.



Features

- > New Easy 4B housing
- > Single 5 V to 17 V application or wide input voltage range from 3.0 V to 17 V with external VCC
- > Output voltage range: 0.25 V to 3.04 V with external feedback resistor divider
- > Enhanced stability engine stable with ceramic capacitors and no external compensation
- > Optional forced continuous conduction mode and diode emulation for enhanced light load efficiency
- > Programmable switching frequency from 400 kHz - 2 MHz in steps of 200 kHz, excluding 1600 kHz
- > Monotonic start-up with selectable soft-start time via SVID or PMBus commands and pre-bias start-up
- > Thermally compensated internal over current protection with eight selectable settings
- > I2C system interface for reporting of temperature, voltage, current and power telemetry
- > Multiple time programming (MTP) with up to 24 writes for the USER section
- > Small size: 5 mm x 6 mm PQFN
- > Lead-free, halogen-free and RoHS2 compliant with exemption 7a

Benefits

- > Fast COT engine provides industry best transient response
- > PM Bus / SVID capability
- > Digitally programmable load line
- > 12 V input sensing without the need for an external interface circuit

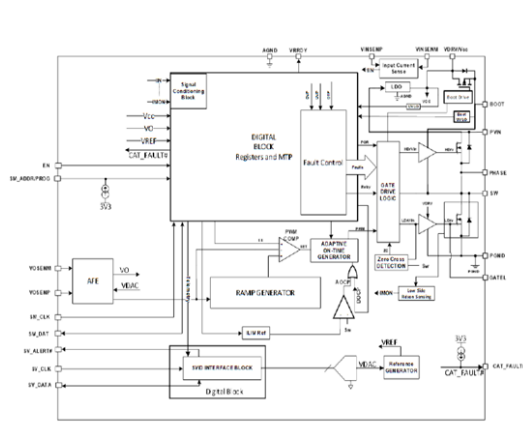
Competitive advantage

- > Industry best transient response
- > OptiMOS™ MOSFETs for best-in-class efficiency
- > Digital interface
- > Multiple time programming for configurability

Target applications

- > Server Applications
- > Storage applications
- > Telecom and datacom applications
- > Distributed point-of-load power architecture

Block diagram



Product collaterals / Online support

[Product page TDA38640](#)

[Product page TDA38725](#)

[Product page TDA38740](#)

Product overview incl. data sheet link

OPN	SP Number	Package
TDA386400000AUMA1	SP005408953	PG-IQFN-36
TDA387250000AUMA1	SP005426071	PG-IQFN-36
TDA387400000AUMA1	SP004155910	PG-IQFN-36

800 V / 950 V CoolSET™ - fixed-frequency AC-DC integrated power

Infineon's novel product family of fixed-frequency AC-DC integrated power stages is integrated with an avalanche rugged high-voltage superjunction MOSFET with a breakdown voltage of 800 V and recently added 950 V to support a wide input voltage range.



These highly integrated controllers are housed in a DIP-7 package, support both isolated and non-isolated topologies such as fly back or buck, and cover switching frequency ranges of 100 kHz as well as 65 kHz.

Features

- > Integrated with 800 V and 950 V avalanche rugged superjunction MOSFET
- > 65 kHz and 100 kHz and maximum switching frequency
- > Supporting continuous (CCM) and discontinuous conduction mode (DCM)
- > Integrated error amplifier supporting direct feedback
- > Comprehensive suite of protection features with auto-restart

Benefits

- > Reducing BOM count and cost thanks to integrated error amplifier
- > Enabling the cost-efficient buck topology
- > Increasing mid- and light-load efficiency with digital frequency reduction
- > Simplifying supply chain with one single device supporting both fly back and buck topology
- > Increased power supply robustness enabled by line overvoltage protection and ultra-wide input range

Competitive advantage

- > Industry best transient response
- > OptiMOS™ MOSFETs for best-in-class efficiency
- > Digital interface
- > Multiple time programming for configurability

Target applications

- > Auxiliary power supply for AC-DC
- > Solar energy systems
- > Home appliances
- > Motor control
- > Drives

Product overview incl. data sheet link

OPN	SP Number	Package
ICE5BR4780BZXKLA1	SP005566776	PG-DIP-7
ICE5BR2280BZXKLA1	SP005566780	PG-DIP-7
ICE5BR3995BZXKLA1	SP005566787	PG-DIP-7
ICE5BR3995CZXKLA1	SP005566790	PG-DIP-7
ICE5AR2280CZXKLA1	SP005566783	PG-DIP-7
EVAL5BR2280BZ700MA1TOBO1	SP005745978	
EVAL5BR3995BZBUCK1TOBO1	SP005745974	
EVAL5BR4780BZ450MA1TOBO1	SP005744263	
REF5AR2280CZ22W1TOBO1	SP005744068	
REF5BR2280BZ22W1TOBO1	SP005744066	
REF5BR3995BZ16W1TOBO1	SP005745985	
REF5BR3995CZ16W1TOBO1	SP005745987	
REF5BR4780BZ15W1TOBO1	SP005744060	

Product collaterals / Online support

[Product family page](#)

[Application note](#)

Battery charging IC ICC80QSG

The ICC80QSG is a PWM controller for flyback topologies operating in quasi-resonant mode and valley switching DCM, to achieve high efficiency of power transfer across wide operating range. For battery charging applications, the IC offers a wide power range as well as a comprehensive set of protections. The IC is easy to design in and requires a minimum number of external components



Features

- > Secondary-side regulation (SSR)
- > Quasi-resonant mode (QRM) operation with continuous conduction mode (CCM)-prevention and valley switching discontinuous conduction mode (DCM) in mid to light load
- > Burst mode for very light loads
- > Reduced gate driver output voltage during burst mode
- > Adjustable on-time mapping at valley changing position
- > Adjustable maximum on-time
- > Comprehensive set of protections
- > Externally configurable hysteresis of brown-in and brown-out
- > Adaptive brown-out level triggering based on bus voltage ripple
- > Soft start

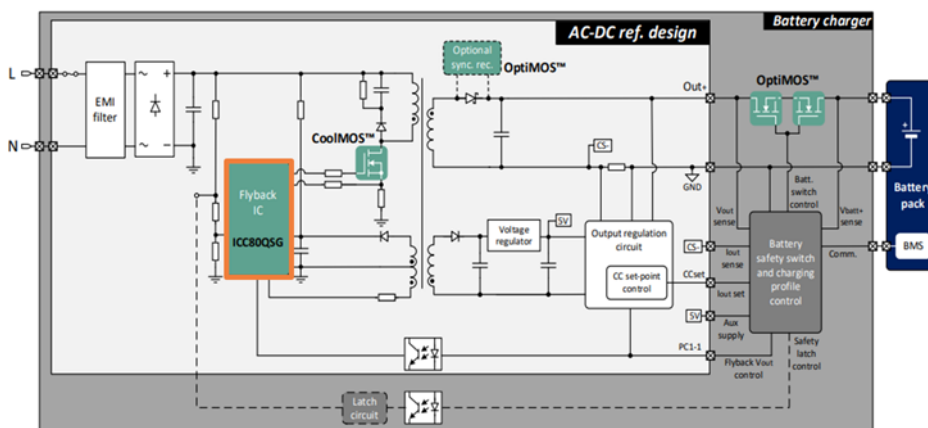
Benefits

- > Ideal for battery charging current control
- > High efficiency and low electromagnetic interference (EMI)
- > Low system standby power consumption
- > Design flexibility with adjustable max operation switching frequency and configurability of brown-in and brown-out
- > Protects primary components from overheating and saturation with higher brown-out level at higher input / output power
- > Safe, robust and reliable operation

Target applications

- > Battery charger applications up to 130 W
- > Adapter
- > PC
- > TV
- > Printer
- > Monitor
- > Audio amplifier applications up to 130 W

Block diagram



Product collaterals / Online support

[Product page](#)

Product overview incl. data sheet link

OPN	SP Number	Package
ICC80QSGXUMA1	SP005731066	PG-DSO-8

EiceDRIVER™ gate driver ICs (1ED44171N01B) – Single-channel low-side driver with fault-reporting

Infineon expands its 1ED4417x family of 25 V single-channel low-side drivers with integrated protection features.

The new 1ED44171N01B is an EiceDRIVER™ 25 V single-channel low-side non-inverting gate driver IC with fault-reporting. It offers a typical 2.6 A source and sink current in a tiny 5 - lead PG-SOT23 package.

1ED44171N01B can be used as a second source option to the popular IRS44273L with a single PCB layout. It's enabling a single supplier, dual sourcing strategy for fast reacting supply flexibility.

The proprietary latch-up immune CMOS technologies enable ruggedized monolithic construction. The logic input is compatible with standard CMOS or LSTTL output. The output driver features a current buffer stage. The 1ED44171N01B provides an integrated fault reporting output and adjustable fault clear timer at the under voltage condition of VCC.



Features

- > Wide supply voltage range 25 V VCC max
- > Single pin for fault output and enable function
- > Programmable fault clear time
- > Under -voltage lockout (UVLO) protection typ. On / off = 11.9 V / 11.4 V
- > 3 kV ESD HBM

Competitive advantage

- > Cost effective
- > Qualify 1ED44171N01B and IRS44273L with a single-PCB layout to enable a single-supplier, multi-sourcing strategy for fast and flexible supply

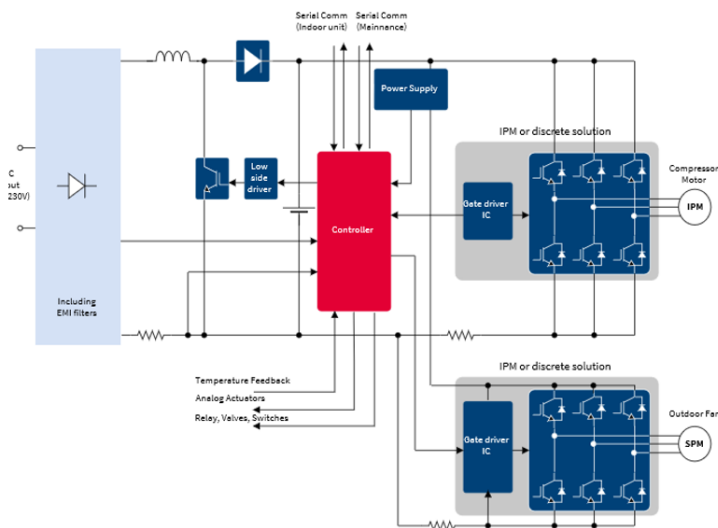
Benefits

- > Eliminates switching loss at low VCC supply voltage
- > More robust against VCC spikes in harsh circuit applications
- > Flexible fault clear time setup makes it easy to adjust to different microcontroller processing speeds

Target applications

- > PFC stage or any ground-referenced topology
- > Home appliances
- > Air conditioning
- > Refrigeration and freezing
- > Ceiling fan
- > Microwaves
- > SMPS

Block diagram



Product collaterals / Online support

- [Product page](#)
- [Product family page](#)
- [Gate Driver ICs Selction Guide](#)
- [Board page](#)

Product overview incl. data sheet link

OPN	SP Number	Package
1ED44171N01BXTSA1	SP005613975	PG-SOT23-5

StrongIRFET™ 2 power MOSFETs 60 V in TO-220

The new StrongIRFET™ 2 in 60 V power MOSFETs are Infineon's latest generation of MOSFET technology addressing a wide range of applications and are suitable for both low and high switching frequencies. This new family compliments the well-established StrongIRFET™ MOSFETs by offering a higher performance option.



Features

- > Broad availability from distribution partners
- > Excellent price / performance ratio
- > Ideal for high and low switching frequency
- > High current rating

Benefits

- > Increased security of supply
- > Right-fit products
- > Supports a wide variety of applications
- > Increased product ruggedness

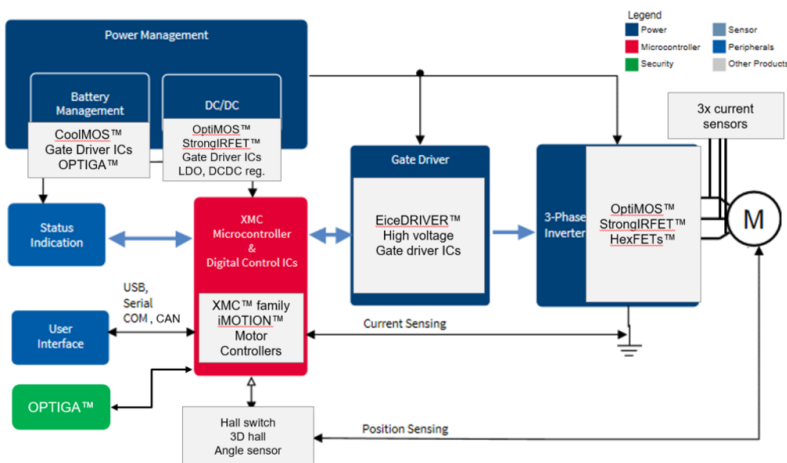
Competitive advantage

- > Large portfolio of products for a wide range of applications
- > Availability at multiple distribution partners
- > Excellent price / performance ratio

Target applications

- > Power and gardening tools
- > Motor drives
- > Battery management
- > Energy storage systems

Block diagram



Product collaterals / Online support

[Product family page](#)

Product overview incl. data sheet link

OPN	SP Number	Package
IPP014N06NF2SAKMA2	SP005742469	PG-TO220-3
IPP016N06NF2SAKMA1	SP005742470	PG-TO220-3
IPP019N06NF2SAKMA1	SP005742471	PG-TO220-3
IPP030N06NF2SAKMA1	SP005550839	PG-TO220-3
IPP040N06NF2SAKMA1	SP005550852	PG-TO220-3

CIPOS™ Mini Intelligent Power Module IM523 series

Energy and system cost saving are all time trends for both consumer and industrial applications. Incorporating Infineon's new 600 V TRENCHSTOP™ RC-Drive 2 and C5SOI gate driver, CIPOS™ Mini IM523 series enable customers to achieve both excellent power loss and thermal performance for low-to medium power application.



IM523 series is a 600 V 3-phase 6 A – 17 A inverter solution and is suitable for various applications such as fans, pumps, HVAC, MHA, industrial drives etc.

Features

- > Based on 600 V TRENCHSTOP™ RCD2 IGBT technology
- > Various current ratings available from 6 A to 17 A
- > New gate driver IC in SOI technology
- > 3 - phase inverter configurations with open emitters based on DIP 36 x 21 package

Benefits

- > Cost - effective ideal solution for low to medium power platforms
- > Enhanced system reliability and functional improvement with latest gate driver IC and RC IGBT
- > High integrations (bootstrap circuit, thermistor) for easy design and saving system space
- > Easy and fast design conversion from existing Mini (P2P) without PCB re-design

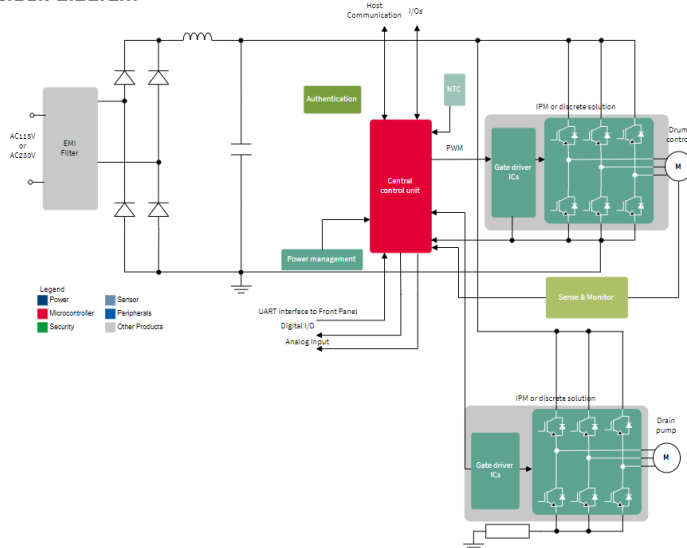
Target applications

- > HVAC
- > Motor control and drives
- > MHA
- > Fans and pumps

Competitive advantage

- > IM523 series shows excellent performance in low switching losses especially at fast switching applications such as washing machines or fans.

Block diagram



Product collaterals / Online support

- [CIPOS Mini Family Page](#)
- [Product page IM523-M6A](#)
- [Product page IM523-S6A](#)
- [Product page IM523-X6A](#)
- [Product page IM523-L6A](#)

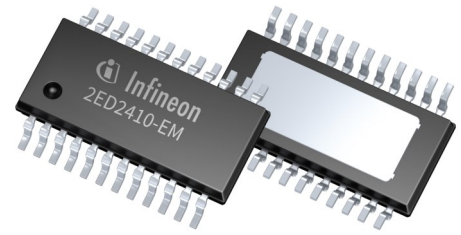
Product overview incl. data sheet link

OPN	SP Number	Package
IM523S6AXKMA1	SP005566036	PG-MDIP-24
IM523M6AXKMA1	SP005566034	PG-MDIP-24
IM523L6AXKMA1	SP005566032	PG-MDIP-24
IM523X6AXKMA1	SP005566038	PG-MDIP-24

Smart analog high-side MOSFET gate driver for 12 V / 24 V automotive applications 2ED2410-EM

The EiceDRIVER™ APD 2ED2410-EM is a smart high-side N-channel MOSFET gate driver with two outputs controlled via logic pins designed for the new upcoming automotive power distribution architectures including an integrated I-t wire protection.

The integrated boost converter allows external MOSFETs to stay continuously on and operational also at critical supply conditions down to 3 V. Due to the efficiency of the boost converter the supply current in idle and normal mode is in the range of μA , which is beneficial if loads need to be supplied during the vehicle is parked (key off mode). Thanks to the enhanced turn-on and turn-off ability of the driver, the number of MOSFETs could be easily scaled up to manage large currents in the order of several hundred amps, while ensuring fast switch on and off within μs .



Features

- > Extended supply voltage range: 3 V - 58 V
- > Two high-side gate driver outputs with 3 Ω pull-down and 50 Ω for pull-up for fast switch off / on
- > Two bidirectional high-side analog current sense interfaces with externally adjustable gain
- > Channel control and diagnostic via pins
- > Analog interface for external temperature measurement
- > Gate under-voltage lock-out (UVLO)
- > AEC-Q100 qualification

Competitive advantage

- > Integrated I-t wire protection to optimize wire harness
- > Best in class quiescent current consumption of few μA
- > ISO-26262 ready gate driver to support fail operational architectures in modern vehicles

Benefits

- > Cost-effective ideal solution for low and medium power platforms
- > Supports back-to-back MOSFET topologies (common drain or common source)
- > Low operating current in idle mode < 50 μA . Idle mode with 15 mA load current by-pass to supply ECUs during parking
- > Adjustable overcurrent/short-circuit protection
- > Versatile comparator to implement:
 - > Adjustable I-t wire protection
 - > Adjustable over/undervoltage protection
 - > Adjustable overtemperature protection
- > PRO-SIL™ ISO 26262 - ready for supporting the integrator in evaluation of hardware element according to ISO 26262

Target applications

- > Fail operational power supply targeting high current applications
- > Connection/isolation switch between power supplies (e.g. for hybrid and electric vehicles)
- > Developed to support dependable power supply and distribution

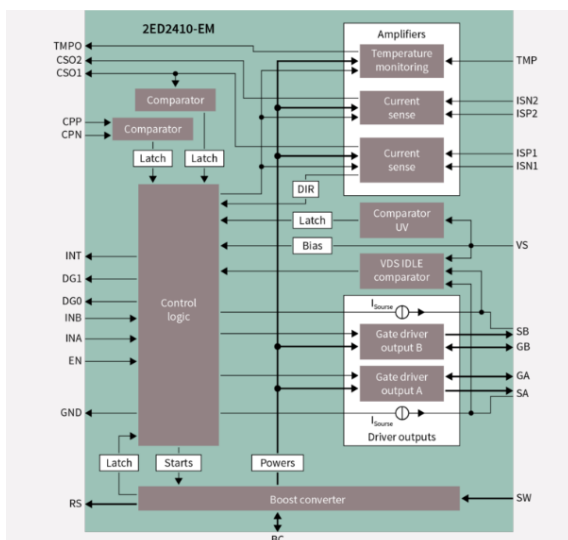
Product collaterals / Online support

[Product page](#)

[Product brief](#)

[User manual](#)

Block diagram



Product overview incl. data sheet link

OPN	SP Number	Package
2ED2410EMXUMA1	SP005072940	PG-TSDSO-24

600 V CoolMOS™ S7 in QDPAK and TO-220 package

The 600V CoolMOS™ S7 SJ MOSFET family is optimized for low conduction losses and features the lowest $R_{DS(on)}$ in the market when it comes to high-voltage SJ MOSFETs in a compact SMD package. It comes with an unprecedented $R_{DS(on)}$ x price figure of merit and is a perfect fit for solid-state circuit breakers and relays, PLCs, battery protection, and active bridge rectification in high-power power supplies. The top side cooling minimizes conduction losses and maximizes power density, with the most efficient SMD cooling.



Features

- > Low $R_{DS(on)}$
- > Compact top-side-cooled QDPAK & TO-220 package
- > Optimized for conduction performance
- > Improved thermal resistance
- > High pulse current capability
- > Kelvin-source pin improves switching performance at high current

Target applications

- > SMPS
- > Solar energy systems
- > Battery and equipment protection
- > Solid state relays (SSR) and solid state circuit breakers (SSCB)
- > Indoor commercial lighting control
- > UPS
- > Low speed electric vehicles (LSEV)
- > Programmable logic controllers (PLC)
- > Room air conditioning

Benefits

- > Minimizes conduction losses
- > Increases energy efficiency
- > More compact and easier designs
- > Eliminates or reduces heat sinks in solid-state design
- > Lower TCO cost or BOM cost

Product collaterals / Online support

[Product family page](#)

[Product brief](#)

[Application note](#)

Product overview incl. data sheet link

OPN	SP Number	Package
IPP60R040S7XKSA1	SP005559297	PG-TO220-3
IPP60R065S7XKSA1	SP005559298	PG-TO220-3
IPDQ60R022S7XTMA1	SP005559293	PG-HDSOP-22
IPDQ60R040S7XTMA1	SP005559294	PG-HDSOP-22
IPDQ60R065S7XTMA1	SP005559296	PG-HDSOP-22

Power Disc AMPT T1400N16H75 and T1700N16H75

Cost - effective and fully integrated solution for low voltage soft starters, UPS bypasses and low voltage drives.

The 1600 V power discs with 75 mm diameter and 26 mm height are extended with a 1400 A and 1700 A version. The T1400 is a cost - efficient alternative to the already established T1190, while T1700 is the alternative to T1500.

Our new thyristor offers the highest continuous current for 75 mm housings. Customers benefit from more opportunities for cost-effective and compact semiconductor solutions.

The standard 75 mm housing can be used for new and existing designs.



Features

- > 75 mm diameter and 26 mm height power discs
- > 1600 V
- > Ceramic housing
- > Advanced Medium Power Technology (AMPT)
- > Full blocking capability 50 / 60 Hz over a wide temperature range
- > High DC blocking stability
- > High turn - on di / dt capability
- > High dv / dt capability

Target applications

- > Low voltage soft starters and low voltage drives

Benefits

- > Lower on - state losses
- > T1700 allows 10K higher T_{jmax} from 125° C to 135° C
- > Minimized maintenance and reduced downtime due to high reliability
- > Easy system power scaling by special designs for series- and parallel connection
- > Fuse-less design possible due to high overload capability

Competitive advantage

- > Highest continuous current for 75 mm housing, 50 A higher than competition

Block diagram



1: Anode / Anode
2: Kathode / Cathode
4: Gate
5: Hilfskathode/
Auxiliary Cathode

Product collaterals / Online support

[Product family page](#)

[Product page T1400N16H75VT](#)

[Product page T1700N16H75VT](#)

Product overview incl. data sheet link

OPN	SP Number	Package
T1400N16H75VTXPSA1	SP005568029	BG-T7526K-1
T1700N16H75VTXPSA1	SP005556301	BG-T7526K-1

OPTIGA™ TPM SLB 9673 FW26.xx

OPTIGA™ TPM SLB 9673 FW26.xx is the latest addition to the OPTIGA™ TPM family targeted at connected devices that require enhanced security features.

This standardized, ready-to-use security solution comes with an I2C interface. It serves as a robust foundation to identify and authenticate network infrastructure and light industrial machines such as factory robots and Programmable Logic Controllers (PLC). In addition, it protects data integrity and confidentiality.

OPTIGA™ TPM SLB 9673 FW26.xx is future-proof thanks to a PQC-protected firmware update mechanism, extended memory, and strong algorithms. Integrated resiliency features allow the TPM firmware to be recovered in compliance with the NIST SP 800-193 Platform Firmware Resiliency Guidelines.

OPTIGA™ TPM SLB 9673 FW26.xx gives “things” a unique identification number so they can connect to the IoT or the network. This number can be used to track IoT devices and equipment on the networks, and to validate their access rights. To avoid the risk of counterfeit, this number is protected from being modified.

A set of configurable commands is available to set the TPM up according to application-specific needs during platform manufacturing.

Its enhanced security features include AES bulk encryption, configuration of the TPM-unique ID, and a configurable endorsement primary seed.



Features

- > I²C interface up to 1 MHz
- > Extended non-volatile memory (51 kB)
- > Support for latest cryptographic algorithms: up to RSA-4096, ECC NIST P384, SHA2-384
- > TCG TPM2.0 (revision 1.59), CC and FIPS certifications
- > PQC-protected firmware upgrade mechanism using XMSS signatures
- > Thin UQFN-32 package
- > Extended temperature range (from -40° C to 105° C)

Product collaterals / Online support

[Product page](#)

Benefits

- > Proven, standardized turnkey security solution
- > High confidence level based on Common Criteria and FIPS certifications
- > Faster cryptographic operations than previous generation
- > Easy integration with Linux OS platforms

Competitive advantage

- > The first I2C TPM with a PQC-protected firmware upgrade mechanism using XMSS signatures.

Target applications

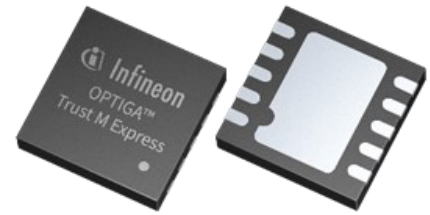
- > Infrastructure: router
- > Industrial automation, drives and PLC
- > Smart building: surveillance camera
- > EV charging
- > Enterprise: printer

Product overview incl. data sheet link

OPN	SP Number	Package
SLB9673XU20FW2610XTMA1	SP005722390	PG-UQFN-32
SLB9673AU20FW2610XTMA1	SP005722392	PG-UQFN-32

OPTIGA™ Trust M Express

OPTIGA™ Trust M Express offers rock-solid security for IoT devices every step of the way from manufacturing through cloud onboarding to field deployment. The cryptographic identity of OPTIGA™ Trust M Express is provisioned in a certified and secured Infineon fab. It is protected from exposure at all stages during the product lifetime. This off-the-shelf solution removes the need for secured ID injection during IoT device manufacturing.



This allows you to enhance the security of your IoT devices and their cloud connectivity while simplifying the production flow, accelerating time-to-market, and increasing cost efficiency.

OPTIGA™ Trust M Express is offered in combination with CIRRENT™ Cloud ID – Infineon’s cloud service that automates IoT device certificate registration and device provisioning in the product cloud at scale with zero manual intervention. This saves time and resources, protects against human error, and makes the process highly scalable.

Features

- > Pre-provisioned with a unique device identity (x.509 certificate) injected in a security certified Infineon facility
- > Ready to use: OPTIGA™ Trust M Express is delivered in an off-the-shelf state and requires no additional programming during the manufacturing process
- > Zero-touch cloud onboarding: with CIRRENT™ Cloud ID support for automated onboarding of IoT devices to the cloud
- > Hardware-based security: Based on CC EAL 6+ certified hardware and state-of-the-art cryptography
- > Open Source: MIT licensed software framework on GitHub
- > Robustness: up to 20 years lifetime for industrial and infrastructure applications
- > Main use cases: Secured cloud authentication, secured cloud communication, crypto offloads, secured software updates and more...

Competitive advantage

- > Our solution provides a simple and secure process for automated cloud provisioning (zero-touch) with easy-to-use user interface provided by CIRRENT Cloud ID and a highly secure, ready-to-use OPTIGA™ Trust M Express security solution

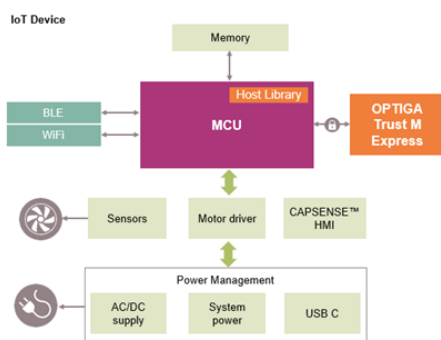
Benefits

- > Saves costs, by removing the need for highly secured manufacturing environment and the need to build and maintain a public key infrastructure
- > Go to market quickly, by a faster design-in process and removes the need for personalization during manufacturing, as well as ready to connect to Azure and AWS.
- > Scales quickly, by automated device onboarding to cloud and a simplified device claiming process
- > Robust security

Target applications

- > Smart home
- > Smart buildings
- > Smart mobility
- > Smart cities
- > Healthcare / Lifestyle
- > Industrial IoT

Block diagram



Product overview incl. data sheet link

OPN	SP Number	Package
OPTIGATRSTMEXPSAMPLXHS1	SP005851493	
SLS32AIA010MLUSON10XTMA9	SP005829966	PG-USON-10

Product collaterals / Online support

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

EZ-PD™ Barrel Connector Replacement (BCR)

EZ-PD™ Barrel Connector Replacement (BCR) is Infineon's highly integrated USB Type-C port controller targeting electronic devices that have legacy barrel connectors (up to 100 W) or USB micro-B connectors for power such as drones, smart speakers, power tools, and other rechargeable devices. EZ-PD™ BCR complies with the latest USB Type-C and USB power delivery (PD) standards and enables users to quickly convert their devices from being powered through a barrel connector to being powered via the USB-C connector with few external components and no firmware development is required. EZ-PD™ BCR integrates a complete USB Type-C transceiver, USB PD policy manager, a load switch controller with a soft start, all termination resistors required for a USB Type-C port, and system-level ESD protection.



Features

- > Supports USB Type-C and power delivery 3.0 programmable power supply
- > Supports Apple charging (2.4 A)
- > UFP-only with configurable RD and RD-DB
- > Integrated analog blocks 30 V tolerant regulator VBUS - to - CC short protection on - chip overvoltage protection (OVP)
- > Supports extended industrial temperature range (-40 ° C to +105 ° C)

Competitive advantage

- > System - on - ship solution: complete USB-C interface, and the USB Power Delivery policy manager runs autonomously without needing any firmware development
- > Highly integrated solution that contains several analog components on - chip
- > USB-C connector is well protected by the EZ-PD™ BCR solution with its on - chip OVP, UVP, OCP, V Bus short protection and IEC61000-4-2 compliant ESD protection
- > Small form factor

Benefits

- > A highly integrated system - on - a - chip solution that minimizes BOM cost for a USB-C power - sink system
- > Supports all USB-PD profiles commonly used in USB-C power adapters and requires no firmware development
- > USB-IF certified with market proven USB-PD stack, ensuring spec compliance and interoperability
- > Evaluation kits available for your specific needs

Target applications

- > Smart speakers
- > Power tools
- > Electric shavers
- > Cameras
- > Handheld game consoles
- > Media players
- > Electronic toys
- > VR headset
- > Drones
- > Most portable, battery-powered electronic devices

Product overview incl. data sheet link

OPN	Package
CYPD3176-24LQXQ	24-QFN
CYPD3176-24LQXQT	24-QFN
CYPD3178-24LQXQ	24-QFN
CYPD3178-24LQXQT	24-QFN
CY4534	
CY4535	

Product collaterals / Online support

[Product page](#)

[Solution brief](#)

EZ-USB™ Serial Bridge Controller

EZ-USB™ Serial Bridge Controller is a family of full speed bridge controllers offering both configurable and fixed-function options. These bridge controllers are the first in the industry to offer configurable serial channels for UART/I2C/SPI interfaces, with the industry's lowest power consumption in standby mode (5 uA). With the latest addition of fixed-function controllers, it can be easily configured to work as USB to UART, USB to I2C, or USB to SPI bridges without requiring any firmware development by the user.

The EZ-USB™ Serial Bridge Controllers integrate the industry-leading CAPSENSE™ capacitive-touch sensing technology (for touch-sensitive key switches) and Battery Charger Detection compliant with USB-IF Battery Charging specification ver. 1.2 (to detect the source of power on the USB port).

Features

- > Dual-channel UART, I²C, or SPI-to-USB bridge
- > Support for up to eight CAPSENSE™ buttons
- > BCD compliant to USB-IF Battery Charging v1.2
- > Integrated regulator, oscillator, and termination resistors
- > Driver support for major operating systems:
 - > Windows (Vista/XP/CE/8/7)
 - > Mac OS X 10.6 and later
 - > Linux kernel 2.6.35 and later
 - > Android Gingerbread and later
- > Configuration utility for VID / PID and serial interfaces
- > Available packages: 24-QFN (4 x 4 x 0.55 mm) and 32-QFN (5 x 5 x 1.0 mm)

Product overview incl. data sheet link

OPN	Package
CY7C65210-24LTXI	24-VQFN
CY7C65211-24LTXI	24-VQFN
CY7C65211A-24LTXI	24-VQFN
CY7C65213-28PVXI	28-SSOP
CY7C65213-32LTXI	32-VQFN
CY7C65213A-28PVXI	28-SSOP
CY7C65213A-32LTXI	32-VQFN
CY7C65214D-32LTXI	32-VQFN
CY7C65215-32LTXI	32-VQFN
CY7C65216-24LTXI	24-VQFN
CY7C65216D-32LTXI	32-VQFN
CY7C65217-24LTXI	24-VQFN
CY7C65223-24LTXI	24-VQFN
CY7C65223D-32LTXI	32-VQFN



Benefits

- > Integrated CAPSENSE™ technology
- > No software / firmware development required
- > Supports single – and dual channel interfaces
- > Battery charger detection
- > Addresses a broad range of applications
- > Broad portfolio of configurable and fixed-function controllers
- > Easy adoption and implementation

Target applications

- > IoT Devices
 - > Wireless IoT gateway
 - > Wirelett IoT router
- > USB to UART generic solutions
 - > NFC card reader
 - > Kiosk printer
 - > Auto starter
 - > UART fingerprint scanner
- > USB Billboard Controllers
 - > Dongles for USB type-C
 - > Docking stations
- > Monitors

Competitive advantage

- > Empower USB 2.0 with a family of full speed bridge controllers offering both configurable and fixed-function options

Product collaterals / Online support

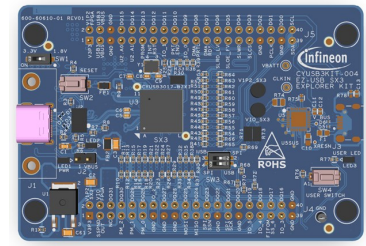
[Product family page](#)

[Product brief](#)

[Application note](#)

EZ-USB™ SX3 Explorer Kit for SuperSpeed USB - CYUSB3KIT-004

The CYUSB3KIT-004 EZ-USB™ SX3 explorer kit (DVK) is based on the SX3 product family of Infineon's configurable controllers for SuperSpeed USB. EZ-USB™ SX3 has a fully configurable general interface that can interface with any processor, ASIC, image sensor, or field programmable gate array (FPGA). It provides easy and effortless connectivity to popular industry interfaces such as synchronous slave FIFO, asynchronous SRAM, asynchronous and synchronous address data multiplexed interfaces, and image sensor interfaces.



Features

- > Video streaming up to 1080 p @30 fps in YUV format from onboard image sensor module
- > Audio stream from onboard L/R digital MEMS microphones
- > USB bus-powered operation
- > External off-the-shelf MIPI camera interface from Raspberry Pi
- > Compatible with FX3 explorer kit interconnect boards
- > Onboard regulators
- > Firmware-controlled LED and user switch
- > GPIO headers

Competitive advantage

- > Easy connectivity: The EZ-USB™ SX3 explorer kit combines hardware, software, and documentation that enable customers to evaluate the SX3 device

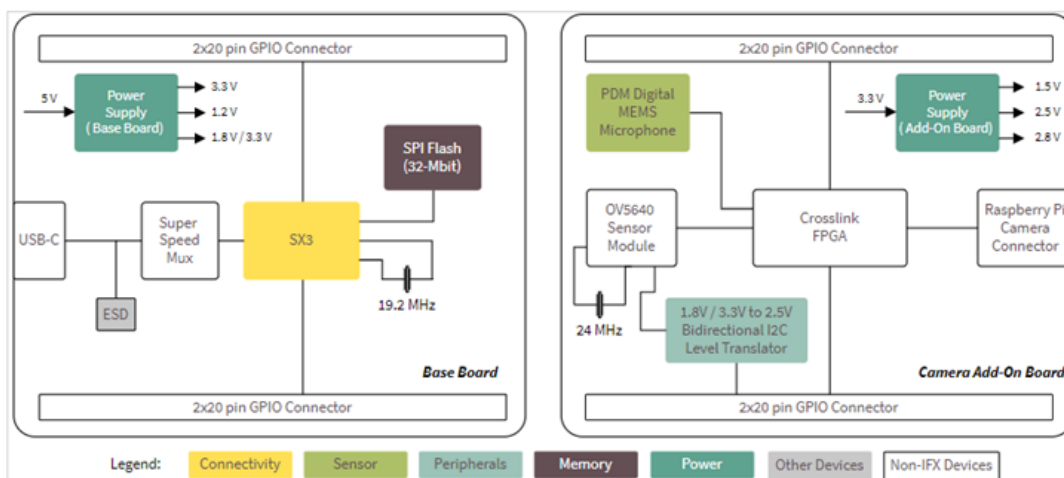
Benefits

- > Fully configurable general interface that can interface with any processor, ASIC, image sensor, or field programmable gate array (FPGA)
- > Easy and effortless connectivity to popular industry interfaces such as synchronous slave FIFO, asynchronous SRAM, asynchronous and synchronous address data multiplexed interfaces, and image sensor interfaces

Target applications

- > USB webcam, document cameras, video conference systems
- > USB to low-voltage differential signaling (LVDS) camera interface boards
- > HDMI USB video capture cards, SDI USB video capture cards
- > Test and measurement equipment
- > Surveillance cameras
- > Medical imaging devices
- > Industrial cameras
- > USB logic analyzers, USB oscilloscopes, USB data loggers, USB data acquisition systems, USB Time-of-Flight (TOF) cameras

Block diagram



Product overview incl. data sheet link

OPN

[CYUSB3KIT-004](#)

Product collaterals / Online support

[Board page](#)

[Application note](#)

[User manual](#)