

New Product Introduction



May 2021

EiceDRIVER™ X3 Compact (1ED31xx) with reinforced isolation

XDP™ digital power XDPS2201 – hybrid flyback controller

IHV B single switch power modules 3.3 kV with IGBT4

XENSIV[™] – 3D magnetic Hall sensors for automotive applications TLE493D-P2B6

XENSIV[™] – 3D magnetic Hall sensors for consumer applications TLV493D-A2BW

BGA9x1MN9 family - LNAs for 5G and LTE applications

62mm power module 1200 V with IGBT4 – FF600R12KT4

1200V CoolSiC MOSFET for Automotive

CIPOS™ Maxi 1200 V 15 A IM818-LCC

Infineon® Power diode 38DN06B02, 46DN06B02

REF FRIDGE D111T MOS - Reference design for efficient control of rotary fridge compressor drives

REF TW BCR601 55V 0.5A - Tunable white LED driver reference design with linear regulators

EiceDRIVER™ X3 Compact (1ED31xx) with reinforced isolation

This release of the X3 Compact (1ED31xx) family adds reinforced isolation according to VDE 0884-11 products to the portfolio. These products complement the existing compact & easy to design-in isolated gate driver family including Miller clamp or separate outputs option.

The gate driver family provides typical peak output currents of up to 14 A, excellent propagation delays and matching. The active Miller clamp function is highly recommended for SiC MOSFETs and IGBT7 at 0 V turn-off. This avoids parasitic turnons and improves the application safety.

Features

- > Reinforced isolation according to VDE 0884-11
- > For IGBTs (incl. IGBT7), SiC and Si MOSFETs
- > 14 A typical output current, 7 ns propagation delay matching
- > 90 ns propagation delay with 30 ns input filter
- > 40 V absolute maximum output supply voltage
- > Separate source and sink outputs or Miller clamp

Competitive advantage

- > Integrated filters reduce the need for external filters & therefore optimize the customer's bill-of-materials.
- > The Miller clamp option in combination with SiC MOSFETs or IGBT7 avoid harmful parasitic turn-ons and enable superior application safety

System diagram



Product overview incl. data sheet link

OPN	SP Number	Package
1ED3120MC12HXUMA1	SP001878178	PG-DSO-8
1ED3121MC12HXUMA1	SP001878188	PG-DSO-8
1ED3122MC12HXUMA1	SP001878172	PG-DSO-8
1ED3123MC12HXUMA1	SP001878182	PG-DSO-8
1ED3124MC12HXUMA1	SP001878200	PG-DSO-8
1ED3131MC12HXUMA1	SP003244266	PG-DSO-8
EVAL1ED3122MX12HTOBO1	SP005347593	Board
EVAL1ED3121MX12HTOBO1	SP005347597	Board
EVAL1ED3124MX12HTOBO1	SP005347599	Board



Benefits

- > VDE 0884-11 with V_{IORM} = 1767 V (peak, reinforced) and UL 1577 (pending) V_{ISO} = 6 kV (rms) for 1 s, 5.7 kV (rms) for 1 min
- > Integrated filters reduce the need for external filters
- Tight IC-to-IC turn on propagation delay matching (7 ns max.) improves application robustness & improves system efficiency
- > Suitable for operation in fast switching applications
- > Superior application safety based on VDE 0884-11 and UL 1577

Target applications

- > Industrial motor drives compact, standard, premium, servo drives
- > Solar inverters
- > UPS systems
- > EV charging
- > Energy storage systems

Product collaterals / Online support

Product family page

Application note

XDP[™] digital power XDPS2201 – hybrid flyback controller

The XDP[™] digital power XDPS2201 is a multi-mode, digitally configurable hybrid flyback controller that combines the simplicity of a traditional flyback topology with the performance of a resonant converter. By utilizing two high-voltage MOSFETs, such as CoolMOS[™], the hybrid flyback XDPS2201 is able to drive both high- and low-side MOSFETs in an asymmetric half-bridge flyback topology. ZVS (zero voltage switching) on primary side and ZCS (zero current switching) on the secondary side are achieved through the means of regulating both positive and negative magnetizing current to increase efficiency. In addition, transformer leakage energy is recycled, thereby further increases efficiency.



Features

- > Supporting wide AC line input voltage range
- > Low switching losses with zero voltage and current switching across all AC line input and load conditions
- High efficiency with multi-mode operation (active burst mode, DCM, ZV-RVS and CRM)
- > Integrated high-side driver
- > Snubberless design

Block diagram

> Single auxiliary transformer winding and resonant cap output to support wide output voltage range

Benefits

- High efficiency of >93% and low standby power to meet international efficiency regulatory standards
- > Ultrahigh power density
- > Low BOM cost and count with highly integrated controller
- > Simplified transformer design to support wide output voltage range
- > Ease of configurable design with GUI tools

Target applications

- > Adapter
- > USB PD charger
- > Smartphone charger



Product overview incl. data sheet link

OPN	SP Number	Package
XDPS2201XUMA1	SP005417712	PG-DSO-14

Product collaterals / Online support

Product page

Product brief

Application note

IHV B single switch power modules 3.3 kV with IGBT4

The well-known IHV B 3.3 kV single switch IGBT module has been improved to meet current and future requirements for industry applications such as drives, traction and transmission. It now features the TRENCHSTOP™ IGBT4 and Emitter Controlled 4 diode.

The FZ2400R33HE4 offers 45% better performance in the same housing, compared to 1800 A competitor device. FZ825R33HE4D has an increased diode, which offers the same performance as the 1000 A Infineon and competition devices. FZ1600R33HE4 is 30% smaller at 10% higher performance vs. 1500 A competition devices.

Customers can easily switch from the IGBT3 to the IGBT4 solution thanks to the standardized IHV B housing. In addition, a frame-size jump is achieved when exchanging the FZ1500R33HE3 with the new FZ1600R33HE4 which results in smaller inverters for the same power.

Features

- Standardized IHV B housing 190 mm (FZ2400) or 130 mm (FZ825 and FZ1600)
- > Best in class short circuit capability
- > Latest 3.3 kV IGBT4 chip generation in 8" wafer technology
- > Optimized substrate layout and chip area
- > Power cycling improved by factor 2 compared to competition and IGBT3 devices
- > Package with CTI > 600
- > Best in class short circuit capability statt 3.3 kV

Benefits

- > Unbeatable robustness against over load and fault condition
- > Highest power & thermal cycling capability
- > Enables frame size jumps
- > Low effort for upgrading old design to newest technology
- > Reduced system-cost
- > Higher performance at given inverter size

Target applications

- > Traction
- > Drives
- > Transmission

Competitive advantage

- > FZ2400R33HE4 offers 45% better performance in same housing vs. 1800 A competition device
- > FZ825R33HE4D has highly increased diode, which offers in consequence in most applications same performance as the 1000 A Infineon and competition devices
- > FZ1600R33HE4 is 30% smaller at 10% higher performance vs. 1500 A competition devices



OPN	SP Number	Package
FZ2400R33HE4BPSA1	SP005559851	AG-IHVB190-441
FZ1600R33HE4BPSA1	SP005560458	AG-IHVB130-441
FZ825R33HE4DBPSA1	SP005550793	AG-IHVB130-411

Product collaterals / Online support

Product page, FZ2400R33HE4 Product page, FZ1600R33HE4 Product page, FZ825R33HE4D Application note

Bulk Canacite

Block diagram

XENSIV[™] – 3D magnetic Hall sensors for automotive applications TLE493D-P2B6

The TLE493D-P2B6 is a magnetic 3D sensor enabled by new and improved HTM test equipment used in qualification. It has improved technical performance of TLE493D-W2B6.



Features

- > 3D (X, Y, Z) magnetic flux density sensing of ±160 mT
- > Programmable flux resolution down to 65 µT (typ.)
- > X-Y angular measurement mode
- > Diagnostic measurements to check digital parts, analog parts and Hall probe of the sensor
- > Wake Up function and Power down mode with 7 nA (typ.) power consumption
- > 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 µC possible via I2C protocol
- > Interrupt signal to indicate a valid measurement to the microcontroller

Benefits

- > Component reduction due to 3D magnetic measurement principle
- Wide application range addressable due to high flexibility
- > Platform adaptability due to device configurability
- > Supporting functional safety by means of integrated diagnostics
- > Very low system power consumption due to Wake-Up mode resulting in extended battery runtime
- > Disturbance of smaller stray fields are neglectable compared to the high magnetic flux measurement range

Target applications

- > Gear stick position
- > Control elements in the top column module and multi-function steering wheel
- > Multi-function knobs
- > Pedal/valve position sensing



Rotation movement



3D movement



Linear movement



Outofshaft

Product overview incl. datasheet link

OPN	SP Number	Package
TLE493DP2B6A0HTSA1	SP005557415	PG-TSOP6-6-8
TLE493DP2B6A1HTSA1	SP005557413	PG-TSOP6-6-8
TLE493DP2B6A2HTSA1	SP005557411	PG-TSOP6-6-8
TLE493DP2B6A3HTSA1	SP005557408	PG-TSOP6-6-8

Product collaterals / Online support Product family page Product brief

XENSIV[™] – 3D magnetic Hall sensors for consumer applications TLV493D-A2BW

The TLV493D-A2BW is a magnetic 3D sensor that offers accurate three dimensional sensing with extremely low power consumption. Within its small WLB package the sensor provides direct measurement of the x-, y-, and z components of a magnetic field. The newly released TLV493D-A2BW has halogen free package and ultra-small size that provides more flexibility to end customer for designing.



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
- > 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 = -20°C...85°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
- > Disturbance of smaller stray fields are neglectable compared to the high magnetic flux measurement range

Target applications

- > Joysticks and gimbals
- > Household products
- > Personal care electrical devices
- > Wearable devices
- > Anti tampering in smart meters



Product overview incl. product page link

OPN	SP Number	Package
TLV493DA2BWXTMA1	SP005542151	SG-WFWLB-5-2

Product collaterals / Online support

Product page Product brief

Classification: restricted document! The information presented is valid from May1st 2021. Please check the latest Distribution Price Book for current prices and minimum quantities

Block diagram

BGA9x1MN9 family - LNAs for 5G and LTE applications

MIPI 5G LNA

The BGA9C1MN9 supports ultra-low bypass current of 2 μ A and 1.2 V operating voltage to reduce power consumption. It operates from 1.1 V to 2.0 V supply voltage over temperature. The compact9 pin TSNP-9 package with the dimension of 1.1 x 1.1 mm helps to save space on the PCB.



Benefits

- > NF is lower than competitor modules
- > Around half current consumption
- > Higher flexibility to source filter

Target applications

> LTE / 5G Smartphones

Competitive advantage

- > Multi-state control: Gain- and Bypass-Modes
- > High Linearity
- > High gain: 20.0 dB

Features

- > Power gain: 21.0 dB
- > Low noise figure: 0.7 dB
- > Low current consumption: 5.6 mA
- > Supply voltage: 1.1 to 2.0 V
- > Integrated MIPI RFFE interface operating in 1.65 to 1.95 V voltage range
- > Software programmable MIPI RFFE USID
- > USID select pin
- > Small form factor 1.1 mm x 1.1 mm
- > High EMI robustness
- > RoHS and WEEE compliant package





Product overview incl. product page link

OPN	SP Number	Package
BGA9V1MN9E6327XTSA1	SP002367704	PG-TSNP-9
BGA9C1MN9E6327XTSA1	SP002367712	PG-TSNP-9

Product collaterals / Online support

Product family page

62mm power module 1200 V with IGBT4 – FF600R12KT4

The 62mm power module is a well-established module design with isolated baseplate and screw main terminals. The four baseplate mounting holes enable fast, cost-efficient and easy module assembly. The 62mm module housing is optimized for highest system availability, realized by high thermal cycling capability. It provides a minimum of service cost and off-time losses.

The FF600R12KT4 provides the highest power density in the standard 62mm housing and is equipped with a fast trench IGBT4 chip.

It is tailored for drives, UPS and solar applications.

With the introduction of the FF600R12KT4, the portfolio of IGBT4 62mm modules now offers 200, 300, 450 and 600 A power ratings with a fast trench IGBT.

Features

- > 600 A/1200 V
- > Fast trench IGBT4 chip technology
- > T_{jop}_max=150°C
- > Established 62mm module design with isolated baseplate
- > Robust standard housing, screw main terminals

Target applications

- > Motor control and drives
- > Solutions for solar energy systems
- > Uninterruptible power supply (UPS)

Block diagram



OPN	SP Number	Package
FF600R12KT4HOSA1	SP005342974	AG-62MM-1

Product collaterals / Online support

Product page

Application note



Benefits

- > Highest power density in standard 62mm package
- > Low stray inductance of 20 nH and symmetrical internal construction
- > Increase in lifetime by a factor two compared to IGBT3
- Increase in power cycling capability by a factor four compared to IGBT3
- > Optimized design for creepage and clearance distances

Competitive advantage

 Full module portfolio of mature housing technology over voltage classes and current ratings

1200V CoolSiC MOSFET for Automotive

The CoolSiC[™] MOSFET for Automotive family shows exceptional performance, quality and reliability in On-Board Charger and DC-DC applications in hybrid and electric vehicles. The devices are specifically designed to meet the high requirements demanded by the automotive industry with regards to reliability, quality and performance.



Features

- > Revolutionary semiconductor material Silicon Carbide
- > Very low switching losses
- > Threshold-free on state characteristic
- > IGBT-compatible driving voltage (15 V for turn-on)
- > 0V turn-off gate voltage
- > Benchmark gate threshold voltage, V_{GS(th)}=4.5 V
- > Fully controllable dv/dt

Block diagram

- > Commutation robust body diode, ready for synchronous rectification
- > Temperature independent turn-off switching losses

Benefits

- > Efficiency improvement
- > Enabling higher frequency
- > Increased power density
- > Cooling effort reduction
- > Reduction of system complexity and cost

Target applications

- On-board Charger/PFC (uni- and bi-directional charging)
- > Booster/DC-DC Converter
- > Auxilliary Inverter

Competitive advantage

> Best-in-Class efficiency; leading quality and reliability



Product overview incl. product page link

OPN	SP Number	Package
AIMW120R035M1HXKSA1	SP005417579	PG-TO247-3
AIMW120R060M1HXKSA1	SP005417583	PG-TO247-3
AIMW120R080M1XKSA1	SP004807194	PG-TO247-3

Product collaterals / Online support

Product family page

Product brief

Application note

CIPOS™ Maxi 1200 V 15 A IM818-LCC

High-performance CIPOS[™] Maxi transfer molded IPM IM818-LCC integrates 6 TRENCHSTIP[™] IGBT4 with an optimized 1200 V 6-channel SOI gate driver to increase reliability, provide excellent protection and optimize PCB size and system costs.

The smallest and most compact package in the 1200 V class, this IPM combines a power rating in excess of 3 kW with exceptional power density, reliability and performance. It offers excellent protections such as under-voltage lockout on all channels, all switches turnoff during protection, cross-conduction prevention, over-current protection, temperature monitoring.

Features

- > Fully isolated dual inline molded module with DCB
- > 1200 V TRENCHSTIP™ IGBT4
- > Rugged 1200 V SOI gate driver technology
- > Integrated bootstrap functionality
- > Overcurrent shutdown
- > Undervoltage lockout on all channels
- > Turnoff of all six switches during protection
- > Cross-conduction prevention
- > Allowable negative VS potential up to -11 V for signal transmission at VBS=15 V
- > Low-side emitter pins accessible

Block diagram



Product overview incl. product page link

OPN	SP Number	Package
IM818LCCXKMA1	SP005260270	PG-MDIP-24

Benefits

> Smallest package size in 1200 V IPM class with high power density and excellent performance

Infineon DSTM Maxi A AMAM

- Gate driver technology with enhanced robustness for excellent protection
- > High efficiency
- > Fast switching speed up to 20 kHz
- Adapted to fast-switching applications with lower power losses
- > Simplified design and manufacturing

Target applications

- > Fans
- > Pumps
- > Outdoor fan for HVAC
- > Low-power motor drives

Competitive advantage

> IM818-LCC has the smallest and most compact package in the 1200 V class

Product collaterals / Online support

Product page

Application note

Infineon® Power diodes 38DN06B02, 46DN06B02

Infineon designed the new welding diodes with improved losses for medium frequency resistance welding and high current rectifier applications. The low on-state voltage allows very high forward current of around 10-15% more than our current types 38DN06 and 46DN06.



Features

- Forward current up to 10 15% higher than current types
- > Low losses
- > Highest reliability
- > Best-in-class power cycling capability

Competitive advantage

> Electrical and thermal contact optimized for extreme load cycling requirements

Benefits

> Best-in-class performance and lifetime ratio

Target applications

- > Resistance welding
- > High current low voltage rectifier
- > Solid state decoupling

Block diagram



Product overview incl. data sheet link

OPN	SP Number	Package
38DN06B02ELEMXPSA1	SP005414444	BG-D_ELEM-1
46DN06B02ELEMXPSA1	SP005557199	BG-D_ELEM-1

Product collaterals / Online support

Product page, 38DN06B02 Product page, 46DN06B02

Application note

REF_FRIDGE_D111T_MOS - Reference design power stage for rotary fridge compressor with iMOTION™ SmartDriver IMD111T and 600 V CooIMOS™

The reference board is a ready-to-use three-phase inverter designed for refrigerator compressors. It demonstrates the whole Infineon solution including the iMOTION™ Smart Driver IMD111T-6F040 and the 600 V CoolMOS™ PFD7 super junction MOSFET IPN60R1K0PFD7S. The reference board is designed to provide easy to use power stage based on our discrete CoolMOS™ Superjunction MOSFET. The board is equipped with all assembly groups for sensorless field oriented control (FOC). It provides a single-phase AC-connector, rectifier, and three-phase output for connecting the motor. The power stage also contains emitter shunts for current sensing and a voltage divider for DC-link voltage measurement.



Features

- > High integration solution featuring iMOTION™ Smart Driver IMD111T-6F040 and 600 V CoolMOS™
- > Ready-to-use motion controller with scripting engine and 6-channel
- > 600 V CoolMOS[™] PFD7 optimized technology with lowest Qrr, ESD protection and compact SOT-223 surface mounted device (SMD) package

Benefits

- > System solution enables best light-load efficiency and compact design.
- > Field-proven turnkey iMOTION™ sensorless FOC solution, plus optional PFC control
- > Cost effective design in SMT using SOT-223
- > Ease of use with graphical user interface (GUI)

Target applications

- > Pumps
- > Refrigerators
- > Small Home Appliance

Competitive advantage

- > System solution enables best light-load efficiency and compact design.
- > Field-proven turnkey iMOTION™ sensorless FOC solution, plus optional PFC control
- > Cost effective design in SMT using SOT-223
- > Ease of use with graphical user interface (GUI)



Product overview incl. user manual link

OPN	SP Number	Package
REFFRIDGED111TMOSTOB01	SP005446494	Board

Product collaterals / Online support

Product page

Application note

User manual

Classification: restricted document! The information presented is valid from May1st 2021. Please check the latest Distribution Price Book for current prices and minimum quantities.

System diagram

REF_TW_BCR601_55V_0.5A - Tunable white LED driver reference design with linear regulators

The REF_TW_BCR601_55V_0.5A tunable white reference design with 2 channels uses BCR601 and BCR602 linear regulators to provide a very stable LED current which is completely free of any ripple or temporary fluctuations. Consequently, the light output is completely free of any artefacts like flicker or stroboscopic effects. Thanks to the active head-room control (AHC) of BCR601, the output of the primary stage of the board, which is attached to, is regulated to maximize efficiency to levels that are quite similar to switched-mode regulators. The cost-effectiveness especially in multichannel designs can be further enhanced by using BCR602 in a tiny SOT23-6 package regulating the LED current for flicker-free deep dimming performance.



Features

- > BCR601 as the master controller controls the voltage overhead of both channels and current of one channel
- > BCR602 as slave controller regulates the current of the second channel
- > Input voltage up to 60 V
- > Can be operated with either BJT or N-channel MOSFET
- Analog dimming down to 3 %, PWM dimming down to 1 % (BCR602)
- > Current precision ±3 %
- > OTP, OVP, hot-plug protection

Benefits

- Linear regulators give considerable cost advantage over buck topology
- > Cost advantage increases with additional channels
- > Efficiency can be on par with the buck (depends on output ripple of the first stage)
- > Highest light quality, zero ripple
- > Deep, full analog dimming
- > Easy to extend to additional outputs (e.g. RGBW)

Target applications

- > LED Lighting
- > LED Driver



Product overview incl. data sheet link

OPN	SP Number	Package
REFTWBCR60155V05ATOBO1	SP005433044	Board

Product collaterals / Online support

Product page

Application note