Infineon Technologies
New Products Introduction

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600 V CoolMOS™ C7 series
Portfolio extension in D²PAK

The new 600 V CoolMOS™ C7 series from Infineon offers a ~50 percent reduction in turn-off losses ($E_{\text{loss}}$) compared to the CoolMOS™ CP, offering a GaN-like level of performance in PFC, TTF and other hard switching topologies. Efficiency and TCO (total cost of ownership) driven applications benefit from the higher efficiency offered by CoolMOS™ C7. Gains of 0.3 to 0.7 percent in PFC and 0.1 percent in LLC topologies can be achieved.

Features

- Reduced switching loss parameters such as $Q_G$, $C_{\text{oss}}$, enabling higher switching frequency
- 50 percent $E_{\text{loss}}$ reduction compared to older CP technology and close to GaN
- Lowest $R_{\text{DS(on)}}$ * A in the world (<1 Ω mm²)
- Suitable for high-end resonant topologies

Benefits

- Doubling the switching frequency will reduce the size and cost of magnetic components (e.g. 65 kHz - 130 kHz)
- Increased efficiency in PFC and TTF topologies
- Smaller packages for same $R_{\text{DS(on)}}$ lead to power density benefits
- Suitable for high-end LLC circuits

Target applications

- Telecom
- Server
- High-end PC power
- Solar
- Industrial

Product collaterals / online support

- Product landing [page](#)
- Product datasheets
  - IPB60R180C7 [page](#)
  - IPB60R120C7 [page](#)
  - IPB60R099C7 [page](#)
  - IPB60R060C7 [page](#)
  - IPB60R040C7 [page](#)

Block diagram
OptiMOS™ 5 40V in TDSON-8 (5x6 SuperS08)
Package for Automotive

Infineon’s new OptiMOS™ 5 40 V product family in S3O8 package combines leading power MOSFET technology with 3.3 x 3.3 mm leadless power package for very compact & robust automotive system solutions. The products are based on Infineon’s latest silicon automotive PowerMOS technology, optimized to meet and exceed the energy efficiency and power density requirements of automotive BLDC and H-bridge applications. Portfolio $R_{DS(on)}$ range go from 1.1mOhm to 5.8mOhm at minimum chip size.

### Features

- Lowest ohmic OptiMOS™5 40V technology ($R_{DS(on) \times A}$)
- Low package resistance (Cu-clip technology)
- Low package inductance (Cu-clip and short leads)
- Low $R_{th}$ (thin chip and leadframe)
- IFX robust package for automotive (robust chip package interaction, large source pin area and optimized mold compound)
- World’s best figure of merit ($R_{DS(on)} \times Q_g$)
- IFX extended Automotive qualification above AECQ-101

### Benefits

- Low conductance losses
- Low switching losses
- High switching frequency operation
- High thermal performance
- Excellent TCoB performance
- No delamination between chip / leadframe and between chip / clip - superior automotive quality

### Application examples

- BLDC like EPS, pumps, fans, ABS-ESP
- Parking break, window lift, power seats, sunroof, braking, DCDC converter, wipers

### Target applications

- All automotive applications in Powertrain, Safety and Body

### Product collaterals / online support

- Product landing page

### Block diagram
TLF4277-2LD
A monolithic integrated low drop out voltage regulator

Active Antenna Supply IC in tiny TSON-10 package with current sense for antenna status monitoring and error detection. The TLF4277-2 is the ideal companion IC to supply active antennas for car infotainment applications. The adjustable output voltage makes the TLF4277-2 capable of supplying the majority of standard active antennas such as FM/AM, DAB XM and SIRIUS. TLF4277-2 has two package options. The SSOP-14 EP package provides an enhanced thermal performance within a SO-8 body size. The TSON-10 package is a 3.3 x 3.3 mm leadless package with excellent thermal performance and the capability for Automated Optical Inspection (AOI).

Features
- Integrated current monitor
- Overvoltage, overtemperature and overcurrent detection
- Adjustable output voltage
- Output current up to 300 mA
- Adjustable output current
- Digital error flag
- Leadless package TSON-10: TLF4277-2LD
- SSOP14 option available: TLF4277-2EL

Benefits
- System reliability
- System cost optimization
- Real time monitoring of load
- Improved application lifetime
- Immediate error detection
- Less board space
- Automated Optical Inspection

Target applications
- Infotainment
  - Active antenna supply for AM/FM, DAB, GPS, satellite
  - Microphone supply
- Automotive Ecall
  - GPS supply
  - Battery management IC
  - External sensors supply
  - Automotive communication

Completing products (P2S)
- Automotive voltage regulators and transceivers
  - Infotainment: TLS810xx as standby supply; TLF51801 as USB supply; TLE6251xx, TLE7251xx, TLE8251xx as CAN supplies

Product collaterals / online support
- Product landing page
- Product datasheet page
- Automotive Power Supply IC’s (linear) video here
- Active Antenna Supply eLearning video here

Application examples
AM/FM Antenna Supply

Evaluation board
Demoboard V1.0 - SP001614980
BGSX2xxMA18 Family
BGSX210MA18, BGSX212MA18, BGSX28MA18

DP10T, DP12T and DP8T (respectively) carrier-aggregation-capable RF CMOS switches for diversity antenna.

Features
- Carrier aggregation (CA) optimized:
  - Unique Cross-function with 2 crossed ports for ultra-high flexibility
  - Up to 4x downlink CA maximum
- RF CMOS diversity switches with power handling capability of up to 27 dBm
- Family concept: only 1 ATSLP package for 3 parts (DPX8,10,12T)
- Very low insertion loss: 0.65 dB at 2.7 GHz; 0.3 dB at 0.96 GHz
- Small size: 2.4 x 2.0 mm²

Benefits
- Ultra-high flexibility and up to 70% complexity reduction on GPIO lines when compared to competitor solution, which do not offer cross-functionality and require multiple layouts
- Reduced BOM and up to 18% space saving on the PCB
- Outperforms competition in the same category of RF applications by offering 0.1 dB lower insertion loss
- Simplifies layout as all DP8, 10, 12T cases covered with one single package

Application examples
- LTE mobile phones

Target applications
- The BGSX2xxMA18 is a RF CMOS switch product family specifically designed for LTE carrier aggregation applications

Block diagram

Product collaterals / online support
- Product landing pages
  BGSX210MA18
  BGSX212MA18
  BGSX28MA18
- Product datasheets
  BGSX210MA18
  BGSX212MA18
  BGSX28MA18
- Infineon Frontend Solutions for Mobile Applications, download here
- Application Guide for Mobile Communication edition 2017 download here
New 62mm IGBT Modules
FF500R17KE4, FF600R12KE4, FF600R12KE4_E

62mm Half-Bridge-Modules with 500A / 1700V or 600A / 1200V offer highest power density and increased inverter output power with same frame size. These new 62mm IGBT modules with trench/fieldstop IGBT4 and ‘Emitter Controlled’ diode are also available with Thermal Interface Material (TIM).

Features
- > 500A / 1700V - 600A / 1200V
- > $T_{j,op} = 150^\circ C$
- > RoHS compliant
- > 4 kV AC 1 min Insulation
- > Package with CTI > 400
- > High creepage and clearance distances
- > UL/CSA Certification with UL1557 E83336

Benefits
- > Existing packages with higher current capability, allows to increase inverter output power with same frame size
- > Highest power density
- > Flexibility (Check)
- > Optimal electrical performance
- > Highest reliability

Target applications
- > 1700V: MVD (medium voltage drives)
- > 1200V: GPD (general purpose drives), Solar, UPS

Application examples
- > Automation, machine tools, CNC-machines, 3D-Printers, robots

Completing products (P2S)
- > The modules can be combined with the dedicated Evaluation Board: MA070E17 for FF500R17KE4 and MA070E12 for FF600R12KE4_E
- > 3-level phase leg configurations are possible in combination with our high efficient 1700V 62 mm dual modules. We recommend to use the fast switching FF600R12KE4 and FF500R17KE4 with trench/fieldstop IGBT4 included
- > Please find the appropriate Gate Driver Boards (EiceDRIVER™Safe): 2ED300C17-S / 2ED300C17-ST

Product collaterals / online support
- > Product landing pages
  FF500R17KE4
  FF600R12KE4
  FF600R12KE4_E
- > Product datasheet pages
  FF500R17KE4
  FF600R12KE4
  FF600R12KE4_E
Stepper Motor Control Shield with IFX9201 & XMC1300
A stepper motor featuring dual-h-bridge configuration

The stepper motor control shield from Infineon technologies is one of the first high current stepper motor control boards being compatible to Arduino as well as to Infineon’s XMC1100 Boot Kit. The stepper motor control shield is capable to drive the two coils in a stepper motor featuring dual-h-bridge configuration. The implemented integrated IFX9201 h-bridges can be controlled by a STEP- and DIRection-signal via the according pins. Interfacing to a microcontroller is made easy by the integrated XMC1300 microcontroller that holds the peripherals to allow high-speed current control. Microstepping of the stepper motor can be achieved using the internal comparators, operational amplifiers are installed to adapt the motor current sense signal to the microcontroller’s input levels.

Features
- Compatible with Arduino Uno R3
- Compatible to XMC1300
- Capable of high performance current control
- Microstepping degree can be adjusted by software
- Driver circuit with logic level inputs

Benefits
- Fast and inexpensive prototyping of stepper motor control
- Simple testing of microstepping algorithms
- Diagnose pin to allow hardware feedback during development
- Overtemperature shut down with latch behavior and undervoltage shut down of the power section

Target applications
- Stepper motors up to 5A phase current
- 24V nominal input voltage for the power stage
- Average motor current 3A without additional cooling effort, 5A possible with proper cooling

Product collaterals / online support
- Product landing [page](#)

Block diagram

Application examples
- Automation, machine tools, CNC-machines, 3D-Printers, robots
Infineon Technologies Bipolar extended its product portfolio of modules in solder bond technology in July 2016 with a 50 mm module. The Rectifier Diode Modules (DD) is now available for high production volumes additionally to the 1600V portfolio in 1800 V, 2000 V and 2200 V. Solder bond modules are ideal for applications where the high robustness of pressure contact technology is not necessarily a must. Typical applications for the new 50 mm modules are drives, power supplies, UPS and welding.

**Features**
- Current 340A
- Blocking Voltages: 1800V, 2000V, 2200V
- Industrial standard package
- Electrically insulated copper base plate

**Benefits**
- Cost and performance optimized: Depending on the module, market prices are approximately 25 percent lower than comparable pressure contact variants
- Profit from over 20 years of expertise in IGBT soldering and bonding

**Target applications**
- Drives, power supplies, UPS and welding

**Product collaterals / online support**
- Product promo [page](#)
- Product datasheet pages
  - DD340N18S
  - DD340N20S
  - DD340N22S

**Block diagram**

XDPL8220
Digital and configurable multiform flyback controller ideal for smart lighting

Digital and configurable multi-mode dual stage (PFC+Flyback) controller for Smart LED Driver.

Features

- Integrated PFC and Flyback Controller
- Excellent Power Factor (>0,9) and THD (15%) even under low load conditions and wide input voltage
- Simultaneous constant current, constant voltage and limited power modes
- Ultrafast start-up time (<0,25s)
- PWM dimming input
- Supports AC and DC input, AC input voltage 90–305 V AC
- Highly accurate primary side control output current typ. ±3%
- Configurable output current with no BOM change
- Efficiency up to 91%
- Integrated 600 V startup cell

Benefits

- Simple small footprint design
- Direct setting of different features via parameter
- Wide operating range enables same design can be used for different LED applications
- Multi-mode (CC, CV, LP) reduces board SKUs further

Application examples

- Driver for Streetlight, driver for downlights, driver for outdoor lighting, driver for Bay lighting

Block diagram

Target applications

- Medium to high power isolated LED lighting driver

Product collaterals / online support

- Product landing page
- Product datasheet page

Application diagram
XDPL8105
Digital and configurable flyback controller with 0-10V dimming interface and extended dimming range

The XDPL8105 is a high performance microcontroller based digital single-stage flyback controller with Power Factor Correction (PFC) for constant output current LED driver. The IC is available in a DSO-8 package and supports a wide feature set, requiring a minimum of external components. The digital engine offers the possibility to configure operation parameters and protection modes, which helps to ease the design phase and allow a reduced number of hardware variants. Accurate primary side output current regulation is implemented to eliminate the need for secondary side feedback circuitry.

Features

- Supports AC and DC input, AC input voltage 90–305 V AC
- Highly accurate primary side control output current typ. ±3%
- Configurable output current with no BOM change
- Efficiency up to 91%
- High power quality, typical power factor > 0.95 and THD < 10%
- Integrated 600 V startup cell

Benefits

- Digital parameter configuration shortens the product development, allows last minute changes and enables less hardware variants
- Smooth operation with extended dimming capability and configurable dimming curve
- Cost optimized isolated 0-10V dimming interface on primary side together with the CDM10V dimming IC

Target applications

- LED driver

Application diagram

LED driver with MCU dimming

LED driver with 0-10V dimming interface

Product collaterals / online support

- Product landing page
- Product datasheet page

Completing products (P2S)

- CDM10V dimming IC, CoolMOS™ CE 800V