

# Infineon Technologies New Products Introduction

December 2016



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## 700 V CoolMOS™ P7

New 700 V superjunction MOSFET technology

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High-side switches for energy efficiency and miniaturization

## BGS1xPN10 family

BGS12PN10, BGS13PN10, BGS14PN10

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50 mm, 60 mm, 70mm

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# 700 V CoolMOS™ P7

New 700 V superjunction MOSFET technology

New 700 V superjunction MOSFET technology developed to serve today's and tomorrow's trends in flyback topologies. Offering amazing performance gains compared to superjunction technologies used today, especially at high speed switching.



## Features

- > Extremely low FOM  $R_{DS(on)} \times E_{oss}$ ; lower  $Q_g$ ,  $E_{on}$ , and  $E_{off}$
- > Highly performant technology
  - Low switching losses ( $E_{oss}$ )
  - Highly efficient
  - Excellent thermal behavior
- > Allowing high speed switching
- > Integrated zener diode
- > Optimized  $V_{(GS)th}$  of 3 V with very narrow tolerance of  $\pm 0.5$  V
- > Finely graduated portfolio

## Benefits

- > Cost competitive technology
- > Up to 2.4% efficiency gain and 12°K lower device temperature compared to C6 technology
- > Further efficiency gain at higher switching speed
- > Supporting less magnetic size with lower BOM costs
- > High ESD ruggedness up to HBM class 2 level
- > Easy to drive and design in
- > Enabler for smaller form factors and high power density designs
- > Excellent choice in selecting the best fitting product

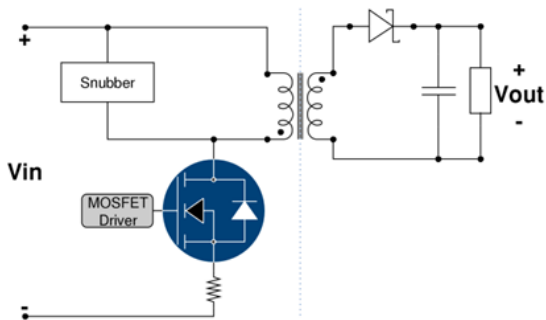
## Target applications

- > Charger (focus)
- > Adapter (focus)
- > TV adapter
- > Lighting
- > AUX power
- > Audio

## Product collaterals / online support - live from January 17<sup>th</sup>

- > Product landing [page](#)
- > Product datasheets
  - IPA70R600P7S [page](#)
  - IPA70R360P7S [page](#)
  - IPD70R1K4P7S [page](#)
  - IPD70R900P7S [page](#)
  - IPD70R600P7S [page](#)
  - IPD70R360P7S [page](#)
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  - IPS70R600P7S [page](#)
  - IPS70R360P7S [page](#)

## Block diagram



## iMOTION™ MADK Power Boards

### EVAL-M1-05F804 and EVAL-M1-05F310

With these new power boards Infineon expands the iMOTION™ evaluation platform for low voltage BLDC motor drives like fans, pumps, drones and door openers. The boards are based on the  $\mu$ IPM™ from Infineon with power ratings of 100V/12A and 40V/25A DC current. They feature an overcurrent/under-voltage lockout protection with fault output and an onboard power supply of 15 V / 3.3 V. There are no heat sinks required, the copper area of the PCB can be used for thermal performance. In combination with an XMC1302 or IRMCK099 control card, designers only need a few steps to run the motor: plug the cards into the PC, motor and grid equivalent voltage supply, download, install and set the parameters of the software.



#### Features

##### EVAL-M1-05F804

- > Power stage to drive 3-phase motor
- > 40V blocking voltage
- > 25A continuous current at 25°C case temperature
- > Up to 80A initial current
- > Testpads with hooks to attach standard oscilloscope probes
- > Standard MADK™ M1 interface connector

##### EVAL-M1-05F310

- > Power stage to drive 3-phase motor
- > 100V blocking voltage
- > 12A continuous current at 25°C case temperature
- > Up to 40A initial current
- > Testpads with hooks to attach standard oscilloscope probes
- > Standard MADK™ M1 interface connector

#### Product collaterals / online support

- > Product landing pages  
[EVAL-M1-05F310MH](#)  
[EVAL-M1-05F804MH](#)
- > iMOTION™ Modular Application Design Boards and Kits (MADK) video [page](#)
- > Product family [page](#)
- > Device (IPM) product landing pages
  - [IRSM005-800MH](#)
  - [IRSM005-301MH](#)

#### Benefits

##### EVAL-M1-05F804

- > Evaluate IRSM005-800MH module for your application
- > Get your motor running within one hour in combination with Eval-M1-1302 or Eval-M1-099M
- > Start to learn more about motor control in low voltage domain

##### EVAL-M1-05F310

- > Evaluate IRSM005-301MH module for your application
- > Get your motor running within one hour in combination with Eval-M1-1302 or Eval-M1-099M
- > Start to learn more about motor control in low voltage domain

#### Completing products (P2S)

- > iMOTION™ MADK Eval-M1-1302 or Eval-M1-099M control boards

#### Target applications

- > Low voltage drives, pumps, low voltage battery driven BLDC motor drives like drones/multicopter or fans, door opener

# PROFET™+2

High-side switches for energy efficiency and miniaturization

The PROFET™+2 family of single, dual and quad channel protected high-side power switches (8 mΩ to 200 mΩ) in TSDSO-14 exposed pad package provides state of the art diagnostics and protection features. The family offers benchmark form factor, the lowest  $R_{DS(ON)}$  (2x 8 mΩ) and smallest package (TSDSO-14) pin pitch of 0.65 mm. The whole family is compatible with the most severe reverse battery requirement on the market due to incorporating ReverSave™ functionality for the 1st time in the market on a single chip product. The family offers outstanding energy efficiency with reduced current consumption, state of the art current sense accuracy (kLIS), benchmark low cranking voltage capability and faster switching/slew rate with no impact on EMC.



## Features

- > Operating voltage range 3.1–28 V with 3.3 V and 5 V compatible logic input
- > Protection: current tripping, overtemperature, overvoltage, load dump, reverse polarity, short-circuit
- > Diagnosis: load current sense output

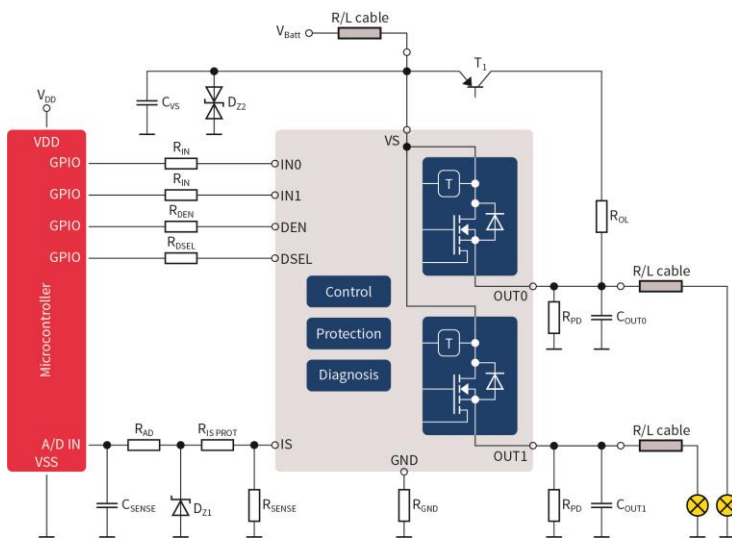
## Product collaterals / online support

- > Product landing [page](#)
- > PROFET™+2 - new high side switches for energy efficiency video [here](#)

## Target applications

- > Automotive 12 V lighting load applications capacitive loads e.g. halogen bulbs and LED modules
- > Resistive loads e.g. small seat heating applications requiring below 8A nominal currents

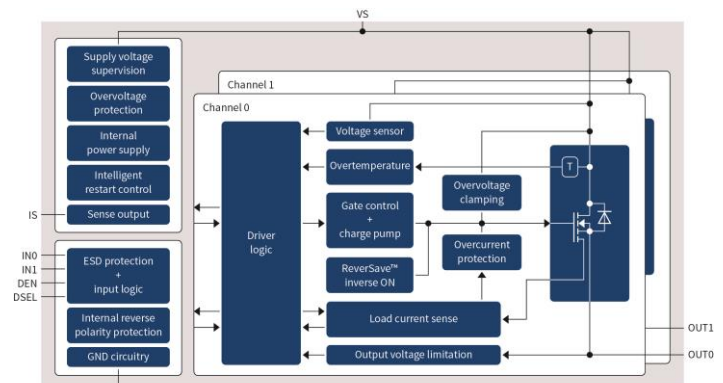
## Application examples



## Benefits

- > 50% reduced internal operating current consumption
- > Simplified and cost efficient ground network
- > Outstanding current sense accuracy (kLIS)  $\leq 5\%$  at nominal load current
- > Benchmark cranking voltage capability able to work down to 3.1 V
- > Smaller package size for area savings
- > Optimized for design flexibility across the family by pin to pin compatibility
- > Very low output leakage current ( $\leq 0.5 \mu A$  up to 85°C)

## Block diagram





# BGS1xPN10 family

## BGS12PN10, BGS13PN10, BGS14PN10

High linearity RF switches (SPDT, SP3T, SP4T respectively) for mobile cellular Rx/Tx applications.



### Features

- > Ultra-high linearity:
  - BGS12PN10 (SPDT) -> 0.5 to 6.0 GHz
  - BGS13PN10 (SP3T) -> 0.4 to 4.0 GHz
  - BGS14PN10 (SP4T) -> 0.4 to 4.0 GHz
- > Best-in-class linearity of up to 75 dBm IP3
- > High power handling: 38dBm
- > 0.26 dB IL @ 2.7 GHz
- > >30dB Isolation @ 2.7 GHz

### Benefits

- > Improved system sensitivity through very low harmonics and intermodulation product generation
- > Ultra-high linearity in critical mobile cellular applications, e.g. 3 dBm higher IP3 improves data rate by 40%
- > Optimized solution for special cases as UL-CA, HPUE, SV-LTE and for critical band combinations UL-CA: B1 + B3 and B2+B4; DL-CA: B4 + B12; SV-LTE: B5 + B13
- > Up to 50% smaller form factor than same performance-class competition - reduced PCB space consumption
- > Family approach SPDT,3T,4T offers significant cost advantages based on pin-2-pin scalability and flexibility for different design variants

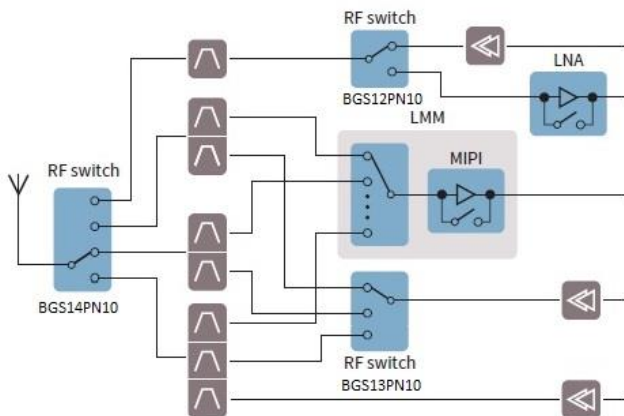
### Application examples

- > EDGE / C2K / LTE / WCDMA / SV-LTE
- > Mobile cellular Rx/Tx applications
- > Optimized for main path and entire RF Front-end without any power restrictions in mobile communication:
  - DL/UL CA and MIMO
  - HPUE 26dBm devices (high power Tx)
  - Micro/pico cells/cellular base stations
  - RF test equipment

### Target applications

- > 3G/4G mobile devices
- > IoT
- > Micro/pico cells/cellular base stations
- > RF test equipment

### Block diagram



### Product collaterals / online support

- > Product landing pages
  - [BGS12PN10](#)
  - [BGS13PN10](#)
  - [BGS14PN10](#)
- > Product datasheets
  - [BGS12PN10](#)
  - [BGS13PN10](#)
  - [BGS14PN10](#)
- > Infineon Frontend Solutions for Mobile Applications, download [here](#)

# Power Block with TIM

50 mm, 60 mm, 70 mm



We offer our customers a broad range of power modules containing thyristors and diodes in voltage range of 1200V to 4400V and a current of 61A up to 1070A. The modules are designed and assembled in high reliable pressure contact technology. The modules are offered in several dual and single device topologies for almost all phase control or rectifier applications. Application areas for our modules are e.g. electrical drives, as well as low voltage soft starters and general purpose power supplies. Now Infineon offers these modules with Thermal Interface Material pre-applied to simplify mounting.

## Features

- > Features Power Block Modules:
  - Short on fail (pressure contact)
  - High overload capability
  - One supplier for a broad range of thyristor / diode modules
  - Fast and extensive technical support
- > Features TIM
  - Pre-applied to power modules
  - Dry to the touch
  - Fully qualified
  - RthCH 20 % less

## Target applications

- > Electrical drives
- > Low voltage soft starters
- > Power supplies
- > Wind

## Benefits

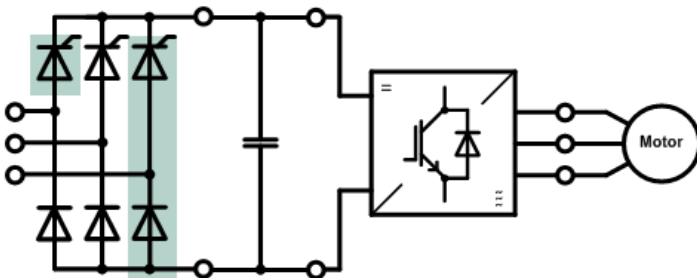
- Benefits Thermal Interface Material:
- > Simplify mounting
  - > Reduce process time in production
  - > Increase system reliability and lifetime
  - > Eliminate of thermal paste application process

## Product collaterals / online support

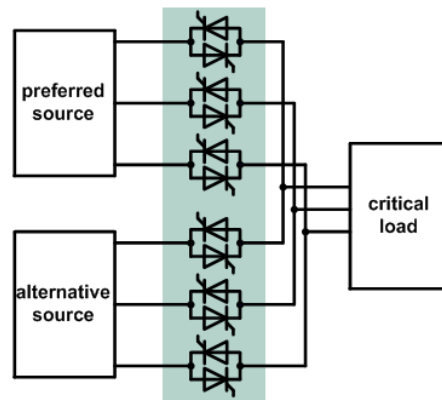
- > Product landing pages
  - [TT250N16KOF TIM](#)
  - [TD250N16KOF TIM](#)
  - [TT330N16KOF TIM](#)
  - [TD330N16KOF TIM](#)
  - [TT500N16KOF TIM](#)
  - [TD500N16KOF TIM](#)
  - [TZ740N22KOF TIM](#)
  - [TZ800N16KOF TIM](#)
- > Thermal Interface Material (TIM) [page](#)
- > Pressure Contact Modules [page](#)

## Application examples

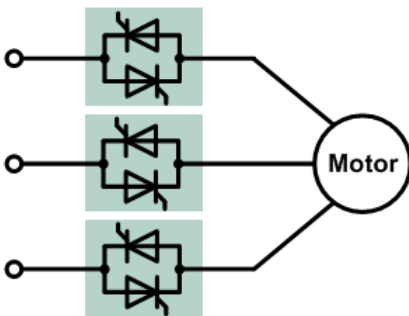
Input Rectifier for drives



Static switch



Low and medium voltage soft starter



Input rectifier and bypass for UPS

