



# New Product Introduction



February 2019

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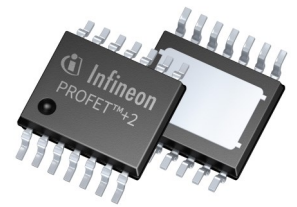
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## PROFET+2 — Infineon's latest protected high-side power switch

PROFET™+2 is the lowest ohmic dual-channel Smart High-Side Switch in a TSDSO-14 exposed pad package, providing protection functions and a very accurate load diagnosis while enabling PCB savings and System Cost.

The family offers a benchmark form factor, the lowest RDSON (1 x 2 mΩ) and is compatible with the hardest reverse battery requirements, with ReverSave™ available for the first time on the market on a single chip product. It offers outstanding energy efficiency with reduced current consumption, state-of-the-art current sense accuracy (KILIS), benchmark low cranking voltage capability and faster switching/slew rate with no impact on EMC.



### Features

#### > Basic Features

- > ReverSave™ for low power dissipation in Reverse Polarity
- > Green Product (RoHS compliant)
- > Qualified in accordance with AEC Q100 grade 1

#### > Protection Features

- > Absolute and dynamic temperature limitation with controlled restart
- > Over Current protection (tripping) with Intelligent Restart Control
- > Under Voltage shutdown
- > Over Voltage Protection with external components

#### > Diagnostic Features

- > Proportional load current sense
- > Open Load in ON and OFF state
- > Short circuit to ground and battery

#### > Innovative Features

- > nominal load currents between 0.5A and 21A
- > Current consumption < 2.5 mA/ch.
- > Benchmark cranking voltage capability down to 3.1 V
- > ≤ 5% current sense accuracy (KILIS)
- > Technology enables minituration

### Benefits

- > Fits a wide range of heating and power distribution applications
- > 50% reduced operative current consumption
- > 40% smaller in package size
- > Support lower cranking pulses
- > Very accurate load diagnosis
- > Provides the lowest system power and size
- > Enables PCB area savings, due to its size but also by reducing the number of components needed in the BOM
- > Overall reduces the system cost, without having to compromise on the technical performance, the protection and the diagnostic

### Target applications

- > Body Actuation Heating
  - > Lighting
  - > Power Distribution
- Application example: body control module

### Qualification

Automotive

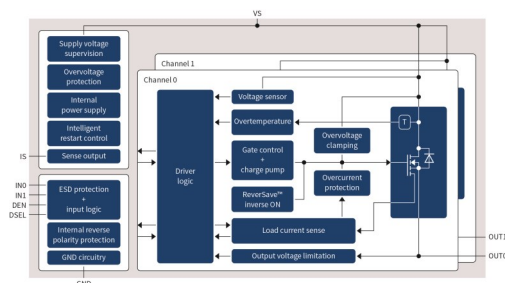
### Competitive advantage

- > Automotive

### Product collaterals / Online support

- > Product family [page](#)
- > Application [guide](#)
- > Simulation [model](#)

### Block diagram



### Product overview incl. data sheet link

OPN	SP Number	Package
<a href="#">BTS70122EPAXUMA1</a>	SP001225144	PG-TSDSO-14
<a href="#">BTS70202EPAXUMA1</a>	SP001225130	PG-TSDSO-14
<a href="#">BTS70302EPAXUMA1</a>	SP001225132	PG-TSDSO-14
<a href="#">BTS70401EPAXUMA1</a>	SP001225124	PG-TSDSO-14
<a href="#">BTS70402EPAXUMA1</a>	SP001225134	PG-TSDSO-14
<a href="#">BTS70802EPAXUMA1</a>	SP001225136	PG-TSDSO-14
<a href="#">BTS70121EPAXUMA1</a>	SP001225122	PG-TSDSO-14
<a href="#">BTS71202EPAXUMA1</a>	SP001225138	PG-TSDSO-14
<a href="#">BTS72002EPAXUMA1</a>	SP001225140	PG-TSDSO-14
<a href="#">BTS72002EPCXUMA1</a>	SP002466224	PG-TSDSO-14

## Easy with TRENCHSTOP™ IGBT7—Higher power density and optimised switching

Infineon's new 1200 V TRENCHSTOP™ IGBT7 and EC7 diode technology is based on latest micro-pattern trenches technology which provide strongly reduced losses and offer a high level of controllability.

The chip is specially optimized for industrial drives applications, which means much lower static losses, higher power density and softer switching. Additionally, by raising the allowed maximum operation temperature up to 175 °C in the power module, an increase of the output current of up to 40 % can be obtained.



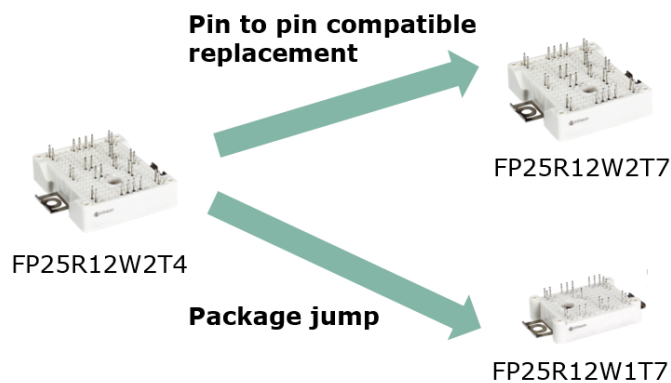
### Features

- > Lowest on state voltage  $V_{CE(sat)}$  and  $V_f$
- >  $T_{vj\ op}=175^{\circ}C$  at overload
- > Enhanced controllability of  $dv/dt$
- > Optimized switching losses for  $dv/dt = 5kV/\mu s$
- > 8  $\mu s$  short-circuit robustness
- > Improved FWD softness

### Benefits

- > Higher power density
- > Smaller power modules with the same current output (e.g. 25A PIM in Easy1B)
- > Low losses to meet energy efficiency requirements
- > Optimized trade-off between losses and EMI
- > Lower system cost

### Higher power density and frame size jump



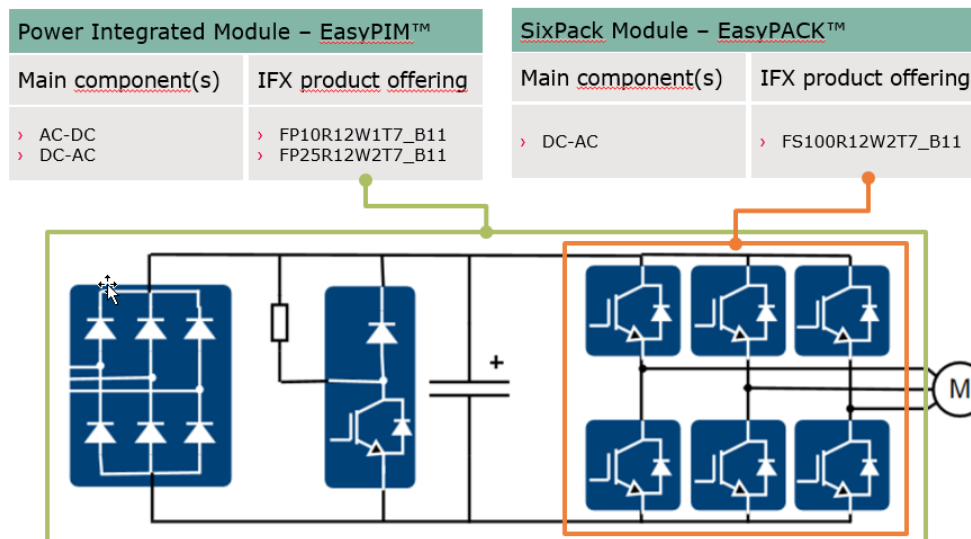
### Target applications

- > Drives
- > Industrial robots
- > Commercial aircon
- > CAV

### Product collaterals / Online support

- > Product family [page](#)
- > Right fit for Industrial Drives [article](#)

### Perfect fit for Industrial Drives applications



Product overview incl. data sheet link

OPN	SP Number	Package
<a href="#">FP10R12W1T7B11BOMA1</a>	SP001655200	AG-EASY1B-2
<a href="#">FP25R12W1T7B11BPSA1</a>	SP001656938	AG-EASY1B-2
<a href="#">FS100R12W2T7B11BOMA1</a>	SP001656864	AG-EASY2B-2

XHP™ 3 3,3kV — FF450R33T3E3 & FF450R33T3E3\_B5

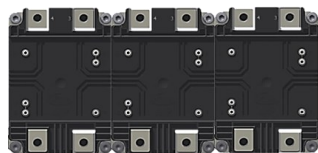
Infineon is presenting the first XHP™ 3 modules for high-power applications in 3,3 kV and 450 A. The XHP™ 3 presents an excellent solution for demanding applications such as traction, CAV, marine and medium-voltage drives. The module allows scalable designs with best-in-class reliability and highest power density.



All XHP™ 3 modules have the same dimensions, 140 mm in lenght, 100 mm in width and 10 mm in height. This gives product designers the opportunity to build homogenous solutions across different current and voltage ratings in order to implement optimize power converter concepts. The first modules in XHP™ 3 housing are FF450R33T3E3 and FF450R33T3E3\_B5.

Features

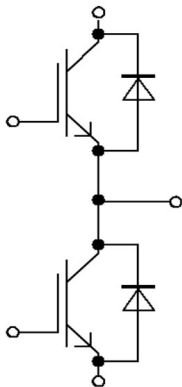
- > New XHP™ 3 standardized housing
- > CTI 600
- > Fire & smoke classification acc. EN45545 R22, R23, R24: HL2
- > AISiC baseplate
- > AlN substrate
- > Ultrasonic welded terminals
- > Symmetric internal current sharing
- > Low stray inductance



Value proposition

- > Designed to realize converter scalability by simple paralleling
- > Simplified mechanical designs
- > Clean switching behavior
- > Low module stray inductance
- > 6kV and 10kV versions available

Block diagram



Benefits

- > Excellent scalability in the system
- > Accelerated design-in process due to simplified mechanical design
- > Clean switching with lower losses
- > Ready for 3-level applications with increased demand for isolation (10kV)

Target applications

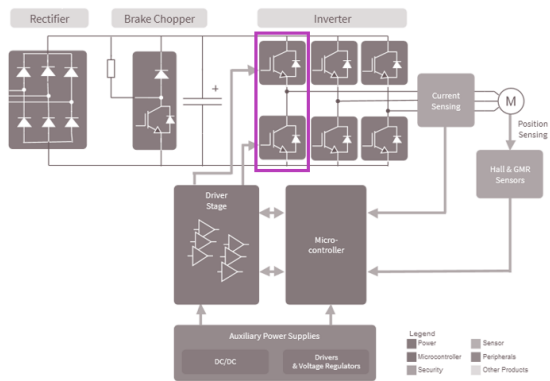
- > Traction — e.g. propulsion drives and auxiliary converters
- > Medium voltage drives
- > CAV — e.g. main wheel drives
- > Marine — e.g. thruster and support systems

adressing the applications requirements of

- > Highly scalable inverter designs
- > High power density

Converter system diagram for industrial drives

- > Inverter: IGBT modules XHP™



Product collaterals / Online support

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

Product overview incl. data sheet link

OPN	SP Number	Package
<a href="#">FF450R33T3E3BPSA1</a>	SP001779550	AG-XHP100-6
<a href="#">FF450R33T3E3BPSA1</a>	SP001779538	AG-XHP100-3

## Evaluation board for motor drive featuring CIPOS™ Maxi IPM 1200V (IM818-MCC IPM)

The evaluation board EVAL-M1-IM818-A was developed to support customers during their first steps of applications with CIPOS™ Maxi IPM. In combination with control-boards equipped with the M1 20pin interface connector, like EVAL-M1-101T or EVAL-M1-099M, it demonstrates Infineon's CIPOS™ Maxi IPM technology for motor drive.

The evaluation board EVAL-M1-IM818-A features IM818-MCC, one of the CIPOS™ Maxi product family, which combines 1200V TRENCHSTOP™ IGBTs and Emitter Controlled diodes with an optimized 6-channel SOI gate driver. It is optimized to industrial application like high voltage ventilation and air conditioning (HVAC) fans, fan motors, pumps and motor drives.



### Features

- > Ready to use power stage with 1200 V IPM to drive 3-phase motor
- > Nominal input voltage 380 Vac
- > Maximum 2.6 kW output power with cooling
- > On board EMI filter
- > Over current protection
- > Over temperature protection
- > Test pads with hooks to attach standard oscilloscope probes
- > Standard MADK M1 20pin interface connector

### Benefits

- > Evaluate IM818-MCC IPM module for your application
- > Get your motor running within one hour in combination with Eval-M1-101T
- > Learn more about motor control in high voltage domain

### Target applications

- > Fans
- > Pumps
- > Motor drives

### iMOTION™ Modular Application Design Kit

- > iMOTION™ page [modular application design kit](#)
- > Easy to set up a complete motor drive evaluation system in less than 1 hour with iMOTION™ controllers
- > Fast time to market – reduced design time & effort
- > Standard iMOTION™ MADK M1 platform enables modularity, flexibility and scalability
- > Scalable power levels also with CIPOS™ Mini, CIPOS™ Nano and CIPOS™ Micro

### iMOTION™ Control board

#### [EVAL-M1-101T](#)

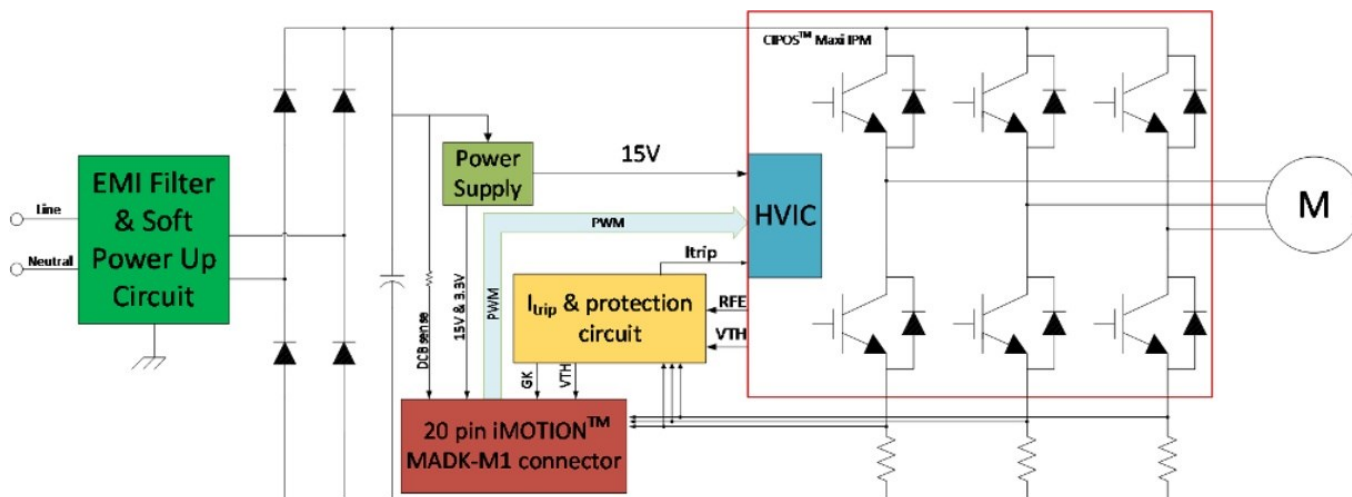
- > Field-proven Advanced Motion Control Engine (MCE)
- > Single-shunt or leg-shunt Sensorless FOC Control
- > Galvanically isolated on-board-debug interface
- > Integrated protection features



### Product collaterals / Online support

- > EVAL-M1-IM818-A power board product [page](#)

### Block diagram



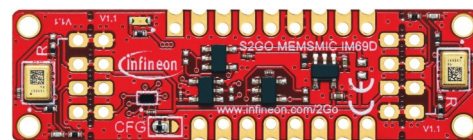
Product overview incl. data sheet link

OPN	SP Number	Package
<a href="#">EVALM1IM818ATOBO1</a>	SP004080732	Container
<a href="#">EVALM1101TTOBO1</a>	SP001780036	Container



## Shield2Go featuring High-performance digital MEMS Microphone IM69D130—S2GO MEMSMIC

Infiniteon's Shield2Go boards offer a unique customer and evaluation experience – the boards are equipped with two High-performance digital MEMS Microphone IM69D130 and come with a ready to use Arduino library. Customers can now develop their own system solutions by combining Shield2Go boards together with Infiniteon My IoT adapters. My IoT adapters are gateways to external hardware solutions like Arduino and Raspberry PI, which are popular IoT hardware platforms. All this enables the fastest evaluation and development of IoT system.



## Features

**Microphone:**

- > Dynamic range of 105dB
  - > Signal to noise ratio of 69dB(A) SNR
  - > <1% total harmonic distortions up to 128 dB SPL
  - > Acoustic overload point at 130dB SPL
  
- > Sensitivity ( $\pm 1$ dB) and phase ( $\pm 2^\circ$  @1kHz) matched
- > Flat frequency response with low-frequency roll-off at 28Hz
- > Very fast analog to digital conversion speed (6 $\mu$ s latency @1kHz)
- > Power optimized modes determined by PDM clock frequency
- > Omnidirectional pickup pattern

### Shield 2 Go:

- > 2x IM69D130 Digital MEMS microphone in stereo mode configuration
- > Interface to Infineon My IoT adapters
- > PDM and I2S output configuration
- > Flexibility to develop a custom application with Arduino and Raspberry PI

## Target applications

- > Voice User Interface (VUI):
  - > e.g. smart speakers, home automation and IoT devices
- > Active noise cancellation (ANC) headphones and earphones
- > High-quality audio capturing:
  - > e.g. cameras, camcorders, conference systems
- > Audio pattern detection: Industrial or home monitoring








## Product collaterals / Online support

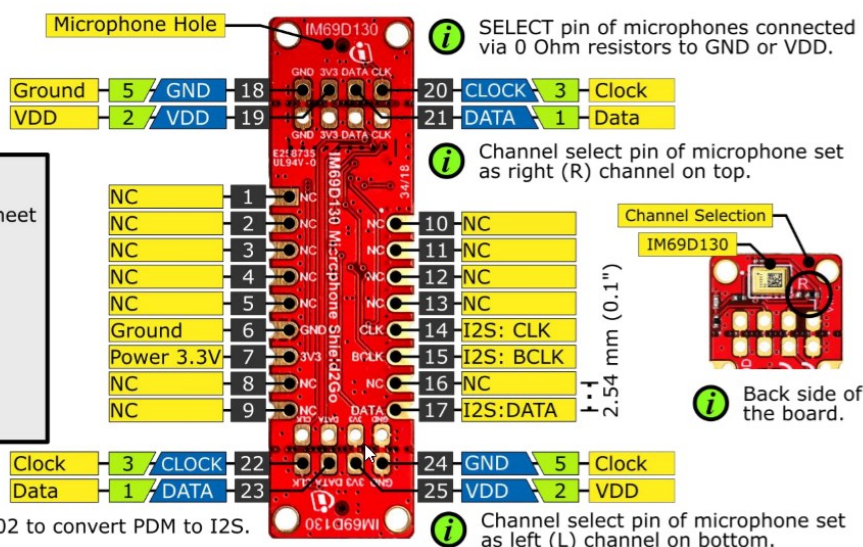
- > S2GO MEMSMIC IM69D product [page](#)
- > IMD69D130 [getting started](#)
- > Shields2go boards and MyloT adapter [white paper](#)
- > Prototyping for IoT applications [brochure](#)
- > Studio-like microphone and recording quality [video](#)
- > IM69D130 product [page](#)
- > Shields2Go [page](#)







### PCB details

- Ground pins on board connected with each other.
- Components are mounted on the backside as microphone holes are on the front side.

### Legend

-  Information
-  Labelling of Pins in Datasheet
-  Pin Number in Datasheet
-  Physical Pin Number
-  Warning
-  Additional Information
-  Not Connected



-  The board uses an ADAU7002 to convert PDM to I2S.   Channel select pin of microphone set as left (L) channel on bottom.
-  The maximum voltage on any pin is typically 3.3 V - please refer to the schematics for the respective connections.
-  The microphone and ADAU7002 VDD voltage level is 1.8 V which is level shifted to the board voltage of 3.3 V.
-  The I2S pins have 3.3 V voltage logic level.

V1.0.0

Product overview incl. data sheet link

OPN	SP Number	Package
<a href="#"><u>S2GOMEMSMICIM69DTOBO1</u></a>	SP002851544	Container
<a href="#"><u>MYIOTADAPTERTOBO1</u></a>	SP002434972	Container
<a href="#"><u>IM69D130V01XTSA1</u></a>	SP001676962	PG-LLGA-5

# 600 V CoolMOS™ CSFD - High voltage superjunction MOSFET for EV-charging applications

The 600 V CoolMOS™ CSFD is Infineon's high voltage superjunction MOSFET technology with integrated fast body diode dedicated for EV-charging stations.



## Features

- > Ultra-fast body diode
- > Best-in-class reverse recovery charge ( $Q_{rr}$ )
- > Improved reverse diode dv/dt and dif/dt ruggedness
- > Lowest FOM  $R_{DS(on)} \times Q_g$  and  $E_{oss}$
- > Best-in-class  $R_{DS(on)}$ /package combinations

## Benefits

- > Best fit efficiency for EV-charging applications
- > Enabling higher power densities
- > Highest reliability levels
- > The right  $R_{DS(on)}$  package combination can be selected

## Lead types

Product	$R_{DS(on)}$	Comment
IPW60R024P7*	24 mΩ	Recommended for PFC *coming soon
IPW60R037P7	37 mΩ	
IPW60R037CSFD	37 mΩ	Recommended for LLC *coming soon
IPW60R024CFD7*	24 mΩ	
IPW60R018CFD7	18 mΩ	

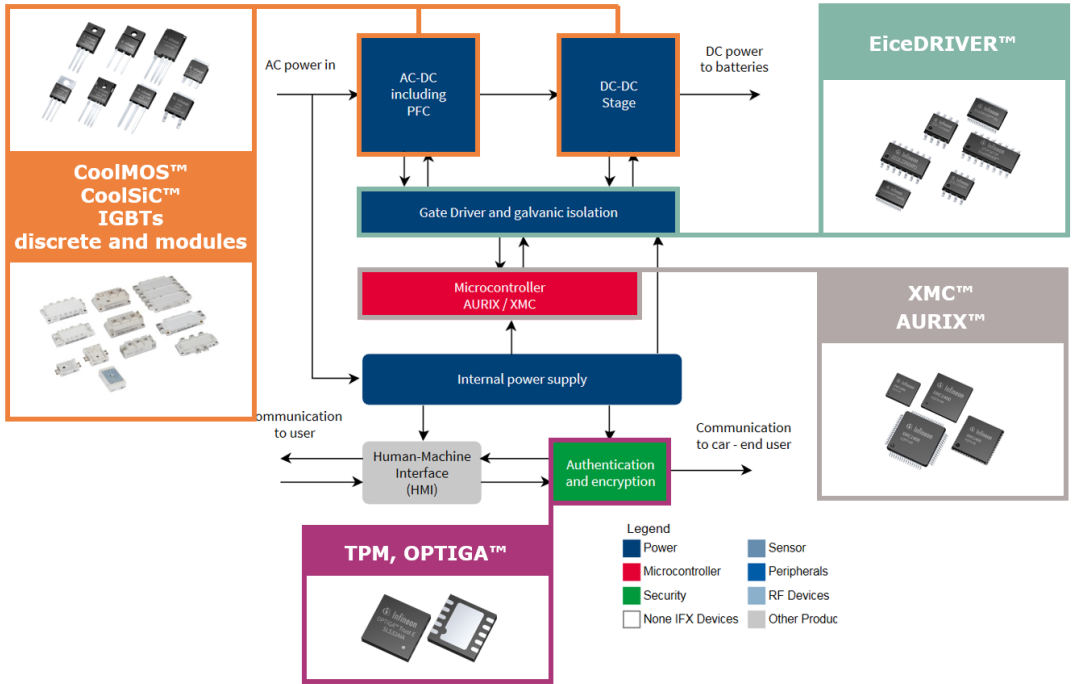
## Completing products

- > [EiceDRIVER™ 2EDi](#)
- > [EiceDRIVER™ 2EDN](#)

## Product collaterals / Online support

- > Product [page](#)
- > EV charging [page](#)
- > Selection [guide](#)
- > [Gate Driver Finder](#)

Key portfolio for target application: [DC EV charging](#)



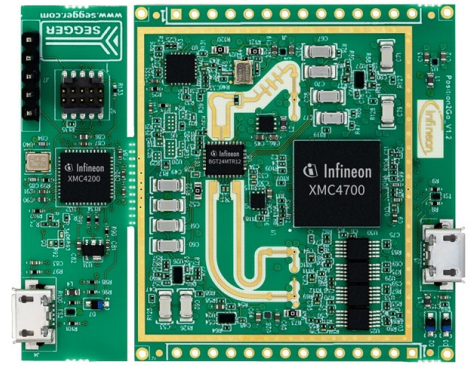
Product overview incl. data sheet link

OPN	SP Number	Package
<a href="#">IPW60R037CSFDXKSA1</a>	SP001927820	PG-TO247-3

## POSITION2GO development kit

Infinion XENSIV™ 24GHz radar sensor development kit utilizing BGT24MTR12 RF transceiver and XMC4700 32-bit ARM® Cortex®-M4 MCU series.

This development kit allows the user to implement and test several sensing applications at the 24 GHz ISM band such as tracking and collision avoidance. This is possible by using fast chirp FMCW and two receive antennas to get the angle, distance, speed and direction of motion. The kit consists of the BGT24MTR12 transceiver MMIC and a XMC4700 32-bit ARM® Cortex®-M4 for signal processing and communication via USB. An alpha-Beta tracking algorithm fully running on the XMC microcontroller allows for simultaneous tracking of multiple objects.



## Features

- > Capability to detect and track the position of multiple targets
- > Capability to detect distance of multiple targets
- > Capability to detect motion, speed and direction of movement (approaching or retreating)
- > Operates in harsh environments and detects through non-metallic materials
- > Small form-factor (5.0 cm × 4.5 cm) 24 GHz ISM band module that can be used as a development kit size or mounted as a daughter board in a system
- > Integrated multiple element patch antenna

## Target applications

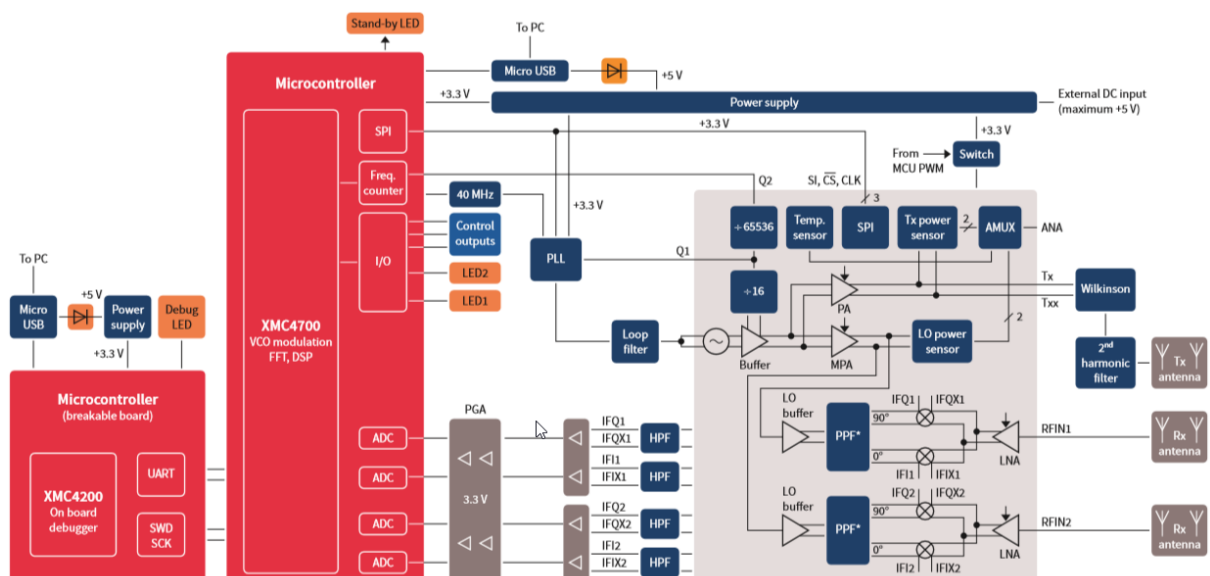
- > Security
- > Drone obstacle avoidance
- > Robotics obstacle avoidance
- > People tracking

### Contents of the kit

- > Demo board
- > Corner reflector
- > USB cable
- > SW GUI to operate kit
- > Precompiled C libraries provided
- > Source code (FW + basic radar algorithms)
- > PCB schematic and Gerber files

## Product collaterals / Online support

- > Product [page](#)
- > Product [brief](#)
- > Quick [start guide](#)



**Product overview incl. data sheet link**

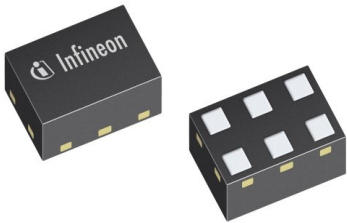
OPN	SP Number	Package
<a href="#"><u>DEMO POSITION2GO</u></a>	SP001726936	Container
<a href="#"><u>BGT24MTR12E6327XUMA1</u></a>	SP001140084	PG-VQFN-32
<a href="#"><u>XMC4700E196K2048AAAXQMA1</u></a>	SP001320594	PG-LFBGA-196
<a href="#"><u>XMC4200Q48K256ABXUMA1</u></a>	SP001168118	PG-VQFN-48
<a href="#"><u>BAS3010A03WE6327HTSA1</u></a>	SP000068629	PG-SOD323-2
<a href="#"><u>IRLTS2242TRPBF</u></a>	SP001553280	TSOP6L



# BGA855N6 Low Noise Amplifier for Lower L-Band GNSS Applications

The BGA855N6 is designed to enhance GNSS signal sensitivity for band L2/L5 especially for very high accuracy.

Besides GPS L5 and L2, the GNSS LNA also covers Galileo E5a, E5b, E6, Glonass G3, G2 and Beidou B3 and B2 bands for a frequency range from 1164 MHz to 1300 MHz. The LNA provides 17.8 dB gain and 0.6 dB noise figure at a current consumption of 4.8mA. The BGA855N6 is based upon Infineon Technologies' B9HF Silicon Germanium technology. It operates from 1.1 V to 3.3 V supply voltage.



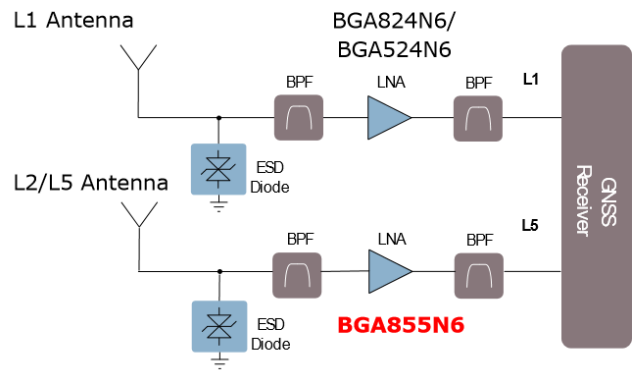
## Features

- > GPS LNA for L2/L5 Frequency
- > Improves GPS accuracy into cm range (~30 cm)
- > Improves GPS for indoor navigation
- > 1.2 V support
- > Designed for high precision GPS devices

## Target applications

- > Enhance GNSS signal sensitivity for band L2/L5, especially for very high accuracy
- > Besides GPS L5 and L2, the GNSS LNA also covers Galileo E5a, E5b, E6, Glonass G3, G2 and Beidou B3 and B2

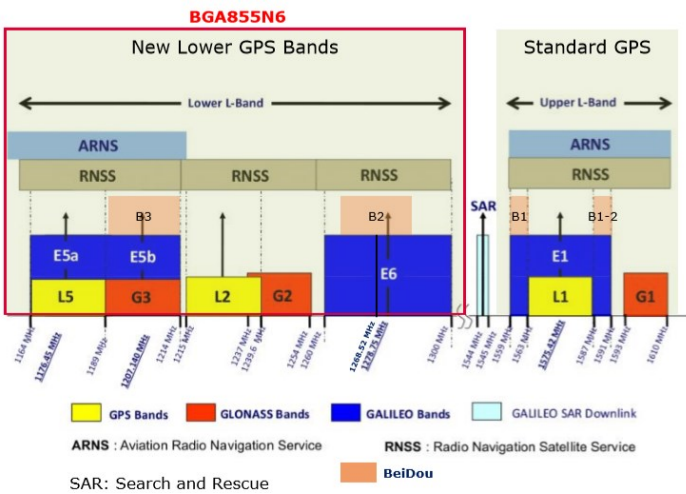
## Block diagram



## Benefits

- > High Accuracy Navigation that enabler for ~30 cm accuracy
- > High linearity that Ideal for Smartphones 5G NSA ready
- > Wide Bandwidth and one solution for all GPS system
- > Backwards compatible with standard GNSS LNA that saves cost of design

## Frequency overview



## Product collaterals / Online support

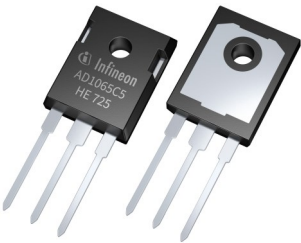
> Product [page](#)

## Product overview incl. data sheet link

OPN	SP Number	Package
<a href="#">BGA855N6E6327XTSA1</a>	SP002337750	PG-TSMP-6

# CoolSiC™ Automotive Schottky Diode

CoolSiC™ Automotive Schottky G5 and G6 Diode represents Infineon leading edge technology for Silicon Carbide Schottky Barrier diodes. Thanks to a compact design and a technology based on thin wafers, this family of products shows improved efficiency over all load conditions resulting from both its thermal characteristics and low figure of merit ( $Q_c \times V_f$ ). This product family has been designed to complement Infineon's IGBT and CoolMOS™ portfolio. This ensures meeting the most stringent application requirements in the 650V voltage class.



## Features

- > Excellent figure of merit  $V_F \times Q_c$
- > No reverse recovery charge
- > Improved surge current capability
- > New passivation concept

## Benefits

- > Improved efficiency over all load conditions
- > Highly stable switching performance
- > Temperature independent switching
- > Best match with CoolMOS™ and IGBT devices products
- > Highest robustness automotive regarding humidity and corrosion

## Qualification

- > Automotive

## Competitive advantage

CoolSiC™ Automotive Schottky G5 and G6 covers the e-mobility urgent need to optimize energy usage, thorough a powerful and compact package design, a technology based on thin wafers and by meeting stringent automotive reliability requirements

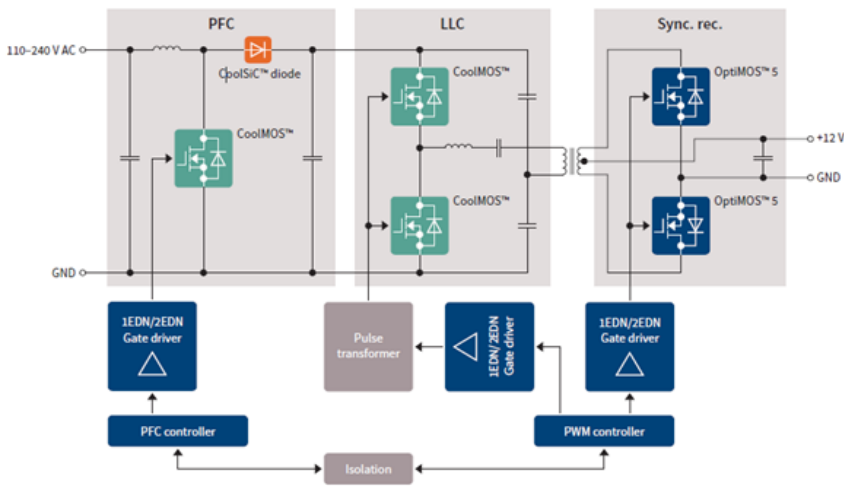
## Target applications

- > Fast switching applications
  - > On-Board-Chargers: EV charger
  - > Auxiliary Systems: DC/AC, DC-DC

## Value proposition

- > High system reliability
- > Easy to design products
- > Reduced system costs
- > Improved efficiency

## Application diagram



## Product collaterals / Online support

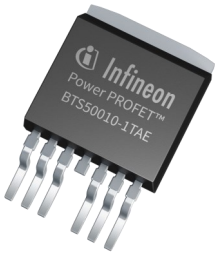
- > Product family [page](#)
- > Automotive CoolSiC™ product [brief](#)
- > [Simulation](#)

## Product overview incl. data sheet link

OPN	SP Number	Package
<a href="#">AIDW10S65C5XKSA1</a>	SP001725156	PG-TO247-3
<a href="#">AIDW40S65C5XKSA1</a>	SP001725204	PG-TO247-3
<a href="#">AIDW30S65C5XKSA1</a>	SP001725210	PG-TO247-3
<a href="#">AIDW20S65C5XKSA1</a>	SP001725214	PG-TO247-3
<a href="#">AIDW16S65C5XKSA1</a>	SP001725218	PG-TO247-3
<a href="#">AIDW12S65C5XKSA1</a>	SP001725222	PG-TO247-3

## BTS50010-1TAE - smart high-side switch to drive currents up to 40A DC in 12V systems

Power PROFET™ BTS50010-1TAE is a smart high-side switch designed to drive currents up to 40A DC in 12V systems. With a RDS(ON) down to 1.0mΩ, the device is packaged in a D2PAK (PG-TO263-7). The benchmark energy robustness and inrush current capability up to 250A supports the requirements of motorcycle and scooter starters for the engine. BTS50010-1TAE also addresses automotive, industrial and consumer applications such as lawnmowers or chainsaws as well as any load with harsh switching demands.



### Features

- > Switching robustness >1Mio cycles
- > One high-side power output
- > Output peak current up to 250A
- > Wide range logic input signal (3.3 V, 5 V, 12 V)
- > Embedded diagnostic and protection features
- > Current mirror for load current measurement
- > Electrostatic discharge protection (ESD)
- > Low standby current and very low output leakage current

### Qualification

- > Automotive

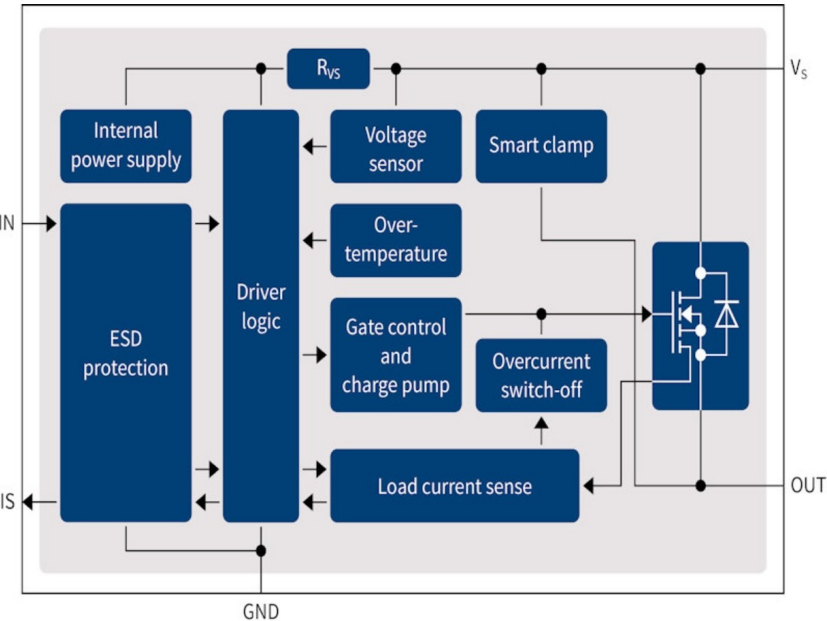
### Benefits

- > Replace mechanical relays offering higher performance
- > No need of suppressor diode
- > No need of external short circuit protection nor components for load current measurement such as shunt/PTC resistors

### Target applications

- > Motorcycle & scooter starter relay
- > Starters for small motors and engines: lawn mowers, chainsaws
- > Inductive and capacitive loads for 12V CAV, industrial & commercial
- > Loads with high inrush current
- > Relay and fuse replacement in automotive applications with >5.5V and low inductance

### Block diagram



### Product collaterals / Online support

- > Product [page](#)
- > Product [brief](#)
- > Application [guide](#)
- > PCB [design data](#)
- > [Simulation](#)

### Product overview incl. data sheet link

OPN	SP Number	Package
<a href="#">BTS500101TAEATMA1</a>	SP001666132	PG-TO263-7