New Product Introduction

June 2020

OptiMOS™ 5 40V MOSFET Normal Level in SuperSO8 5x6

sTOLL - new 7x8 mm² Power MOS package

OPTIREG™ Power Management IC (PMIC) TLF30682, TLF30681

Extension of CoolSiC™ MOSFET Easy portfolio with TIM

EasyPACK™ 3B with TRENCHSTOP™ IGBT7 for 1500 V PV string inverters

EiceDRIVER™ WCDSC006 - Half-bridge level-shift gate-driver IC

REF_10WTX_QI_4102 - 15W Qi transmitter for charging

BCR431U - Linear low-voltage-drop LED driver IC

XENSIV™ Sense2GoL pulse development kit

KIT_6W_13V_P7_950V - Auxiliary DC-DC supply solution

OptiMOS™ 5 40 V MOSFET Normal Level in SuperSO8 5x6

With the OptiMOS™ 5 40 V normal level product family Infineon offers a benchmark solution for applications requiring normal level (higher threshold voltage) drive capability.

The high V_{th} in the normal level portfolio offers immunity to false turn-on due to noisy environments. In addition, lower Q_{GD}/Q_{GS} ratios (C_{GD}/C_{GS} divider ratio) reduce the peak of the gate voltage spikes, further contributing to the robustness against unwanted turn-on.

Features

- Normal Level gate threshold (2.8 V typical)
- 175°C junction temperature (Tj)
- Optimized charge ratio Q_{GD}/Q_{GS} <0.8 for dv/dt and noise immunity
- Low gate charge
- Strong linear mode /SOA rating
- High current rating

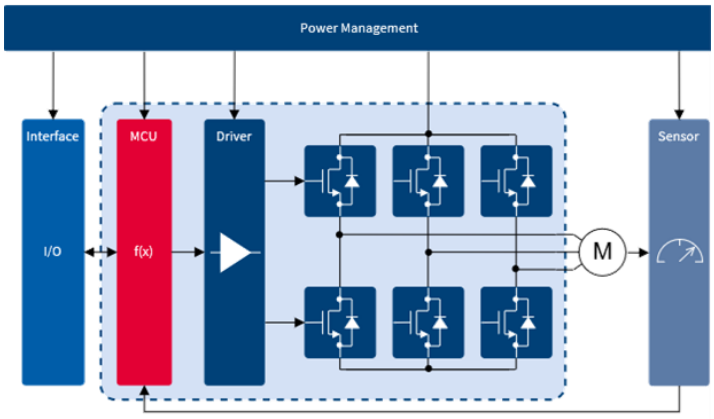
Benefits

- Normal gate drive offers immunity to false turn-on in noisy environments
- Increased operating temperature for robust designs
- Reduced switching losses leading to greater system efficiency and power density
- Suitable for operation at higher frequencies enabling advanced motor control techniques like field oriented control (FOC), direct torque control (DTC) as well as block commutation method
- Capable of withstanding high surge current during in-rush, locked rotor and braking scenarios
- Increased current carrying capability

Target applications

- Battery powered applications
- Battery powered tools
- Battery management
- Low voltage drives

Application diagram



Product overview incl. data sheet link

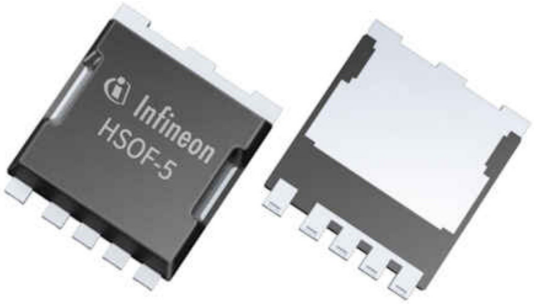
OPN	SP Number	Package
ISC015N04NM5ATMA1	SP005352240	SuperSO8
ISC017N04NM5ATMA1	SP005399103	SuperSO8
ISC019N04NM5ATMA1	SP005352244	SuperSO8
ISC028N04NM5ATMA1	SP005399107	SuperSO8
ISC036N04NM5ATMA1	SP005399111	SuperSO8
ISC046N04NM5ATMA1	SP005399115	SuperSO8
ISC058N04NM5ATMA1	SP005399119	SuperSO8

Product collaterals / Online support

Product family page

Product brief

sTOLL - new 7x8 mm^2 Power MOS package



New OptiMOS™-6 40 V Mosfet in sTOLL Package (high power leadless package in 7x8 mm^2) for future automotive applications (JEDEC name is MO-319A and IEC name is HSOF-5).

sTOLL offers high current capability of 250 A and a footprint of 56 mm^2 which is even smaller than DPAK (65 mm^2). In combination with Infineon's leading OptiMOS™-6 40 V power MOS technology, sTOLL offers best in class power density and power efficiency at Infineon's well known quality level for robust automotive packages.

Features

- JEDEC registered
- 7x8 mm² small footprint
- 250 A high current capability
- Leadless package with low package resistance and minimized stray inductance
- Leading 40 V technology OptiMOS-5™ + OptiMOS-6™
- $R_{DS(on)}$ range: 0,6 mOhm – 1,4 mOhm
- AOI capable package for Automated optical inspection

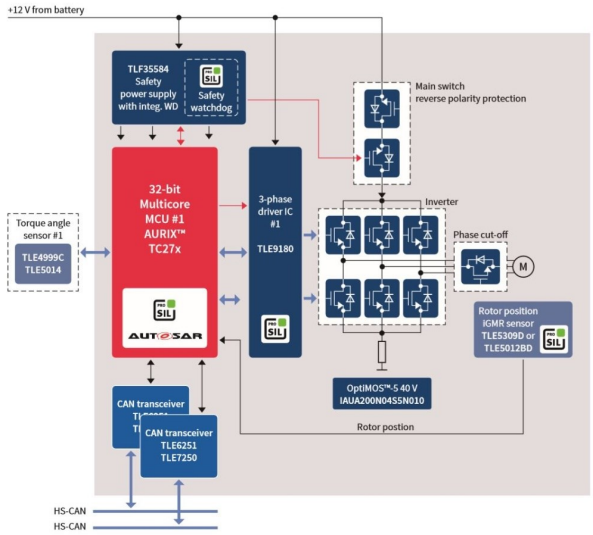
Benefits

- High power + current density
- High thermal capacity lead-frame package
- Reduced conduction losses
- Optimized switching behavior
- Reduced form factor compared to traditional DPAK/D2PAK
- Industry standard package (JEDEC MO-319A)

Target applications

- 12 V EPS
- 12 V BLDC
- 12 V - 48 V DC/DC

Application diagram



Product overview incl. data sheet link

OPN	SP Number	Package
IAUA250N04S6N006AUMA1	SP003127488	PG-HSOF-5
IAUA250N04S6N007AUMA1	SP003127494	PG-HSOF-5
IAUA200N04S5N010AUMA1	SP001497688	PG-HSOF-5
IAUA180N04S5N012AUMA1	SP002655470	PG-HSOF-5
IAUA180N04S5N012AUMA1	SP001497666	PG-HSOF-5

Product collaterals / Online support

Product Page

Product brief

OPTIREG™ Power Management IC (PMIC) TLF30682, TLF30681

Automotive PMICs, capable to withstand a battery connection at the input, supplying 3 different voltage domains at the outputs optimized to power different loads such a CAN transceiver, memory modules and the core of a microcontroller. The devices integrate internal and external voltage monitoring and feature a window watchdog in a 7x7mm² VQFN-48 package.

Features

- Pre-/post-regulator concept: Buck/SMPR-Buck & SMPR-Boost
  - –µC or MMIC or DSP
  - –Core or memory
  - –Transceivers
- UV/OV-monitoring for integrated rails
- UV/OV-monitoring for external rails
- Flexible window-watchdog

Benefits

- High efficiency and flexibility
- Wide temperature range
- Reduced number of external components for minimized PCB-area
- Minimized values of external components for cost optimization

Target applications TLF30682

- 76-79 GHz radar
- Multi-purpose camera
- Human machine interface

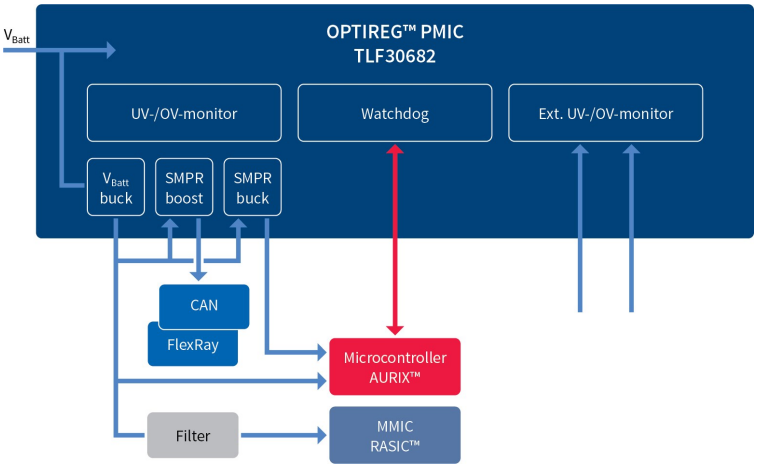
Target applications TLF30681

- 77 GHz SRR (Short Range Radar)
- 24 GHz radar
- 60 GHz radar (In-cabin sensing)

Competitive advantage

- Small footprint
- Reduced number of external components and minimized value of those
- Automotive grade with wide temperature range
- Minimized values external components for cost optimization
- High system reliability
- Easy and fast implementation
- Safety documents available on request

Block diagram



Product overview incl. data sheet link

OPN	SP Number	Package
TLF30682QVS01XUMA1	SP001588618	PG-VQFN-48
TLF30682QVS01BOARDTOBO1	SP001622202	board
TLF30681QVS01XUMA1	SP005347674	PG-VQFN-48
TLF30681QVS01BOARDTOBO1	SP005427058	board

Product collaterals / Online support

Product family page

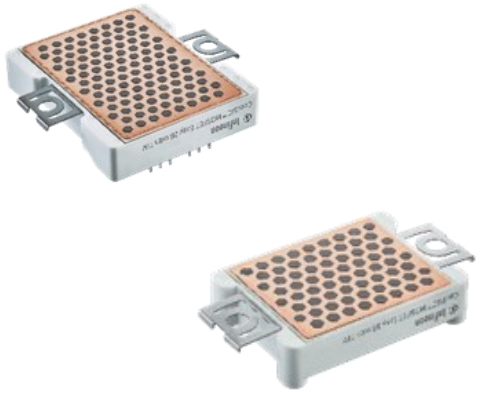
Product brief TLF30681QVS01

Product brief TLF30682QVS01

TLF30681 Simulation Models

TLF30682 Simulation Models

Extension of CoolSiC™ MOSFET Easy portfolio with TIM



CoolSiC™ MOSFETs reduce the system complexity leading to lower system cost and size in mid to high power systems. Thanks to the outstanding material properties of SiC, solutions which have been possible in the low-voltage world (< 600 V) are now feasible at higher voltages as well.

Thanks to the superior trench technology in combination with the thick gate-oxide, CoolSiC™ MOSFETs offer highest reliability. In addition, our CoolSiC™ body diode is long-term stable and does not drift.

Features

- 1200 V CoolSiC™ Trench MOSFET
- Pre-applied Thermal Interface Material (TIM)
- Low device capacitances
- Temperature independent switching losses
- Intrinsic diode with low reverse recovery charge
- Threshold-free on-state characteristics

Benefits

- About 80% lower switching losses compared to Si
- Reduced cooling effort and reduction of system cost
- High reliability due to superior gate oxide thickness
- Reduced system complexity
- Ease of design and implementation
- Up to 20% improved Rth by using TIM

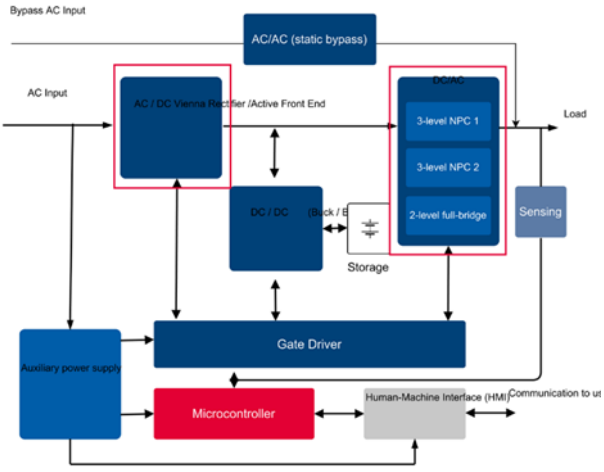
Target applications

- Solar
- Fast EV Charging
- UPS
- Servo Drives
- Energy Storage Systems

Competitive advantage

Superior gate oxide thickness for highest reliability
CoolSiC™ MOSFET body diode is long-term stable

Application diagram



Product overview incl. data sheet link

OPN	SP Number	Package
FF6MR12W2M1PB11BPSA1	SP004134434	AG-EASY2B-2
FF8MR12W2M1PB11BPSA1	SP005341588	AG-EASY2B-2
FF11MR12W1M1PB11BPSA1	SP005035982	AG-EASY1B-2
DF11MR12W1M1PB11BPSA1	SP005403179	AG-EASY1B-2
DF23MR12W1M1PB11BPSA1	SP005403183	AG-EASY1B-2
F423MR12W1M1PB11BPSA1	SP005035992	AG-EASY1B-2

Product collaterals / Online support

CoolSiC™ technology page

CoolSiC™ MOSFET module page

Video

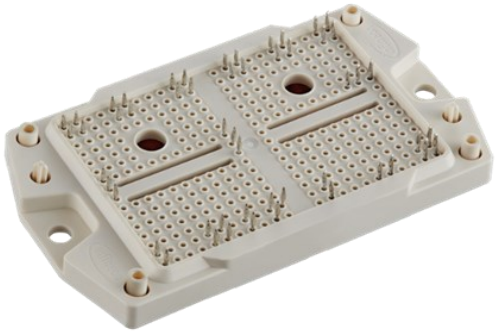
Webinar

Whitepaper CoolSIC™ for power conversion systems

Whitepaper CoolSIC™ reliability

EasyPACK™ 3B with TRENCHSTOP™ IGBT7 for 1500 V PV string inverters

The solar power market is undergoing a trend towards 1500 V solutions, which allow for more series connections, less cable, fewer generator connection boxes and fewer inverters.
The new EasyPACK™ 3B with TRENCHSTOP™ IGBT7 is especially designed for this market; it offers not only the established flexible pin -grid system to realize customized solutions, but the 950 V Active Neutral Point-Clamping (ANPC) topology can generate alternating current from 1500 V direct current with particularly low loss levels.
EasyPACK™ 3B is a total solution for 1500 V solar inverters. For MPPT (Maximum Power Point Tracker), Infineon offers a single module solution in dual-boost topology with 3 MPPTs in one module. Each of the MPPT can handle up to 26 A current. This makes this solution ready for bi-facial solar panels.
For the inverter stage, Infineon offers two solutions: one with Si diodes and one with CoolSiC™ Schottky diodes. The EasyPACK™ 3B with TRENCHSTOP™ IGBT7 and CoolSiC™ Schottky diode can achieve up to 10% higher power density.



Features

- Innovative base-plate-less power module in Easy 3B housing
- 400 A nominal current
- Optimized voltage class (950 V) in 3-level ANPC topology
- Low parasitic inductance pin-out design
- Press-FIT pins
- Integrated NTC
- Two options: Si or CoolSiC™ Schottky diode

Benefits

- Extend the well-known Easy power module family
- Achieve higher power with only a few mechanical modifications for current inverter designs
- Voltage class and topology result in extreme low losses for a given power rating < 150 kW
- Pin-out allows fast switching speed for achieving low loss
- PressFIT pins are the best fit for automated, high-volume production

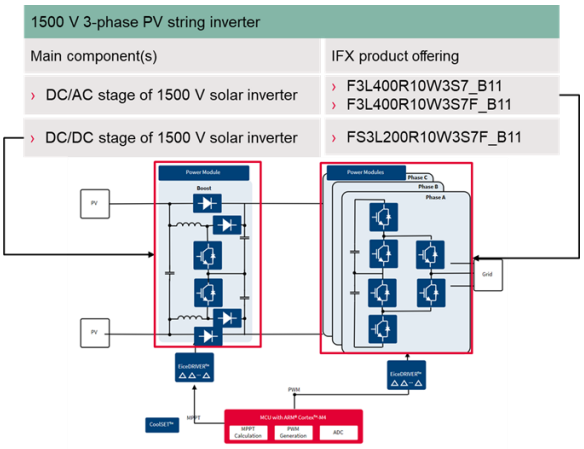
Target applications

Solar string inverter solutions

Competitive advantage

Broadest 12 mm portfolio without baseplate on the market to cover applications from 600 V to 1700 V

Application diagram



Product overview incl. data sheet link

OPN	SP Number	Package
F3L400R10W3S7B11BPSA1	SP003503062	AG-EASY3B-1
F3L400R10W3S7FB11BPSA1	SP003723550	AG-EASY3B-1
FS3L200R10W3S7FB11BPSA1	SP003733416	AG-EASY3B-1

Product collaterals / Online support

Family Page Easy Power Modules

Family page TRENCHSTOP™ IGBT7

Whitepaper

Video

EiceDRIVER™ WCDSC006 - Half-bridge level-shift gate-driver IC

The half-bridge gate driver EiceDRIVER™ WCDSC006 is particularly suitable to drive both high-side and low-side MOSFETs in a half-bridge inverter configuration especially in inductive wireless power charging technology for smartphones.

Features

- -0.3 V to 7 V input bin capability
- 4 A sink and 2 A source current capability for high-side and lo-side drivers
- Independent high-side / low-side TTL logic inputs
- Integrated bootstrap diode
- Maximum bootstrap voltage of 60 V
- 5 ns (typ) dead-time to prevent shoot-through

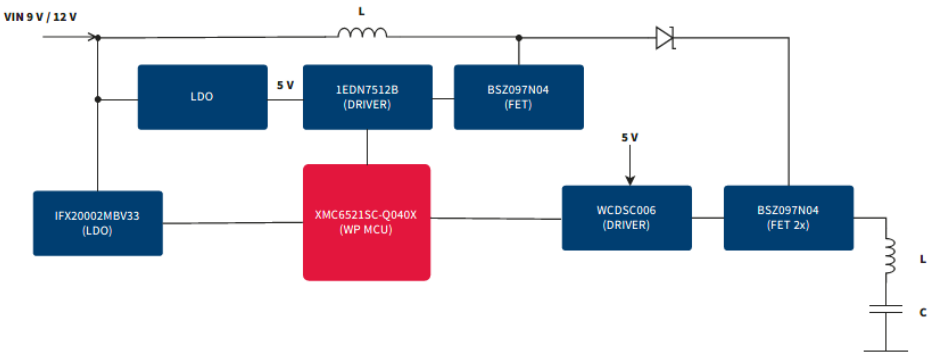
Benefits

- Increased robustness
- Faster switching mode and higher efficiency results
- Increase flexibility
- No need of external components
- Higher margin and more robust operation
- No risk of cross conduction

Target applications

- Wireless charging

Block diagram



Product overview incl. data sheet link

OPN	SP Number	Package
WCDSC006XUMA1	SP002574622	PG-WSON-10

Product collaterals / Online support

Product page

Product brief

REF_10WTX_QI_4102 - 15W Qi transmitter for charging smartphones

The 15W wireless power transmitter evaluation module is a high-performance, easy-to-use development kit designed for applications up to 15W of power transfer. It supports an input voltage range of 9-12V and is compatible with QC 3.0 adapters.

The transmitter provides the designer a certified platform that drastically reduces the development time of their end application. The system supports WPC v1.2.4 receivers up to 15W. Smartphones with proprietary fast charge capability are also supported.

Features

- Up to 15W wireless power transfer
- WPC Qi v1.2.4 EPP certified (MP-A11 coil)
- Fixed frequency power transfer
- Supports fast charging for Samsung and Apple phones
- VIN range: 9 -12V and 83% peak efficienc
- To be operated with Q.C. 3.0 adapter
- Improved accuracy of foreign object detection (FOD)

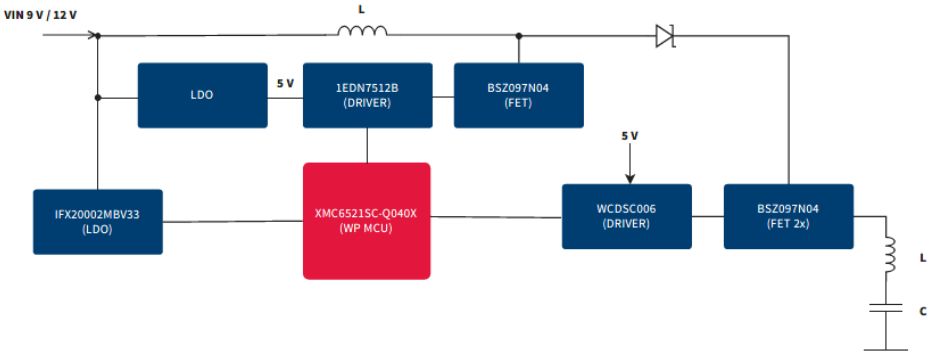
Benefits

- Development effort reduction
- Efficiency and accurate FOD
- Reduced system costs
- Fast charging capability

Target applications

- Mobile phone, tablet
- Electric toys
- IoT (Medical, health, smart home)
- Wireless charging

Solution diagram



Product overview incl. product page link

OPN	SP Number	Package
REF10WTXQI4102TOBO1	SP003078392	board

Product collaterals / Online support

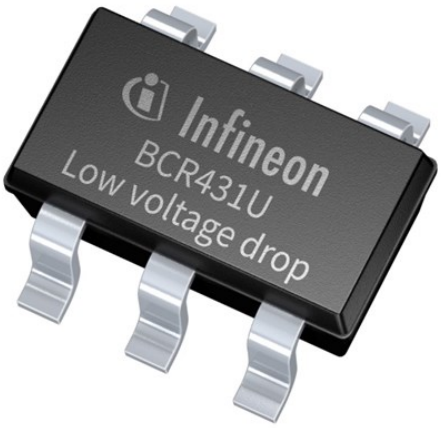
Product page

Interactive 3D board model

Solution brief

Quick start guide

BCR431U - Linear low-voltage-drop LED driver IC



Infineon's BCR431U is a linear LED driver IC in a small SOT23-6 package regulating the LED current in standalone operation without any external power transistor. It is suitable for driving currents up to 37mA and the IC supply voltage ranges from 6V up to 42V.
The LED current level can be adjusted by connecting a high-ohmic resistor R_{set} to pin RS. The voltage drop at the integrated LED driver stage is 200mV max. at 37mA improving the overall system efficiency and providing extra voltage headroom to compensate for tolerances of LED forward voltage and supply voltage.
Despite temperature changes, the driving current is always under control. Thanks to a smart temperature controlling circuit which is reducing the LED current when the junction temperature of BCR431U is very high.

Features

- Supply voltage from 6 to 42 V
- Controls up to 37 mA LED current
- Typ. 105 mV saturation voltage at 15 mA
- Smart temperature control
- LED current precision ±10% over the whole current range
- High ESD robustness
- LED current can be adjusted by R_{set} functionality

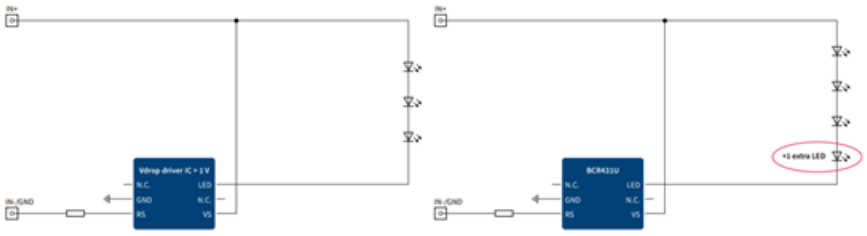
Benefits

- Flexible for 12 V / 24 V / 36 V designs
- Low voltage-drop enables voltage headroom
  - for more LEDs and better efficiency
  - for longer LED strips and less feeding points
  - for more flexibility in power supplies used
- High precision for low-power LEDs
- Thermal protection in critical temperature ranges
- Protection against surge events

Target applications

- LED strip
- Architectural LED lighting
- LED displays and channel letters
- Emergency lighting
- Retail lighting
- White good lighting

Block diagram



Product overview incl. data sheet link

OPN	SP Number	Package
BCR431UXTSA1	SP005097600	PG-SOT23-6
DEMOBCR431ULVDROP	SP005351261	board

Product collaterals / Online support

Product page

Product brief

Application note

Video

XENSIV™ Sense2GoL pulse development kit

This development kit allows the user to implement and test several sensing applications at the 24 GHz ISM band such as motion detection and speed measurement. The kit operates in a pulsed mode achieving 18 m detection range with a sensor power consumption less than 5 mW. The demonstration kit consists of two boards, the radar front end board: SHIELD_BGT24LTR11 and the microcontroller board: RADAR BB XMC4700. The baseboard adds additional flexibility by allowing battery operation, current measurements, SD card reader for storage and Arduino compatible pin connectors.

Features

- Capability to detect motion, speed and direction of movement (approaching or retreating)
- Detection range of 18 m for human target at a power consumption < 5 mW ›High sensitivity of detection in comparison to PIR
- Operates in harsh environments and detects through non-metallic materials
- Multiple power supply possibilities: Micro USB, external power supply, or battery
- Arduino compatible microcontroller board (Arduino standard connectors)
- Modulation parameters can be changed to suit the application requirements
- Multiple current sensors for current consumption monitoring and optimization

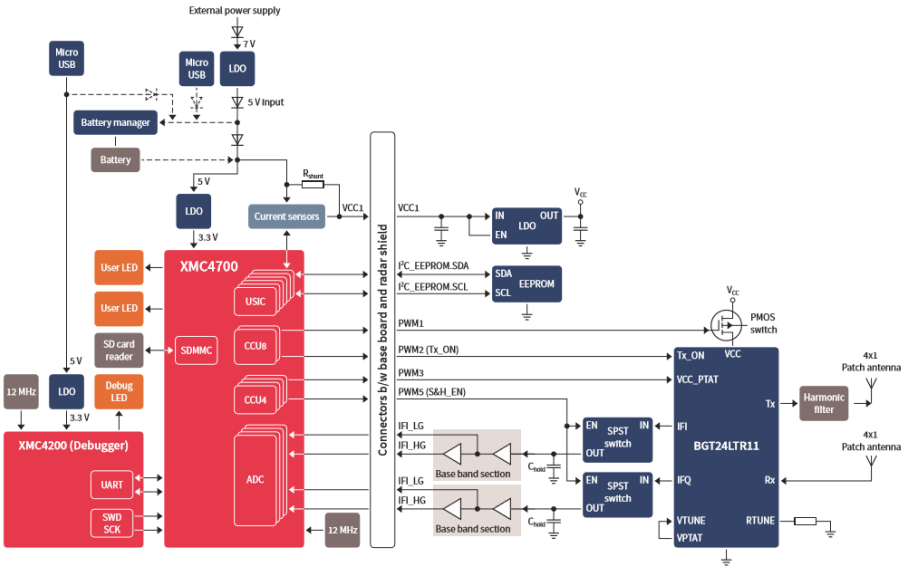
Benefits

- Fast prototyping with flexible kit
- Arduino Library available
- Can be battery driven
- Covers multiple applications/use cases

Target applications

- Security
- Indoor and outdoor lighting
- Smart home
- Automatic door opener
- Intelligent switches
- Speed measurement

Block diagram



Product collaterals / Online support

Product page

Product brief

Application notes

3D model

Video

Product overview incl. product page link

OPN	SP Number	Package
DEMOSENSE2GOLPULSETOBO1	SP005400656	board

KIT_6W_13V_P7_950V - Auxiliary DC-DC supply solution

In power supplies that are used for server, telecom, and industrial applications there is typically a small bias power supply in addition to the main power converter. This 6W bias board is designed to run in a system where it is continuously powered from the 400VDC output of a boost power factor correction (PFC) converter and provides power to the fan, gatedrivers, and controller. This board uses the ICE5QSAG quasi-resonant (QR) flyback controller and the new 950V CoolMOS™ P7 (IPU95R3K7P7). This 950V breakdown voltage gives additional margin in the system to ensure the bias continues to run through surge events. This design was done as a snubberless flyback converter to further improve the efficiency over the entire load range.

Features

- Quasi-resonant flyback using a Infineon's second generation controller
- Snubberless operation to improve efficiency
- 950 V breakdown voltage allows operating off of higher input voltages
- Primary side regulated 13 V and a secondary side unregulated 13 V output

Benefits

- High efficiency
- Low cost solution
- Reduced PCB hotspot due to elimination of the snubber network

Target applications

- Power supplies
- SMPS

Product overview incl. product page link

OPN	SP Number	Package
KIT6W13VP7950VTOBO1	SP005416612	board

Product collaterals / Online support

Product page

Application note