New Product Introduction

March 2019

BCR601 and BCR602 – 60 V linear LED controller IC family

Reference design: 500 mA linear LED controller with BCR601

Reference design: cost-efficient, dimmable and highly reliable linear LED driver (60 V, 200 mA linear LED controller)

CIPOS™ Micro IM231

High Perfomance/ Low Capacitance ESD Devices:

High Perfomance/ Strong Clamping ESD Devices:

IHW30N160R5 - 1600 V IGBT with anti-parallel diode in TO-247

XENSIV™- AMR based analog angle sensors TLE5109A16(D)

XDPL8218 – Lighting controller for LED drivers

Reference design: high power factor flyback converter with constant voltage output and secondary-side regulation

XDPL8221 — for advanced, smart and connected LED driver

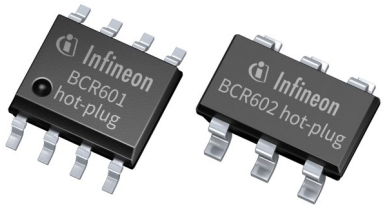
Reference design: 50 W / 100 W LED driver — efficient and flicker-free reference circuit design with high power factor and low THD

XMC4800 IoT Amazon FreeRTOS Connectivity Kit WiFi with EtherCAT® Kit

BCR601 and BCR602 – 60 V linear LED controller ICs

BCR601 is a linear LED controller IC regulating the LED current with an external driver transistor. It supports either NPN bipolar transistors or N-channel MOSFETs to cover a wide LED current and power range up to several amperes. The LED current is fully scalable by dimensioning an external resistor at MFIO pin.

The BCR602 is a perfect fit for 48 V LED applications by combining small form factor with low cost. Through its higher integration, BOM savings and ensuring long lifetime of LEDs, this controller has many advantages compared to discrete solutions.



Features

> BCR601 – 60 V linear LED controller IC with voltage feedback to primary side
> BCR602 – 60 V linear LED controller IC for dimmable LED
- > Supply voltage from 8 V to 60 V
- > Supports an optocoupler voltage feedback loop to primary side minimizing power losses
- > AC ripple suppression
- > Supports wide current range depending on external driver transistor
- > Gate drive current 10 mA
- > LED current can be adjusted by R_{set} functionality
- > Dimming at MFIO pin
  - – Analog down to 3 %
  - – By resistors down to 3 %
- > Hot-plug capable
- > LED current precision ±3 percent
- > Overvoltage and overtemperature protection

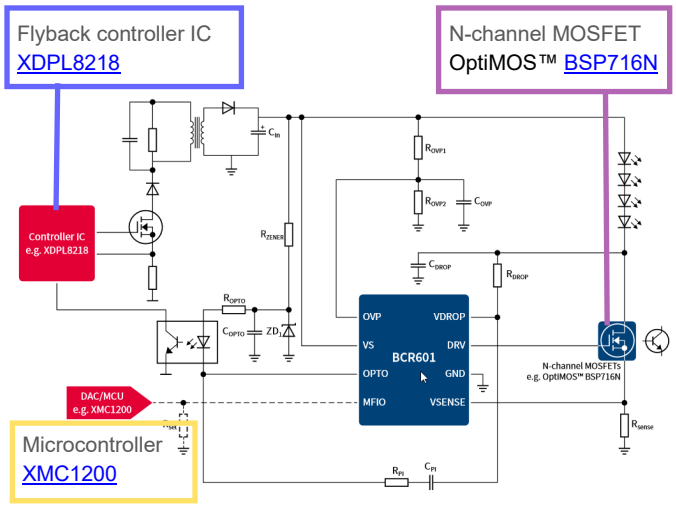
Benefits BCR601 and BCR602

> Reducing voltage overhead and power loss in transistor (BCR601)
> Less EMI shielding required in 2-stage designs
> Flicker-free deep dimming performance (BCR602)
> Operating in SELV area
> Flexible designs with BJT or N-channel MOSFET
> Current always under control
> Small form factor

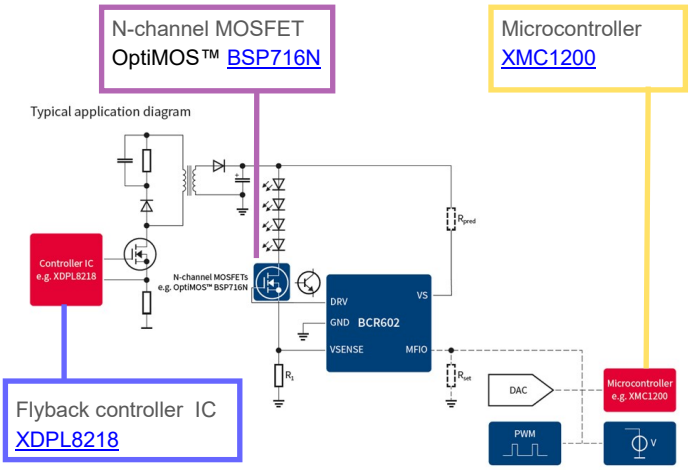
Competitive advantage and key arguments

> Cost-effective linear devices with wide voltage operating in SELV area and current range offering design flexibility and protection functions
> BCR601 with innovative voltage feedback to primary side (“Active Headroom Control”) design alternative to DC-DC buck ICs
> BCR602 offering vast dimming options down to 1%
> High light quality without flicker
> Current always under control protecting LEDs

Application diagram BCR601 with innovative voltage feedback to primary side („active headroom control“)



Application diagram BCR602 – 60 V linear LED controller IC with advanced dimming options



Target applications

> BCR601: LED driver
> BCR602: Light engine

Product collaterals / Online support

> BCR601 product page / product brief
> BCR602 product page / product brief
> Linear LED controller with feedback loop to primary side design guide
> Linear LED controller 60 V design guide
> Power and sensing selection guide

Product overview incl. data sheet link

OPN	SP Number	Package
BCR601XUMA1	SP001681722	PG-DSO-8
BCR602XTSA1	SP001681730	PG-SOT23-6

Reference design: 500 mA linear LED controller with BCR601

This demo board introduces BCR601, a 60 V linear DC-DC LED controller IC for general lighting applications. The BCR601 features a linear current regulation, various protection features and analog dimming options. Highlight feature of the BCR601 is the unique voltage feedback loop to primary side to keep not only the current but also the voltage effectively under control. This board is intended for the design evaluation of cost-efficient, highly reliable, power efficient LED drivers with BCR601.

The board is configured to have an output current of 500 mA.

A modular reference design consisting of XDPL8218 board for primary side – a digitally configurable AC-DC flyback converter - together with BCR601 board is available.

Features

> Supply voltage from 8 V to 60 V
> Board configurable up to 1.5 A LED current control
> 100 Hz/120 Hz supply ripple suppression
> LED current precision ±3%
> 3% analog dimming or 1% PWM dimming of LED current at pin MFIO,
> Board suitable for assembly with transistor packages of types SOT-223, DPAK, TO-220,
> Rset functionality at pin MFIO
> Flexible input capacity selectable as ceramic SMD device or as electrolyte device
> Hot-plug protection to minimize LED inrush current
> Overtemperature protection function vs junction temperature

Benefits

> Cost and power efficient design-in
> No ripple on LED for flicker-free light
> Various protection features for LEDs

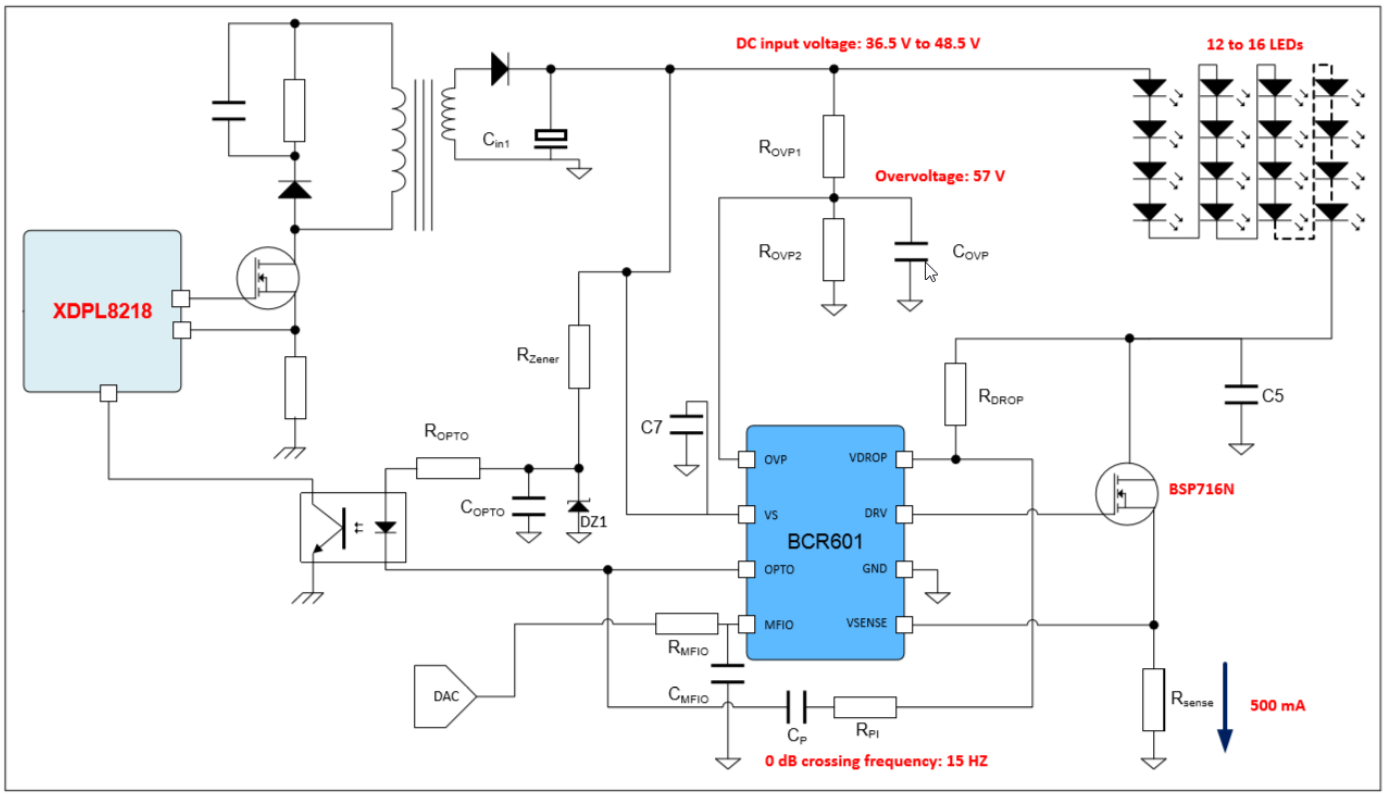
Target applications

> General lighting
> LED module/engine

Product collaterals / Online support

> Board page
> Engineering report
> Application note

Application diagram: light engine capable of driving 12 to 16 OSLON LEDs at 500 mA using a low-cost package MOSFET



Product overview

OPN	SP Number
DEMO_BCR601_60V_IVCTRL	SP002798056

Reference design: cost-efficient, dimmable and highly reliable linear LED driver with BCR602(60 V, 200 mA linear LED controller)

This demo board introduces BCR602, a 60 V linear DC-DC LED controller IC for general lighting applications. The BCR602 features a linear current regulation, various protection features and flexible dimming options. This board is intended for the design evaluation of cost-efficient, highly reliable, dimmable LED engines/modules with BCR602.

The board is configured to have an output current of 200 mA.

A modular reference design consisting of XDPL8218 board for primary side – a digitally configurable AC-DC flyback converter - together with BCR602 board is available.

Features

> Supply voltage from 8 V to 60 V
> Board configurable up to 1.5 A LED current control
> 100 Hz/120 Hz supply ripple suppression
> LED current precision ±3%
> 3% analog dimming or 1% PWM dimming of LED current at pin MFIO
> Board suitable for assembly with transistor packages of types SOT-223, DPAK, TO-220
> Rset functionality at pin MFIO
> Flexible input capacity selectable as ceramic SMD device or as electrolyte device
> Hot-plug protection to minimize LED inrush current
> Overtemperature protection function vs junction temperature
> Flexible PWM and analog dimming options

Benefits

> Cost and power efficient design-in
> No ripple on LED for flicker-free light
> Various protection features for LEDs

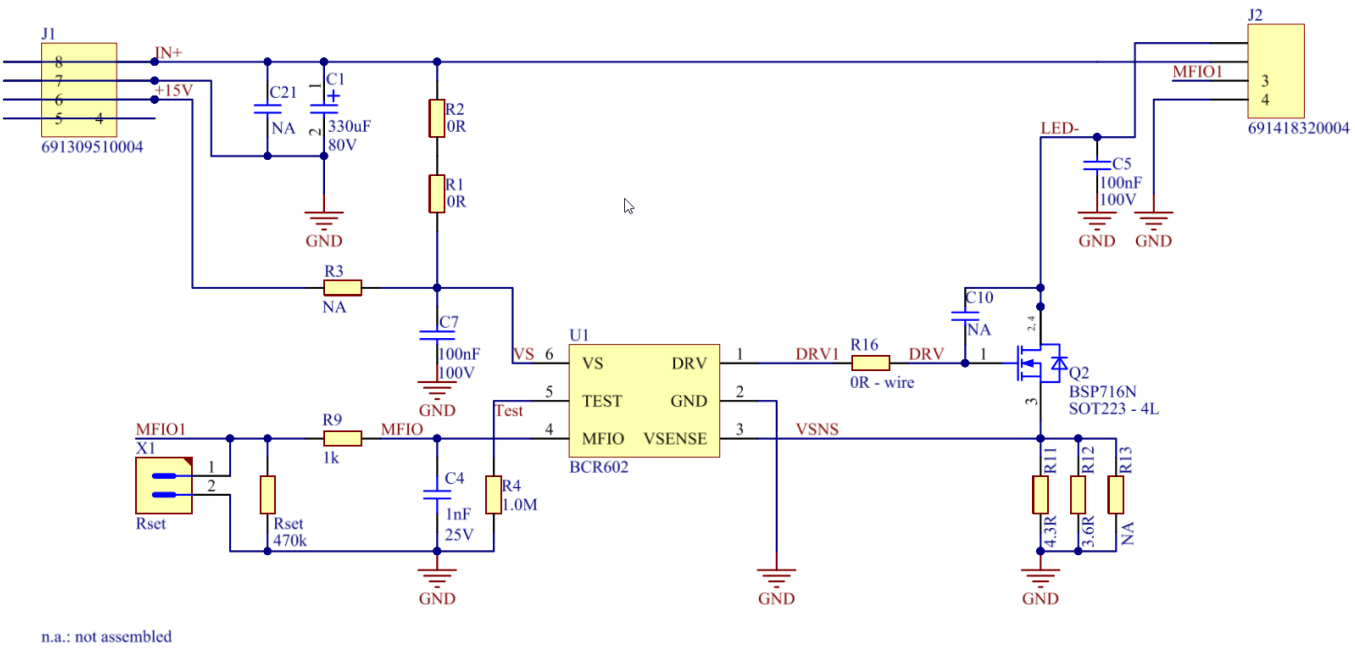
Target applications

> General lighting
> LED module/engine
> LED replacement lamps

Product collaterals / Online support

> Board page
> Engineering report
> Application note

Application diagram: cost-efficient, dimmable and highly reliable linear LED drivers (60 V, 200 mA linear LED controller)



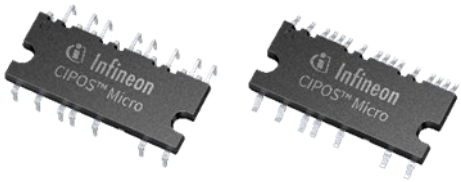
n.a.: not assembled

Product overview

OPN	SP Number
DEMO_BCR602_60V_ICTRL	SP002798054

CIPOS™ Micro IM231 series

The CIPOS™ Micro is a family of compact intelligent power modules (IPM) for low power motor drive applications including fans, pumps, air purifiers and refrigerator compressor drives. It offers a cost effective power solution by leveraging industry standard footprints and processes compatible with various PCB substrates.



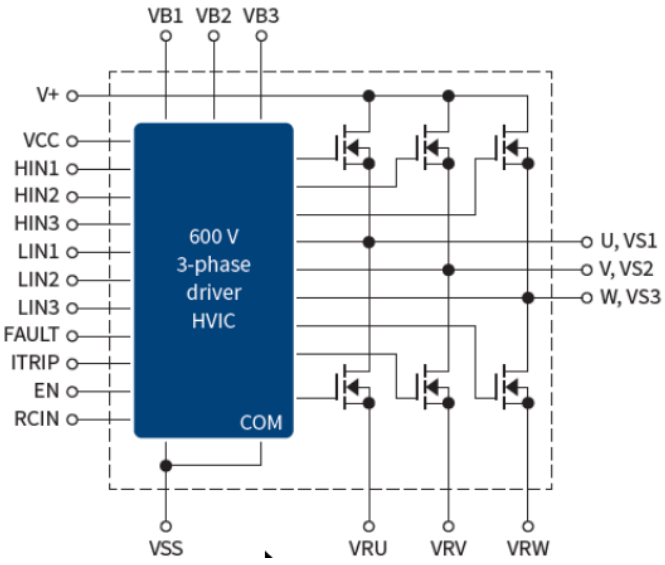
Features

> 600V 3-phase inverter including gate drivers & bootstrap function
> Low $V_{CE(sat)}$ TRENCHSTOP™ IGBT6
> Heatsinking mounting holes added
> Temperature sense
> Accurate overcurrent protection (±5%)
> Fault reporting and programmable fault clear
> Advanced input filter with shoot-through protection
> Optimized dV/dt fir loss and EMI trade offs
> Open-emitter for single and leg-shunt current sensing
> 3V logic compatible
> Isolation 2000VRMS, 1 min

Benefits

> Ruggedness/Reliability- HV H3TRB qualified, highest isolation voltage in its class, and higher lifetime
> Protection- protection from system fails, and UL certified temperature sense
> Ease of Use- Surface Mount (SMD) option, easy PCB design, optimal creepage and clearance, and heat sinking holes added
> Performance-Latest TrenchStop™ IGBT6, and low EMI
> Easy to design-in–fast time to market
> Same PCB design can address multiple markets (100 VAC – 230 VAC) with the same IPM package
> UL certified package and temperature sensor
> Heatsink mounting holes added

3 phase configuration



Target applications

> Home appliances like
  > Refrigerator
  > Air conditioning
  > Hydronic pumps
  > Kitchen hoods
  > Heating systems
  > Dishwasher
  > Hair dryer
  > Air purifier
  > Motorized blinds
> 10 - 200 W motor drives
> Pumps and fans

Product collaterals / Online support

> Product family page

Product overview incl. data sheet link

OPN	SP Number	Package
IM231L6S1BALMA1	SP001831436	PG-DIP-23
IM231L6T2BAKMA1	SP001831432	PG-DIP-23
IM231M6S1BALMA1	SP002055144	PG-DIP-23
IM231M6T2BAKMA1	SP002055140	PG-DIP-23

High Perfomance/ Low Capacitance ESD Devices:

ESD133-B1-W01005, ESD144-B1-W0201, ESD145-B1-W01005

Low Capacitance ESD protection family additions. Adding a deep snap-back NFC antenna protection champion with the ESD144-B1-W0201 and side by side the even smaller package version, the ESD145-B1-W01005. Additionally, the super small 01005 package variant of our low cap/ strong snap back high speed I/O protection, the ESD133-B1-W01005 is introduced.

Features

> ESD / transient protection according to:
  > IEC61000-4-2 (ESD):
    ESD133: ±20 kV (air / contact discharge)
    ESD144/145: ±18 kV (air / contact discharge)
  > IEC61000-4-4 (EFT): ±2.5 kV / ±50 A (5/50 ns)
  > IEC61000-4-5 (Surge):
    ESD133: ±3 A (8/20 µs)
    ESD144/145: ±3.5 A (8/20 µs)
> Bi-directional working voltage up to:
  > ESD133: VRWM = ±5.5 V
  > ESD144/145: VRWM = ±18 V
> Line capacitance: CL = 0.2 pF (typical) at f = 1 MHz
> Clamping voltage:
  > ESD133: VCL = 13 V (typical) at ITLP = 16 A with RDYN = 0.56 Ω (typical)
  > ESD144/145: : VCL = 12.5 V (typical) at ITLP = 16 A with RDYN = 0.58 Ω (typical)
> Very low reverse current: IR < 1 nA (typical)
> Small form factor SMD size
  > ESD133/145: 01005 and low profile (0.43 mm x 0.23 mm x 0.15 mm)
  > ESD144: 0201 and low profile (0.58 x 0.28 x 0.15 mm³)
> Bi-directional and symmetric I/V characteristics for optimized design / assembly

Target applications

> ESD133-B1-W01005: USB 3.0 / 3.1, Firewire, DVI, HDMI, S-ATA, DisplayPort, Thunderbolt, Mobile HDMI link, MDDI, MIPI, SWP
> ESD144/145-B1-W0201/W01005: ESD protection of RF signal lines in Near Field Communication (NFC) applications, RF antenna

Application examples:
> ESD133: High Speed/ Low Voltage Signallying port on notePC/ tabletPC/ mobile handset
> ESD144/145: Antenna input feed on NFC radio transceiver

Product collaterals / Online support

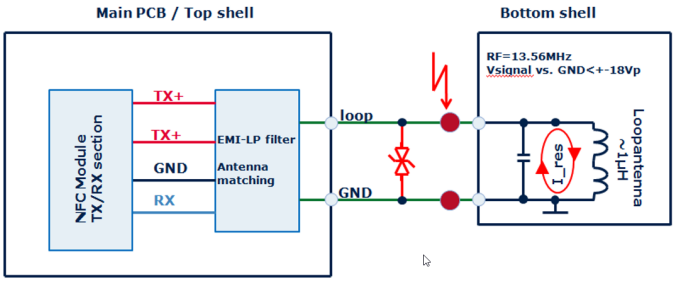
> Product family page

Benefits vs. predecessor

> **ESD133** benefits vs. ESD105, ESD108 & ESD112
  VCL reduced by ≥ 35% / CL reduced to 0.25pF (vs. CL = 0.28pF)
> Improved clamping versus predecessor parts ESD110 and ESD128. **ESD144** is Infineon's **deep snapback protection** device for best clamping performance for the protection of NFC antenna.
> Improved clamping versus predecessor parts ESD110 and ESD128. **ESD145 is the size reduced version** of the ESD144 offering now a smaller deep snapback protection device for best clamping performance for the protection of NFC antenna

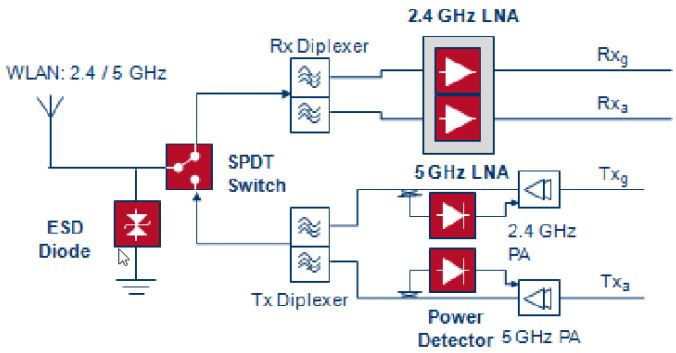
Application schematic NFC antenna

> ESD144-B1-W0201 / ESD145-B1-W01005
> To cope with the high RF amplitude @ the resonant loop antenna maximum working voltage of the TVS diode has to be >+-18 V. Low TVS diode capacitance is mandatory to avoid a de-tuning of the antenna resonance. ESD exposed connection pads to the phone's mainboard (MB) must be ESD protected efficiently.



Application schematic WLAN

> ESD133-B1-W01005
> As higher the TX power or RF interferer @ the RF TVS diode is, the higher the TVS diode linearity has to be. No compromise on ESD performance even linearity requirements are high!



Product overview incl. data sheet link

OPN	SP Number	Package
ESD133B1W01005E6327XTSA1	SP001619396	SG-WLL-2
ESD144B1W0201E6327XTSA1	SP001504652	SG-WLL-2
ESD145B1W01005E6327XTSA1	SP001662142	SG-WLL-2

High Perfomance/ Strong Clamping ESD Devices:

ESD234-B1-W0201, ESD253-B1-W0201, ESD259-B1-W0201

Strong Clamping Multipurpose ESD protection family additions. Adding 2 new high voltage protection devices- ESD253-B1-W0201 and ESD259-B1-W0201. Also adding a new high cap device(56pF), ESD234-B1-W0201

Features

> ESD / transient protection according to:
- IEC61000-4-2 (ESD):
  - ESD234: ±19 kV (air/contact discharge)
  - ESD253/ 259: ±15 kV (air/contact discharge)
- IEC61000-4-4 (EFT):
  - ESD234: ±2 kV/ ±40 A (5/50 ns)
  - ESD253: ±2 kV/±40 A (5/50 ns)
  - ESD259: ±2.5 kV/±50 A (5/50 ns)
- IEC61000-4-5 (Surge):
  - ESD234: ±7 A (8/20 µs)
  - ESD253: ±3 A (8/20 µs)
  - ESD259: ±2.5 A (8/20 µs)

> Bi-directional working voltage up to:
- ESD234: VRWM = ±5.5 V
- ESD253: VRWM = ±24 V
- ESD259: VRWM = ±16 V

> Line capacitance:
- ESD234: CL =56 pF (typical) at f = 1 MHz
- ESD253: CL =2.8 pF at f = 1 MHz
- ESD259: CL =4.2 pF at f = 1 MHz

> Clamping voltage:
- ESD234: VCL = 12.5 V (typical) at ITLP = 16 A with RDYN = 0.15 Ω (typical)
- ESD253: VCL = 31 V (typical) at ITLP = 16 A with RDYN = 0.3 Ω (typical)
- ESD259: VCL = 24 V (typical) at ITLP = 16 A with RDYN = 0.29 Ω (typical)

> Very low reverse current: ESD234/253: IR < 1 nA (typical)

> Small form factor SMD size 0201, low profile (0.58 x 0.28 x 0.15 mm³)

> Bi-directional & symmetric I/V characteristics for optimized design

Target applications

> ESD234/ ESD253: ESD protection of highly susceptible IC/ASICs in audio, headset, human digital interfaces
- > Quick charging in mobile devices, wireless charging
- > 24V DC/DC port protection

> ESD259:
- > Audio line, speaker, headset, microphone
- > Keypad, touchpad, buttons, convenience keys
- > LCD displays, camera, audio lines, mobile communication, consumer products (E-Book, MP3, DVD, DSC...)
- > Notebooks tablets and desktop computers and their peripherals

Benefits vs. predecessor

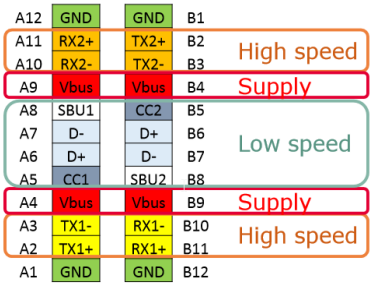
> ESD234: High capacitance for built-in line filtering, e.g. TVS protected audio lines

> ESD253 vs ESD218: VCL reduced by 19V@16A; other characteristics remain almost unchanged; CSP and miniaturized versions of ESD218-B1-02ELS

> ESD259: Special emphasis on Harmonic performance for use on signal lines near strong RF transmitters- improved version of ESD249

Application schematic USB type C (USB 3.2, Thunderbolt 3)

> ESD253 — Supply (V bus):
- > Signaling: 5.5V typical up to 22V for fast charging/power delivery
- > TVS requirements: capacitance unimportant, high surge bustness, high operating voltage for PD



Application schematic Avoiding EMC/EMI harmonic issues

> ESD259:
- > Harmonics generation due to TVS gets into focus:
- – Emission: For FCC compliance
- – Intra device coupling: To avoid harmonics signals coupling into other functional blocks

Product collaterals / Online support

> Product family page

Product overview incl. data sheet link

OPN	SP Number	Package
ESD234B1W0201E6327XTSA1	SP001713072	SG-WLL-2
ESD253B1W0201E6327XTSA1	SP001936924	SG-WLL-2
ESD259B1W0201E6327XTSA1	SP001786870	SG-WLL-2

IHW30N160R5

1600 V IGBT with anti-parallel diode in TO-247

The 5th generation of reverse conducting 1600 V, 30 A TRENCHSTOP™ IGBTs with monolithically integrated reverse conducting diode in a TO-247 package has been optimized for the demanding requirements of Induction Cooking applications. The 30 A RC-H5 devices complement the previous generation of reverse conduction IGBTs and extend the performance leadership of the RC-H family, focusing on system efficiency and reliability.

Features

> Switching losses reduced by 20%
> Very low conduction losses
> Reduced turn-on current spike up to 10%
> $T_{j(max)}$ = 175°C
> Soft current turn-off waveforms for low EMI
> Higher blocking voltage $V_{BR(min)}$ = 1600

Benefits

> Increased switching frequency
> Lowest power dissipation
> Better thermal management for higher reliability
> Lower EMI filtering requirements
> Reduced system costs
> Highest reliability against peak current

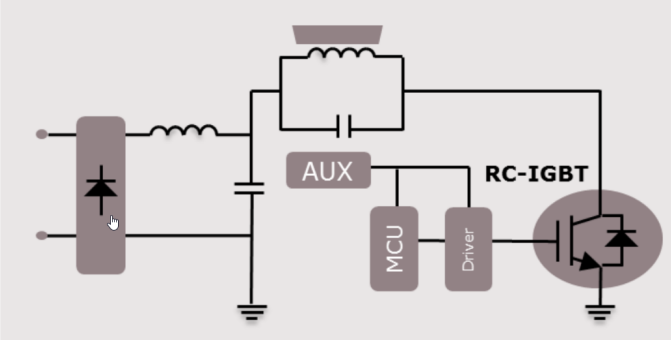
Competitive advantages

> Easy transition from former generation R2
> Reliability: R5 has better thermal performances
> Feature to cost: R5 offers best induction heating feature set to match market pressure cost, with highest quality standard
> Total power losses: lowest power loss at all cooktop's condition (very low conduction losses and lowest conduction losses (-20% than R3, thanks to best in class V_{ce}, sat))

Target applications

Resonant switching topologies with focus on home appliances like
> Induction cooking
> Microwave oven
> Rice cookers
> Induction water heaters

Block diagram



Product collaterals / Online support

> Product page
> Reverse Conducting IGBT page
> Gate driver finder

Product overview incl. data sheet link

OPN	SP Number	Package
IHW30N160R5XKSA1	SP001646684	PG-TO247-3

XENSIV™- AMR based analog angle sensors TLE5109A16(D) - ultra-precise and fast

The TLE5109 product family covers Infineon Technologies AG's new ultra-precise, fast analog AMR-based angle sensors which can be used within a very broad magnetic field range, starting at 10mT reaching up to more than 500mT. One major benefit of the iAMR technology is its high angle accuracy, reaching typical values of only 0.1° angle error.

TLE5109 products are available as single and dual die versions and at two different supply voltage options, coming inside the green and robust TDSO-16 Package. The whole TLE5109 family is ready for ISO26262 standards, targeting ASIL D for all dual die sensors. This makes the products a perfect fit for both Automotive as well as Industrial Safety Applications.

Features

> Wide magnetic field range: from 10mT up to >500mT
> High angle accuracy with only 0.1° overall angle error (typ.)
> Best-in-class typ. angle error of only 0.2° within range 10…20mT
> Separate supply pins for top and bottom sensor
> Low current consumption
> Best-in-class fast start-up time only 40…70 us
> Very short propagation delay
> Optimized 3.3 V or 5 V supply voltage
> Pre-amplified output signals for differential or single-ended applications for AMR sensor
> TDSO 16 package

Qualification

> Automotive qualified acc. to AEC Q100
> Ready for ISO26262, targeting ASIL D (dual die)

Competitive advantage

> Best-in-class angle accuracy, especially at low magnetic fields
> Best-in-class fast start-up time
> Increasing the design-in flexibility: quick and easy product version interchange of all TLE5x09 products due to identical pin-configuration and interfaces

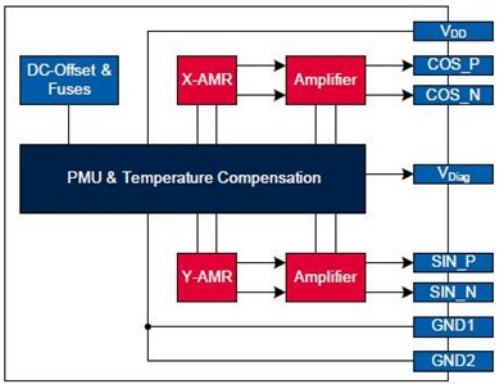
Benefits

> Operating within a very magnetic Field range: 10mT...> 500mT
> System Cost Benefit: enables very cost-efficient systems as customers can use smaller and cheaper magnets due to the angle error of 0.2° typ. at 10...20mT
> Perfect fit for non contact angle measurement for reliable wear free operation like e.g. wiper
> System Cost Benefit: no need for an external amplifier leads to minimal external component count
> Highly reliable for use in high availability applications due to ISO26262 readiness targeting ASIL D (dual die)

Target applications

> BLDC motor position (e.g. pumps, wipers, brakes and other actuators)
> EPS Rotor Position
> Pedals and rotary switches
> Valve or flap position sensing
> Steering angle sensing (SAS)
> Electric Motors
> Magnetic Encoders
> High-Speed Applications
> Automotive and Industrial Safety
> Any other kind of ultra-precise and fast angle measurement application

Block diagram



Product collaterals / Online support

> Product family page
> Product brief
> XENSIV™ sensing the world selection guide / pocket guide
> TLE5xxx Calibration 360° application note

Product overview incl. data sheet link

OPN	SP Number	Package
TLE5109A16DE1210XUMA1	SP001496434	PG-TDSO-16
TLE5109A16DE2210XUMA1	SP001044230	PG-TDSO-16
TLE5109A16E1210XUMA1	SP000956970	PG-TDSO-16
TLE5109A16E2210XUMA1	SP000956966	PG-TDSO-16

XDPL8218 – High power factor constant voltage flyback IC with secondary-side regulation for cost-effective LED driver

The XDPL8218 is a digital, highly integrated, future-proof device. It combines a constant voltage quasi-resonant flyback controller with algorithms for high power factor and low THD. Main application field for XDPL8218 is for dual stage designs with a DC-DC stage at secondary side and XDPL8218 as primary side. The device manages wide load ranges and reacts fast and stable to dynamic load changes. The digital core of the XDPL8218 enables high efficiency over wide output power range. The multi-mode operation with quasi-resonant switching at high power, discontinuous conduction mode for frequency reduction at medium power and active burst mode at low power enables this.

Features

> Programmable constant voltage output with secondary-side regulation
> Supports AC and DC input
> Nominal input voltage range 100 V_{AC} – 277 V_{AC} or 127 V_{DC} – 430 V_{DC}
> Reference board efficiency > 90%
> Power factor > 0.9 and THD < 15% over wide load range
> Standby power < 100 mW
> Temperature guard with adaptive thermal management with on-chip sensor
> Digital control selects automatically best mode of operation, depending on actual requirements
    > QRM (Quasi-resonant mode)
    > DCM (Discontinuous conduction mode)
    > ABM (Active burst mode)
> Tunable, digital parameters
> Configurable brown-out and brown-in protections
> Embedded digital filters
> Relevant error conditions are monitored and protected
    (Undervoltage / Overvoltage / Open load / Output shorted)

Benefits

> Enables the design of high performance and innovative value LED driver with small effort
> Reduced BoM minimizes system cost and increases flexibility
> High reliability features improve lifetime of the driver
> Fast design cycles reduce time to market and efforts for value products
> Supply chain efficiency optimizes stock keeping and enables high flexibility

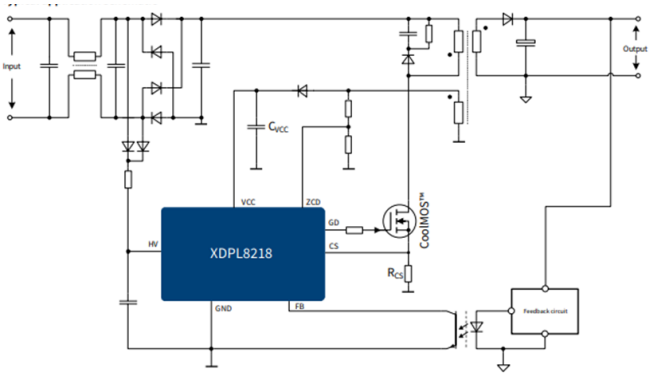
Target applications

> LED driver with constant voltage secondary-side regulation

Competitive advantage

> User settable parameters offer big flexibility
> Small standby power consumption < 100 mW
> Extensive set of configurable protection mechanisms
> Power supply for external devices with an Auxiliary winding control algorithm

Block diagram



Product collaterals / Online support

> Product page
> Product brief
> Design guide
> Dimming control using a PWM signal white paper
> Power and sensing selection guide

Product overview incl. data sheet link

OPN	SP Number	Package
XDPL8218XUMA1	SP001707258	PG-DSO-8

Reference design: high power factor flyback converter with constant voltage output and secondary-side regulation

The REF-XDPL8218-U40W is an efficient high performance reference design with XDP™ digital power CV output primary stage for 40 W LED driver. This reference design is featuring high power factor constant voltage flyback controller IC (XDPL8218) with secondary-side feedback. It presents excellent power quality over wide load range.

This design enables exchangeable feedback via pluggable extension boards:

> Standard reference feedback board (default)
> BCR601 based feedback board (optional)
> Standard reference & ILDx150 boards (optional)

It has configurable output power limitation. The design features protection modes for most failure modes.

Features

> Small form factor 200 mm x 28 mm
> Exchangeable feedback add-on boards
> Excellent power factor and THD over wide load range
> Connector for XDP™ interface board for parameter configuration

Benefits

> Access to most features of XDPL8218
> Reference for own constant voltage boards
> Prototype for demonstrations
> Operating parameter can be tuned to meet application requirements

List of components

> High power factor constant voltage flyback IC (XDPL8218)
> 800 V CoolMOS™ P7 superjunction MOSFET (IPD80R900P7)

Target applications

> CV stage for advanced LED driver

IF-BOARD.DP-GEN2

This is the galvanic isolated and CE certified .dp InterfaceGen2, which is used to set parameters and protection behavior for digital power products. It can be used to either test parameter temporarily or to burn them permanently. The .dp device will be connected via USB to a computer and is controlled using the .dp Vision Software.

Product collaterals / Online support

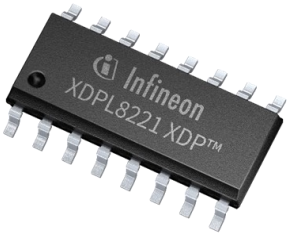
> Product page
> Product brief
> Engineering report

Product overview incl. manual link

OPN	SP Number
REFXDPL8218U40WTOBO1	SP001710980
IFBOARDDPGEN2TOBO1	SP001260696

XDPL8221 — for advanced, smart and connected LED driver

The XDPL8221 is a digital, highly integrated, future-proof device. It combines a quasi-resonant PFC with a quasi -resonant flyback controller with primary side regulation. A serial communication interface supports direct communication with external MCU. The XDPL8221 is especially designed for advanced LED driver in smart lighting or IoT applications. The multi control feature constant voltage, constant current and limited power enables highly, versatile LED driver (e.g. window LED driver).



Features

> Supports AC and DC input
> Nominal input voltage range $100V_{AC}$ – $277V_{AC}$ or $127V_{DC}$ – $430V_{DC}$
> Reference board efficiency > 90%
> Power factor > 0.9 and THD < 15% over wide load range
> UART interface and command set
> Standby power < 100mW
> Temperature guard with adaptive thermal management with internal and/or external sensor
> Digital control selects automatically best mode of operation, depending on actual requirements
    > QRM (quasi-resonant mode)
    > DCM (discontinuous conduction mode)
    > ABM (active burst mode)
> Tunable, digital parameters
> Configurable brown-out and brown-in protections
> Relevant error conditions are monitored and protected (Undervoltage / Overvoltage / Open load / Output shorted)

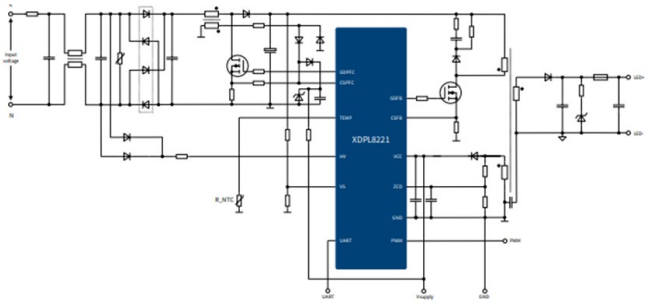
Benefits

> Enables the design of high performance and innovative advanced LED driver for connected lighting with small effort
> Reduced BoM minimizes system cost and increases flexibility
> High reliability features improve long lifetime of the driver
> Fast design cycle reduces time to market and efforts for value products
> Supply chain efficiency optimizes stock keeping and enables high flexibility
> Real time operating parameters digitally available by UART interface
> Dimming control numerically precise through UART commands

Target applications

> Flicker-free LED driver for indoor or outdoor applications
> Multi-mode LED driver for connected lighting
> Wired or wireless connected LED driver

Block diagram



Competitive advantage

> UART interface part in smart lighting and IoT
> Multi-control operation (CC/CV/LP) support wide LED driver variety
> Dimming below 1% possible
> Wide operating range and configurability for variety of product features with the same electrical design

Product collaterals / Online support

> Product page
> Product brief
> Design guide
> Dimming control using a PWM signal white paper
> XDPL8221 controller UART interface white paper
> XDPL822x operating window white paper
> Power and sensing selection guide

Product overview incl. data sheet link

OPN	SP Number	Package
XDPL8221XUMA1	SP001684238	PG-DSO-16

Reference design: 50 W / 100 W LED driver — efficient and flicker-free reference circuit design with high power factor and low THD

The REF-XDPL8221-U50W and REF-XDPL8221-U100W work as an efficient and flicker-free reference design with XDP™ digital power and serial interface for a 50 W LED driver. This board is an efficient and flicker-free reference circuit design for XDPL8221 with high power factor and low THD (total harmonic distortion). The REF_XDPL8221_U50W accepts universal input voltage range. It serves to evaluate the functionality and design space of the XDPL8221.

Many characteristics are programmable by parameters such as output values and protections. It provides a connector for IF-BOARD.GEN2 (for use with dp.Vision tool).

Features

> Supports constant current, constant voltage and limited power operating mode
> Excellent power factor and THD over wide load range
> Parameter configuration and UART communication via XDP™ interface board connector

Target applications

> Window LED driver with CC/CV/LP output
> Smart LED driver

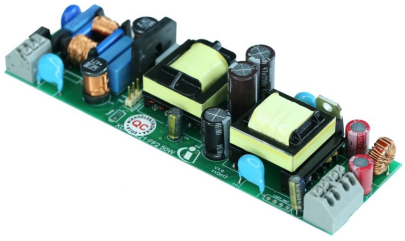
Benefits

> Evaluation of multi-mode possibilities
> Reference for own window driver
> Provide demonstrator for driver capabilities
> Operating parameter can be tuned to meet application requirements

IF-BOARD.DP-GEN2

This is the galvanic isolated and CE certified .dp InterfaceGen2, which is used to set parameters and protection behavior for digital power products. It can be used to either test parameter temporarily or to burn them permanently. The .dp device will be connected via USB to a computer and is controlled using the .dp Vision Software.

REF-XDPL8221-U50W



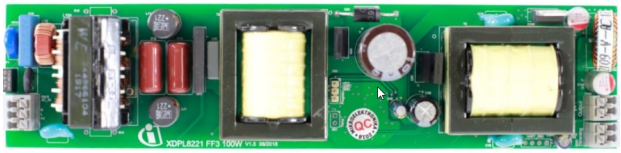
List of components

> Digital PFC and flyback controller IC (XDPL8221)
> Fully integrated dimming interface IC (CDM10VD)
> 800 V CoolMOS™ P7 superjunction MOSFET (IPD80R450P7)
> 700 V CoolMOS™ P7 superjunction MOSFET (IPD70R360P7S)
> Depletion MOSFET (BSS169)
> N-channel small signal MOSFET (2N7002)

Product collaterals / Online support

> Product page
> .dp vision product brief
> Engineering report
> Product presentation

REF-XDPL8221-U100W



List of components

> Digital PFC and flyback controller IC (XDPL8221)
> Fully integrated dimming interface IC (CDM10VD)
> 800 V CoolMOS™ P7 superjunction MOSFET (IPD80R450P7)
> 600 V CoolMOS™ C6 N-channel MOSFET (IPA60R190C6)
> Depletion MOSFET (BSS169)
> N-channel small signal MOSFET (2N7002)

Product collaterals / Online support

> Product page
> .dp vision product brief
> Engineering report

Product overview incl. manual link

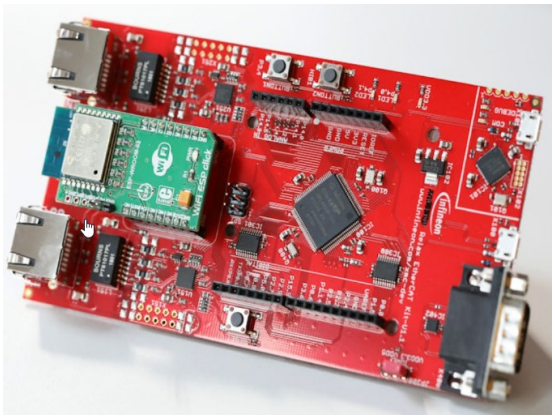
OPN	SP Number
REFXDPL8221U50WTOBO1	SP003127452
REFXDPL8221U100WTOBO1	SP001710982
IFBOARDDPGEN2TOBO1	SP001260696

XMC4800 IoT Amazon FreeRTOS Connectivity Kit WiFi with EtherCAT® Kit

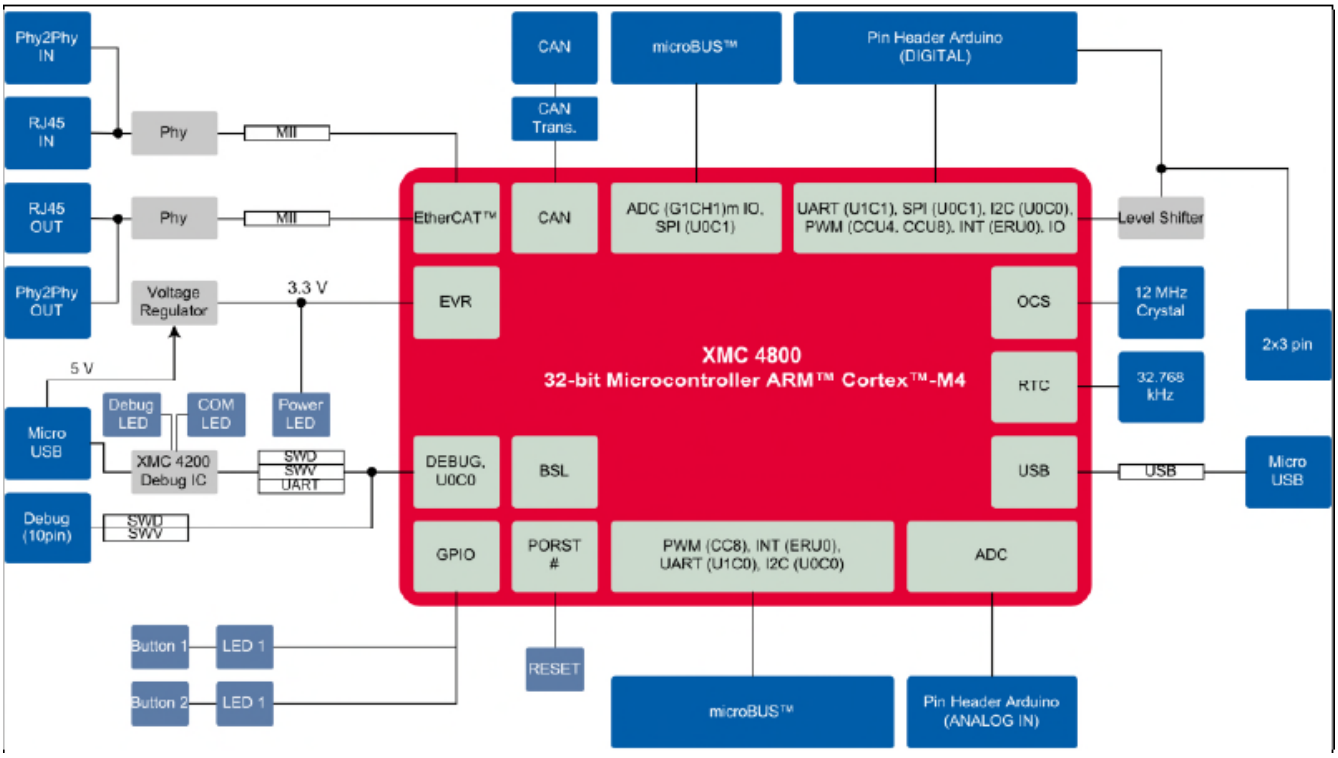
This connectivity board will allow you to connect the cloud services from AWS using the Amazon FreeRTOS software. This kit contains the MCU base board and the WiFi connectivity module, bringing to you the complete out-of-the-box experience.

The base kit is a XMC4800 Relax kit with Arduino and Click Board (Mikrolectronica) compatible form factor. The XMC4800 series, Infineon can offer the AWS FreeRTOS solution combined with ETHERCAT functionality in the same device. These XMC4800 devices are powered by Cortex ARM M4F microcontrollers. They also offer up to six standard CAN and ETHERCAT connectivity, for IoT gateway applications, plus many other peripherals.

The kit include the WiFi is based on the WiFi ESP click module from MikroElektronika connected to the mikroBUS™. As a plus you have the EtherCAT® communication for Industry 4.0 applications.



Block diagram



Features base board with XMC4800 relax kit:

> XMC4800-F100X2048 Microcontroller
> ARM® Cortex®-M4 CPU 144MHz
> 2 MB of Flash
> 353 kByte RAM
> 100 pin package
> EtherCAT® connectivity
> On-board debugge

Features WiFi click board module

> MikroElektronika WiFi ESP click (MIKROE-2542) – ESP-WROOM-02 module with ESP8266EX devices

Product collaterals / Online support

> Product page
> PCB footprint
> XMC4700/XMC4800 datasheet

Product overview incl. manual link

OPN	SP Number
KITXMC48IOTAWSWIFITOBO1	SP003277948