# New Era of Scalable and Highly Integrated Microcontrollers for Automotive Applications

www.infineon.com/XC2000

**Infineon**

Never stop thinking

# Contents

# Contents

* FlexRay is a trademark of the FlexRay Consortium and used under license

# XC2000

## XC2000 – New Era of Scalable and Highly Integrated Microcontrollers for Automotive Applications

INFINEON'S NEW AND POWERFUL XC2000 series is a new standard of 16/32-bit microcontrollers especially designed to address the exacting requirements of automotive applications. Its three dedicated sub-families address three different automotive application segments.

THE XC2200 FAMILY of microcontrollers fulfills all key requirements for present and future body system control such as body control module (BCM), gateway, heating, ventilation, air conditioning (HVAC) and door modules. The XC2300 family will cover safety applications like airbag, electric power steering (EPS) and ABS, where as the XC2700 family addresses powertrain systems.

IN THE AUTOMOTIVE SEGMENT the huge increase in vehicle networking, increased energy efficiency and the adoption of IEC61508 (SIL3) for safety-critical systems such as ABS and power steering, demands major enhancements to the CPU features and peripheral set.

THE BROAD XC2000 product portfolio comprises a multiplicity of different products, offering design engineers the scalability to select an MCU with the optimal combination of memory, peripheral set, frequency, temperature and packaging – just the right MCU to match the application's feature and performance requirements. The compatibility within the families, even in different packages, allows a product change during and after the design cycle, without any changes to the printed circuit board design.

ONCE THE SOFTWARE for Infineon's XC2000 microcontrollers is compiled, it can easily be used for various applications within a car manufacturer's different model platforms. All members of the same family are binary compatible and share the same development tools. Furthermore, an AUTOSAR library that allows easy integration of existing code into XC2000 programs is available.

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## XC2000



## Body & Convenience

### XC2200

**Main Features**

- Up to 1.6MB eFlash
  incl. EEPROM
- Up to 6 CAN nodes
- Up to 10 serial interfaces
- Multiple motor control
  features
- Up to 40-channel 10-bit ADC
- FlexRay™
- Dedicated power-down features

## Safety

### XC2300

**Main Features**

- Up to 1.6MB eFlash
  incl. EEPROM
- Up to 3 CAN nodes
- Up to 8 serial interfaces
- Motor control features
- Up to 24-channel ADC
- FlexRay™
- Dedicated safety features

## Powertrain

### XC2700

**Main Features**

- Up to 1.6MB eFlash
  incl. EEPROM
- Up to 3 CAN nodes
- Up to 4 serial interfaces
- Up to 30-channel 10-bit ADC
- Dedicated powerful
  motor control features

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# XC2200

THE XC2200 FAMILY IS A SUB-FAMILY of the new scalable 16/32-bit XC2000 microcontroller series from Infineon, and addresses the increasing complexity of highly integrated body and gateway applications. Available today are XC2200 derivatives from 448 to 768KB of Flash, optional EEPROM emulation, up to 82KB SRAM with max 80MHz CPU clock. Expanding the portfolio up to 1.6MB of Flash memory while addressing even higher performance requirements, Infineon will further enlarge the family with pin-compatible MCUs. This makes the choice in favor of the XC2200 family a safe long-term decision, with Infineon's 130 nm technology offering an additional performance boost at competitive cost.

THE XC2200 FAMILY IS OPTIMIZED for mid-range to high-end body applications. In order to comply with the AUTOSAR programming model that provides for hardware-independent software development, the controllers are equipped with a memory protection unit (MPU). Today's available XC2200 devices address low- to mid-range gateway applications integrated into body controllers. Soon to come variants will enlarge the portfolio, offering a perfect fit for high-end central body and gateway applications. In addition, Infineon has a stand-alone FlexRay™ communication controller available that can be easily added to the system.
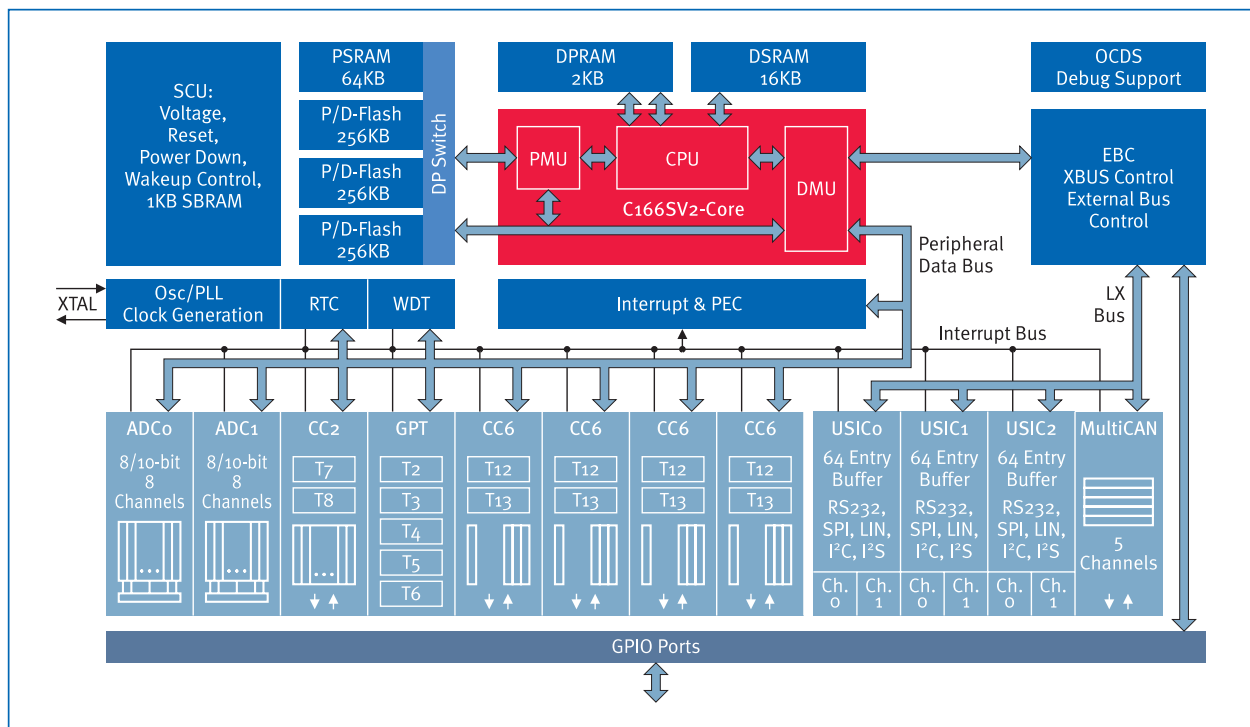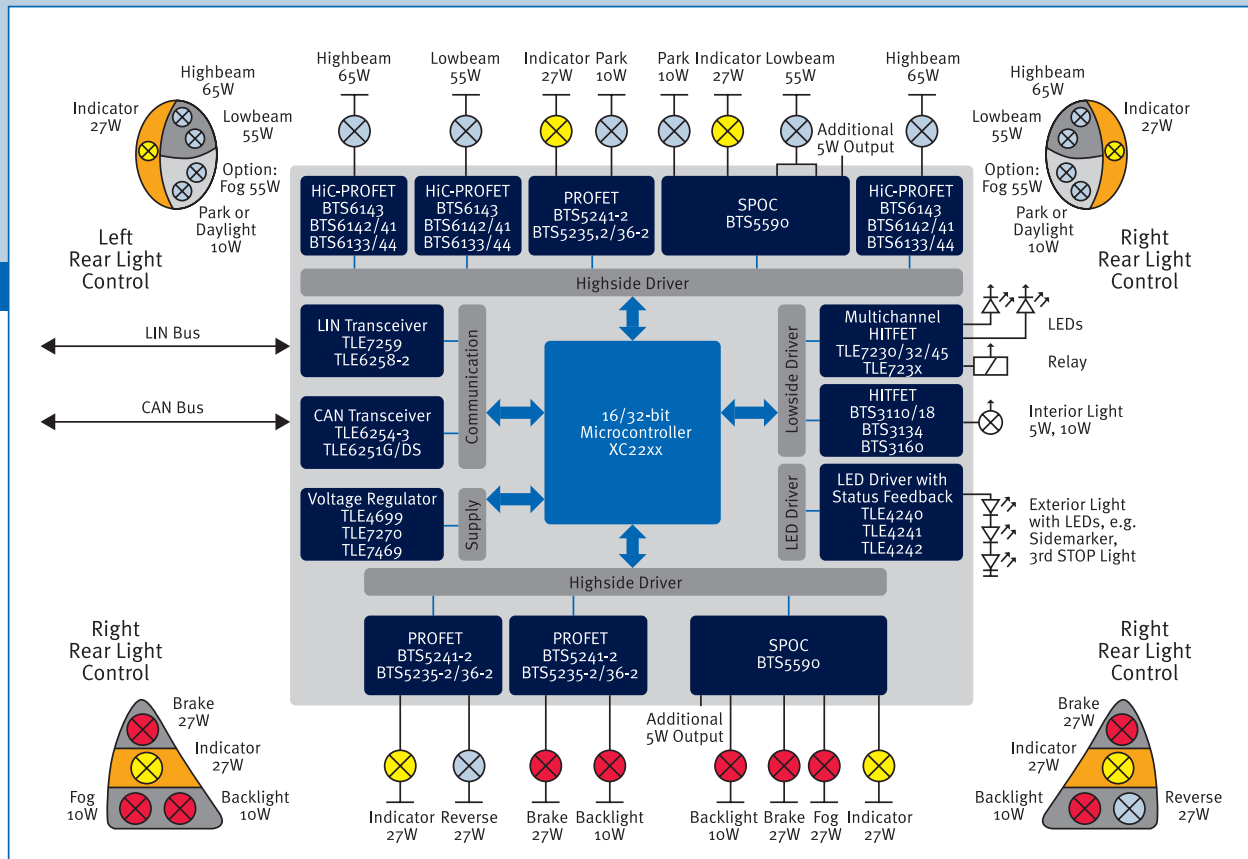
Body & Convenienc

# XC2200

**Product Portfolio**

| Type | eFlash [KB] | RAM [KB] | Serial Interfaces | CAN Nodes | FlexRay™ | PWM Channels | ADC Channels | Package | Availability |
|------|-------------|----------|-------------------|-----------|----------|--------------|--------------|---------|--------------|
| XC2236N | 128–320 | 10–34 | 2 | 2 | no | 24 | 10 | PG-LQFP-64 | 2009 |
| XC2264/N | 128–768 | 10–82 | 4 | 2 | no | 24 | 8 | PG-LQFP-100 | Available/2009 |
| XC2265N | 128–320 | 10–34 | 6 | 3 | no | 24 | 16 | PG-LQFP-100 | 2009 |
| XC2267/M | 384–832 | 26–82 | 6/8 | 5/6 | no | 32 | 16 | PG-LQFP-100 | Available/2008 |
| XC2285/M | 384–832 | 26–82 | 4 | 2 | no | 24 | 16 | PG-LQFP-144 | Available/2008 |
| XC2286/M | 384–832 | 26–82 | 6/8 | 3 | no | 32 | 24 | PG-LQFP-144 | Available/2008 |
| XC2287/M | 384–832 | 26–82 | 6/8 | 5/6 | no | 32 | 24 | PG-LQFP-144 | Available/2008 |
| XC2297H | 832–1600 | 50–138 | 10 | 3 | no | 48 | 40 | PG-LQFP-176 | 2009 |
| XC2298H | 832–1600 | 50–138 | 10 | 6 | no | 48 | 30 | PG-LQFP-176 | 2009 |
| XC2299H | 832–1600 | 50–138 | 10 | 6 | yes | 48 | 30 | PG-LQFP-176 | 2009 |

**XC2200 Block Diagram (Example)**

**Left Rear Light Control**

Highbeam 65W
Lowbeam 55W
Option: Fog 55W
Indicator 27W
Park or Daylight 10W

Highbeam 65W
Lowbeam 55W
Indicator 27W
Park 10W
Park 10W
Indicator 27W
Lowbeam 55W
Highbeam 65W
Additional 5W Output

HiC-PROFET BTS6143 BTS6142/41 BTS6133/44
HiC-PROFET BTS6143 BTS6142/41 BTS6133/44
PROFET BTS5241-2 BTS5235,2/36-2
SPOC BTS5590
HiC-PROFET BTS6143 BTS6142/41 BTS6133/44

**Right Rear Light Control**

Highbeam 65W
Lowbeam 55W
Option: Fog 55W
Indicator 27W
Park or Daylight 10W

Highside Driver

LIN Bus
CAN Bus

LIN Transceiver TLE7259 TLE6258-2
Communication
CAN Transceiver TLE6254-3 TLE6251G/DS
Voltage Regulator TLE4699 TLE7270 TLE7469
Supply

16/32-bit Microcontroller XC22xx

Lowside Driver
Multichannel HITFET TLE7230/32/45 TLE723x
HITFET BTS3110/18 BTS3134 BTS3160
LED Driver
LED Driver with Status Feedback TLE4240 TLE4241 TLE4242

LEDs
Relay
Interior Light 5W, 10W
Exterior Light with LEDs, e.g. Sidemarker, 3rd STOP Light

Highside Driver

**Right Rear Light Control**

Brake 27W
Indicator 27W
Fog 10W
Backlight 10W

PROFET BTS5241-2 BTS5235-2/36-2
PROFET BTS5241-2 BTS5235-2/36-2
SPOC BTS5590

Additional 5W Output

Indicator 27W
Reverse 27W
Brake 27W
Backlight 10W
Backlight 10W
Brake 27W
Fog 27W
Indicator 27W

**Right Rear Light Control**

Brake 27W
Indicator 27W
Backlight 10W
Reverse 27W

# BCM & Gateway

B O D Y  C O N T R O L  M O D U L E  ( B C M ) application comprising internal and external lighting systems, as well as car access and door modules with lighting, window lift, mirror positioning, refueling indicator for windscreen wipers and clock. The Central Gateway manages all internal interfaces (i.e. motor management, in-car entertainment, dashboard or convenience control) and communication with external interfaces for after-sales software updates.

**Key Features**
- 128–1600KB Flash with emulated EEPROM
- Up to 138KB SRAM
- Up to 6 CAN with 256 MO
- Up to 40 ADC channels
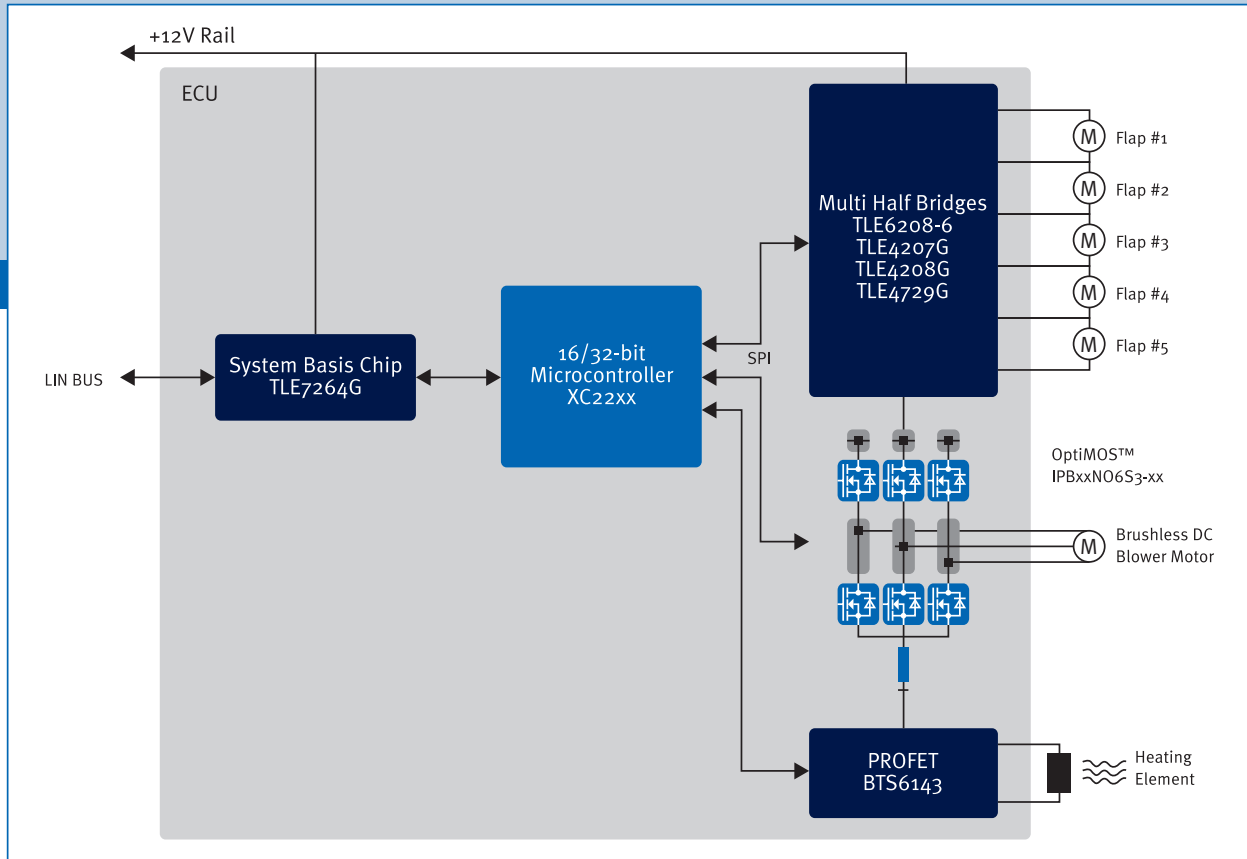- Up to 48 PWM channels
- Up to 10 serial interfaces

**Benefits**
- Light bulb supervision without CPU load
- CAN gateway functionality without CPU load
- Fully scalable over package and memory
- Flexible power concept
- Memory protection unit (MPU) to fulfill AUTOSAR requirement

**BCM & Gateway**

**Application Example**



+12V Rail

ECU

LIN BUS

System Basis Chip
TLE7264G

16/32-bit
Microcontroller
XC22xx

SPI

Multi Half Bridges
TLE6208-6
TLE4207G
TLE4208G
TLE4729G

Flap #1
Flap #2
Flap #3
Flap #4
Flap #5

OptiMOS™
IPBxxN06S3-xx

Brushless DC
Blower Motor

PROFET
BTS6143

Heating
Element

# HVAC

BALANCING COMFORT AND FUEL efficiency is very important in automotive air conditioning. Reduced fuel consumption can be achieved by demand-oriented climate regulation. This could be covered by, for example, fresh air regulation (recirculating air operation) or the usage of brushless DC motors in fans.

### Key Features

- 64–768KB Flash
  with emulated EEPROM
- Up to 3 CAN
- Up to 24 ADC channels with
  +/−2 LSB resolution
- Up to 32 PWM channels
- Up to 8 serial interfaces

### Benefits

- CAN gateway functionality
  without CPU load
- Highly flexible serial interfaces
  (USIC), suitable as LIN, SPI, IIC,
  UART, IIS
- Fully scalable over package
  and memory
- High-performance CPU for
  ripple count algorithm

HVAC

# XC2300

THE NEW XC2300 MICROCONTROLLER FAMILY is specifically designed for use in vehicle safety applications, targeting airbag systems and electronic power steering applications. The XC2300 family provides 32-bit performance and a rich peripheral feature set required for present and future safety applications demanding fast reaction time, redundancy and flexibility.

THE MEMBERS OF THE XC2300 FAMILY feature between 128KB and 1.6MB of Flash memory to fit both, e.g. airbag systems and highly complex safety-systems such as power steering, low-end chassis control and sensor clusters. Four different package options from 64-pin to 176-pin will be offered with a rich variety of features among others with integrated FlexRay™.

FOR SAFETY-CRITICAL APPLICATIONS such as airbags, steering or braking, the highest degree of reliability is an absolute must for all system components. All components of the XC2300 family are specifically designed to fulfill these strong safety requirements, and include a set of safety-relevant features, such as hardware error correction code (ECC) on all memories, memory protection, feature redundancy and several control mechanisms including cyclic redundancy code check (CRC). These features are essential for all XC2300 products to support and enable a system meeting the requirements of IEC 61508 (SIL3) or future ISO 26262 (ASILD).
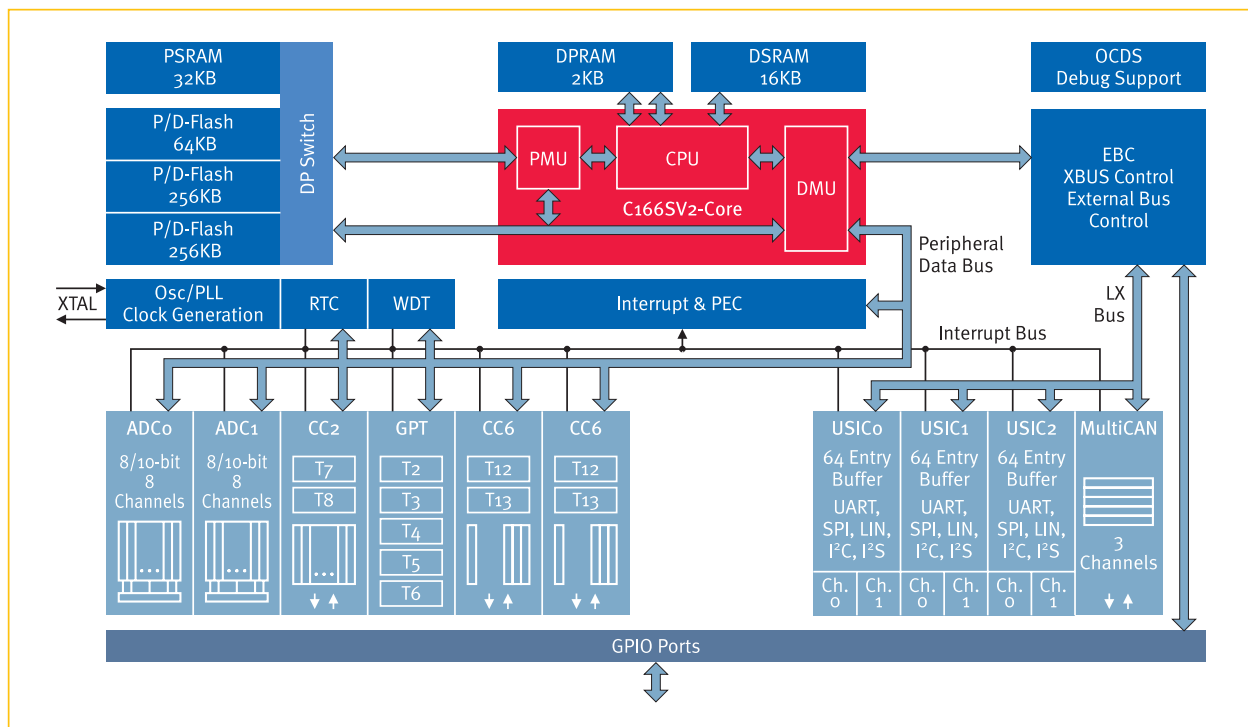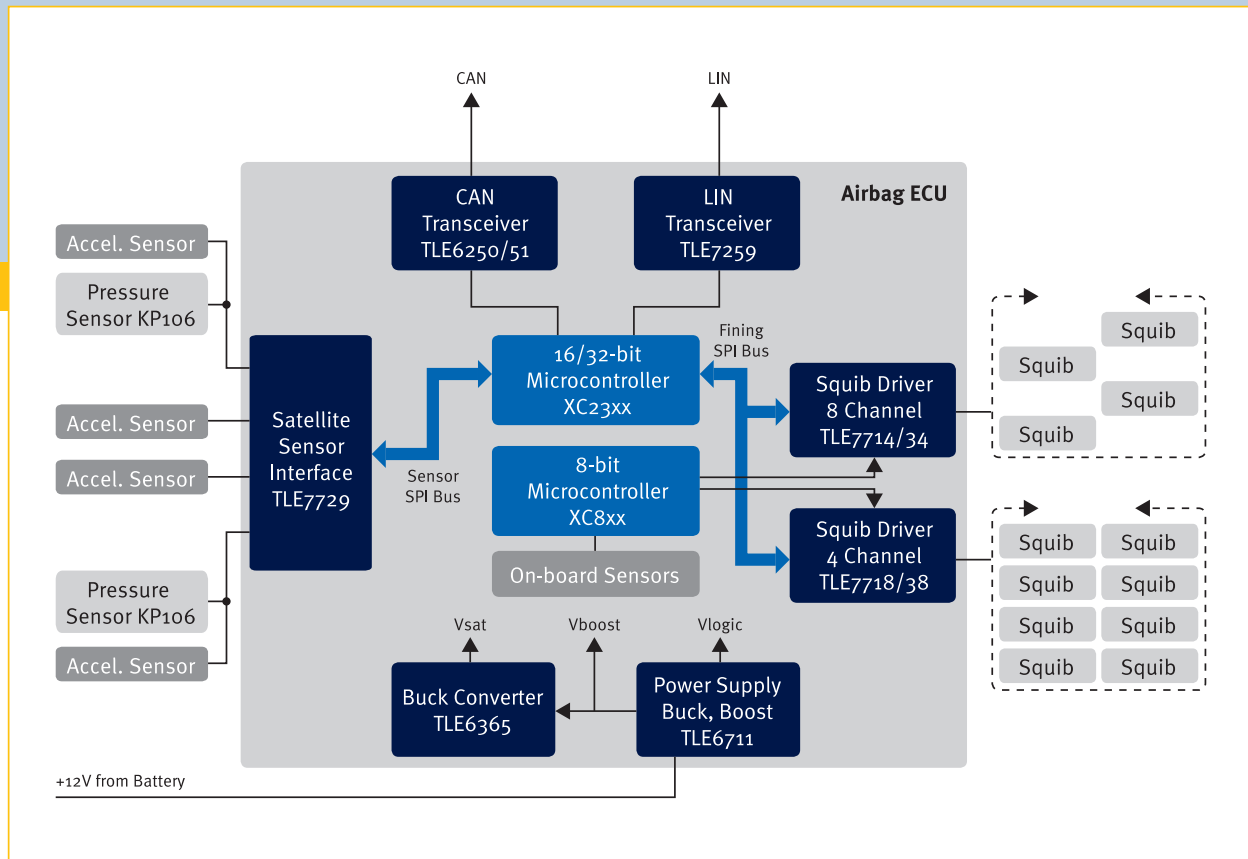
Safety

# XC2300

## Product Portfolio

| Type | eFlash [KB] | RAM [KB] | Serial Interfaces | CAN Nodes | FlexRay™ | PWM Channels | ADC Channels | Package | Availability |
|------|-------------|----------|-------------------|-----------|----------|--------------|--------------|---------|--------------|
| XC2338B | 128–320 | 10–34 | 4 | 2 | no | 24 | 8 | PG-LQFP-64 | 2009 |
| XC2363A/B | 256–576 | 18–50 | 2 | 2 | no | 24 | 8 | PG-LQFP-100 | 2008/2009 |
| XC2364A/B | 256–576 | 18–50 | 4 | 2 | no | 24 | 16 | PG-LQFP-100 | 2008/2009 |
| XC2365/A | 256–576 | 18–50 | 6 | 3 | no | 24 | 16 | PG-LQFP-100 | Available/2008 |
| XC2385A | 384–576 | 18–50 | 4 | 2 | no | 24 | 16 | PG-LQFP-144 | 2008 |
| XC2387/A/C | 512–1088 | 26–122 | 6 | 3 | no | 24 | 24 | PG-LQFP-144 | Available/08/09 |
| XC2388C | 832–1600 | 50–138 | 8 | 3 | yes | 32 | 24 | PG-LQFP-144 | 2009 |
| XC2397C | 832–1088 | 50–122 | 8 | 3 | no | 32 | 24 | PG-LQFP-176 | 2009 |
| XC2398C | 832–1600 | 50–138 | 8 | 3 | yes | 32 | 24 | PG-LQFP-176 | 2009 |

## XC2300 Block Diagram (Example)

CAN                    LIN

**Airbag ECU**

| CAN Transceiver TLE6250/51 | LIN Transceiver TLE7259 |

Accel. Sensor

Pressure Sensor KP106

16/32-bit Microcontroller XC23xx

Fining SPI Bus

Squib

Squib

Squib

Squib

Satellite Sensor Interface TLE7729

Accel. Sensor

Accel. Sensor

Squib Driver 8 Channel TLE7714/34

Sensor SPI Bus

8-bit Microcontroller XC8xx

Pressure Sensor KP106

On-board Sensors

Squib Driver 4 Channel TLE7718/38

Squib   Squib

Squib   Squib

Squib   Squib

Squib   Squib

Accel. Sensor

Vsat        Vboost        Vlogic

Buck Converter TLE6365

Power Supply Buck, Boost TLE6711

+12V from Battery

# Airbag

THE XC2300 FAMILY OFFERS a perfect product fit for airbag appli-
cations. Its wide scalability and best price/performance ratio enables the system
supplier to chose the cost optimized product, which fits best to the specific system
requirements.

**Key Features**

- 128–768KB Flash
  with EEPROM emulation
- Up to 80KB SRAM
- Dual 10-bit ADC
- Up to 3 CAN, up to 6 serial interfaces
- FlexRay™ optional
- Dedicated safety features
  (MPU, CRC, ECC)
- 64-pin to 144-pin package

**Benefits**

- High scalability supports low-end
  to high-end airbag applications
- Excellent price/performance ratio
- EEPROM emulation enables
  event data recording, no external
  EEPROM needed
- Dedicated SAFETY concept to be pre-
  pared for SIL3/ASILD requirements
- Low power consumption (58mA @
  80MHz over full temperature range)
  enables system cost savings
  (e.g. in power supply circuits)

Airbag

**Application Example**



+12V Rail

**Electric Power
Steering ECU**

Steering Angle
Sensor

2x iGMR Sensor
TLE5011

8-bit
Microcontroller
XC886/8

Steering
Angle

Torque Sensor

2x Lin Hall
TLE4998

Torque

Sensor Interface

Tracker
TLE4250/51

Supply ICs
TLE6361
TLE6389

8-bit
Microcontroller
SAK-XC86x

Fall Safe

16/32-bit
Microcontroller
SAK-XC23xx

Master

CAN/LIN
Transceiver
TLE6251DS/G,
TLE6258, 6285G

3-Phase Driver IC
TLE7183F
TLE7189F
TLE718X

OptiMOS™-T 40V
IBP180N04S3-02
IBP180N4S3-H2
x6

Rotor Position Current Sense

Field Oriented
Controlled
Brushless DC

M

Rotor Position
iGMR Sensor
2x TLE5011

Current Sense
Shunt-
substitution
Lin Hall
2x TLE4990/98

HS-CAN-Bus

# Electric Power Steering

THE VARIETY OF DIFFERENT electric power steering systems makes
differing high demands on the performance and feature set of the microcontroller
used in-system. The rich portfolio of the XC2300 family offers a cost-optimized fit for
all system requirements, whether a simple EHPS system or a complex EPS application
requiring high performance and specific interfaces such as FlexRay™.

**Key Features**
- Up to 100MHz system performance
- 256–1600KB Flash with
  EEPROM emulation
- Up to 138KB SRAM
- Dual ADC with highest resolution
- Up to 3 CAN, up to 8 serial interfaces
- FlexRay™
- Dedicated safety features
  (MPU, CRC, ECC)
- 100-pin to 176-pin package

**Benefits**
- High scalability enables optimized
  price-product choice
- Excellent price/performance ratio
- Dedicated SAFETY concept to be pre-
  pared for SIL3/ASILD requirements
- Low power consumption (58mA @
  80MHz over full temperature range)
  enables system cost savings
  (e.g. in power supply circuits)

EPS

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# XC2700

**THE XC2700 FAMILY** of microcontrollers with 32-bit performance will allow system makers to build cost effective electronic engine controls in motorcycles and entry-level automobiles around the world to meet coming emission standards.

**THE XC2700 FAMILY** is based on the industry-leading C166SV2 high performance microcontroller core with up to 100MHz. It also integrates key peripherals such as memory, voltage regulator and interfaces to reduce the overall system cost. This also means that software that has been developed on existing C166 controllers can be easily reused on the new family.

**WITH 64 TO 176 PINS,** the XC2700 family provides a scalable package range from lower-cost to higher-performance. Designers can easily move up and down the performance curve to design optimized engine control systems for motorcycles, entry-level cars as well as applications such as marine engines. Compatibility, scalability and a maximum re-use within the XC2700 family provides you with a variety of products and functions, covering today's, as well as future's application needs.

**THE HIGH INTEGRATION AND PERFORMANCE** of the XC2700 microcontroller family allows electronic engine control to be implemented in low-cost vehicles, providing more efficiency and significantly improved emissions. The XC2700 microcontroller is the perfect fit for value-driven powertrain applications.

**THE LARGE RANGE OF AVAILABLE SUPPORT,** tools and software as well as Infineon's extensive experience in powertrain applications allow you to achieve optimum time to market.

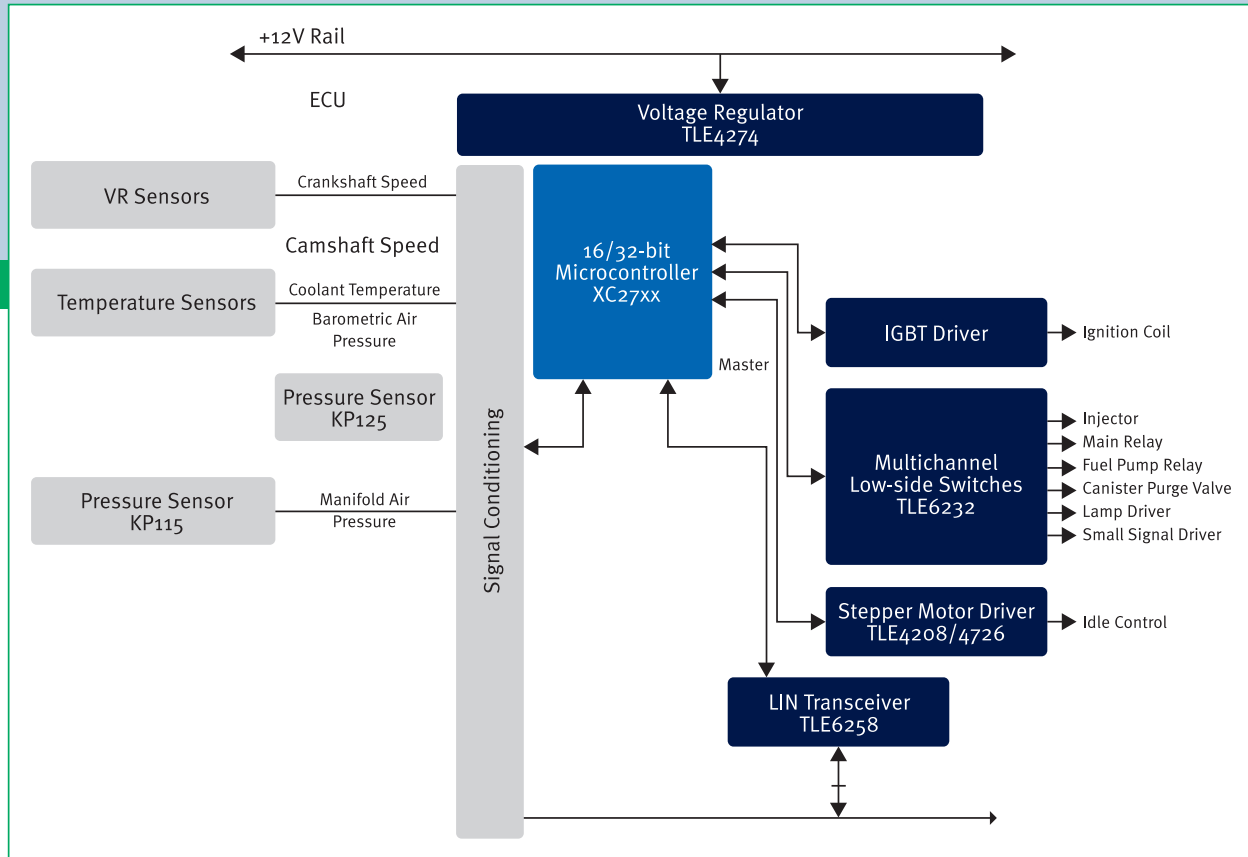# Powertrain

# XC2700

## Product Portfolio

| Type | eFlash [KB] | RAM [KB] | Serial Interfaces | CAN Nodes | FlexRay™ | PWM Channels | ADC Channels | Package | Availability |
|------|-------------|----------|-------------------|-----------|----------|--------------|--------------|---------|--------------|
| XC2797X | 1600 | 138 | 8 | 2* | yes | 32 | 40 | PG-LQFP-176 | 2009 |
| XC2787X | 1600 | 138 | 8 | 2* | yes | 32 | 24 | PG-LQFP-144 | 2009 |
| XC2786X | 768–832 | 50 | 4 | 2* | no | 24 | 24 | PG-LQFP-144 | Available/2008 |
| XC2766X | 768–832 | 50 | 4 | 2* | no | 24 | 16 | PG-LQFP-100 | Available/2008 |
| XC2785X | 576 | 40 | 4 | 2* | no | 24 | 24 | PG-LQFP-144 | 2008 |
| XC2765X | 576 | 40 | 4 | 2* | no | 24 | 16 | PG-LQFP-100 | 2008 |
| XC2735X** | 576 | 40 | 4 | 2* | no | 24 | 9 | PG-LQFP-64 | 2008 |
| XC2764X | 320 | 32 | 4 | 2* | no | 24 | 12 | PG-LQFP-100 | 2009 |
| XC2734X | 320 | 32 | 4 | 2* | no | 24 | 9 | PG-LQFP-64 | 2009 |
| XC2763X | 128 | 16 | 4 | 2* | no | 12 | 12 | PG-LQFP-100 | 2010 |
| XC2733X | 128 | 16 | 4 | 2* | no | 12 | 9 | PG-LQFP-64 | 2010 |

* CAN are optional    ** Limited to 85°C

## XC2700 Block Diagram (Example)

**Application Example**



+12V Rail

ECU

Voltage Regulator
TLE4274

VR Sensors — Crankshaft Speed

Camshaft Speed

Temperature Sensors — Coolant Temperature
Barometric Air Pressure

Pressure Sensor KP125

Pressure Sensor KP115 — Manifold Air Pressure

Signal Conditioning

16/32-bit Microcontroller XC27xx

Master

IGBT Driver → Ignition Coil

Multichannel Low-side Switches TLE6232 → Injector / Main Relay / Fuel Pump Relay / Canister Purge Valve / Lamp Driver / Small Signal Driver

Stepper Motor Driver TLE4208/4726 → Idle Control

LIN Transceiver TLE6258

# Engine Management for Motorcycles

THE NEXT GENERATION of motorcycles requires more functions to fulfill emission regulations, performance requirements and comfort expectations.

**Key Features**
- 40–100MHz CPU
- 128–1600KB Flash
- High flexible serial interfaces (USIC), suitable as LIN, SPI, IIC, UART, IIS
- On-chip MultiCAN interface
- Multi-functional general purpose timer
- Capture/compare units
- Synchronous A/D converters
- Single power supply
- 64-pin to 176-pin packages
- Temperature range: −40°C to +125°C

**Benefits**
- Scalable family, enabling value-driven 2/3/4-wheeler powertrain applications
- Based on industry-leading C166SV2 high-performance microcontroller core
- Supported by large range of development tools

Motorcycles

THE GLOBAL DRIVE FOR EMISSION reduction will also affect the two-wheeler market and entry level cars market. With the XC2700 family you are choosing modern and future oriented microcontrollers dedicated to powertrain applications.

CURRENT SYSTEMS IN AUTOMOTIVE provide an accurate, reliable and cost-effective method of metering fuel and providing maximum engine efficiency with clean exhaust emissions, which is why electronic fuel injection (EFI) systems have replaced carburetors in the marketplace. EFI is becoming more reliable and less expensive through widespread usage. At the same time, carburetors are becoming less available and more expensive. Even marine applications are adopting EFI as reliability improves. Virtually all internal combustion engines, including motorcycles, off-road vehicles, and outdoor power equipment may eventually use some form of fuel injection. The XC2700 product family supports all features for a reliable and cost-effective system.
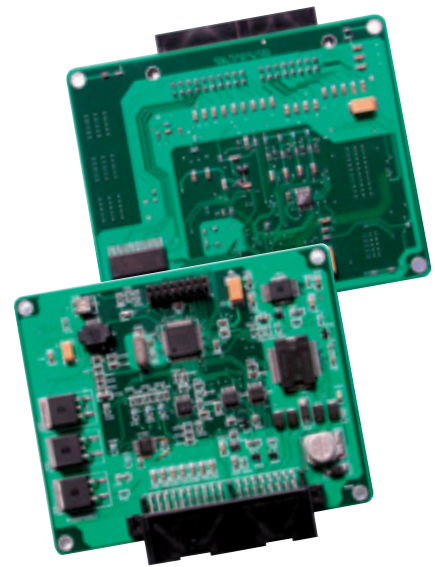
**XC2700 features offer the perfect fit to increase efficiency, to reduce emmission and to improve comfort.**

| Fuel Injection | Sensors, Catalyst | By-wire |
| --- | --- | --- |

| Air Management | Engine Improvement | Comfort |
| --- | --- | --- |

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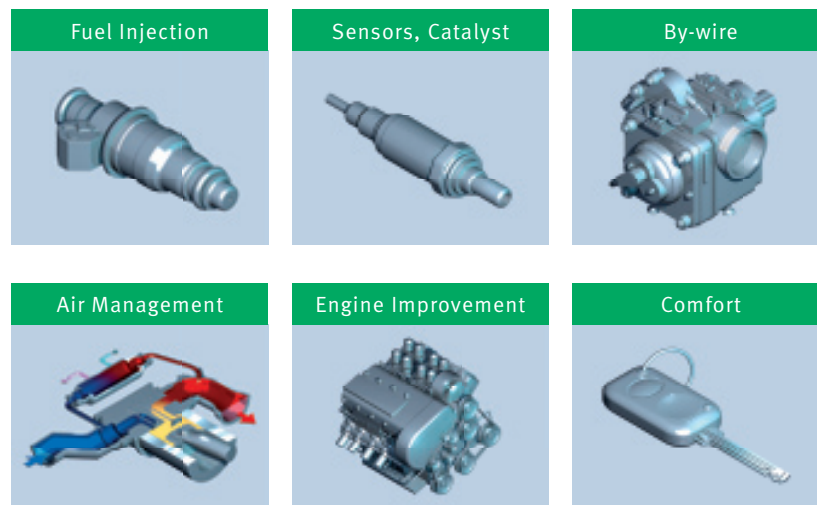
Enhanced Commun

# Enhanced Communication

## MultiCAN

COMPLEX APPLICATIONS
increasingly require intelligent communi-
cation over the CAN network. A CAN gate-
way and a FIFO are only two examples
of what can easily be implemented with
XC2000's enhanced MultiCAN module.

**MultiCAN Features**

- Full CAN with CAN 2.0B active
- Up to 6 independent CAN nodes
- Up to 256 message objects
- Programmable acceptance filtering
- Data transfer rate up to 1Mbit/s, indi-
  vidually programmable for each node
- Powerful analysis capability
- FIFO data handling support
- Automatic gateway support
- Flexible interrupt handling
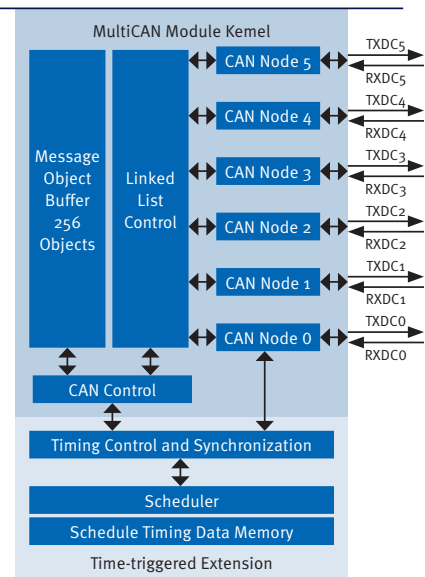


## Universal Serial Interface (USIC)

**Each USIC Channel**

- Is capable of handling UART, SPI, LIN,
  IIC and IIS
- Is individually configurable
  (incl. baud rate generation)
- Handles full duplex data transfers
- Has programmable Rx and Tx FIFOs
- Can be reprogrammed on the fly
  without chip reset

**A USIC Module**

- Is a cluster of 2 independent,
  identical USIC channels
- Up to 5 USIC modules available
  (=10 channels)
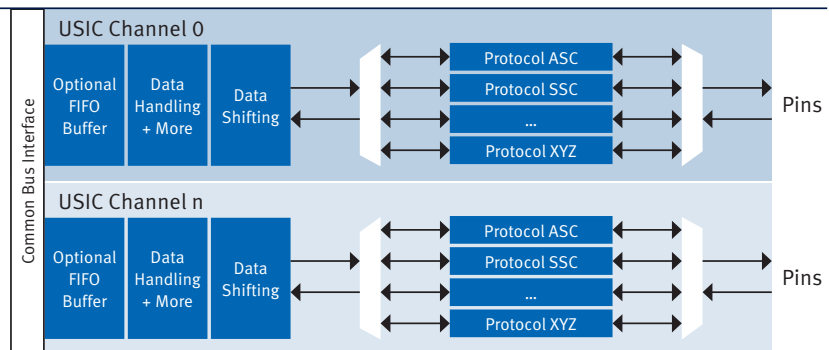


DESIGNERS CAN NOW CONFIGURE universal serial interfaces
depending on their system's requirements. Whether UART, SSC (SPI compatible),
LIN, IIC or IIS, any interface is possible after a quick adjustment of the USIC module.

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## FlexRay™



Bus Interface ↔ eRay™

- TxD
- TxEN
- RxD
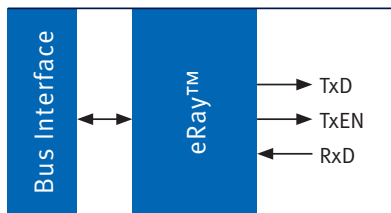
Constant Current Supply

- Embedded FlexRay™ module available in 2009
- Module based on Bosch eRay™ 1.0.2
- Follows latest FlexRay™ specification 2.1
- Flexible operation features
- Support of 16/32-bit adaption
- Support of XC2000 PEC

## Scalable Integrated & Discrete Solutions



Sensors
Microcontroller
Power IC
Integrated Combination
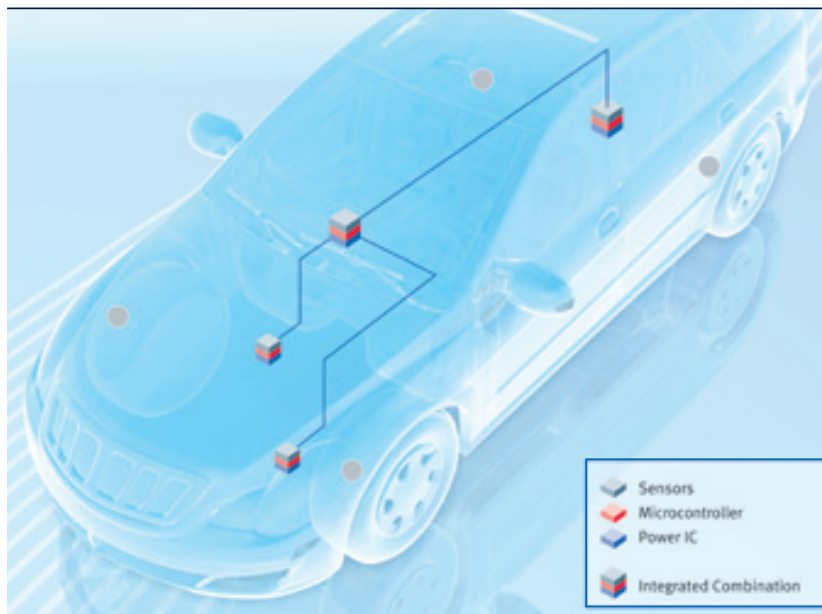
### Discrete FlexRay™ Solutions

**Infineon CIC-310 – FlexRay™ Companion IC – Fits Perfectly With**

**Infineon XC2200 Microcontrollers**

- Power-down features and communication interface options for body applications

**Infineon XC2300 Microcontrollers**

- Safety features and redundancies for safety-relevant applications such as power steering and airbag

**Infineon XC2700 Microcontrollers**

- Powerful motor control features for low-end engine control

### Integrated FlexRay™ Solutions

**XC2000 Fully Integrated, Most Powerful Automotive Microcontroller**

- Up to 100MHz
- FlexRay™ integrated
- Up to 1.6MB eFlash
- XC2200 optimized for high-end body applications,
  XC2300 optimized for safety,
  XC2700 optimized for low-end engine control

# Peripheral Highlights

## CCU6E – High-performance PWM

CONSISTS OF A 16-BIT timer block (T12) with three capture/compare channels and another 16-bit timer block (T13) with one compare channel. The T12 channels can generate up to 6 PWM signals or accept up to 6 capture triggers. The T12 channels can be used to control up to 3 half-bridges with automatic dead-time generation. They can jointly generate control signal patterns to drive AC motors or inverters. Sinusoidal or space vector modulation can be easily implemented. Special operating modes support the control of brushless DC motors using Hall sensors or back EMF detection. In addition, block commutation and control mechanisms for multi-phase machines are supported.
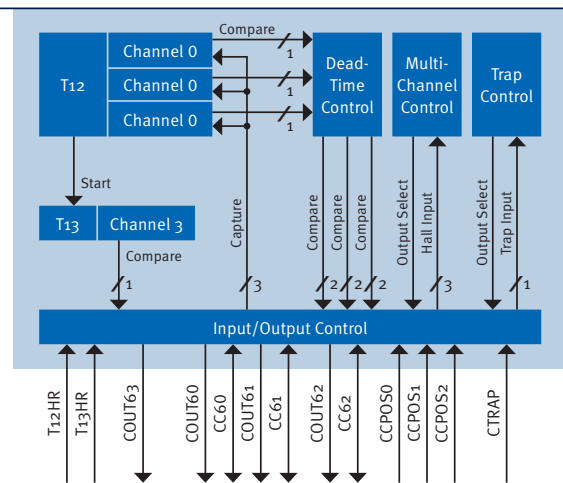
**CCU6E Features**

- Capture for time measurement
- Compare for PWM generation
- Burst for additional modulation
- Single-shot for flexible signal generation
- Multi-channel for unipolar machines
- Block commutation for brushless DC drives



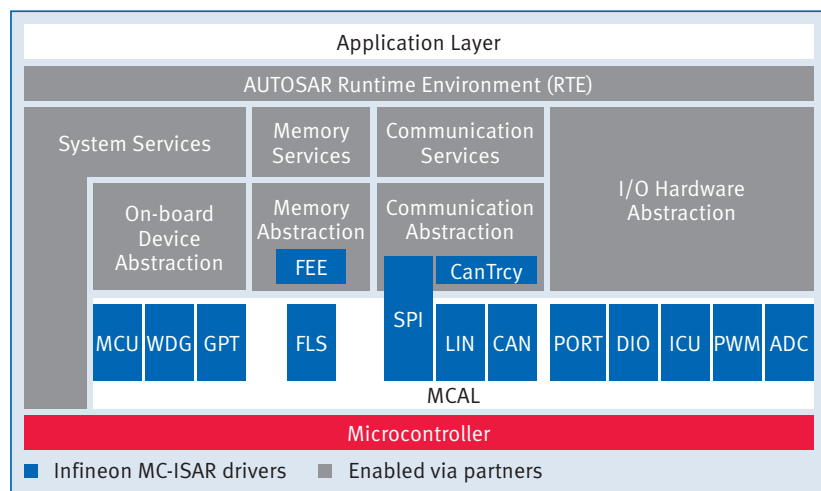## Enhanced Analog-Digital Converter (ADC)

**2 Synchronizable A/D Converters With**

- Total of up to 40 channels
- 10-bit resolution, +/−2 LSB
- Conversion time down to 1.2μs
- Data reduction pre-processing
- Result accumulation, limit check
- External or internal trigger events and automatic conversion sequencing

# AUTOSAR



Application Layer | AUTOSAR Runtime Environment (RTE) | System Services | Memory Services | Communication Services | I/O Hardware Abstraction | On-board Device Abstraction | Memory Abstraction | FEE | Communication Abstraction | CanTrcy | SPI | MCU | WDG | GPT | FLS | LIN | CAN | PORT | DIO | ICU | PWM | ADC | MCAL | Microcontroller

■ Infineon MC-ISAR drivers    ■ Enabled via partners
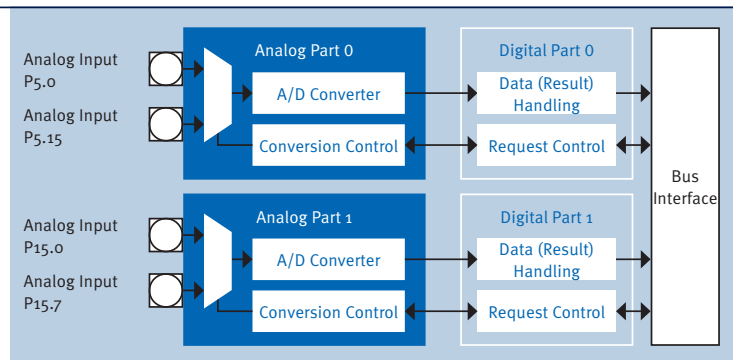
## AUTOSAR

**Infineon...**

■ Has been contributing to AUTOSAR since 2004

■ Provides AUTOSAR solutions for its microcontrollers

■ Offers AUTOSAR-compliant low-level drivers: MC-ISAR

■ Enables partners to provide the complete AUTOSAR basic software

**Infineon Product Families Supported**

■ XC2200

■ XC2300

■ XC2700

**Oriented to Automotive**

■ Early implementation of MC-ISAR in 2005

■ MC-ISAR will be implemented for additional microcontrollers

■ CMM level3 certified and standardized software process applied

■ Microcontroller modules designed for flexible configuration via AUTOSAR

## XC2000 Integrated Compiler Development Environment

**Altium** — Classic C166 and Viper VX166

**KEIL** — An ARM® Company

## Emulator/Debugger Development Systems

**hitex** DEVELOPMENT TOOLS

**pls** Development Tools

**LAUTERBACH**

**i SYSTEM**

## Programmer/Programming Software

**XELTEK ELECTRONICS**

**ELNEC**

**HTV**

**MEMTool**

## Operating System & Software

**Vector**

**AUTOSAR**

**Mentor Graphics**

**EB**

**ETAS**

DSP-Lib

**euros** Embedded Systems GmbH

## Simulation/Modelling

**Matlab Simulink**

## Auto Code Generation Tools

**DAvE**

**dSPACE**

**Realtime Workshop**

## Starter Kits and Evaluation Boards

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