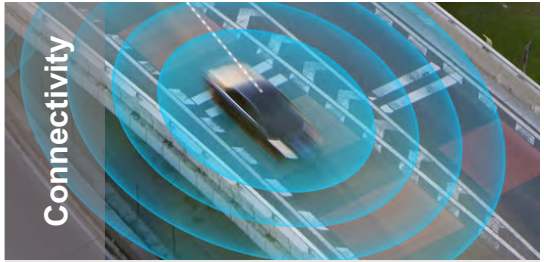
Infineon Functional Safety

Infineon's virtual show 2020

Megatrends shaping the automotive market
Infineon products are enabling automotive safety

Enabling safety towards Vision Zero

Enabling CO_2 reduction



Enabling the communication of cars

Enabling security in connected cars

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We simplify the integration of safety features

Mission: We shape the future of mobility with microelectronics enabling clean, **safe**, smart cars.

ISO26262-compliant

ISO26262-ready

Dependable Electronics
Functional Safety

Infineon electronics are a foundation for safe and autonomous driving customers can trust in

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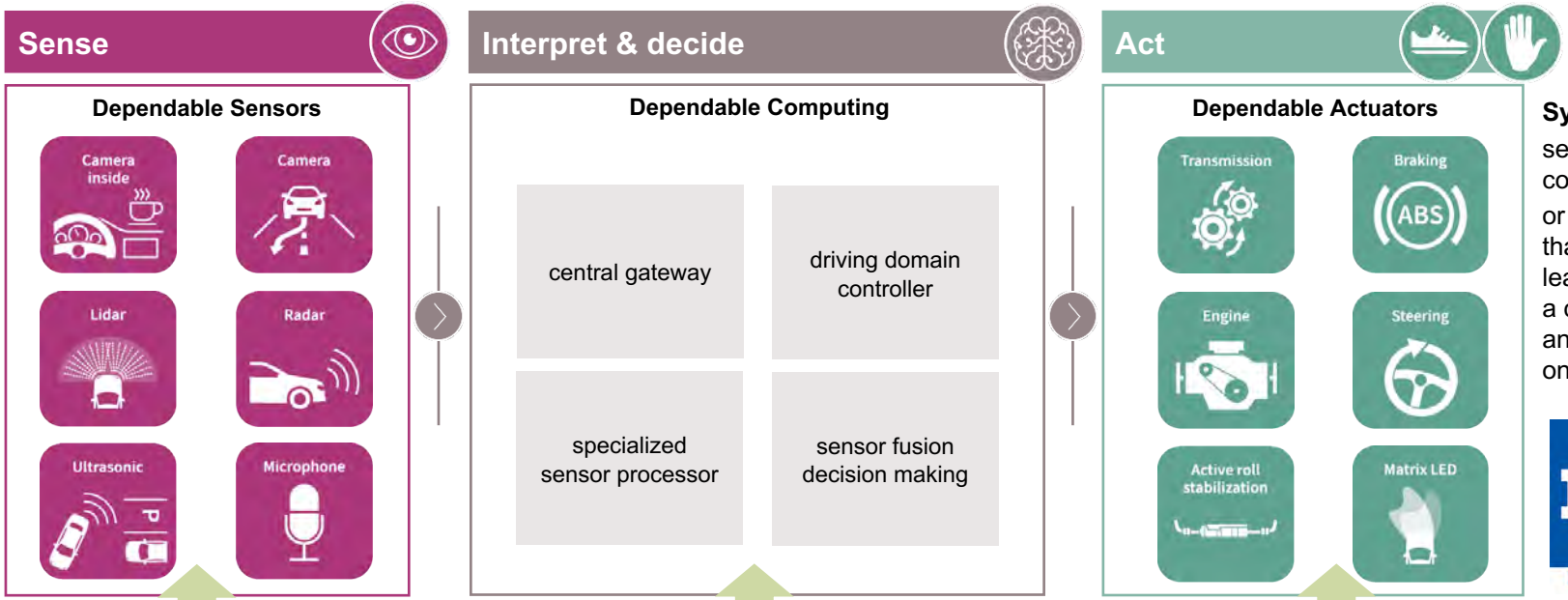
Trust requires dependable systems which are always available
Infineon supports with safe semiconductors



System
set of components or subsystems that relates at least a sensor, a controller and an actuator with one another

ISO 26262

Dependable Memory

Secure communication and authentication

Dependable power supply and distribution

Our profound system understanding makes us a competent partner in safety-critical applications providing safe semiconductors in conformance to ISO26262

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Dependable systems are highly available, safe and secure systems, increasing the need for more dependable electronics

PRO SIL

ISO26262-compliant

ISO26262-ready

Fail-Safe | in the event of a failure, system enters safe state

Fail-Operational | Mitigate potentially hazardous effects by ensuring critical operations in the event of a failure

High Availability | Ensure high availability beyond critical operations; a safe and secure system, that operates in all conditions

	Yesterday (operating time until failure)	Today (operating time after failure)	Tomorrow (extended operating time after failure)
Sense	Integrated safety and diagnostic functions	Broad ISO26262 compliant product portfolio, incl. dual die products to provide redundancy	Measurement diversity coming from multiple technologies
Compute	Safe computing supported by safety library	First microcontroller certified acc. ISO262626:2018 with increased built in diagnostics.	Increased performance through integrated accelerators with holistic safety
Act	Gate drivers and switches supporting safety applications	Gate drivers and switches Pro-SIL(TM) ISO26262-compliant	Drivers and switches with functions dedicated for DC/DC / Battery Management
Supply Distribute	Safe supplies for microcontrollers and switches for relays and fuse replacement	ISO26262-compliant PMICs and ISO26262-ready switches for relays and fuse replacement	ISO26262-compliant application specific PMICs and switches for fail operational power supplies

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From Safety Goals (SG) to Top Level Safety Requirements (TLSR)
The "Infineon Safety Investigation" a supporting process

ISO 26262

Safety investigation → Support to the **Development process**

Classical Approach

OEM

Hazard analysis & risk assessment

Specification of Safety Goals

Tier 1

Functional safety concept

Specification of functional safety requirements

How?

Technical safety concept

Specification of technical safety requirements

Tier 2

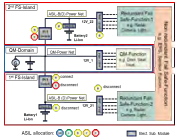
Hardware safety concept

Hardware safety requirements

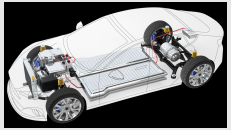
TLSR

Software safety concept

Software safety requirements



Item and system level



OEM **Tier 1**

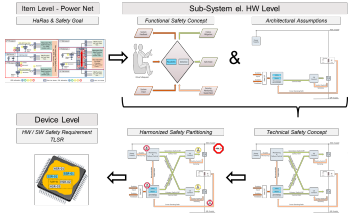
Marketing
Field Application Engineering

Safety Application Community

Application and Concept Engineering

Product Development

Safety investigation



ISO26262-compliant

ISO26262-ready

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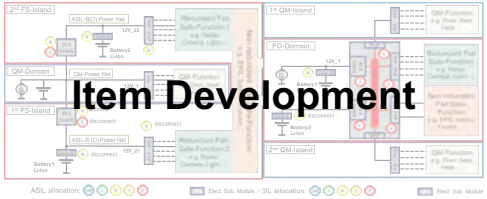
The product Top Level Safety Requirements (TLSR) are derived from the "Safety Investigation"

OEM & Tier 1

Hazard & Risk Analysis - Safety Goal



Product Development

Device Level

HW / SW Top Level Safety Requirement (TLSR)

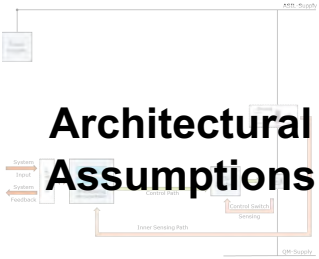
ISO26262-ready

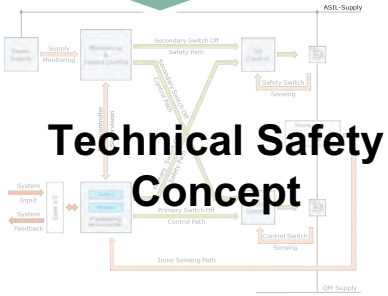
ISO26262-compliant

Infineon Safety Application Group

Sub-System el. HW Level

&





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The Holistic Functional Safety approach of Infineon
A foundation for dependable electronics

Trust

PRO SIL

ISO26262-ready

ISO26262-compliant

Management of FuSa

An established culture of safety builds trust in Infineon products, documented in a safety policy

Development

Proprietary development processes conforming with ISO26262 by ensured compliance concepts

Safety Analyses

Well established safety analyses incl. Infineon tools provide evidence to fulfill the required safety

Production

Infineon's automotive specific production of top quality products increases availability

Foundation for safe and dependable electronics

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With our strong Functional Safety experience we provide building blocks for integrating safety features

ProSIL™ products support a safety use case

Customer use case	System Integration Efforts	System Integration Documentation	Safety Feature Description	Infineon Label
Design with safety product to develop its own safety system	Use case specific	Use case specific	Product with diagnostic or safety features	PRO SIL
Hardware integration using products developed with Infineon automotive processes	Medium	Safety App. Note	Safety analyses and customer documentation supporting ISO26262 system integrations	ISO 26262 ready
System designed around Infineon components developed specifically for safety relevant applications	Low	Safety Manual	Product developed according to ISO26262 process with required documentation	ISO 26262 compliant

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Infineon supports the complete safety lifecycle
Your trusted Supplier

ISO26262

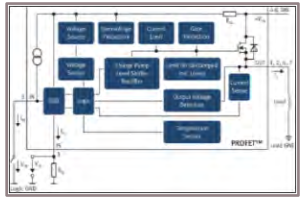
Conformity to ISO26262 by internal Functional Safety confirmations supported by ensured compliance processes

Comprehensive documentation supports customer requests and simplifies integration

Robust safety designs are optimized for safety-critical automotive applications

Global support by application safety experts and product safety engineers in development and field support

From prototyping and developer kits to SW drivers, a comprehensive FuSa ecosystem can be provided



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Experienced Functional Safety semiconductor supplier with comprehensive system understanding supports complete safety lifecycle

Your #1 partner in Safe Systems

Infineon components support your safety requirements and are easy to integrate

Automated Driving enabled by dependable electronics from Infineon based on our comprehensive system understanding to support all safety-relevant automotive systems

- Certified Products
- Project Launch Support
- Quick Start & Prototyping
- Trouble shooting
- Training
- In Field Maintenance

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Infineon is your trusted partner for Functional Safety
Committed to enable dependable solutions

Mission: We shape the future of mobility with microelectronics enabling clean, **safe**, smart cars.

ATV Functional Safety Policy

About this document

Purpose and Scope

This document describes how functional safety management is implemented in the Automotive division at Infineon. It addresses the following aspects:

- Definition of the implemented safety culture
- Definition of the implemented safety organization
- Applied processes, safety-related and supporting processes
- Handling and escalation of safety anomalies

The ATV Functional Safety Policy establishes the overall framework for all involved parties to develop and maintain ISO 26262 compliant products.

Targeted audience

Colleagues and organizations in the Automotive division ATV at Infineon who are involved in functional safety activities and in the development of ASIL classified products according to ISO 26262.

This ATV Functional Safety Policy is binding for all affected ATV organizations.

Release:

Function / Role	Name (Department)	Signature
Owner	ATV Board	Signed on page 1
Author	Robert Hartwimmer (ATV QM-PRC)	Signed in system
Reviewer	Thomas Kunze (ATV QM)	
Approver	ATV BL Heads	
Releaser	Robert Hartwimmer (ATV QM-PRC)	

PRO SIL

ISO26262 ready

ISO26262 compliant

- The **emphasis on safety** at Infineon, enables us to develop and provide products for the automotive market, for all safety-relevant applications
- With our **passion for innovation and quality**, we develop products for the growing Functional Safety market
- In an ever-changing automotive market, **Infineon Pro-SIL™ products** enable safety-relevant systems to achieve their safety goals

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Dependable Electronics

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