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the digital world.

# Infineon Solution for Head Unit

Infineon's virtual show 2020



# Infineon offerings for Head Unit



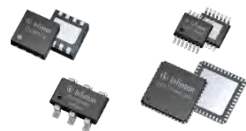
## Energy efficiency

### Dependable power supply

- › MOSFETs
- › Automotive power ICs
- › System basis chips
- › Transceivers

### USB-C power delivery

- › USB-C power delivery controller



## Safety

### Audio

- › Audio amplifiers
- › MEMS microphones

### Advanced driver assistance

- › Automotive microcontrollers
- › Pressure, magnetic, capacitive & RF sensors
- › Image/ ToF camera sensors



## Connectivity

### Storage

- › NOR Flash
- › F-RAM, SRAM, HyperRAM™

### Intuitive sensing

- › TrueTouch® Touchscreen controller
- › PSoC® 4



## Security

### Wireless connectivity

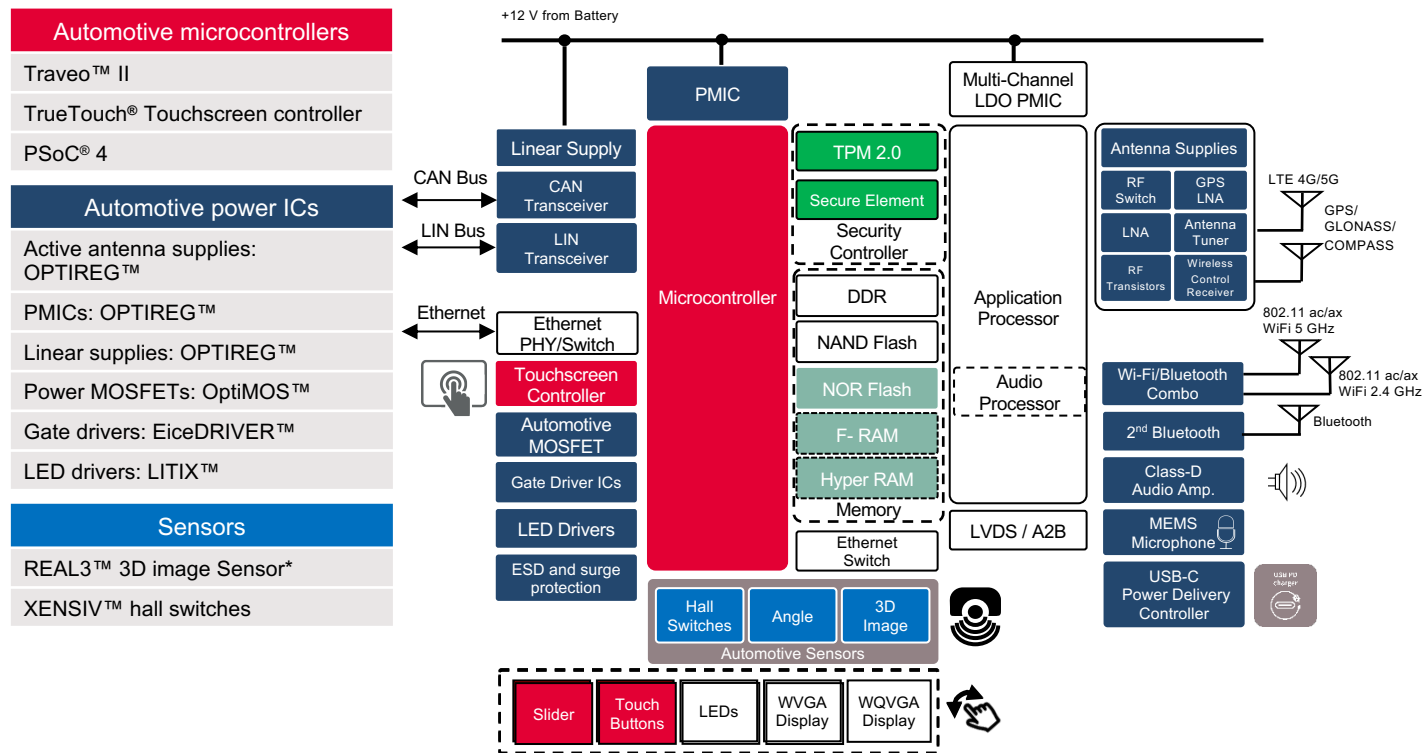
- › GPS / GLONASS / COMPASS LNA
- › WiFi + Bluetooth
- › RF switches
- › ESD and surge protection

### Privacy

- › Automotive security (V2X, access, payment etc.)
- › Embedded SIM for mobile communication



# Head Unit – block diagram and further product details



\*Available on request

# Focus product / Traveo™ II (TVII) family

## scales across E/E architecture performance, memory & peripherals



### Key features TVII family

### Key value



#### Scalability

Flexible solution with respect to performance, package, memory, peripherals, security & safety implementation



Scalability **optimizes variant costs**



#### High performance

Triple CPU cores, performance up to 1600DMIPS



**Easy for platform build up**, from entry level to high level



#### Low power consumption

Ultra low power consumption in active mode, deep sleep mode, hibernate mode



**Save power** consumption for system



#### Functional safety

Functional safety concept enabling ISO26262 ASIL-B full functional safety in both hardware and software



**Reliable** for both hardware and software



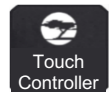
#### Security

HSM, on-chip security compliance to EVITA FULL standard



Increased **vehicle security**

# Focus product / TrueTouch® touchscreen controller – advanced features with high reliability



## Key features TrueTouch® family



### Scalability

Flexible solutions support multiple touch technologies (On-Cell, Hybrid In-Cell, LCD, OLED,  $\mu$ LED, ...) and various display sizes (up to 35")



### High performance

Up to 50mm hover, force touch, haptic and acoustic feedback, integrated slider, buttons, waterproof, glove touch, gestures, dial on display and Multi-chip architecture for very large screen sizes



### Reliability

Proprietary AutoArmor™ technology meets automotive electromagnetic compatibility (EMC) requirements with a customer shareable report



### Quality

Qualified according to AEC-Q100, supporting an extended temperature range of -40° to 105°C

## Key value



Scalability **optimizes variant costs**



Help customers to design **innovative automotive touch screens**



**Reliable** system in harsh automotive electromagnetic environment



Geared towards **minimal failure rates**

# Focus product / PSoC® – scalable, easy-to-use, low-power and reliable HMI designs



## Key features PSoC® family



### Scalability

Broad and scalable portfolio (16KB -384KB flash and up to 100-pin packages) for the simplest to the most complex HMI systems



### Ease of design

PSoC Creator™ and its CapSense Components make it easy to design sleek capacitive sensing HMI systems



### Low power consumption

Ultra low power consumption in active mode, deep sleep mode, hibernate mode



### Reliability

CapSense's robust noise immunity enables to meet the most challenging automotive electromagnetic compatibility (EMC) requirements



### Quality

Qualified according to AEC-Q100, supporting an extended temperature range of -40° to 105°C

## Key value



Scalability offers flexibility and **optimizes HMI design costs**



Reduce design effort and **Fast time-to-market**



**Save power** consumption for system



**Reliable** system in harsh automotive electromagnetic environment



Geared towards **minimal failure rates**

# Focus product / automotive Wi-Fi and Bluetooth – industry leading portfolio of automotive wireless products



## Key features Automotive Wi-Fi/BT family



### Scalability

Industry's broadest product portfolio covering needs for low- / mid- / high-end systems



### Unified software architecture

Unified software architecture across complete portfolio



### Solution maturity

Industry's most deployed product portfolio, automotive use cases field-proven in multiple generations



### Broad ecosystem

Modules available from major suppliers in automotive



### Performance

Industry leading RF performance  
full-dongle architecture offloads SoC completely

## Key value



Scalability **optimizes variant costs**



**Cost and time efficient R&D for different versions of end product**



**Reliable** and fully tested **software code**



**Ease of design, optimized development schedules**



Best RF and system level performance



# Focus product / CCG7D – Auto USB-C PD Controller – two port PD Controller with DC-DC Buck Boost Controller



## Key features of EZ-PD™ CCG7x family



### Integration

MCU + 2 port PD Controller + 2 DC-DC Buck Boost Controller + HV LDO



### Programmability

MCU and Flash enables customization to meet OEMs requirements, by platform/model, and meet USB-IF and Automotive Compliance



### Unique Automotive Specific Features

Load Sharing between Ports, Output Power Throttling – Temp/Voltage, Black Box and Secure Field Firm Ware Upgradability



### Protection

High Voltage short-protection to CC pins,  $V_{BATT}$  to GND short-protection, OCP, OVP



### Software and Support

Auto SDK and Projects offer USB-IF Compliant Firm Ware with excellent customization. Regional Apps Teams provide real-time support globally

## Key value



Integration **optimizes BOM and Module Size**



**Flexibility, Firm Ware Upgradability** and maintain compliance



**Better User Experience, Reduced System Cost, Diagnostics, Safety**



**Safety, optimized BOM and PCB Area**



**Excellent Customization and Localized Support**



# Focus product OPTIGA™ TPM SLI 9670 – hardens E/E architecture, standardized security solution



## Key features OPTIGA™ TPM SLI 9670



### Hardware security

Tamper resistant and security certified hardware & software solution (EAL4+) pre-personalized with initial key



### Compatibility

Complaint to the international standard ISO/IEC 11889:2015, parts 1-4 of the trusted computing group



### Quality

Qualified according to AEC-Q100, supporting an extended temperature range of -40° to 105°C



### Ease of design

Turn-key system solutions with an existing eco-system (preprogrammed firmware plus SW-stack for Linux or AUTOSAR-OS)



### Logistical benefits

TPM protects keys over value chain and enables transport and production in non-trusted environments

## Key value



Increased **vehicle security**



**Based on latest security standard** of most innovative IOT players



Geared towards **minimal failure rates**



Reduce design effort and **time to market**



**End-to-end protection**

# Focus product / Semper™ Flash – safe, reliable, and high-performance flash memory solution



## Key features Semper™ Flash family



### Functional safety

World's first ISO 26262 ASIL-B functional safety  
Compliant Flash memory



### Reliability

EnduraFlex™ architecture offering 1+ million  
program/erase endurance cycles and 25 years data  
retention



### High Performance

JEDEC standard xSPI interfaces up to 400 MB/s read  
bandwidth and Quad SPI interface up to 102 MB/s



### Easy of design

Broad support from chipsets and ecosystem partners.  
Semper SDK provides production-grade drivers



### Scalability

Density range from 256 Mb to 4 Gb, supporting 1.8 V and  
3 V interfaces, with common feature set

## Key value



**Safe storage** for boot code  
and ADAS algorithms



**Reliable data-integrity** for  
grades up to +125°C



**Instant-on boot** performance  
for instrument clusters and  
other systems



Reduce design effort and  
**Fast time-to-market**



Scalability **enables code and  
data size changes** without  
board re-design

# Focus product / Excelon™ Auto F-RAM – most reliable data-logging solution



## Key features Excelon™ Auto F-RAM family



### Instant non-volatility

Instantly capture critical event data



### Reliability

Virtually unlimited endurance and long data-retention over automotive temperatures



### Functional safety

ISO26262 ASIL-B functional safety compliant



### High performance

Industry leading SPI/QSPI performance with no write delays



### Scalability

Industry's broadest product portfolio with flexible architecture for value-added solutions

## Key value



**Ideal data-logger** for post-crash forensics



**Reliable data-logger** for long automotive product life



**Dependability** for safety systems



**Best throughput** for continuous data-logging



Scalability **optimizes TTM and variant costs**

# Support material



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