AVNET®

Smart Automotive

Solution Guide

Accelerate your business with smart solutions

The era of the internet of Things (IoT) is fast upon us, and connected vehicle technology is now a key market driver that can no longer be overlooked.

As the lines between vehicles, technology and connectivity blur, drivers today expect better intelligence and more sophisticated automotive systems from their cars.

For a more secure and reliable driving experience, reduce driver fatigue with our Advanced Driver Assistance Systems, which helps you avoid accidents through parking guidance, 360 degree full panorama view and front collision warning system. Our Adaptive Front Lighting System also ensures driver's safety while on the road.

Vehicle maintenance is now easier than before with our Battery Management System which protects battery health and Tire Pressure Monitoring System, which lets you keep track of your tire pressure even with your smartphone.

Whether it's our Passive Keyless Entry for greater driver convenience, Sensorless BLDC Controller which maintains the performance of automotive parts, or Infotainment Systems that creates a more enjoyable ride, our automotive solutions transform the way cars work, bringing you a better all-round in-vehicle experience.

Partnering the best

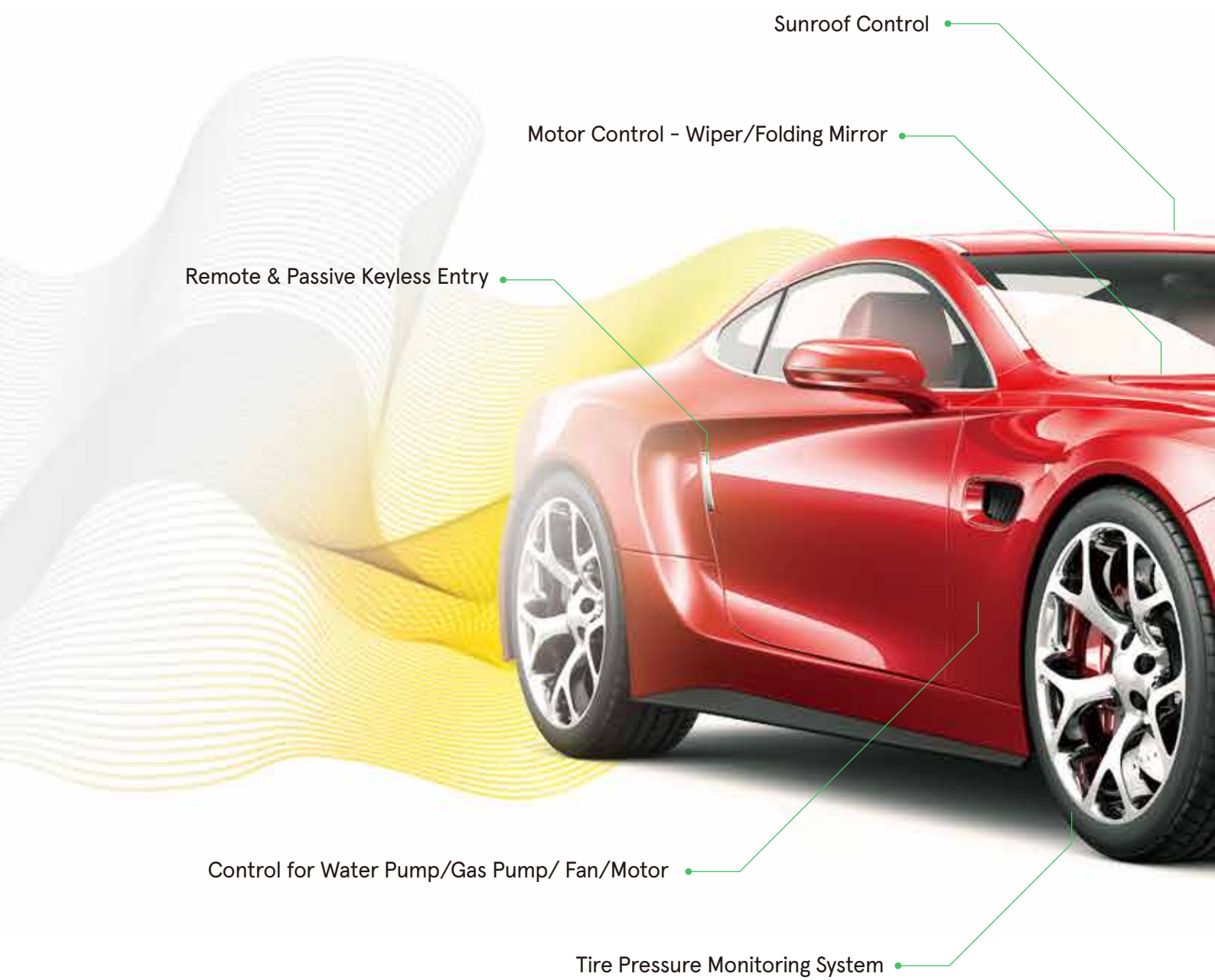
We partner industry-leading suppliers to bring you complete solutions, shorten design cycles and reduce your time to market.

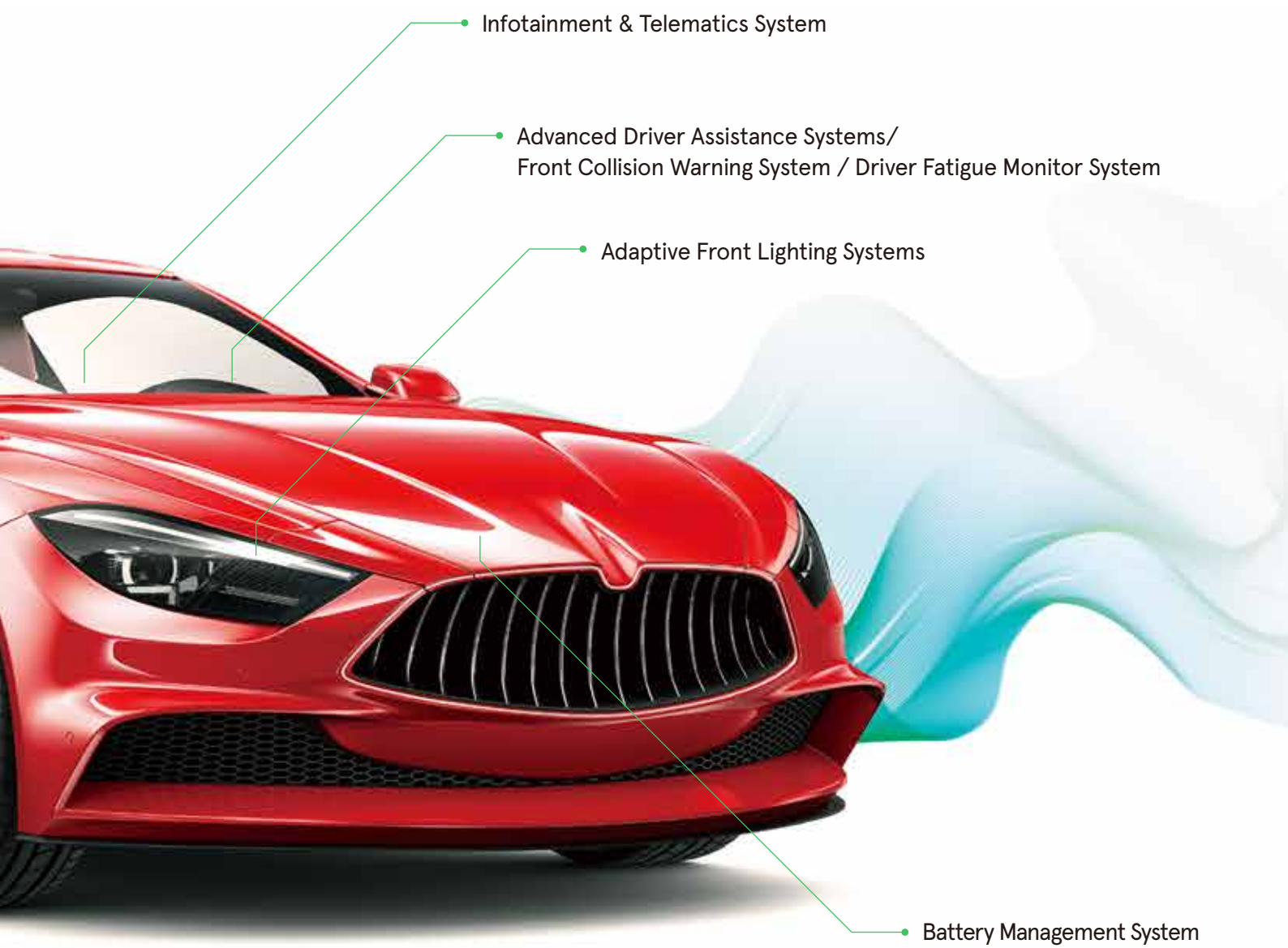
	MCU & Processor	Power Management	Media & Audio Processing	Sensors	RF & Radar	Interface & Connectivity	Secure Car Access	Discrete & Logic	Clock & Timing	Memory	LED	Connectors & Cables	Passive (LRC)	Relay, Switch & Fuse	Battery
Amphenol			•		•	•						•			•
ams OSRAM				•							•				
BOURNS				•									•	•	
Citizen									•						
C&K														•	
EPCOS		•		•				•					•		
EPSON*				•					•						
GP Batteries															•
Harwin						•						•			
IDT(Renesas)	•			•	•	•	•		•	•		•		•	•
Infineon	•	•	•	•	•	•	•	•	•	•					
Intersil	•	•		•		•	•					•		•	•
ISSI			•	•	•	•	•			•					
KYOCERA AVX												•	•		
Marvell						•	•								
Microchip	•		•			•	•		•	•					
Molex					•	•						•			
Monolithic Power Systems		•													
Nexperia								•							
Nippon Chemi-Con													•		
Nordic						•									
NXP		•	•	•	•	•	•		•						
onsemi		•		•	•	•		•		•					
Panasonic*				•	•	•						•	•	•	
Renesas Electronics	•		•	•	•	•	•			•					
ROHM		•	•	•		•		•		•	•		•		
Samtec														•	
STMicroelectronics	•	•	•	•	•	•	•	•							
TE				•		•						•		•	
Toshiba								•							
Vishay				•				•			•		•		
Xilinx	•		•			•	•	•							

* Only available in selected countries.
The above information is an illustration of Avnet's solutions for reference purposes. It does not represent the entire portfolio of Avnet or our suppliers.

Innovations that revolutionize your ride

Avnet's spectrum of solutions encompasses and caters to all your automotive needs. We harness our technological capabilities into valuable insights and useful applications for your business.




Infotainment & Telematics System
Advanced Driver Assistance Systems/
Front Collision Warning System / Driver Fatigue Monitor System
Adaptive Front Lighting Systems
Battery Management System

Avnet Design Services Solutions

Ensure that your products are always market-ready with our design centers that tailor product designs according to your requirements and shorten the design cycle.

Auto Smart LED Lighting

The headlamp is an important part to ensure the safety of the vehicle. Matrix headlight lamps control system is an intelligence system which integrates DRL, turn signal, combination tail lamp, adaptive system formation. it can adjust the LED illumination angle and range of flexible control according to the surrounding environment.

Features

- INPUT : 9V-16V(MAX26V)
- The solution uses ASL5008/5115 to control LED matrix and contains 12 series switch array & CAN to control every LED and maximum six devices in series.
- NXP's BOOST ASL4500 and BUCK ASL3416 for constant current control for LED.
- The MCU PS32K144UAV controls the ASL5008 by CAN to enable and adjust the output current of ASL3416.

Main Platform

- NXP: ASL4500 + ASL3416
- NXP: ASL5*08
- NXP: PS32K144UAV
- Bourns: SSRR1210A-221M
- Nexperia: BUK9275-100A*4,
- Nexperia: BUK7Y25-60E*6
- ams OSRAM : LUW CEUP. CE-7 M8M

BLDC/PMSM Motor Control

The Infineon TLE987x family combines all the elements needed to build a very compact and power-efficient 3-phase PMSM motor control platform. TabletTLE987x helps to minimize PCB size, simplify design and increase overall system quality through integration. Six current programmable drivers with charge pump for N-Channel MOSFET is under the spotlight.

Features

- Sensorless FOC algorithm
- Integrated Cortex M3 MCU, 40 MHz
- Integrated MOSFET Driver, LDO, High Speed Operational Amplifier, High Voltage Monitoring Input
- Built-in automotive voltage regulator
- Integrated LIN transceiver compatible with LIN 2.2 and SAEJ2602

Main Platform

- INF: TLE9877QXA40
- INF: IAUC45N04S6N070H*3
- INF: IPZ40N04S5-8R4

Smart E-cockpit Solution

Avnet's Smart E-Cockpit solution is a highly integrated solution with high performance MPU and rich peripheral interfaces that allow multiple functions to operate simultaneously, such as LCD, HUD flat screen display, smart E-mirror, car recorder(DVR), and etc.

Features

- Rich peripherals including 4G, WIFI 2.4G/5G, BT 4.2
- Dead Reckoning by GNSS & Gyro fusion sensor
- 3 x 100Mb Ethernet T1 ports
- 1 x 1000Mb TX-BASE
- 3 x Display output
- 4 x surround view input
- 3 x camera inut (DMS, FCW, DVR)
- 2 x CANFD

Main Platform

- NXP:i.MX8DXP/QXP/Quad MAX, MMPF8100, TJA1040
- Marvell : 88Q5050, 88Q1512

FMCW 77GHz mmWave Radar

Avnet automotive FMCW radar solution consisted of TEF810 and S32R274. It is used in short-, medium- radar application, covering the full car radar frequency band from 76GHz to 81 GHz.

Features

- 10*10 patch-array antenna for long range target detection
- 2*10 patch-array antenna for near range target detection
- Turn-key solution with hardware and software

Main Platform

- S32R274
- TEF8102

Smart Car Access

A Digital Key Solution using Secure Elements(SE) in combination with communication technologies including Ultra-Wideband(UWB), Bluetooth Low Energy(BLE) and Near Field Communication(NFC). They help enable the unlocking and starting of a car with a smartphone, key fob or an NFC Smart Card holding a digital key as well as the secure sharing of vehicle access with other mobile devices, an advanced capability for the secure car access ecosystem.

Features

- Precise localization, accuracy is 10cm
- Highest protection against RSA(Relay attacks)
- Best consumer experience for passive smart access
- Mobile technology moves into key
- Battery low backup by NFC

Main Platform

- NXP:S32K344
- NXP:NJJ29C2
- NXP:FS26
- NXP:TJA1021
- NXP:TJA1045
- NXP:SJA1105
- NXP:TJA1121
- NXP:NCF29A7
- NXP:NCJ29D5D
- NXP:KW36
- NXP:NCF3320
- NXP:NCF3340

Advanced Driver Assistance System (ADAS) with surround view

Avnet's ADAS solution allows passengers a personalized and connected experience as vehicles seamlessly sense, think and act on real-time road situations.
Multi-camera surround view and sense park assist systems capture and display onscreen the area surrounding the car from a virtual 2D and 3D view.

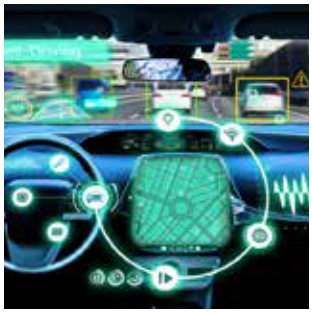
Features

Rich peripherals:

- 5 x 100Mb Ethernet T1 ports (with AVB)
- 1 x 1000Mb TX-BASE
- 4 x LVDS camera input surround view
- 2 x CANFD

Main Platform

- NXP: S32V2, MMPF8200
- ONS: AR0820AT, AR0233AT, AS0148AT(AVB module)



Tire Pressure Monitoring System (TPMS)

Tire Pressure solution measures parameters such as pressure , radial acceleration, temperature and supply voltage. TPMS solution will help in increased safety on the road because the solution will monitor and update these features real time which will help in preventing accidents caused by underinflated tire.
Solution supports best-in-class pressure-accuracy in the range from 100 to 1400kPa , making it the ideal choice for all kind of vehicles from passenger cars to heavy truck applications.

Features

- Measures pressure, temperature, voltage and Z axis acceleration.
- Pressure range up to 450Kpa, 900Kpa, 1300Kpa
- ISM Band 315/434 MHz
- RF output power 5dBm
- Temperature Range -40℃ ~ 125℃
- Operating range 1.9 V to 3.6 V
- LCD display and LIN/CAN connectivity on Rx board.
- Interface on Rx board to connect external BLE module

Main Platform

- INF: SP400-15-11
- INF: TDA5235
- NXP: S9KEAZ64AVLH
- NXP: MC33662EF
- NXP: TJA1042T

Driver Monitoring System (DMS)

This solution includes a camera-based monitoring system that targets the driver's face and provides real-time assessments of the driver's presence and status. DMS can help alert the driver and initiate interventions to manage vehicle control.

Features

- Innovative processes double the sensitivity of 850nm and 940nm without compromising the sensitivity of visible light
- Create a highly sensitive night mode for the camera
- Save costs and power with fewer NEAR-infrared LEDs to get more detail and capture more light.

Main Platform

- NXP: i.MX6/8
- ONS: AR0144AT, AR0234AT, NCL30161

Camera

Avnet's experience with global shutter image sensors for more than 20 years. Based on the onsemi image sensor, the best camera solutions are designed according to the structure of sensor's specs and terminals, such as ensuring better performance of the camera module in detail such as closed testing, water resistance rating, and the reliability of the interface.

Features

- High GSE, and MTF and NIR QE are the best balance ever

Main Platform

onsemi automotive image sensor series:
R0820AT(8Mega), AR0323AT(3Mega), AR0233AT(1080P), AR0220AT(1.8Mega), AR0138AT(960P), AS0148AT(AVB module) 720p soc(H.264, MJPEG, 1000Mb/S, AP0200 (2mega ISP 1000Mb/S), AR0132AT+AP0101AT(960P), AR0144AT(720P), AR0234AT(1080P), AR0143AT(AR0147AT)+AP0101AT(720P), AR0140+AP0100AT(720P), ASX340AT(VGA rear view), ASX344AT(VGA rear Dewarp)

Battery Management System (BMS)

Avnet has rich experience in Automotive BMS application, including EV, HEV, 48V and 14V solutions.

Features

- Motherboard powered by a 12V low voltage network.
- Power from the board 12V low voltage network.
- Communication type: CAN, daisy chain and CAN bus.

Main Platform

- NXP: SPC5744, S32K344, S32K144, MX33771/772/775, FS65XX/26XX, MC33664, MC10XS3425, TJA1046, TJA1145, NBP8F
- INF: 9012, 9015, TC265, IPZ40N04S5

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