



AGENDA

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ALWAYS IN MOTION WITH THE RIGHT COMPONENTS



Electronic component solutions for automotive customers

One thing is certain – the future will be electronic. This applies in particular to the area of mobility, where vehicles are interacting more and more with their environment. To meet the pressure to innovate in the development and industrial production of vehicle modules.

An intelligent combination of quality, flexibility and availability is required. As one of the leading design-in distributors in Europe, Endrich has specialized in this area, to help Automotive customers optimizing their development and production processes in the best possible way.

Where competence meets service

For almost 50 years we have been a family-owned company with more than 20 European sales offices within the industrya byword for know-how and value added services.

We see ourselves not only as a supplier of high-quality electronic components from Asia and the USA, but rather as a link between the possibilities of the manufacturers and the requirements of our customers. The highly specialized Endrich-Automotive team stands by the customers of the automotive industry as a central contact partner in every phase of a project for the site – with comprehensive technical support – from the first consultation about a tailor-made product solution to a successful market launch: customer-oriented, innovative, effective, personal and binding.





Our focus is on maximum efficiency by optimizing all parts of a process chain. Whether Kanban, just-in-time, buffer stock, consignment stock or a smooth logistics, all processes are individually adapted to the requirements of our customers at Endrich. EDI standard and precise traceability of each IoT is a matter of course. But as complex as the tasks may be no matter what, in the end there is a simple result: The satisfied customer.

endrich - components of life

SENSORS

Applications & Features





SEMITEC, TATEYAMA, TEWA, Sciosense

LIDAR 3D SENSOR / TIME OF FLIGHT

Everlight, TDK InvenSense

VEHICLE INTERIOR AIR QUALITY (VIAQ)

Sciosense

SEAT-POSITION

TDK-Micronas, TDK InvenSense

MEASUREMENT

TDK-Micronas, Sciosense

ADAPTIVE HEAD LIGHT

TDK-Micronas, TATEYAMA

E-MOTOR EV/HV

SEMITEC, TATEYAMA, TEWA, TDK-Micronas, Sensitec

STEERING MOTOR -BLDC MOTOR

TDK-Micronas, Sensitec

TRUNK FOOT **SENSOR**

TDK InvenSense

BATTERY MANAGEMENT SYSTEM

SEMITEC, TATEYAMA, TEWA, TDK-Micronas, Sensitec, Sciosense

STEERING ANGLE

TDK-Micronas, Sensitec

WINDSHIELD-**SENSORS**

Sciosense, Everlight

MAP LIGHT CONTROL

Everlight, TDK-InVensense

EGR/EXHAUST TEMP.

SEMITEC, TATEYAMA, TEWA,



Hall Direct Angle



NTC SMD



MEMS Motion Sensors



Leakage Current Sensors



Air Quality, HVAC an+H49+I49

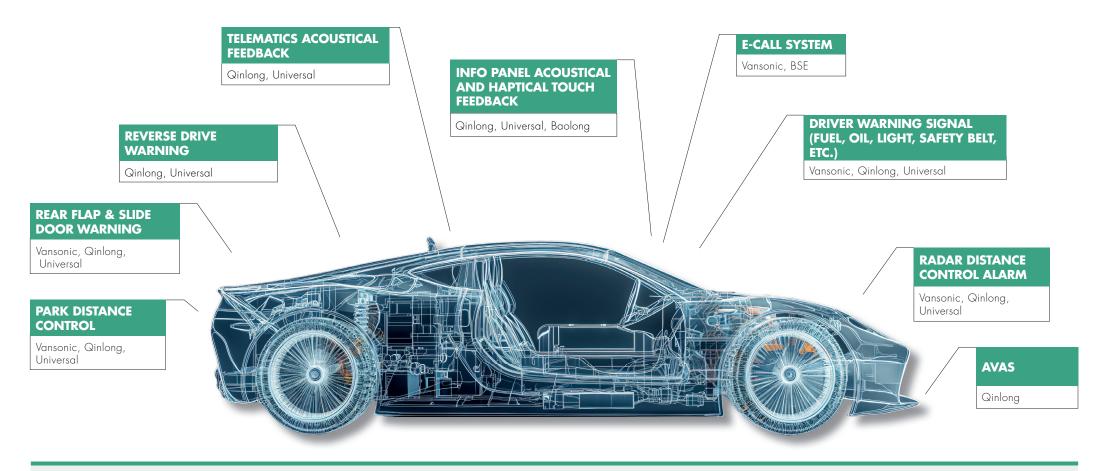


Auto-Grade VCSEL Diode AEC-Q102

	MICRONAS	SENSITEC	SEMITEC*	TATEYAMA.	EVERLIGHT	&TDK	Sci <u>o</u> Sense
MAGNETIC SENSORS							
Direct Angle Hall Sensors	•	•					
TMR Sensor / Linear Hall Sensors	•	•					
Switches	•	•					
Motor Controllers	•						
Current Sensors		•					
TEMPERATURE SENSORS							
NTC SMD / NTC leaded							
NTC film types							
NTC thermistor probes			•				
Assembled sensors							
MOTION SENSORS							
Infrared and ambient light sensors					•		
TOF Sensors					•		
OPTICAL SENSORS						ı	
Magnetometer / Accelerometer						•	
Gyroscope						•	
ENVIRONMENTAL SENSOR	S					J	
Gas Sensors / Pressure							•
Temperatur / Humidity Sensors							
Ultrasound sensor interface for water & gas flow metering							•
KEY FEATURES					1		
	 HAL39xy - True 3D sensor with internal stray field compensation HAC - Hall sensor with integrated capacitors HAR - Hall sensor as dual-die variant (redundancy) HVC motor controller with integrated drivers 	varying complexity: Discrete components (chip level), current	 Temperature sensors especially for e-mobility applications (HV/EV) µ-Pressure and temperature sensors for medical applications 	Temperature sensors with extremely fast thermal response time especially for e-motor applications (coil & hairpin)	■ Optical response similar to human eyes, High resolu- tion, Programmable intergration time, Night vision, Rain sensor, Dashboard Lighting control, Touch sensor, Gesture detection, Dri- ving monitoring, Flood illumination In-Cabin Sensor	■ MEMS Motion Sensors for Automotive Applications: Grade 1 6-axis Motion Tracking device for safety and Grade2 3-axis accelerometer with ASIL-B and ASIL-D rating. Programmable interrupts, a 4096-byte FIFO, programmable gyroscope, on-chip 16-bit ADCs	■ HVAC out-cabin air quality (Prevents toxic/unpleasant gases in traffic) HVAC energy management (dewpoint detection, Windshield Antifogging) Battery condition monitoring (thermal runaway) In-cabin air quality (Detect particles and odors in-and outside cabin)

ACOUSTICS







Dynamic Speakers



Vibration Motors



Electret Condenser Microphones



Dynamic Speakers



Piezo Buzzers & Transducers



Electro Buzzers & Transducers

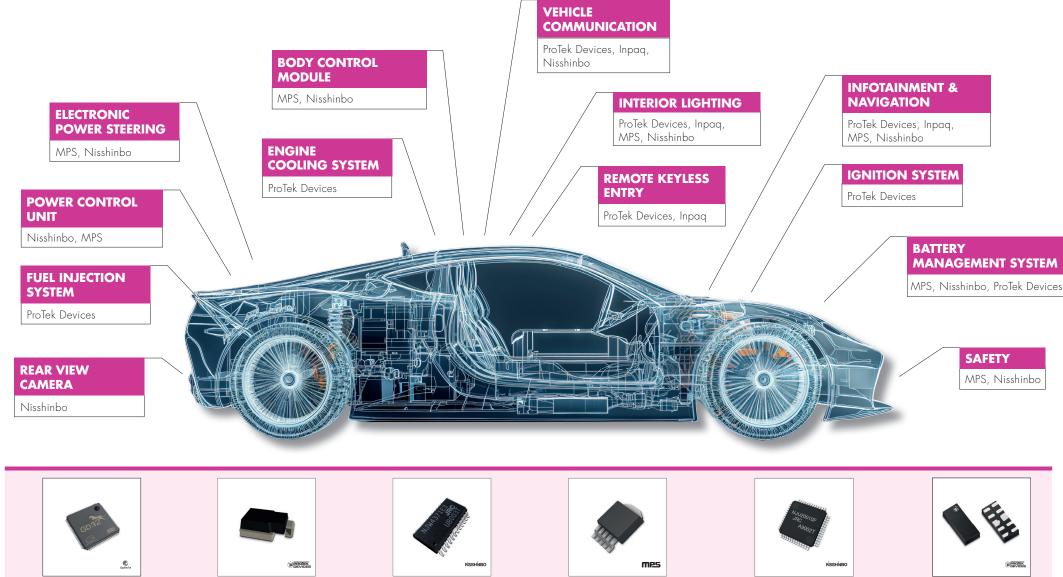
	Ÿ <i>EĽ</i> Ø	QINLON	HME INVESTIGATION SOUND	ZHEJIANGBAOLONGM&ECO.,LTD.	BSE
ACOUSTICS					
Piezoelectric transducers		•	•		
Piezoelectric buzzers		•	•		
Piezoelectric speakers		•			
Piezoelectric elements		•			
E-magnetic transducers		•			
E-magnetic buzzers		•			
Dynamic speakers		•	•		
AVAS		•			
Exciter		•			
SMD microphones	•		•		•
Standard microphones			•		
MEMS microphones			•		
Coin vibration motors				•	
Cylinder vibration motors				-	
SMD vibration motors				-	
Linear vibration motors				•	
KEY FEATURES					
	 Reliable dynamic loudspeaker technology Competitive prices SMD reflowable Flame retardant plastics High acoustics performance Different connection versions Customised solutions Optional housing ESD packaging 	 SMD reflowable Flame retardant plastics High acoustics performance Different connection versions Customised solutions 	ker technology	 Reliable vibrations motor technology Very competitive price SMD reflowable High diversity in SMD motors High vibration performance Different connection versions Customised solutions Customised packagings 	 Reliable microphone technology Very competitive price SMD reflowable High performance microphones Different connection versions Customised solutions

ACTIVE COMPONENTS

Load Dump Protection

Applications & Features





LDO

Video ICs

TVS Arrays

Motor Driver ICs

ESD Guard™

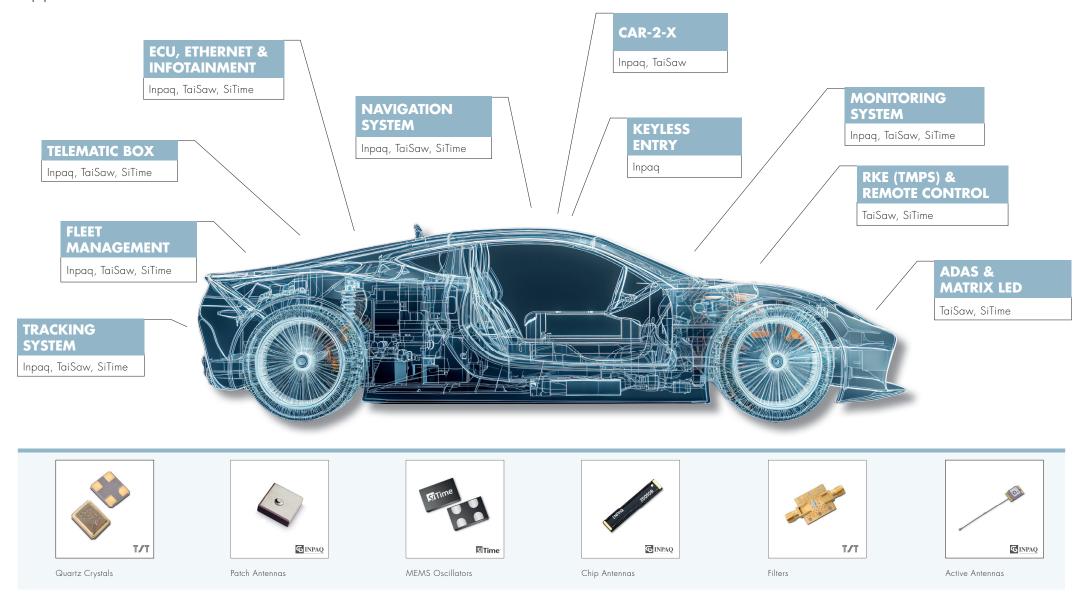
NSSHNBO





ANALOG ICs				
Analog switches				
Audio ICs		•		
Communication ICs		•		
GaAs MMICs		•		
ED drivers				
Notor ICs				
Operational amplifiers				
ower supply ICs	•	•		
/ideo ICs				
DIGITAL & OVERVOLTAGE PROT	ECTION			_
TVS diodes / arrays			•	
FLASH Memory				•
MCU				•
		Customized productPossible customer adaption	 Biggest AEC-Q101 qualified TVS solutions product portfolio Compact sizes Low capacitance devices for data lines High powered solutions for power lines 	Long availabilityDirect technical support

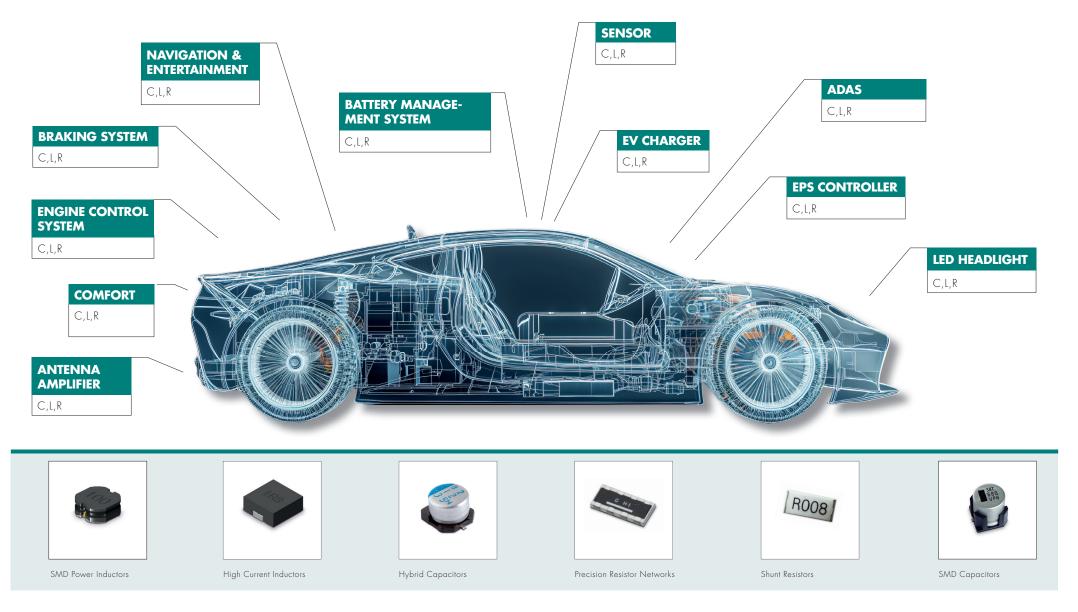
FREQUENCY & **RADIO COMPONENTS**



	<i>Si</i> Time ⁻	TIT	G INPAQ
QUARTZ			
Quartz crystals (MHz) / (kHz)			
OSCILLATORS			
Oscillators (MHz) / (kHz)		•	
FILTERS			
SAW / BAW / MCF filters		•	
Dielectric filters		•	
Diplexer / duplexer / FEM			
ANTENNAS			
Antennas f. ISM Band, WiFi TM , Bluetooth®			
Antennas f. GPS/GNSS, LTE/5G			
Antennas for UWB, NFC			
KEY FEATURES			
	Best shock (10,000 g) & vibration (70 g) resistance	 Complete product portfolio on crystal, crystal-oscillator and RF-filter Enhanced reliability in the range of -40 °C to +125 °C Simulation, matching, analysis support IC matching information / recommendation for chip set 10% global share on CSP SAW filter 	 High performance and excellent quality Customized designs and solutions High product variety (patch antennas, chip antennas, active antennas, dipole antennas, LDS/LAP) Small sizes (to 6×6mm) and low profiles (to 2mm) Fine tuned antennas High gain patch antennas for GNSS

PASSIVE COMPONENTS

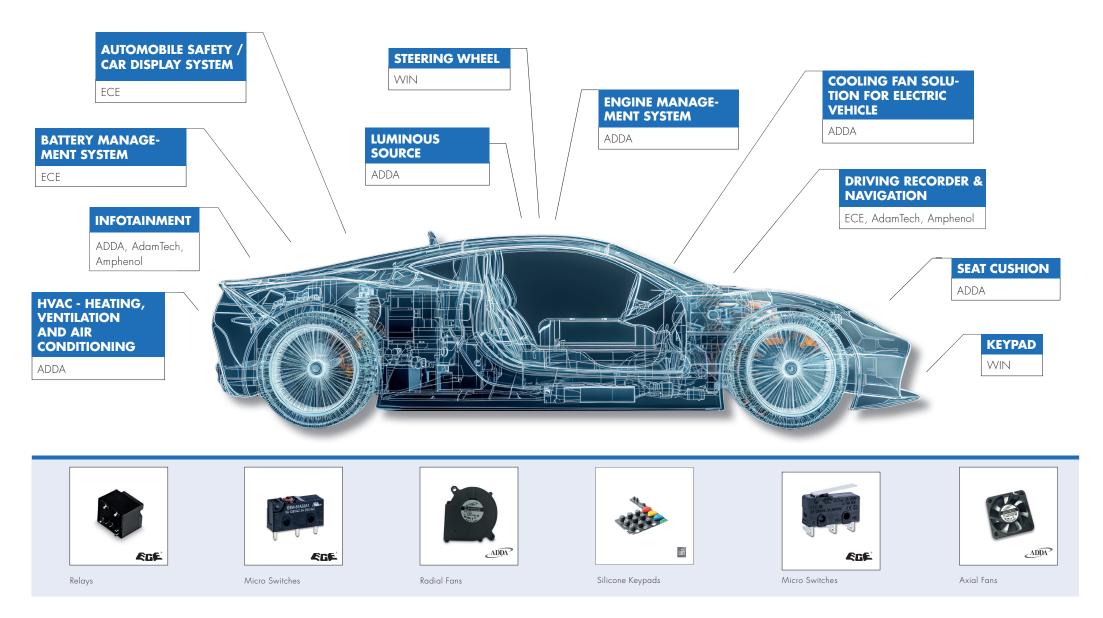




	SSM susumu	ABO	GINPAQ	SunCon	WALSIN	Panasonic
CAPACITORS (C)						
Electrolytic				•		•
Hybrid						•
MLCC					•	
INDUCTIVE COMPONENTS (L)						
Ferrite beads						
RF chokes		•				
Power chokes		•				
EMI / EMC chokes		•				
LTCC					•	
CHIP RESISTORS (R)						
Thin Film					•	
Thick Film					•	
Shunt					•	
Specialty / others					•	
KEY FEATURES						
	best accuracy and long term stability for demanding applications Network resistors: widest ratio with best accuracy and stability. Full customization possible Shunt resistors: highest power rating with long side terminals, boot compati-	Ferrite core: non-shielded semi shielded & shielded types Iron/Metal alloy core: low profile, high current power inductors Common mode chokes for power line as well as signal line Can Bus, Can-FD, Ethernet, 100Base-T1, PoC and other interfaces Ceramic core: wire wound chip indictor for RF-circuits	 Chip ferrite beads for standard/high power/high speed application Chip type power inductor with metal alloy core and wire wound spring coil Iron/metal alloy core: low profile, high current power inductors Ceramic RF inductors (Multylayer) 	 Aluminum electrolytic capacitors with various features for low ESR, high ripple, long lifetime, high temperature range up to +150deg.C., antivibration Hybrid polymer capacitors with various features for very low ESR, very high ripple, long lifetime, high temperature range up to +150deg.C., antivibration, reverse voltage proof Made in Japan 	Offering a comprehensive range of resistors, capacitors, and inductors, Walsin provides reliable solutions for automotive electronics. With state-of-the-art manufacturing technology and rigorous quality control, Walsin sets the standard in the electronics industry.	High-performance hybrid and standard e-cap for maximum reliability. Hybrid capacitors operating from -55°C to +150°C, ideal for demanding applications. Standard e-cap with temperature ranges up to -40°C to +125°C, depending on the series

ELECTROMECHANICS













Amphenol®RF

AIR MOVERS					
Axial and radial fans	•				
DC	•				
SWITCHES / KEYPADS					
Tactile switches		•			
Push-button switches					
Silicone keypads & membrane keyboards			•		
Relays					
Micro switches					
CONNECTORS					
Data					
Power					
Fakra				•	•
KEY FEATURES					
	 Quick response Large product range Modular constructon system MOQ = 500 pcs Thermal simulation Fan & Heatsink Tailor-made solution > 50,000 pcs 	 Wide variety of products Vertical integration Production capability Quality assurance 	 Mold making: design, production Rubber: Screen printing, Laser etching, Epoxy coating Switches / Membranes / Touch panels: Cutting, assembly, printing / etching Plastic injection: Screen printing, electroplating, spraying Costumized application solutions possible (plastic housing + switches etc.) 	 Ruggedized housing with audil 14 different mechanical and vi Minimum of 25 mating cycles Reliable electrical performance Available in a variety of PCB of Stamped & formed construction termination FAKRA 2 compatible with enhancement of the state of the	isual key codes e up to 6 GHz and cable-mount configurations a for fully automated anced TPA functionality A 2 specification

AUTOMOTIVE GRADE PRODUCTS

SENSORS

- Hall Switches
- Linear Hall
- Direct angle Hall
- NTC SMD
- NTC leaded

- PTC leaded
- NTC film types
- NTC thermistor probes
- PTC thermistor probes
- Assembled sensors

PASSIVE COMPONENTS

- Electrolytic capacitors
- Hybrid capacitors
- Power capacitors
- Ferrite beads
- RF chokes
- Power chokes

- EMI / EMC chokes
- Precision chip resitors
- Low ohm chip resitors
- Special / others chip resitors

ACTIVE COMPONENTS

- Analog switches
- Audio ICs
- Communication ICs
- GaAs MMICs
- LED drivers
- Motor ICs

- Operational amplifiers
- Power supply ICs
- Video ICs
- TVS diodes-/arrays
- Multilayer varistors
- ESD suppressors

ELECTROMECHANICS

- Axial and radial fans air movers
- DC air movers
- Tactile switches
- Push-button switches
- Silicone keypads & membrane keyboards

- Relays
- Micro switches
- Data connectors
- Power connectors
- Fakra

FREQUENCY & RADIO COMPONENTS

- Quartz crystals
- Oscillators
- SAW / BAW / MCF filters
- Dielectric filters
- Diplexer / duplexer / FEM
- GPS / GNSS modules

- Antennas f. ISM Band, WiFiTM, Bluetooth®
- Antennas f. GPS/GNSS, GSM/UMTS/LTE
- Antennas f. car2car communication
- NFC

ACOUSTICS

- Piezo buzzers & transducers
- Flectro buzzers & transducers
- Dynamic speakers
- Electret condenser microphones
- Vibration motors

OUR AUTOMOTIVE SUPPLIERS

Scio Sense **SENSORS SENSITEC EVERLIGHT** TATEYAMA. SEMITEC* **公TDK** ♦ MICRONAS **BSE VEC**□ **ACOUSTICS QINLON** HOSE FANTASTIC SOLAR ZHEJIANGBAOLONGM&ECO.,LTD. MPS **ACTIVE COMPONENTS** PROTEK NSSHNBO GigaDevice **FREQUENCY & G**INPAQ Si Time **RADIO COMPONENTS** SunCon WALSIN (ABO) **PASSIVE COMPONENTS G**INPAQ **SSM** SUSUMU **Panasonic** ADAME ETECH ADDA win **EGE**® **ELECTROMECHANICS** Amphenol® RF

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