





We shape the mobility of the future with Smart Solutions. Our components and solutions contribute to Clean Mobility.

Founded in 1865, Eberspaecher has demonstrated its spirit of innovation through advances in climate control systems and automotive controls for more than 150 years. Today, Eberspaecher collaborates closely with automotive and transportation OEMs to help deliver automated and electrified vehicles in both the light and heavy-duty industries.

AUTOMOTIVE CONTROLS

As both the automotive and commercial vehicle industries become more automated and electrified, reliable electronic components are the critical factor for success. Eberspaecher offers a comprehensive portfolio of battery management systems and switches for light and heavy-duty vehicle applications.

Contact:

Dan Wishart, Sales Manager
Eberspaecher Controls, NA
(248) 704-6160
Dan.Wishart@eberspaecher.com

Battery Management Systems

Eberspaecher's battery management systems leverage reliable 12V power storages as a redundant energy source to ensure the correct operation of the vehicle power grid.



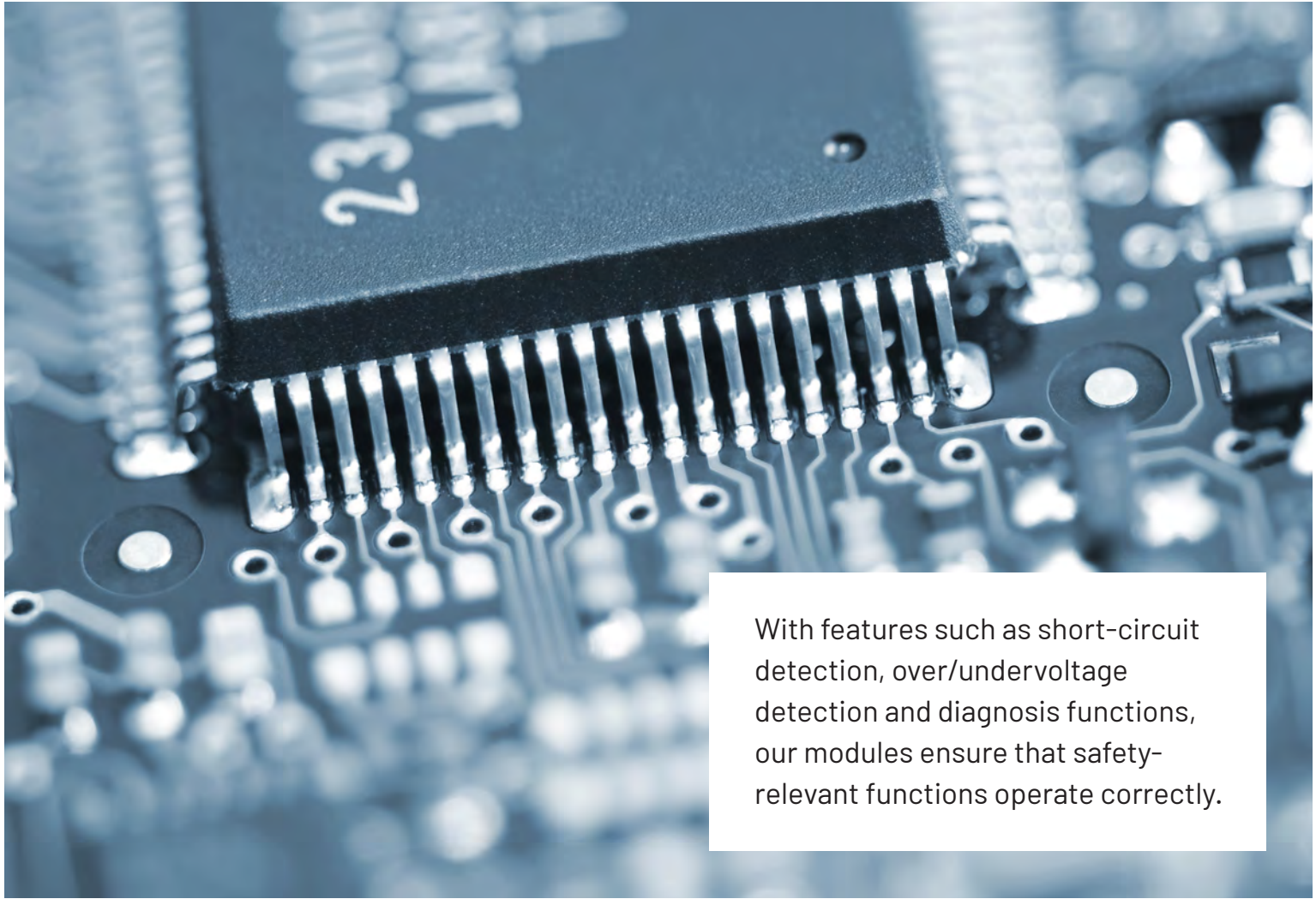
48V supercapacitor (SCAP) storage is used as the industry standard by leading manufacturers to store recuperation braking energy in city buses and in heavy-duty vehicles or as roll stabilizers in electric and hybrid vehicles.

Benefits:

Fuel Economy: Up to 7 percent fuel savings possible
Recuperation: Benefit 3 - 5% CO2 reduction
Energy: Back up supply - 1.2kW for 5 sec. considering SOH 80%
Functional Safety: Supply of transient safety relevant ASIL level loads
Durable: Designed for vehicle lifetime



Eberspaecher offers a comprehensive portfolio of battery management systems and switches for light and heavy-duty vehicle applications.



With features such as short-circuit detection, over/undervoltage detection and diagnosis functions, our modules ensure that safety-relevant functions operate correctly.

Switch Portfolio

OEMs around the world rely on our expertise in construction and connection technology to reliably distribute electricity in the power grid to switch and distribute large current loads. With features such as short-circuit detection, over/undervoltage detection and diagnosis functions, our modules ensure that safety-relevant functions operate correctly.



The **Q-Diode** uni-directional switch enables central stabilization of a dual battery system to ensure a safe state during vehicle restart.

Benefits:

- Reliable:** Fast-switching capabilities ensures vehicle and passenger safety every time the vehicle starts up to 1 million switching cycles
- Light-weight and quieter:** 50% lighter than other comparable high-current relays allowing for smart packaging as an integrated system or stand alone
- Manages high current loads:** 230A continuous current carrying capacity



e-Relay bi-directional switch for 12V and 48V systems is designed to work in combination with a Q-Diode as an advanced system that reliably switches high-current loads and distribute power to the required vehicle functions.

Benefits:

- Durable:** Construction delivers less noise/mechanical wear, as well as low power loss
- Flexible:** Ability to incorporate advanced safety functions with autonomous opening for over temperature and under voltage



Autonomous Drive Safety Switch (ADSS) helps manage the electrical currents and loads within a vehicle to ensure that safety critical electronic functions receive power when required, regardless of the battery state.

Benefits:

- Fail-Safe:** 230A continuous current carrying capacity ensures no power interruption
- Modular Design:** Flexible modular approach - 2 and 4 MOSFET configurations possible as well as additional functions
- Communication:** LIN or CAN
- Functional Safety:** ISO 26262 ASIL B

CLIMATE CONTROL SYSTEMS

Modern, consumption-optimized vehicle engines may not provide a comfortable interior temperature. Eberspaecher offers an effective solution for this challenge with its electrical coolant heaters (PTC heaters). Initially launched in 2010, Eberspaecher high-voltage coolant heaters can be found on more than 25 million vehicles worldwide today.

Contact:

George Tomasso, Sales Manager
Eberspaecher Climate Control Systems/
Electrical Heaters, NA
(248) 697-4881
George.Tomasso@eberspaecher.com

Today, Eberspaecher is developing production-ready high-voltage PTC heaters that can be used in vehicles with hybrid, electric or fuel cell drives in a small installation space. The PTC heating elements cover a power spectrum of up to 7 kW and can be adapted to the typical voltage ranges - for highly efficient heating in both new vehicle concepts and customer-specific applications.

Eberspaecher most recently launched the third-generation heater, which is smaller, less expensive, and more powerful than previous models:

Packaging decreased by 33%

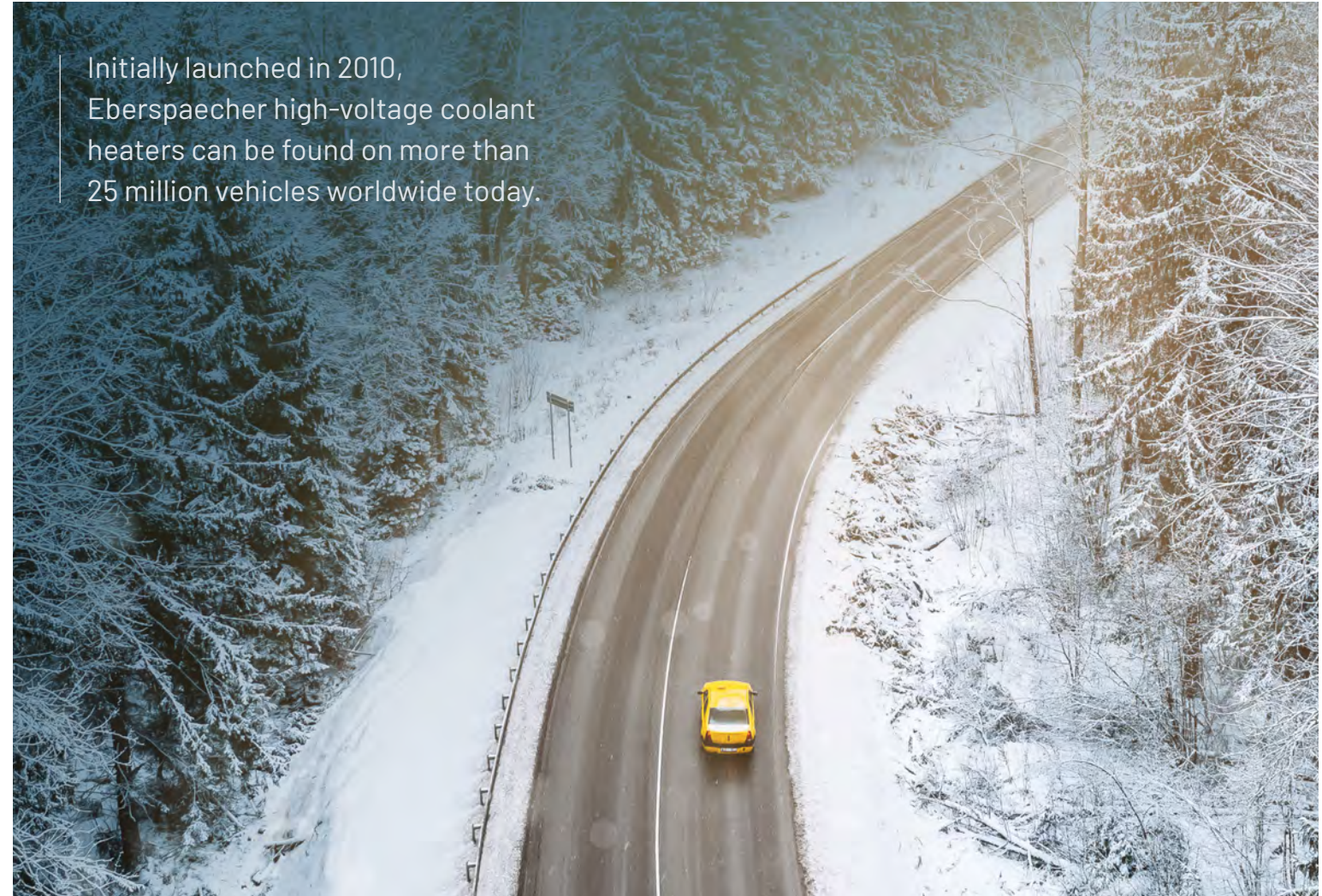
Customer cost reduced by 60%


Heating power increased by 40%

ISO 26262 compliant

Meets DIN and SAE required industry safety standards

Initially launched in 2010, Eberspaecher high-voltage coolant heaters can be found on more than 25 million vehicles worldwide today.





Eberspaecher is developing production-ready high-voltage PTC heaters that can be used in future generations of vehicles with hybrid, electric or fuel cell drives in a small installation space.



Third Generation High Voltage Coolant Heater Battery and Cabin

Voltage Range: 250v - 500v

Power Output: 5000W \pm 10% (@ 60°C/min; 350v)

Dimensions: 159x195x105 mm³

Weight: 2.0 kg

Benefits:

Safety: With a ceramic heating element, the PTC self-regulates power consumption, never exceeding its designed temperature and requires no electronics to operate safely

Cost reduction: The Generation Three and Three Plus PTC heaters are currently in production, eliminating tooling costs and significantly reducing or eliminating customer validation costs

Flexibility: These heaters can be mounted in any position to the vehicle

Third Generation PLUS High Voltage Coolant Heater Battery and Cabin

Voltage Range: 250v - 500v

Power Output: 7000W \pm 10% (@ 60°C/min; 350v)

Dimensions: 230x179x124 mm³

Weight: 2.5 kg

DRIVING THE MOBILITY
OF TOMORROW

 Eberspächer



eberspaecher.com