PHOENIX

TECHNICAL MARKETING

Body Control and Lighting Automotive Catalog

nexperia 5 YEARS

Body control and lighting

While the focus of electrification is often seen to be the powertrain, it is also changing traditional body control and lighting applications. The rise of LED lighting not only gives designers efficient interior and exterior lighting options, but also opens the door to changing the overall look of a vehicle. In addition, any pumps and motors – from heating and ventilation to powered seat, door, window and mirror control – makes changes inside the cabin just as dramatic as under the hood.

Body control and lighting Applications

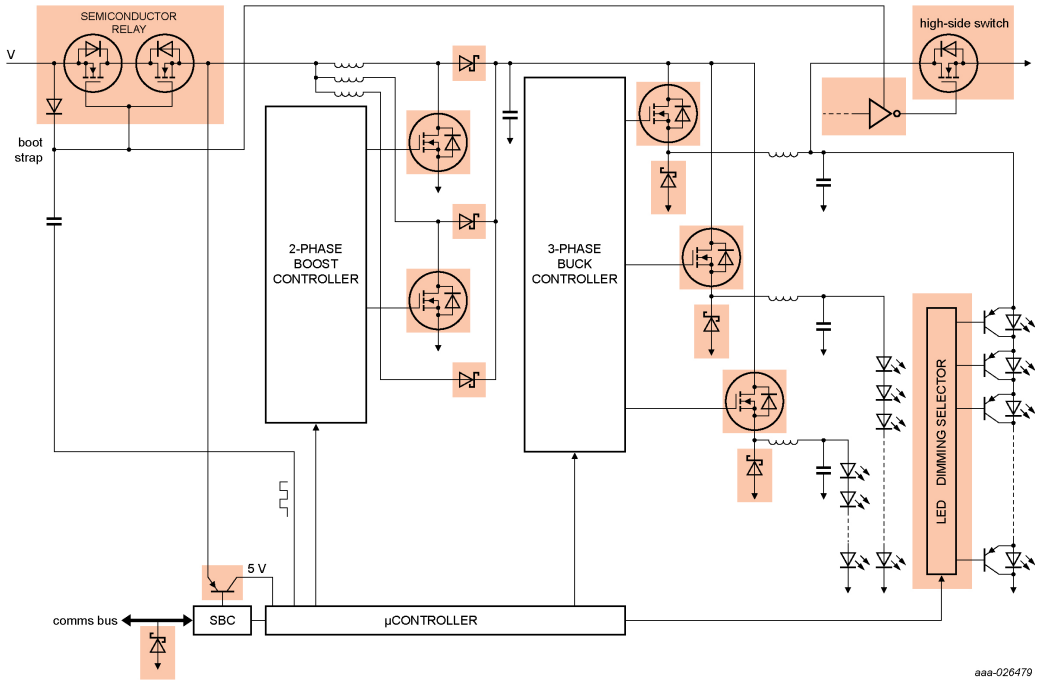
- **Adaptive Front LED lights**
- Front LED lighting is the most power-hungry lighting application and often has a high degree of complexity. A multi-chann...
- Read more
- **Automatic HVAC - BLDC blower motor**
- In Heating, Ventilation, and Air Conditioning (HVAC) systems, the trend is towards temperature control with PWM driven br...
- Read more
- **Constant current source for interior LED lighting**
- Highly efficient and compact, LEDs have become the de-facto choice for interior lighting applications, from cluster backl...
- Read more
- **In-Vehicle Network (CAN FD / LIN / FlexRay / Ethernet) protection**
- The car is an extremely interconnected system, with over 100 ECUs all attempting to communicate with other systems in the...
- Read more

Body control and lighting Focus Products

- Automotive MOSFETs
- LIN/CAN(FD)/FlexRay
- Schottky diodes and rectifiers IF >= 1 A
- Small signal MOSFETs
- High-speed CMOS HC(T)
- LED driver / Constant current source

Adaptive Front LED lights

Front LED lighting is the most power-hungry lighting application and often has a high degree of complexity. A multi-channel boost/buck topology is often preferred as this provides flexibility for the LED drive. The output LEDs can be dimmed by using a combination of low-power bipolar transistors with a shift register.



Products

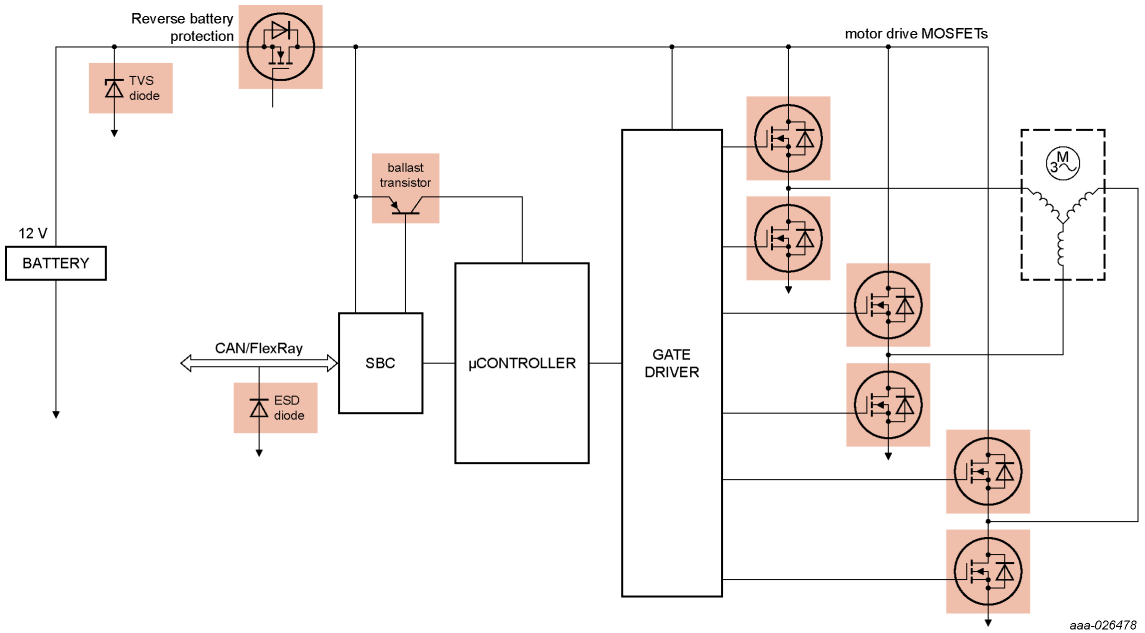
- Driver MOSFETs - 80 V, 25 mOhm, LFPAK56
- ESD diode - CAN / LIN bus protection
- Schottky rectifiers - 60 V; 2-10 A
- High-side switch - 80 V, DFN2020
- Shift register - HC(T), DHVQFN16
- Reverse battery: LFPAK56, 40 V, > 100 A

Design considerations

- Digital controlled adaptive non-glare
- Individually dimmable LED Control
- Accurate LED current control
- Compact design
- High efficiency driver design
- Low EMI solution using small scale highly integrated package technology

Automatic HVAC - BLDC blower motor

In Heating, Ventilation, and Air Conditioning (HVAC) systems, the trend is towards temperature control with PWM driven brushless DC motors. Overall system reliability and efficiency is improved compared with linear operation and brushed motors. This delivers significant performance, fuel and CO2 savings over the lifetime of the vehicle.



Products

- Motor drive MOSFETs: 40 V, LFPAK
- Schottky rectifiers: 100 V
- Reverse battery: LFPAK56, 40 V, > 100 A
- ESD: CAN / LIN bus protection
- ESD: TVS, 24 / 40 W

Design considerations

50 W – 400 W Brushless DC motor drive

- BLDC preferred for controllability and low power performance

Controlled by 6 MOSFETs operated with PWM

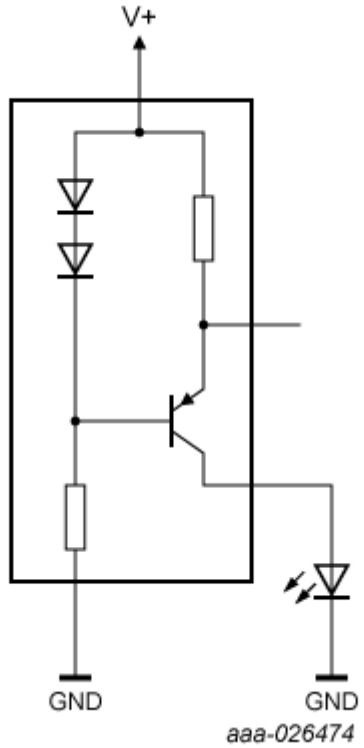
- puts the focus on switching losses and EMC performance
- power saving of 100 W on average
- emission reduction of approx. 0.24 kg CO2 per 100 km.

Applications face a high ambient temperature

Main Office Tel +52 (33) 31 23 91 99
www.phoenixrep.com

Constant current source for interior LED lighting

Highly efficient and compact, LEDs have become the de-facto choice for interior lighting applications, from cluster backlighting to mood lighting. However, LEDs are sensitive to operating current so, for any single or string system, a constant steady state current is vital. That's why constant current source devices make the ideal solution for driving LEDs in the electrically noisy environment of vehicles. Our space-saving NCR series complements the efficiency of LEDs perfectly with accurate and stable outputs.



Products

- Constant current source: NCR series

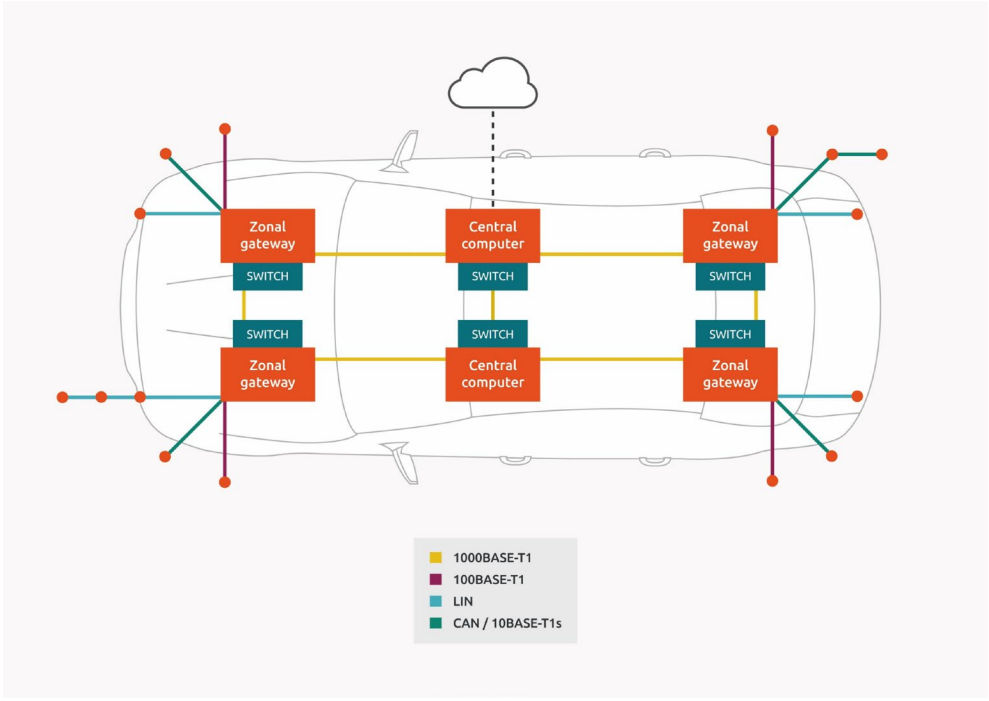
Design considerations

- Individually dimmable LED control
- Accurate LED current control
- Compact package (SOT23 / SOT457)
- High efficiency driver design
- Low EMI solution using small scale highly integrated package technology
- Maximum drain current: 10 to 50 mA

Main Office Tel +52 (33) 31 23 91 99
www.phoenixrep.com

In-Vehicle Network (CAN FD / LIN / FlexRay / Ethernet) protection

The car is an extremely interconnected system, with over 100 ECUs all attempting to communicate with other systems in the car. To manage increased complexity and higher data rates as new versions of existing protocols find their way into vehicle networks (CAN FD, Ethernet), the classic flat wiring harness architecture is changing to a domain and zonal architecture with Automotive Ethernet as the backbone. Offering increased system robustness, our IVN bus line protection solutions are well suited to automotive bus protection without impeding signal integrity in this electrically noisy environment.



Products

- LIN / CAN(FD) / FlexRay
- Automotive ESD Ethernet

Design considerations

- High ESD robustness up to 30 kV and high surge currents up to 3.5 A (8/20µs)
- Excellent ESD clamping behavior
- Operate at a low capacitance avoiding any unwanted circuit disturbances
- Asymmetrical internal diode configuration, ensures optimized electromagnetic immunity