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OPTIMIZE SYSTEM COSTS OF BODY CONTROL MODULES AND MAXIMIZE EFFICIENCY



Smart shunt solutions from Isabellenhütte help optimize system costs of Body Control Modules and maximize efficiency

CHALLENGE

Central control units, also known as Body Control Modules (BCMs), control and monitor various functions in the vehicle, such as electric door openers and window lifters, liftgate openers, seat adjusters, etc.

This is where the currents for controlling the motors and actuators are intelligently monitored and regulated by shunts. Since the BCMs are located inside the vehicle, the requirements for installation space and ambient temperature are lower than for applications in the area of engine or transmission control units. In the past, BCM manufacturers have tended to focus on functionality and price rather than design, performance, and low-space consumption when selecting components.

Due to the increasing complexity of vehicle technologies, multiple BCMs are often required in the vehicle. In addition, a wide range of functions are used, which can be found in different equipment levels. All these control units require corresponding installation space in the vehicle and influence the weight and overall costs of a vehicle.

Since the weight of a vehicle has a considerable influence on its range, especially in hybrid and electric cars, manufacturers are faced with a challenge at this point. Potential solutions include BCMs with higher power density and low-energy consumption. This can be achieved with the use of specific shunts.



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Downsizing with smart high-performing solutions

SOLUTION

Thanks to the high power rating and very good stability values of Isabellenhütte's components, it is possible to use shunts with small sizes to intelligently control the current flow in motors and thus optimize the performance and efficiency of electric motors, DC/DC converters, or controllers. This allows BCMs to achieve higher performance while reducing energy consumption.

The following example shows how an existing component in a BCM can be replaced by a shunt that is more than five times smaller, while still meeting performance requirements.

For example, if the BRS type of size 3812 was previously used, the FMK of size 1206 can also be used while ensuring the same performance. This is particularly worthwhile if several shunts are used on the board. The space consumption in the application can be significantly reduced in this way, which ultimately leads to an optimization of the overall weight and consequently the system costs. If a high initial tolerance of the component is not required, further savings potential is possible with 5% or even 10% tolerance and the cost-benefit ratio can be improved again.

Component recommendation

Typical component recommendations for BCMs are our FMK shunts in size 1206 in the resistance range of 2 to 6 mOhm as well as the CMK in the range of 10 to 100 mOhm. For higher currents and power ratings, the WAK type in range of 0.5 mOhm to 1 mOhm offers an ideal solution for saving installation space.

APPLICATION

BCM's for monitoring and controlling various electronic accessories in vehicles' body like power windows and mirrors, air conditioning, central locking, seat adjustments, etc.