

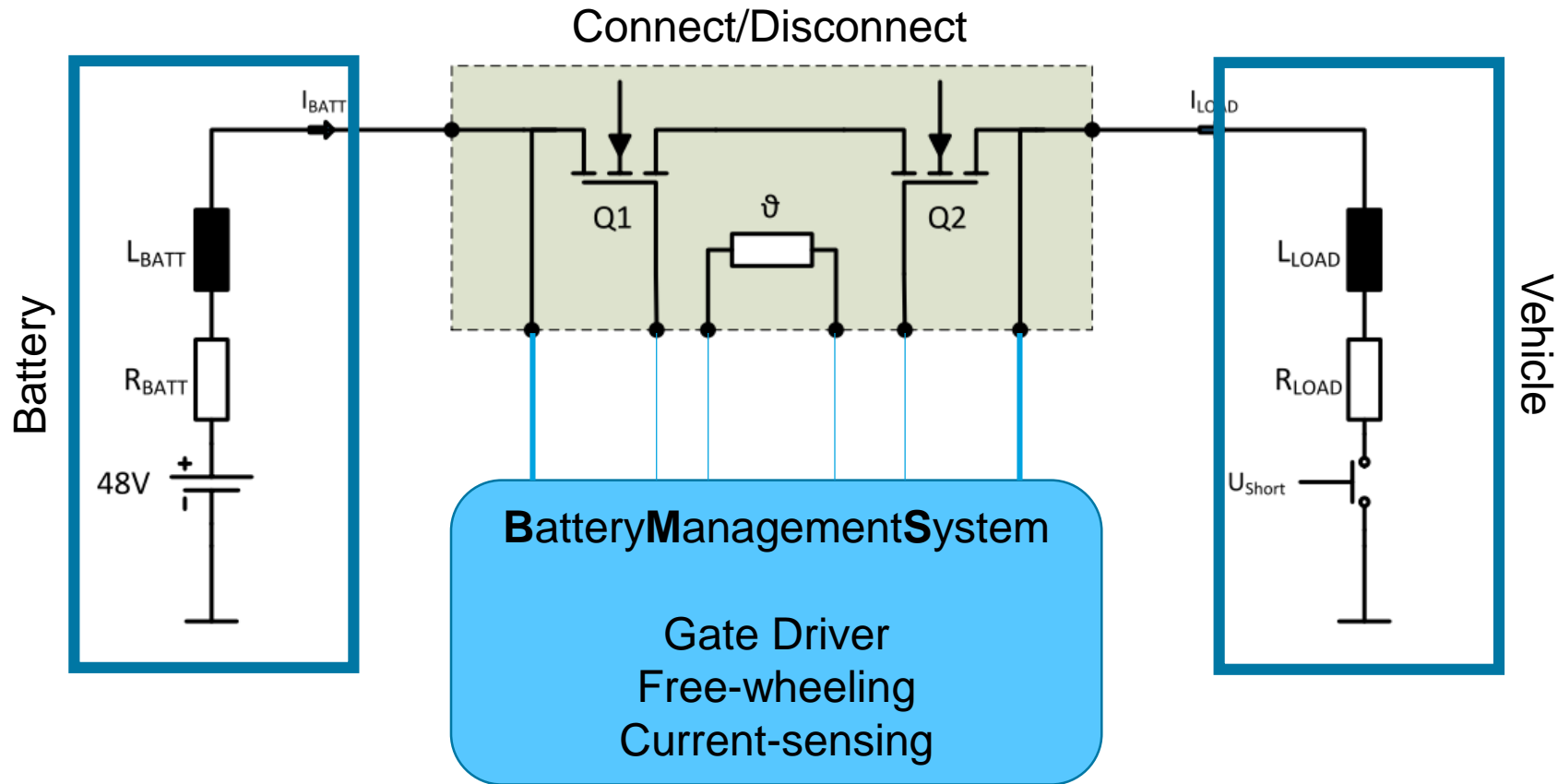


ACCELERATING
INNOVATION

48V Solid State Battery Protection Switch



Functional circuit plan





































Purpose: Electronic replacement for mechanic-relay main battery switch

Advantages of an Solid State Switch

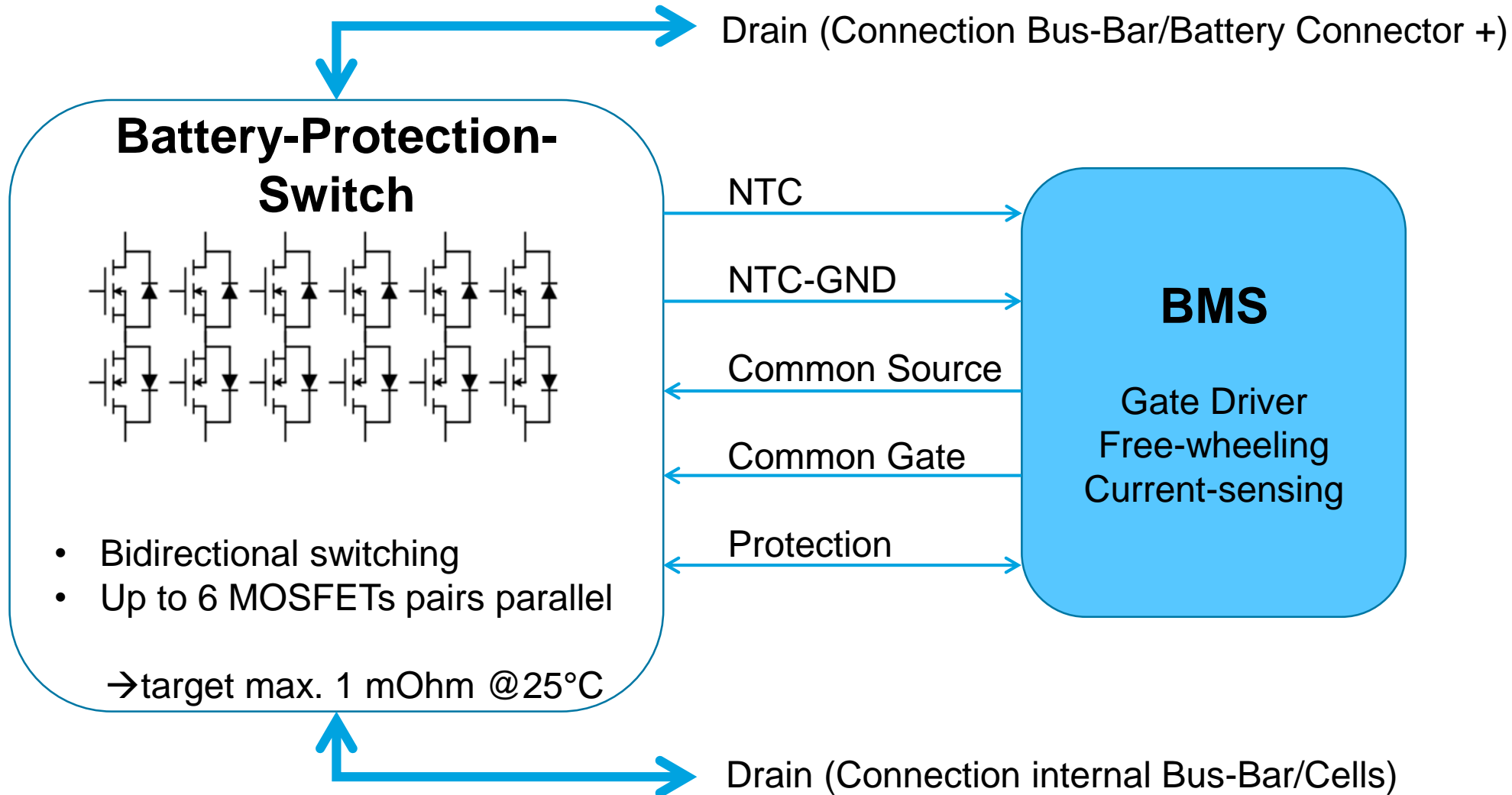
- Uni or Bidirectional configuration
- R_{DSon} scalable
- Faster switching times possible to protect the battery
- Far more switching cycles possible (nominal and short circuit currents)
- Additional functionalities, like PWM for precharging possible
- Higher mechanic shock withstand capability
- AL substrates serves as busbar
- No noise emission
- weight reduction



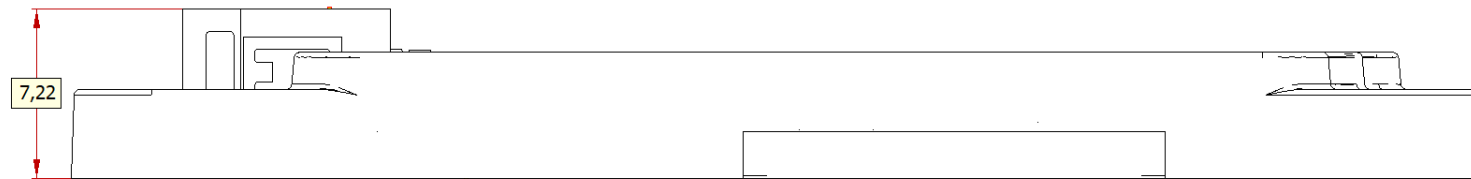
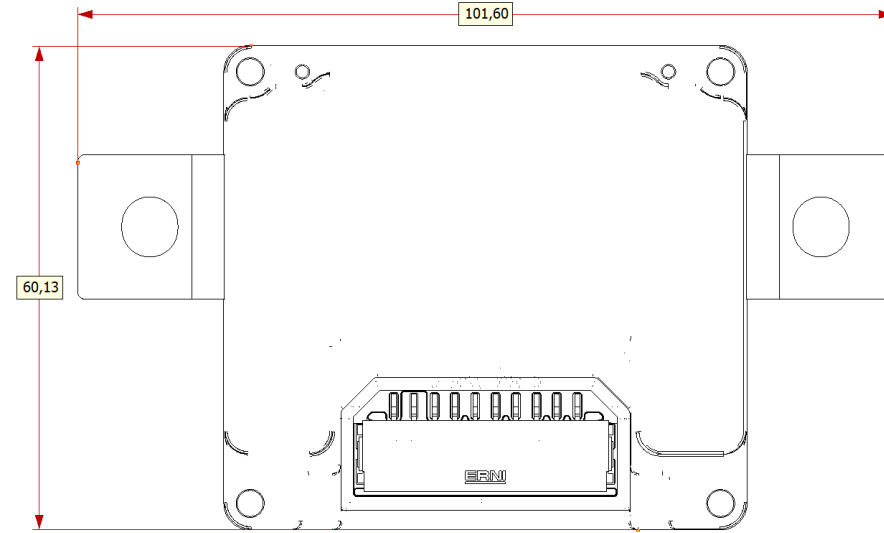
Advantages of an electronic solution

	Mechanical Relay	Semiconductor
Reaction time	~30 ms  	~ 100 us   
Power losses		 
Lifetime		 
Module weight	~ 200 g 	~ 60 g  
Module height		 
Vibration robustness		 
Noise level		  
Addition of functionalities		  
Level of efficiency		 
Sale Price	 	

Block Diagram



Solid State Battery Protection Switch including housing



Battery Switch High Voltage - 470V

- Bidirectional configuration
- Breakdown voltage 750 V
- Design is scalable → performance depends on cooling of the switch
- actual design → continuous current 500A possible
- Short pulsed current up to 1000A (or higher) → depends on cooling
- Fully isolated with 2.5 kV
- Integrated isolated gatedriver
- Precharging functionality integrated
- First prototypes available in Q1/22

THANK YOU.



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