

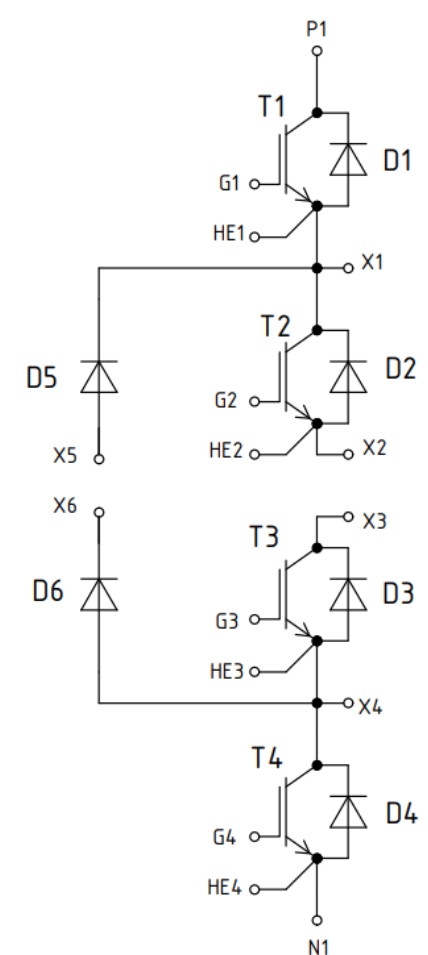
Application of Easy3B Module with New 7th Fast IGBT in String and Industrial & Commercial Energy Storage Systems

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Introduction

The rapid growth of utility-scale and commercial energy storage systems is driving increasing demand for high-efficiency and high-reliability power conversion systems (PCS). Grid-forming functionality, overload capability, and long-term operation under varying power factors require advanced semiconductor solutions.

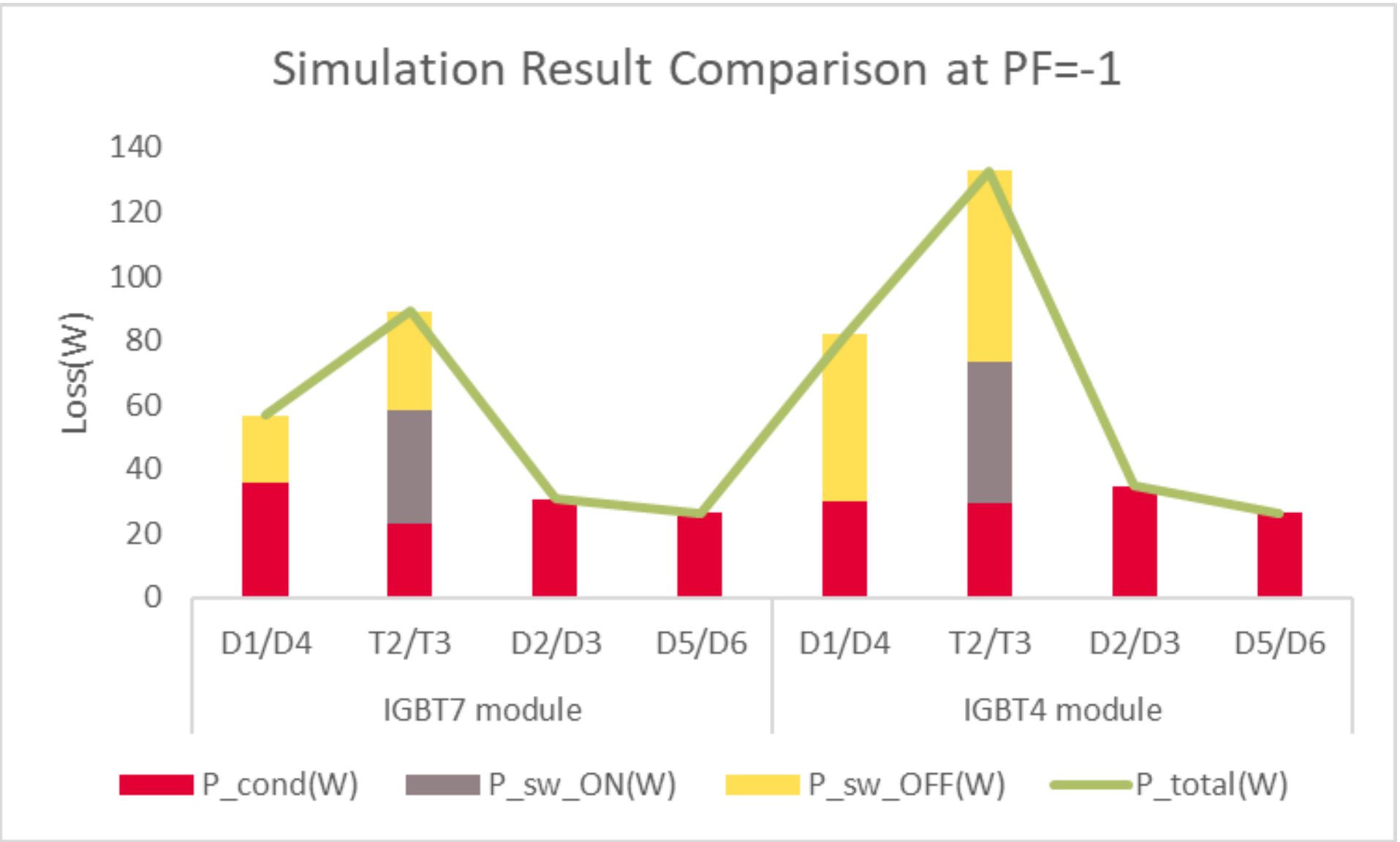
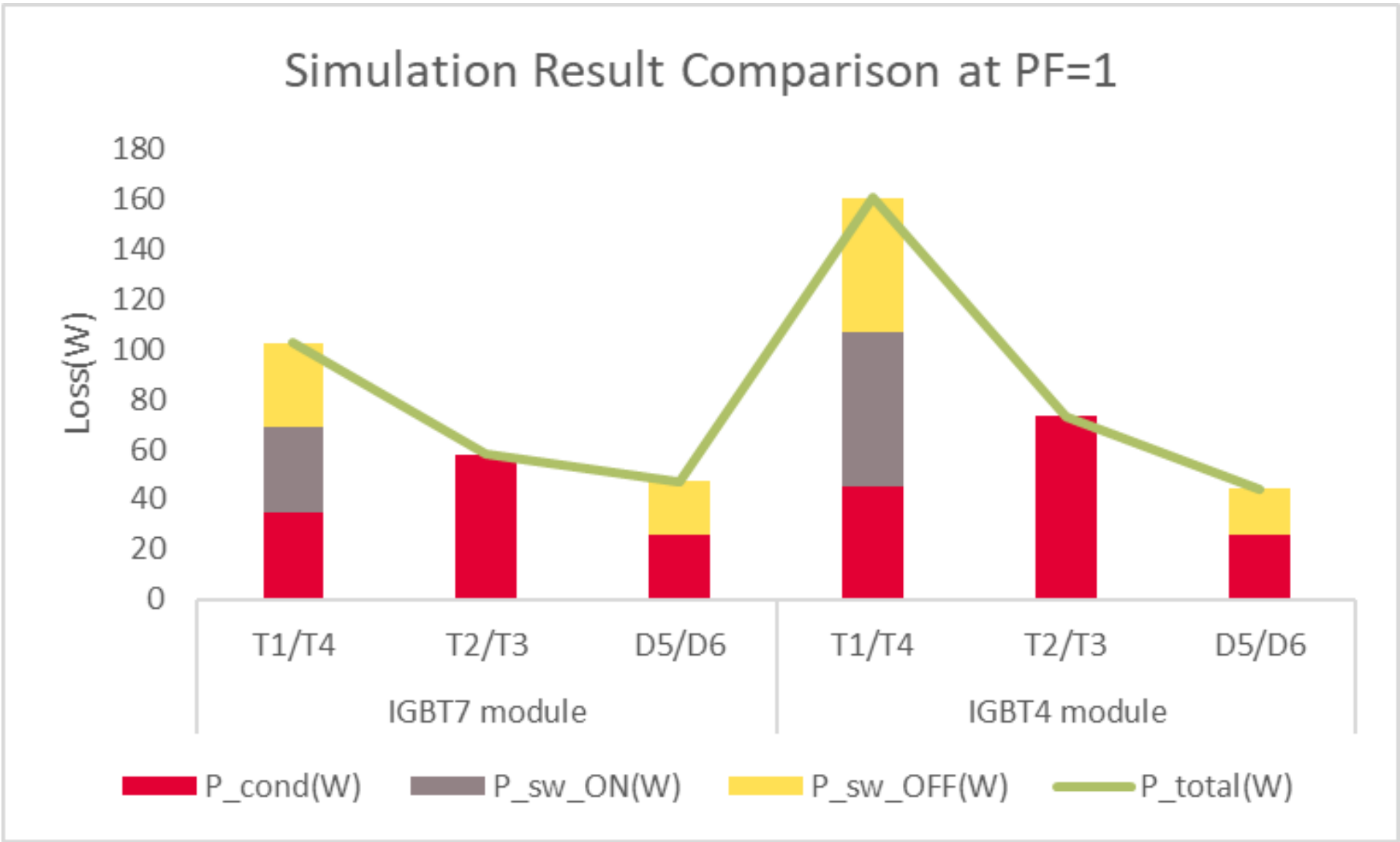
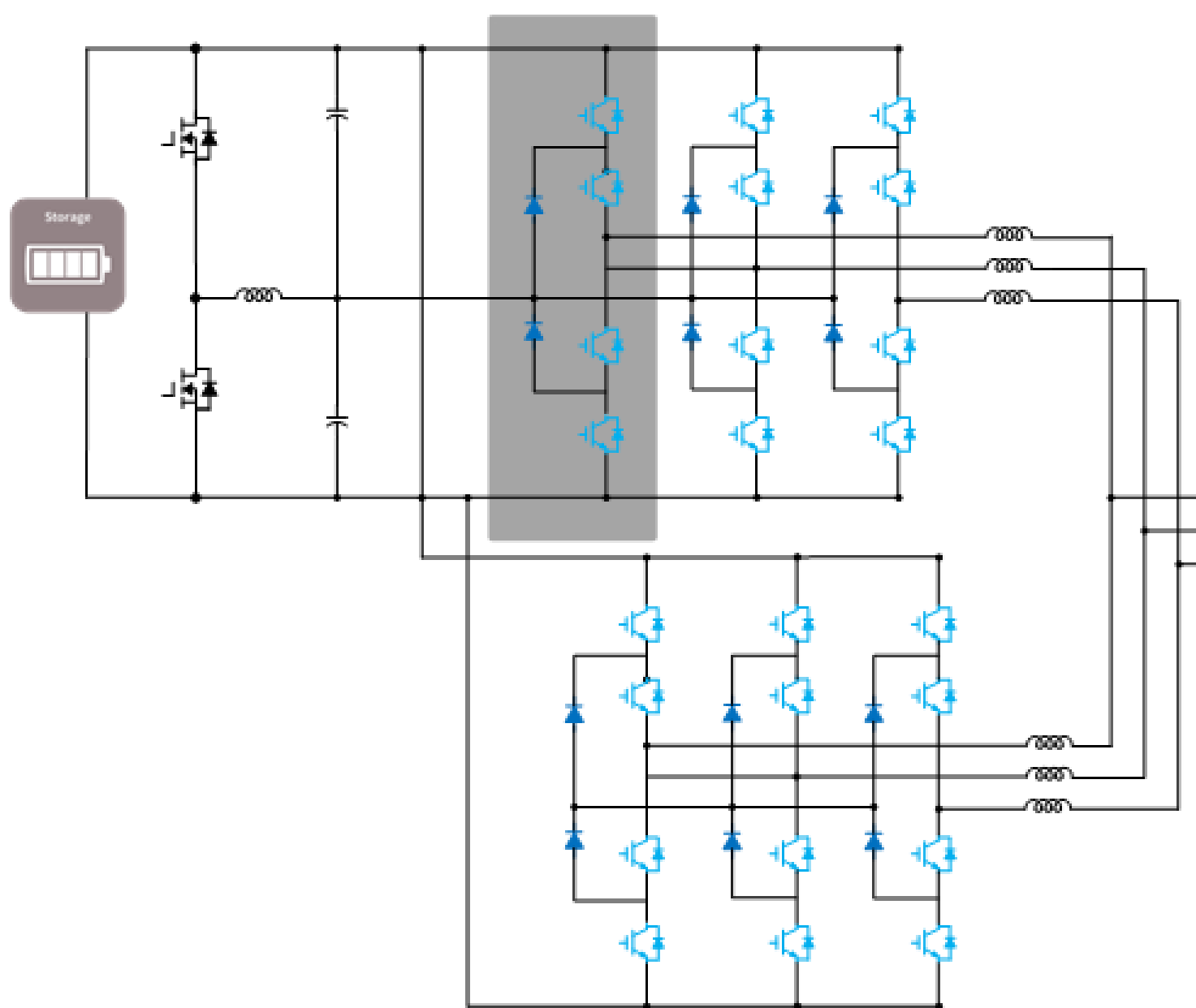
New EasyPACK™ 3B Module Solution



- Compared with previous generations:
- 25% lower VCEsat
 - 45% lower switching loss (Esw)
 - 250 V higher blocking voltage than 950 V S7 devices
 - Improved efficiency

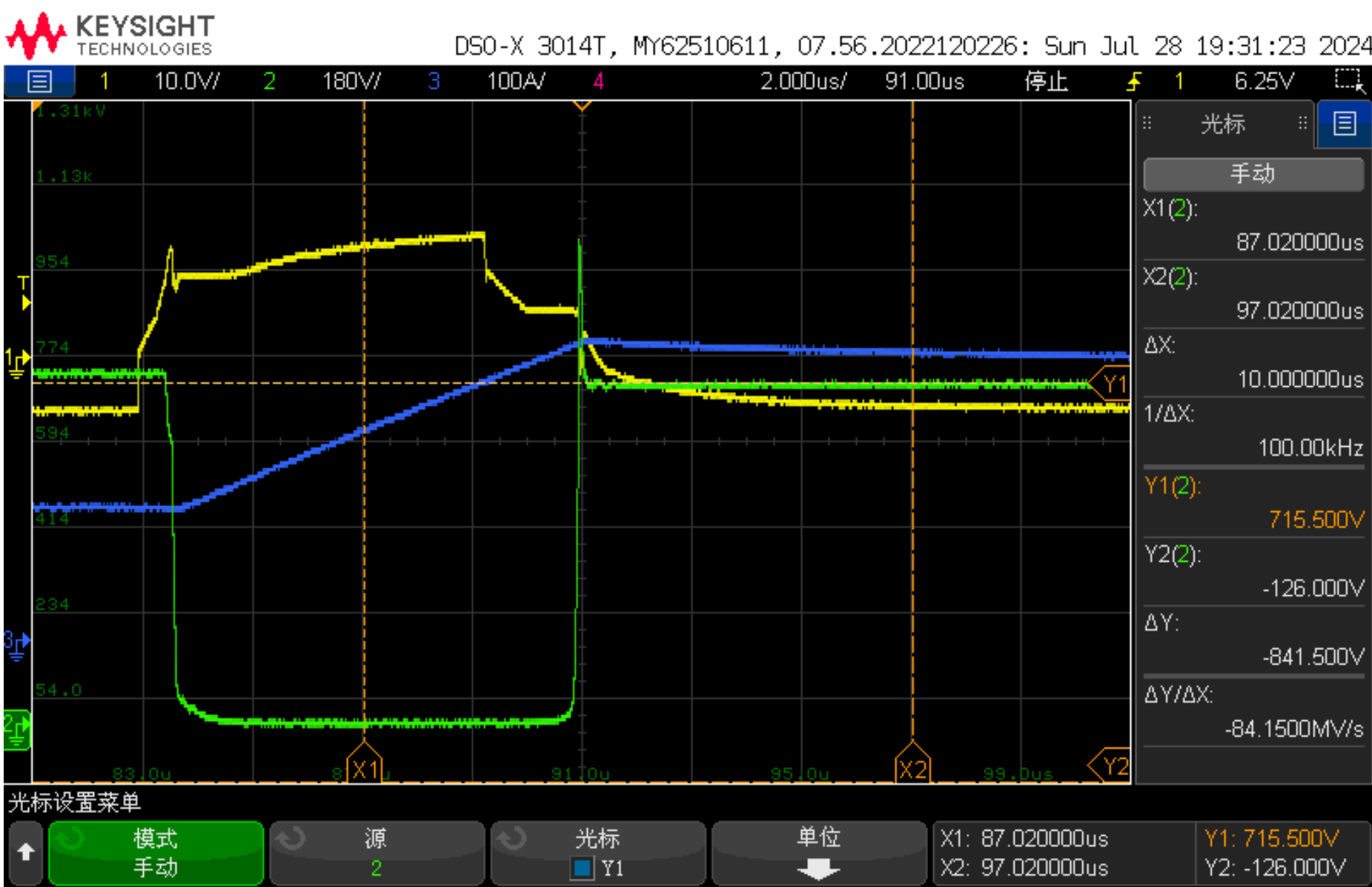
- The EasyPACK™ 3B package adopts:
- Optimized NPC1 topology
 - Low-stray-inductance commutation paths
 - Layered DC+/N/DC- bus structure
 - Flexible driver pin assignment
 - These features enable full utilization of the fast-switching H7 chip performance

160 kW Grid-Forming PCS Architecture

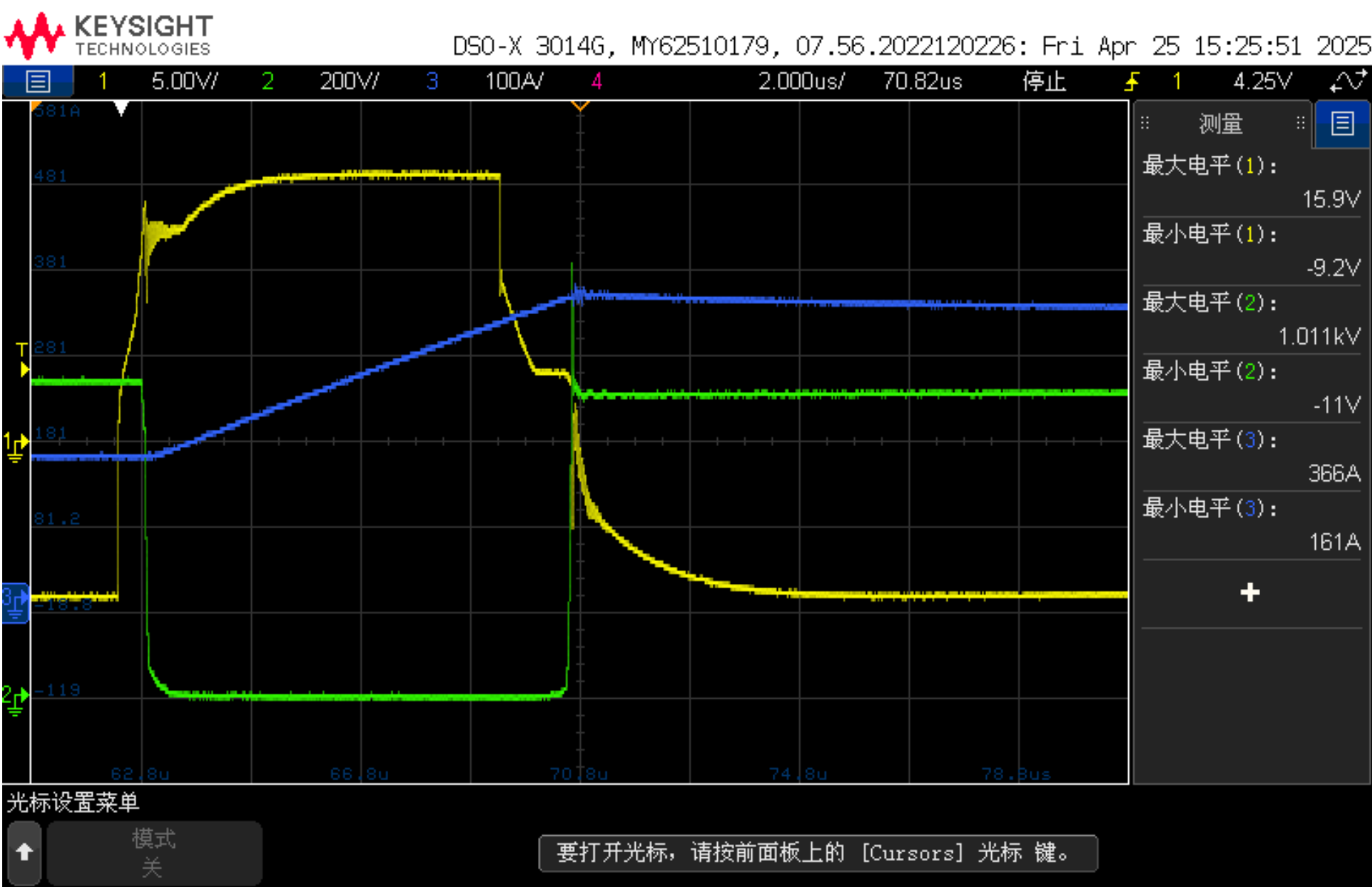


Compared with the previous IGBT4 solution, the H7 module shows significantly reduced conduction and switching losses over the full power-factor range.

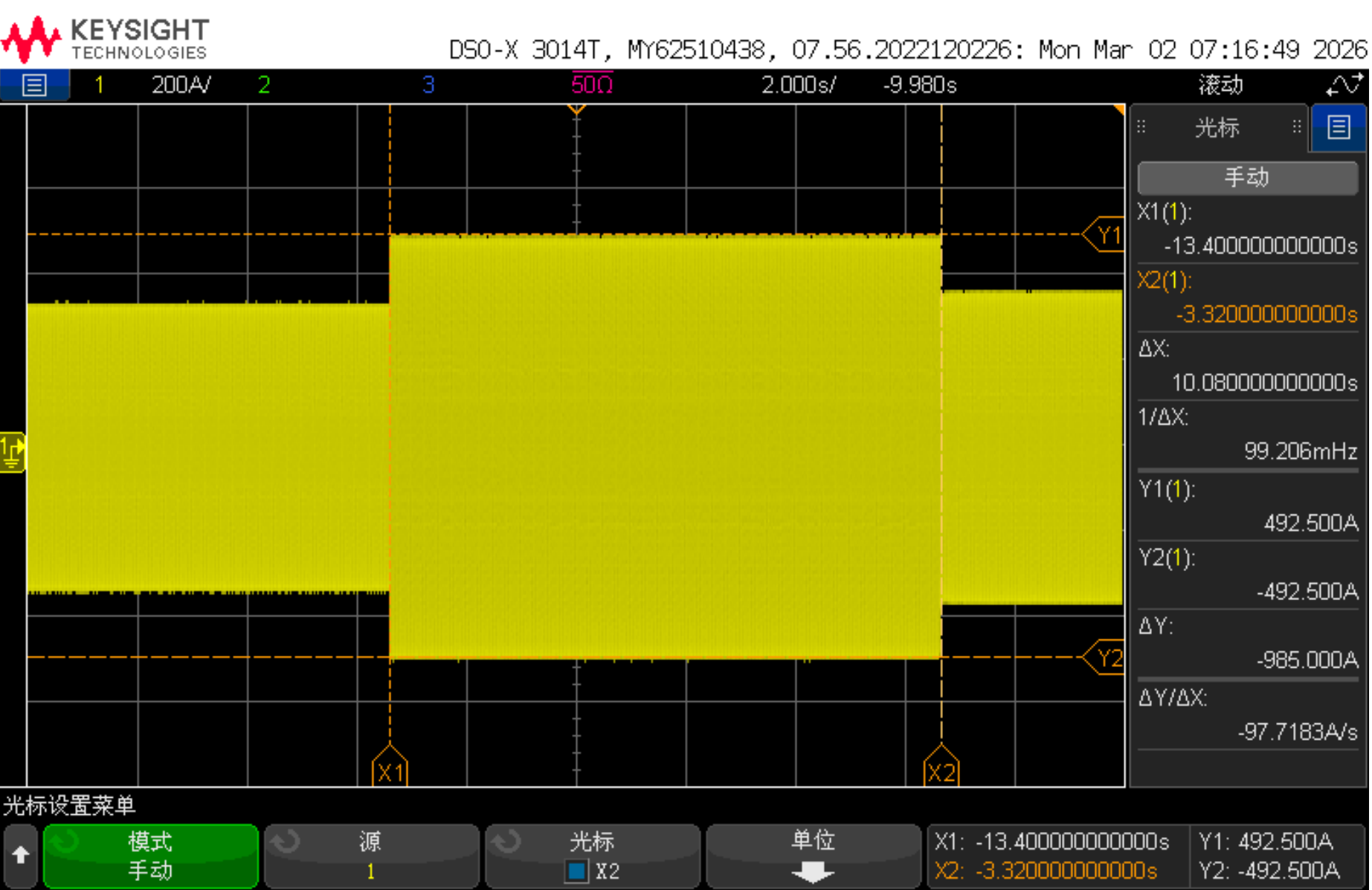
Design optimization and system testing



Double-pulse test with a low-current driver IC



Double-pulse test with 1ED3011



Overload test for Grid-forming

Key Results

- Performance Improvements
- 25% lower VCEsat
 - 45% lower switching losses
 - Up to 0.4% system efficiency improvement
 - Low-inductance EasyPACK™ 3B package
 - 150% overload capability for 10 s
 - Suitable for 1500 V String PCS and C&I ESS

Conclusion

The EasyPACK™ 3B module with 1200 V TRENCHSTOP™ IGBT7 H7 enables lower losses, higher efficiency, and robust overload performance for grid-forming energy storage systems. Combined with a low-inductance package and 2 kV SiC neutral balancing solution, it provides a reliable and cost-effective platform for string and C&I ESS applications.