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STMicroelectronics expands 800 VDC AI datacenter power conversion portfolio with new 12V and 6V architectures in collaboration with NVIDIA

- 12V, 6V solutions complement ST's existing 800 VDC to 50V stage solution and are highlighted during NVIDIA GTC 2026
- ST now provides a complete portfolio for the 800 VDC power distribution inside gigawatt-scale compute infrastructure
- Solutions leverage ST power, analog and mixed-signal with custom design at both chip and package levels

Geneva, Switzerland — March 17, 2026 — STMicroelectronics (NYSE: STM), a global semiconductor leader serving customers across the spectrum of electronics applications, today announced the expansion of its 800 VDC power conversion portfolio with two new advanced architectures: 800 VDC to 12V and 800 VDC to 6V. Developed according to the [NVIDIA 800 VDC reference design](#), these new power conversion stages complement the previously introduced 800 VDC to 50V solution. The rapidly emerging 800 VDC data center architecture enables higher energy efficiency, reduces power losses, and supports more scalable, high compute density, infrastructure for hyperscalers and AI compute.

“As AI infrastructure compute scale continues to expand fast, it requires higher voltage distribution and greater density, which can only be achieved with system-level innovation for each of the different AI server form factors,” said Marco Cassis, President, Analog, Power & Discrete, MEMS and Sensors Group Head of STMicroelectronics’ Strategy, System Research and Applications, Innovation Office at STMicroelectronics. *“With these new converters for 800 VDC power distribution, ST brings a complete set of solutions to support the deployment of gigawatt-scale compute infrastructure with more efficient, scalable, and sustainable power architectures.”*

A complete 800 VDC ecosystem for the different AI server form factors

The expansion to 12V and 6V output stages reflects the industry move toward different server architectures requiring different power delivery topologies depending on GPU generation, server height, form factor, and thermal envelope for large-scale training clusters, inference farms, and high-density AI infrastructures. The 50V, 12V, and 6V intermediate DC buses will all coexist in AI data centers depending on rack density, GPU configuration, and cooling strategy.

The new 800 VDC to 12V converter enables high-efficiency distribution from rack-level power shelves directly to the voltage domains that feed advanced AI accelerators.

The new 800 VDC to 6V path allows OEMs to reduce the number of conversion stages and move the 6V bus closer to the GPU. This reduces copper usage, minimizes resistive losses, and improves transient performance, a critical differentiator for large-scale training clusters.

Back in October 2025, STMicroelectronics introduced a fully integrated prototype power-delivery system showcasing a compact GaN-based LLC converter operating directly from 800 V at 1 MHz with over 98% efficiency and exceptional power density in a smartphone-sized footprint exceeding 2,600 W/in³ at 50 V.

The three solutions combine ST technologies across power semiconductors (silicon, SiC, GaN), analog and mixed-signal, and microcontrollers.

Technical highlights of the new 12V and 6V architectures

Direct 800 VDC to 12V high-efficiency conversion:

- Eliminates the traditional 54V intermediate stage, reducing conversion steps and system-level losses.
- Enables higher rack-level efficiency, lower copper usage, and simplified integration for future GPU generations.
- Includes newly developed high-density power delivery board (PDB) achieving efficiency targets exceeding the sum of previous two-stage conversion paths.

800 VDC to 6V architecture for GPU-nearing conversion:

- Is designed for system builders who require power stages closer to the GPU, minimizing IR drop and improving response under fast load transients.
- Completes the topology portfolio for servers with ultra dense GPU configurations.

Additional technical information at <https://blog.st.com/800-v-hvdc-data-center/>

About STMicroelectronics

At ST, we are 48,000 creators and makers of semiconductor technologies mastering the semiconductor supply chain with state-of-the-art manufacturing facilities. An integrated device manufacturer, we work with more than 200,000 customers and thousands of partners to design and build products, solutions, and ecosystems that address their challenges and opportunities, and the need to support a more sustainable world. Our technologies enable smarter mobility, more efficient power and energy management, and the wide-scale deployment of cloud-connected autonomous things. We are on track to be carbon neutral in all direct and indirect emissions (scopes 1 and 2), product transportation, business travel, and employee commuting emissions (our scope 3 focus), and to achieve our 100% renewable electricity sourcing goal by the end of 2027. Further information can be found at www.st.com.

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