



## PRESS RELEASE

### **ASE Introduces powerSiP™ for Transformative Power Delivery That Increases Power Efficiencies by 50% in AI and Data Center Applications**

SUNNYVALE, Calif., May 29, 2024 – Advanced Semiconductor Engineering, Inc. (ASE), a member of ASE Technology Holding Co., Ltd. (NYSE: ASX, TAIEX: 3711), today announced that it has introduced powerSiP™, a transformative power delivery platform designed to reduce signal and transmission loss while addressing current density challenges. ASE's powerSiP™ platform today enables a vertically integrated multi-stage voltage regulator module (VRM) for higher system efficiency and lower power consumption and delivers a reduced footprint that is 25% smaller when compared to traditional side-by-side configurations. The powerSiP™ technology innovation allows a 50% increase in current density from 0.4A/mm<sup>2</sup> to 0.6A/mm<sup>2</sup> and a decrease in routing power loss from 12% to 6%, signifying a 50% reduction over a side-by-side configuration. With the Artificial Intelligence (AI) market size, reach, and impact still in early stage, ASE is innovating to meet related data center requirements, performance expectations, and power improvements, offered through powerSiP™.

The introduction of powerSiP™ corresponds with the emergence of compute power and cooling as the two most energy-intensive processes within data centers today. According to the International Energy Agency (IEA), data centers consumed 460 terawatt-hours (TWh) in 2022, representing 2% of all global electricity usage, with this set to rise to 1,000 terawatt-hours (TWh), or 8%, by 2026. This surge in energy consumption is being fueled by the ongoing proliferation of AI, which relies on powerful, yet power-draining, CPU, GPU, memory and disk systems for function, performance, and lowest possible latency. Costs have become prohibitive, and demand

for innovation to counteract extreme inefficiencies in power conversion and cooling has never been greater.

Today, high voltage power delivery is brought into modern data center facilities, and it is converted to lower voltage in multiple stages ahead of microprocessor utilization. Each power conversion stage in the data center power delivery network (PDN) has high efficiency in the mid to high 90% range. However, at higher power levels, the routing losses in the path from the last DC-to-DC converter on the power delivery platform to the microprocessor start to dominate and can impact overall system efficiency. Typical systems use a single stage voltage reduction from the platform to the microprocessor and bring in power at a higher voltage to the microprocessor using the VRM. ASE's powerSiP™ platform can help customers enable a multi-stage VRM-based PDN solution.

“The powerSiP™ platform provides an option to place the voltage regulator directly under the SoC and chiplets, and vertical integration allows a large current supply at a short power delivery path,” said YE Yeh, Vice President of Research & Development, ASE. “This successfully reduces impedance in the power delivery network thus improving system performance and functionality while simultaneously increasing overall efficiency and power density.”

“System efficiency is a top priority for architects, particularly as the world explores ways to address the growing global demand for electricity at the same time as driving down carbon emissions,” commented Patricia MacLeod, Senior Director of Corporate Communications & Industry Partnerships at ASE. “Our powerSiP™ platform signifies another step forward for ASE in our endeavor to help enable more efficient power solutions and greener data center energy utilization that aligns with our corporate commitment to sustainability.”

“AI is permeating our lives incrementally and profoundly reshaping knowledge work, business function, and human experience, supported by powerful high performance computational systems that are being optimized for efficiency within today's data centers,”

added Yin Chang, ASE's Senior Vice President of Sales & Marketing. "Advanced packaging is playing a pivotal role, and this is the impetus behind the introduction of our powerSiP™ platform to support our customers. Offering unique advanced packaging structures and an innovative technology roadmap, powerSiP™ is evolving to deliver crucial data center system requirements including power and performance efficiencies for AI and HPC applications."

Available now, ASE's powerSiP™ is a transformative power delivery platform that will expand in alignment with industry roadmaps and application requirements.

### **Supporting resources**

- For more about PowerSiP™, please visit: <https://ase.aseglobal.com/powersip/>
- Visit the ASE Exhibition at ECTC 2024 in Denver, CO, May 28-29, 2024
- Follow us on our LinkedIn page for targeted updates and announcements @aseglobal
- Follow us on Twitter @aseglobal

### **About ASE, Inc.**

ASE, Inc. is the leading global provider of semiconductor manufacturing services in assembly and test. Alongside a broad portfolio of established assembly and test technologies, ASE is also delivering innovative VIPack™, advanced packaging, and system-in-package solutions to meet growth momentum across a broad range of end markets, including AI, Automotive, 5G, High-Performance Computing, and more. To learn about our advances in SiP, Fanout, MEMS & Sensor, Flip Chip, and 2.5D, 3D & TSV technologies, all ultimately geared towards applications to improve lifestyle and efficiency, please visit: [aseglobal.com](http://aseglobal.com) or follow us on LinkedIn & X: @aseglobal.

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