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## ***Embedded Silicon Capacitors Support Power Integrity Needs Of Processors***

[Empower Semiconductor](#), has announced three embedded silicon capacitors (ECAPs) designed to meet the power integrity demands of next-generation AI and high-performance computing (HPC) processors. The ECAP portfolio includes the EC2005P, with 9.34- $\mu$ F capacitance in a 2-mm x 2-mm package; the EC2025P, offering 18.68- $\mu$ F capacitance in a 4-mm x 2-mm package; and the EC2006P, providing 36.8- $\mu$ F capacitance in a 4-mm x 4-mm form factor.

As AI processors push the limits of performance, power delivery has emerged as a critical constraint. Achieving the required power integrity for extreme current densities and ultrafast transient response is no longer realistic with board-level mounted components; embedding capacitors into the processor substrate is now essential (see the figure).

Empower's ECAP solutions feature ultralow equivalent series inductance (ESL) and equivalent series resistance (ESR). According to the vendor, the wide-bandwidth ultralow impedance delivers optimal power delivery network (PDN) performance and significantly improves overall power integrity. Each device has been engineered from a packaging perspective to meet the strict dimensional and tolerance requirements necessary for embedded deployment within AI and HPC processors.

The EC2005P, EC2025P and EC2006P ECAPs are available in mass production now. For more on the ECAPs, see the [brochure](#) or the company's [website](#).



*Figure. "Our customers are under intense pressure to deliver greater performance with tighter power margins," said Steve Hertog, senior vice president worldwide sales, Empower Semiconductor. "These new ECAPs are a proven and practical way to deploy higher capacitance density into a smaller footprint right at the package level of the AI processor."*