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pSemi, a Murata Company, Unveils Breakthrough Power Solutions for FastCharging Mobile Devices and NextGeneration Humanoid Robotics at APEC 2026

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[pSemi](#), a global leader in capacitor switching power architectures and Murata company, today made two major product announcements—the PE26100 multi-level buck converter for direct charging applications and the PE25304 advanced integrated charge pump switching-capacitor power module—that promise to revolutionize the mobile battery charging industry and enable high-efficiency power conversion to humanoid robotic, dexterous-hand power applications.

pSemi has introduced an expanded application focus for its highperformance PE26100 multilevel buck converter, now optimized for main, direct battery charging in nextgeneration smartphones, tablets, and compact mobile devices. Building on its proven leadership in high efficiency power delivery, the PE26100 delivers fastcharging capability, high output current, up to 6A, and exceptional thermal performance in an ultrathin form factor ideal for spaceconstrained consumer electronics.

PE26100's architecture and performance characteristics make it uniquely suited for today's global migration toward highpower USB Power Delivery (USBPD) and programmable power supply (PPS) fastcharging ecosystems. Supporting 4.5V to 18.5V input, the device enables 4level buck mode for higher USBPD voltage inputs and 3level buck mode engages for midtolow input voltages. In applications using USB PPS, the PE26100 can also operate as a fixedratio, capacitordivider charge pump, offering divider ratios of 2:1 and 3:1 depending on programmed input voltage.

The PE25304: A Versatile Power Solution for Emerging Robotics and Mechatronic Systems

pSemi has also announced the release of the PE25304, an advanced integrated charge pump switchingcapacitor power module engineered to deliver unprecedented efficiency and performance in spaceconstrained, highpower applications. Designed to divide input voltage by four, the PE25304 is purposebuilt for 48V input architectures, with a wide operating range from 20V to 60V, making it a versatile power solution for emerging dexterous hand robotics and mechatronic systems.

The PE25304 comes in an ultra-low-profile package (2mm) and can deliver up to 72W of output power. It also achieves an exceptional 97% conversion efficiency, significantly reducing power loss and thermal buildup—key advantages in tightly packed electromechanical assemblies.

Beyond robotics, the PE25304 is suitable for drones, medical devices, embedded AI modules, industrial automation systems, and anywhere designers need efficient high-voltage stepdown conversion without compromising system size or thermal performance.

“By bringing together fastcharging innovation and advanced highvoltage conversion, we’re delivering solutions that open new doors for designers across mobile, robotics, AI, and more,” says Steve Allen, vice president of power, pSemi. “Our customers are designing some of the most advanced systems in the world, and they need power solutions that deliver uncompromising efficiency performance in the smallest possible footprint. The PE26100 and PE25304 were built for exactly that mission.”

In addition to the PE26100 and PE25304 products, the following solutions will also be showcased at APEC 2026:

- Two-stage Buck Regulators Powering optical transceiver, sub 10nm, low output voltage core applications. Ideal for low profile (~1.2mm) applications for under-side PCB placement to reduce board area and reduce power losses. Latest products include: PE24111: 3.3Vin, capable of 20A output delivery to low voltages in the range of 0.35-0.85V output.
- Ultra-high efficiency switching capacitor, charge pump divider products for intermediate bus power conversion. Products include PE25213 supporting divide by two and three ratios at 10A output current with efficiencies up to 99%. Products can significantly improve overall system efficiency and extend battery life.
- Two-stage boost LED drivers, charge pump followed by a boost regulator and LED drivers in a single package. Products include PE23108, an 8-channel driver for high efficiency, low-profile panel displays.

To see pSemi’s latest power-focused products in action, please visit the Murata Electronics Exhibit (booth #833) at APEC in San Antonio, Texas, on March 22 - 26, 2026.

Doug Osterhout, Sr. Staff Systems Engineer, pSemi, will also present more details regarding the world’s first 4-level buck converter during a presentation at APEC on Wednesday, March 25, 2026, from 12:00 p.m. – 12:30 p.m. CST in Expo Theatre 1.

For more product information, please visit <https://psemi.com/products/power-management/> or contact sales@psemi.com.

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AI (Artificial Intelligence), Battery, Battery Management, Embedded Design, Industrial Automation, Manufacturing, PCB, Power Electronics, Robotics, Semiconductors

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