

Dual MOSFET Provides Precise Balancing Of 3-V+ Supercapacitors

[Advanced Linear Devices'](#) ALD910030 is an addition to the company's Supercapacitor Auto-Balancing (SAB) MOSFET family. According to the vendor, this dual MOSFET provides unmatched auto-balancing capabilities and power management for supercapacitors ranging from 2.8 V to 3.3 V. The ALD910030 uses virtually no power for cell balancing and prevents most catastrophic failures. The chip enhances performance across various sectors, including utility boxes, backup power systems, industrial applications, uninterruptible power supplies, renewable energy systems and consumer electronics.

Traditionally, widely used supercapacitors had a voltage rating of 2.7 V to 3.0 V. However, 3.3-V supercapacitors are increasing the demand for advanced voltage and leakage current balancing schemes. ALD's SAB MOSFET addresses this need by precisely and effectively balancing series-connected supercapacitors. By dissipating near-zero leakage currents, this chip practically eliminates excessive power usage, making it an energy-efficient solution for a wide range of applications. Each part is precision factory-trimmed according to individual voltage specifications (see the figure).

Supercapacitors are commonly connected in series to reach targeted voltage levels. For instance, four 3.3-V-rated supercaps can be stacked for applications that need a standard 12-V direct current supply voltage. This configuration will produce 13.2 V, satisfying the requirements of a 12-V power supply while allowing for potential fluctuations.

The ALD910030SALI is packaged in an 8-pin SOIC. For more information, see the Precision Supercapacitor Auto Balancing (SABTM) MOSFETs [page](#). The part is available through [Digi-Key](#) and [Mouser](#), starting at \$4.43 per unit for quantities of 50.

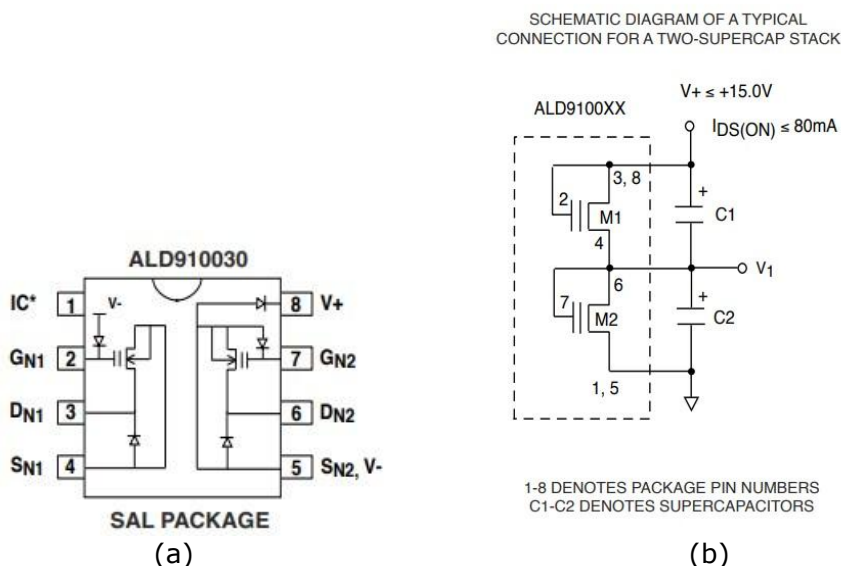


Figure. "We are proud to add a product to our SAB MOSFET family that provides power management for 3-V rated or higher supercapacitors while consuming near-zero power," said Robert Chao, president and founder of ALD. With its unique electrical characteristics, the ALD910030 ensures precise monitoring and control of voltage and leakage current for each supercapacitor in a series-connected stack. The chip exponentially adjusts drain currents to effectively balance voltages, safeguarding against voltage runaway power fluctuations. The MOSFET operates within a temperature range from -40°C to +85°C. An internal diagram (a) and application diagram (b) are shown here.