A plug and play PCB solution for automatically balancing supercapacitors

Actual board size
0.6 x 1.6 inches
Features & Benefits

- Single or pair of dual or quad SAB MOSFET devices installed per board.

- Two dual and one quad SAB MOSFET can also be installed in the same PCB. The dual chips are connected in series.

- The high charging and discharge supercapacitor load currents do not pass through the semiconductor chips.

- Each SABMB16 PCB can be cascaded to the next SABMB16 PCB to form a series chain to parallel a series connected chain of supercapacitor cells.

- Optional reverse biased external power diodes can be installed where necessary across each SAB MOSFET.

- No user circuit design or hardware engineering is necessary.

- Cost savings alternative to op-amp based balancing schemes.
- Little or no additional power dissipation.

- Protects supercapacitors from premature failure due to over-voltage and over-current conditions.

- Rated for RoHS compatible/industrial temperature range of -40°C to +85°C

- Long life battery operated applications where capacitances ranging from 0.1 F to more than 3000 F are required.

- Simple (auto-balancing) solution and implementation for protecting supercapacitors
Universal plug & play PCB family designed to automatically balance supercapacitors with ALD SAB MOSFETs for prototyping, evaluation and production.

SABMB16 PCBs balancing virtually any size supercapacitor

Blank version made with RoHS compliant FR4 material ready for mounting up to two ALD SAB MOSFETs.

Four standard SABMB boards are also available with populated installed and fully tested SAB MOSFETs, each capable of automatically balancing up to 4 supercapacitors.

Ideally suited for balancing series stacked networks ranging from two to more than a hundred supercapacitors.
Higher Voltage Cell Stacks

ALD910026
STACK 1
V+ - VA ≈ +5.0V

V+ ≈ 10.0V

ALD8100XX
STACK 1
V+ - VA ≤ +15.0V

V+ ≤ +30.0V
(2 x 15.0V)

IDS(ON) ≤ 80mA

ALD910026
STACK 2
VA = +5.0V

V_A ≈ 5.0V

ALD8100XX
STACK 2
VA ≤ +15.0V

1, 5, 6, 7, 8, 16
Basic connection diagram for use with 3 SAB MOSFET Devices subject only to a maximum voltage per board of 15V
4-Cell MOSFET/Supercapacitor

Diagram of MOSFETs connected in series with capacitors:
- ALD810025
- V+ = 10.0V
- V1 ≈ 7.5V
- V2 ≈ 5.0V
- V3 ≈ 2.5V
More Higher Voltage Cell Stacks
Some Other Configurations

ALD8100XX

V+ ≤ +15.0V
IDS(ON) ≤ 80mA

ALD810025

V+ = 10.0V

V1 ≈ 5.0V
Benefits

• No clocking or dead times
• Fast response time
• Continuous auto balancing --- no sleep modes
• Wide time constant ranges, from superfast to very slow
• From microseconds to days
Breakthrough for leakage imbalances

- Addresses supercap balancing problem
- Lower cost and board space
- Advanced, precise and yet simple to use
- Reduces or eliminates leakages
- No other components needed
Auto Balancing SAB MOSFETS Provide:

- Zero power in steady state mode
- Always active
- Ability to balance multiple components in one package
- Easily stackable to higher voltages
- Fully automatic regulation and control
Breakthrough in Supercap Balancing methods
Better in function, cost and leakages
Fully automatic operation
Simple to apply and use
Precision MOSFET Array technology
Proven manufacturing technology