

July 13, 2023

Maxell, Ltd.

Development of “Air Patch^{*1} Battery II” thin high-capacity flexible battery Twice the capacity of existing products^{*2} enables application in a wider range of fields



Air Patch Battery II
(left: AP II 112530, right: AP II 115055)



Air Patch Battery II (AP II 112530)
on a finger (for scale)

Maxell, Ltd. (President and Representative Director: Keiji Nakamura / hereinafter “Maxell,”) has developed high-capacity products with twice the capacity^{*2} of the current “Air Patch Battery II” series of high-output^{*3} thin flexible batteries, which can be used for long periods^{*4} with consideration for safety and environmental impact.

The “Air Patch Battery II”, which Maxell announced on May 19, 2022, is suitable for logistical management tags that manage item location information, usage status, temperature, humidity, etc., in addition to medical/healthcare patches used for monitoring biological information such as body temperature and blood glucose levels, as well as administering drugs such as insulin and pain relievers. A doubling of the high capacity of existing products^{*2} is accomplished by combining and further evolving safety technology with the battery material and manufacturing technology that Maxell has cultivated over half a century through button, coin, small laminated batteries for IoT and wearable devices. Adding this battery to the lineup can support more information monitoring and long-term use.

“Air Patch Battery II” is currently being shipped for samples, and mass production is planned for fiscal 2024.

Maxell will continue to evolve its technologies for safety and environmental impact reduction, while working on the development of safe, secure, high-performance batteries.

*1 Air Patch: Registered trademark of Maxell, Ltd. in Japan. Registration No. 6142395

*2 Twice the capacity of existing products / high-capacity products with twice the capacity / the high capacity of existing products: AP II 112530 (with twice the capacity of existing product AP II 082530), and AP II 115055 (with twice the capacity of existing product AP II 085055). AP II was announced on May 19, 2022 through the press release “Maxell Adds new lineup to Air Patch Battery for Medical, Healthcare Services, and

Logistics.” (https://ssl4.eir-parts.net/doc/6810/ir_material4/185935/00.pdf)

*3 High output: When AP II 112530 is discharged with a current of 50mA (maximum discharge peak current) for 10msec at 3sec intervals at 20 °C. This depends on usage conditions and battery product name (standard capacity).

*4 used for long periods: 1 year of use, when AP II 112530 is used with an average current consumption load of 4μA at 20 °C. This depends on storage conditions, usage conditions, and battery product name (standard capacity).

Trademark

Air Patch is a registered trademark of Maxell, Ltd. in Japan. Registration No. 6142395

Product details

Air Patch Battery

https://biz.maxell.com/en/primary_batteries/air_patch_battery.html

Contacts

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This document was distributed in Japan on 13th July 2023 by Maxell, Ltd. Air Patch II complies with current Japanese regulations but Maxell Ltd cannot guarantee it complies with regulations outside of Japan.

Appendix

Features of Air Patch Battery II

1. Does not use hazardous or dangerous materials.
Mercury^{*1}, Lead^{*1}, Cadmium^{*1}, Lithium metal^{*2}, Potassium hydroxide (strong alkali)^{*3}, and flammable organic solvents have not been used.
2. Thin & flexible
0.55mm, 0.8mm and 1.1mm thickness batteries are available for thin devices and curved surfaces.
3. Disposable^{*4}
The battery can be disposed after use.
4. High capacity, high energy-density^{*5}
More than twice to five times as high as a manganese-zinc sheet battery with typical aqueous electrolyte solution.
5. Suitable for long-term use^{*6}
6. High output^{*7}
Operable under heavy loads and at low temperatures.

Specifications of the Air Patch Battery II

	Air Patch Battery II				
Model	AP II 052530	AP II 082530	AP II 112530	AP II 085055	AP II 115055
Dimensions (mm)	25×30×0.55	25×30×0.8	25×30×1.1	50×55×0.8	50×55×1.1
Nominal Capacity (mAh)	5	18	36	150	300
Nominal voltage (V)	1.5				
Energy density (Wh/L)	18	45	65	102	149
Remarks			Newly developed		Newly developed

*1 Mercury, lead, cadmium: RoHS regulated substances

*2 Lithium metal: Japan Fire Service Act Category III, spontaneously combustible substances and water-reactive substances, alkali metals

*3 Potassium hydroxide (strong alkali): Japan Poisonous and Deleterious Substances Control Law, deleterious substances

*4 Disposable: Please dispose of in line with the appropriate local and/or national guidelines.

*5 High energy density: Twice the capacity of existing “Air Patch Battery II” and more than twice to five times as high as a manganese-zinc sheet battery with typical aqueous electrolyte solution. As of June 2023. According to a survey by Maxell. Volumetric Energy Density

*6 Long-term use: 1 year of use, when AP II 112530 is used with an average current consumption load of 4μA at 20 °C. This depends on storage conditions, usage conditions, and battery product name (standard capacity). The period of time varies in accordance with storage conditions, conditions of use, and nominal capacities.

*7 High output: When AP II 112530 is discharged with a current of 50mA (maximum discharge peak current) for 10msec at 3sec intervals at 20 °C. This depends on usage conditions and battery product name (standard capacity).