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## Launch of Evaluation Board for SLB Series of Small Lithium-Titanate Rechargeable Batteries

NICHICON CORPORATION

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NICHICON CORPORATION will begin marketing evaluation boards to accelerate the design process for applications where the SLB series of small lithium-titanate rechargeable batteries are to be used. The SLB series has become a top-selling product in the small rechargeable battery market, having shipped over 50 million units in total since its launch in 2019.

In order to promote carbon neutrality, disposable non-rechargeable batteries are being replaced by rechargeable batteries paired with environmentally friendly power generation from sustainable sources. The evaluation board allows for easy evaluation of power circuits incorporating the SLB series and various environmental power generation devices. We will introduce this product at Sensors Converge 2023, a trade show specializing in sensors and applied technologies, to be held in Santa Clara, California (US), from Tuesday, June 20 to Thursday, June 22.

### **Overview and Development Background**

Long-life power supplies are essential for the development of IoT devices that require maintenance-free operation. Replacing the conventional non-rechargeable batteries with a power supply that combines an environmentally friendly power generation device and a rechargeable battery requires significant design work. Using this evaluation board makes it possible to easily examine the use of power supplies using environmentally friendly power generation.

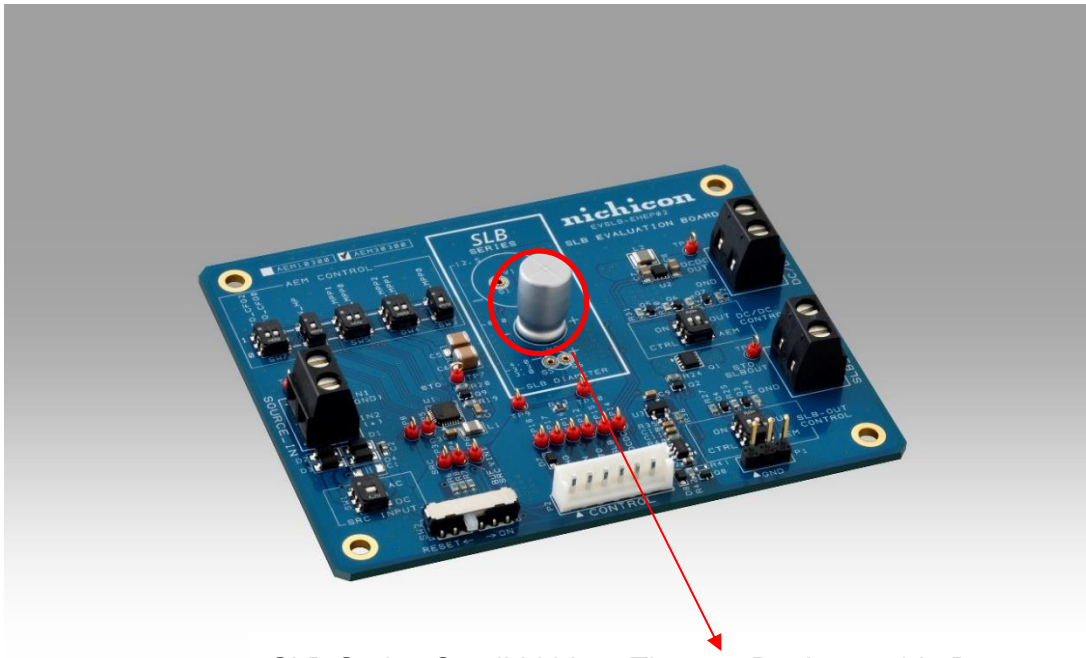
## Features

The evaluation board can be used to easily configure a power supply using environmental power generation by inserting the SLB series directly into the board and connecting it to a power generation device such as a solar power system. The built-in power management IC (PMIC) allows power collection efficiency to be optimized according to the power generation device used. The PMIC is equipped with two power supply outputs, which can be used in different ways according to the application.

We are able to propose a very low-loss solution by using the low-power-consumption AEM series from Belgium-based e-peas for the PMIC and the MAX1722x series from Analog Devices, Inc., also known for its low power consumption, for the output DC/DC converter.

## Main Specifications

- Environmental power generation element connection terminal: 1 system  
DC/AC switchable, Input voltage range: DC: 4.5V or less, AC: +/- 4.5V peak or less
- Power supply output terminal: 2 lines
  - (1) SLB DC output (2.8V to 1.8V)
  - (2) DC/DC converter output (factory set voltage: 3.3V)  
Can be set in the range of 3.0V to 5.0V by replacing resistors
- Maximum power point tracking (MPPT) function (switchable)  
Operating voltage: 7-mode release voltage ratio preset + input impedance adjustment mode  
Sampling time/period: 4 preset modes
- SLB charge/discharge control threshold voltage setting (switch-type)  
2 preset modes + custom setting mode
- Output circuit enable setting (switch-type)  
4 modes (always on / PMIC control / external control / always off)
- One-touch connection/disconnection of SLB series is possible (no soldering required)
- Built-in charge/discharge stop circuit at high temperatures
- External control terminal
- Circuit configuration allows power consumption customization according to required function
- Test pin placement on main signal lines
- Product dimensions: 90mm x 70mm x 12mm



SLB Series Small Lithium-Titanate Rechargeable Battery

Evaluation Board for SLB Series of Small lithium-titanate rechargeable batteries:  
**EVSLB-EHEP02A**

About NICHICON CORPORATION:

NICHICON is a global electronic components manufacturer that develops, manufactures, and sells aluminium electrolytic capacitors, film capacitors, and circuit products. The Company actively pursues corporate strategies in four market segments: energy, the environment, and medical equipment; automotive and vehicle-related equipment; white goods and industrial inverter equipment; and information and telecommunications equipment.

About "SLB" series

"SLB" series are "Small Rechargeable Batteries" suitable for IoT and wearable applications which utilize lithium titanate oxide (LTO) for the negative electrodes, realizing

- (1) Long life of more than 25,000 charge/discharge cycles
- (2) High-density input/output approaching electric double layer capacitors (EDLCs)
- (3) Capable of charging at low rate using energy harvesting
- (4) Low temperature characteristics enabling operation at -30 °C
- (5) Extremely low possibility of explosion or ignition even when used under harsh conditions

## SPECIFICATION

Specification

Part number	SLB03070LR35	SLB03090LR80	SLB04255L040	SLB08115L140	SLB12400L151	
						
Nominal voltage	2.4V	2.4V	2.4V	2.4V	2.4V	
Voltage range	2.8V - 1.8V	2.8V - 1.8V	2.8V - 1.8V	2.8V - 1.8V	2.8V - 1.8V	
Max.charge / discharge current	7mA	16mA	80mA	280mA	3000mA	
Nominal capacity	0.35mAh	0.8mAh	4mAh	14mAh	150mAh	
ESR	Max. 12 ohm	Max. 8 ohm	Max. 0.6 ohm	Max. 0.24 ohm	Max. 0.06 ohm	
Temperature range	-30°C ~ +60°C	-30°C ~ +60°C	-30°C ~ +60°C	-30°C ~ +60°C	-30°C ~ +60°C	
Energy density	17Wh/L	25Wh/L	30Wh/L	58Wh/L	73Wh/L	
Weight	0.12g	0.16g	0.75g	1.2g	9.0g	
Size	Diameter	3.0mm	3.3mm	4.0mm	8.0mm	12.5mm
	Height	7.0mm	9.0mm	25.5mm	11.5mm	40.0mm
Data sheet						

<https://www.nichicon.co.jp/english/products/slb/lineup/>

### Inquiries

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