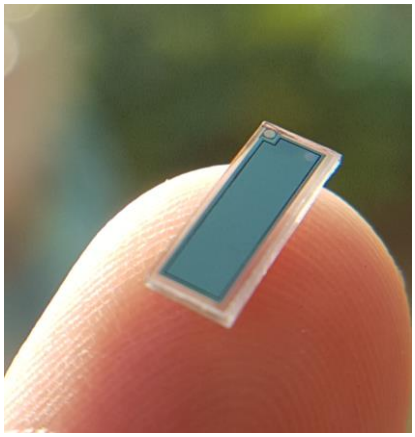
Stereax® M50 – Miniature Solid State Battery for MedTech

Features

- Dedicated to the Needs of MedTech
- Ultra-Thin Form factor
- Miniature Footprint
- Stackable for Increased Energy Density
- Customisable Shape and Size
- All Solid-State Construction
- Fast Charge
- Thousands of Cycles
- Low Self-discharge
- No Free Lithium



Physical Properties

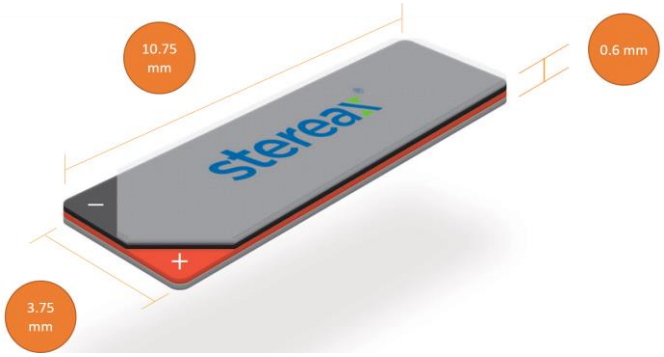
- Footprint: 10.75 x 3.75 mm
- Thickness [a]: 0.6 mm
- Mass: 0.1 g
- Operating temperature: -20°C to +80°C

Electrical Properties at 37°C

- Output Voltage (nominal): 3.4 V
- Capacity (nominal): 50 µAh
- Charging Source: 4.0V
- Charging time to 80%: < 10 minutes
- Charge/discharge cycles [b]: 10,000
- Peak current [c]: 1 mA

a: Thickness value includes substrate. Thinner substrates are available.

b: 5% DoD; c: 0.5 ms, 3 pulses every second.



General Description

The Stereax® M50 is Ilika's first solid state battery designed especially for the need of MedTech. The M50 is Ilika's smallest form factor solid state battery to date. At less than 1mm thick, it is ideal for medical applications where size and safety are critical. The M50 is built on Stereax low leakage, reliable technology, but is up to 70% smaller than other batteries in the range. The M50 is customizable to a wide range of shapes and sizes, responding to the energy density and cost constraints of the target application. Devices implanted using our safe technology benefit from a battery life of up to 10 years.

The Stereax technology platform is developed by Ilika who licenses its IP portfolio and know-how based on deposition processes and materials to systems and components OEMs and manufacturers. This format allows Ilika to respond to partners' requirements more efficiently than manufacturing standardized product lines, for an optimal outcome and greater flexibility in terms of shape, capacity, life cycle …

Applications

- Medical implantable devices
- On-the-body devices
- Wearables
- Back-up electronics
- IoT sensors

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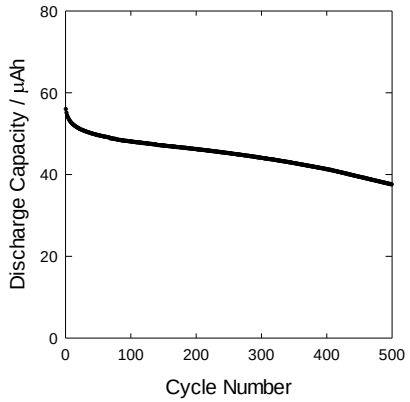
Specifications

Parameter	Test conditions	M50 Specification
Rated Capacity	1 C between 3.0 and 4.0 V	50 µAh
Nominal Voltage	37°C	3.4 V
Operating Voltage	37°C	3 – 4 V
Peak Current	0.5 ms, 3 pulses every second, 37 °C	1 mA
Maximum Continuous Current	37°C	0.5 mA
Standard Discharge Current	37°C	50 µA
CC/CV Charging	CC Phase	50 µA
	Voltage for CV Phase	4 V
Constant Voltage Charging	4V; Time to 80% of nominal capacity	< 10 minutes
Operating Temperature		-20°C to +80 °C
Cycle life	5% depth of discharge at standard discharge current; 80% of rated capacity remaining; 37°C	10,000 cycles
	100% depth of discharge at standard discharge current; 80% of rated capacity remaining; 37°C	450 cycles
Internal Resistance	Cycle 1 (25 °C)	700 Ω

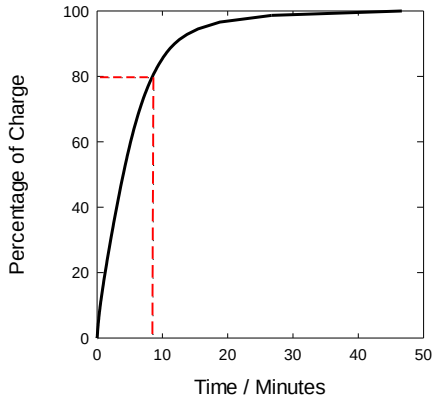
Note: All specifications contained within this document are subject to change without notice.

Typical Characteristics (all 37°C)

Cycle Life



Rapid Charging



Discharge Profiles