

Stereax® M250 Rechargeable Solid State Battery: 250 μ Ah, 3.5 V

Features

- ▲ Thin Form factor
- ▲ All Solid State Construction
- ▲ Fast Charge
- ▲ High Current Pulses
- ▲ High Energy Density per Footprint
- ▲ Thousands of Cycles
- ▲ Low Self-discharge
- ▲ High Operating Temperatures
- ▲ No Free Lithium: Moisture Resistant
- ▲ Eco-friendly

Physical Properties

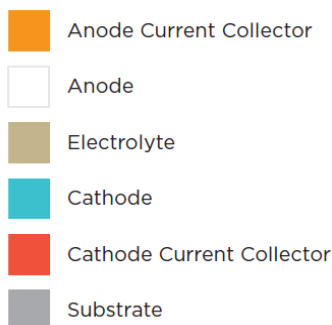
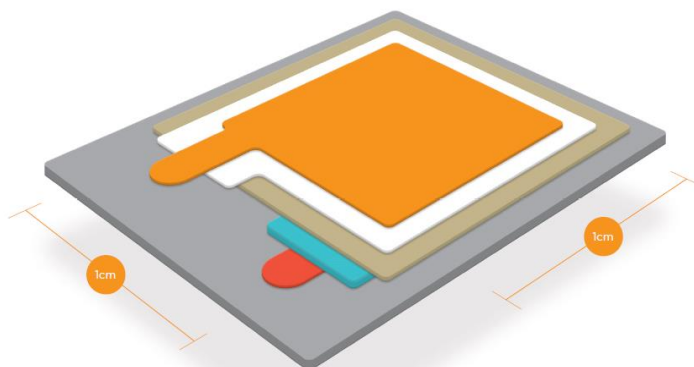
Active Area:	10 mm x 10 mm
Thickness ^a :	< 750 μ m
Mass:	270 mg
Operating temperature:	-20°C to 100°C

Electrical Properties

Output Voltage (nominal):	3.5 V
Capacity (nominal):	250 μ Ah
Charging Source:	4.0 V
Charging time to 90%:	10 minutes
Charge/discharge cycles ^b :	> 5000
Peak current:	5 mA

Applications

- ▲ Autonomous Sensor Devices
- ▲ Smart Homes (HVAC, Security, Light)
- ▲ Automotive (Infotainment, Sensors)
- ▲ Logistics (Asset Tracking)
- ▲ Medical devices (Biometric Monitoring)
- ▲ Wearables



Graphical representation of the Stereax M250 solid state battery.

General Description

The Stereax® M250 is the first of a family of solid state, rechargeable, thin film batteries developed by Ilika. It contains no liquid or polymer components and is the only solid state battery available without free lithium, either in the charged or discharged state, making it moisture resistant and appropriate for medical applications. Its low self-discharge allows it to be trickle-charged by an energy harvesting source such as vibration or a PV panel. Its high peak current enables the transmission of data using protocols such as Bluetooth Low Energy. The combination of energy harvester, transmitter, sensor and the M250 is ideal for integration into small, “fit and forget” autonomous sensor devices with multiple applications including Smart Homes, Vehicles and medical devices. The M250 is provided on a rigid substrate (650 μ m) whilst thinner substrates may also be used.

a: Thickness value includes substrate (650 μ m). Thinner substrates are available. b: 10% DoD

accelerated materials innovation

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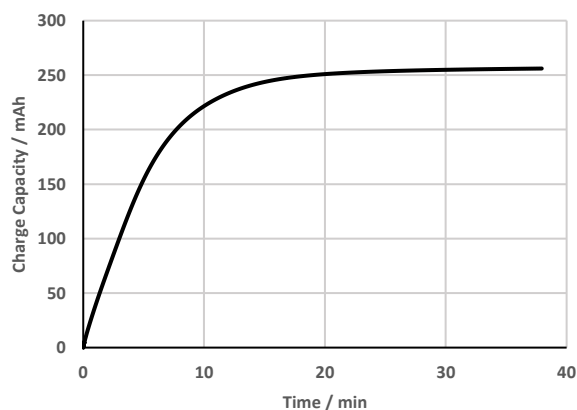
M250 SPECIFICATION V2.3 - ENGLISH

Specifications

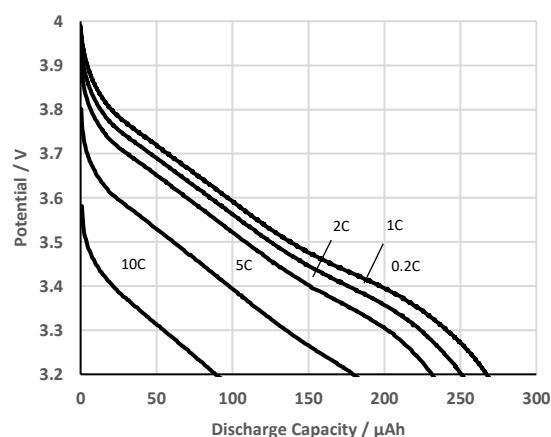
Parameter	Test conditions	Value	Unit
Capacity	1 C between 3.2 and 4.0 V	250	μAh
Nominal Voltage	25°C	3.5	V
Operating Voltage	25°C	3.2-4.0	V
Peak Current	0.5 ms, every second	5	mA
Maximum Continuous Current	25°C	10	C-rate
Standard Discharge Current	25°C	250	μA
CC/CV Charging	CC Phase	250	μA
	Voltage for CV Phase	4	V
Constant Voltage Charging	4V; Time to 90% of nominal capacity	10	min
Operating Temperature		-20°C to 100°C	°C
Cycle life	10% depth of discharge at standard discharge current; 80% of rated capacity remaining; 25°C	5000	Cycles
	100% depth of discharge at standard discharge current; 80% of rated capacity remaining; 25°C	300	Cycles
Internal Resistance	Charge Cycle 1	120	Ohm

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

Typical Charge Curve



Typical Discharge Curves



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