

iM3NY 50 Ah Lithium-Ion Cell Specification

1. **Scope:** This document describes the electrical and mechanical specifications for a 50Ah lithium-ion battery cell made by Imperium3 New York, Inc.

2. **Electrical Specifications:**

No.	Item	Specification	Comments
2.1	Cell Chemistry	Lithium Mixed Metal Phosphate	
2.2	Typical Capacity	50 Ah	0.5C Charge/Discharge at 25°C
2.3	Typical Energy	185 Wh	0.5C Charge/Discharge at 25°C
2.7	Operating Voltage Range	2.8 - 4.2 V	
2.8	Maximum Charge Voltage	4.2 V	Standard charging method
2.9	Standard Charging Method	0.5C CC to 4.2V, then CV until $\leq 0.05C$	
2.10	Standard Discharging Method	0.5C CC discharge to 2.8V	
2.11	Cell Internal Impedance	$\leq 2 \text{ m}\Omega$	AC resistance, 1 kHz, 50% SOC
2.12	Cell Internal Resistance	$\leq 5 \text{ m}\Omega$	DC resistance, 1A pulse for 20 ms. Average of 10 pulses
2.14	Continuous Charge Current	$\leq 1C$	
2.15	Peak Charge Current	$\leq 2C$	
2.16	Continuous Discharge Current	$\leq 1C$	
2.17	Peak Discharge Current	$\leq 2C$	
2.18	Operating Temperature (Charge)	0 - 60°C	
2.19	Operating Temperature (Discharge)	-20 - 60°C	
2.20	Storage Temperature	-20 - 45°C	Cell will need to maintain charge if stored at $>25^\circ\text{C}$
2.21	Calendar Life at 25°C	$\geq 80\%$ initial capacity after 20 years	Maintain at 25°C

2.22		Maximum Charge Rate by Temperature									
Cell Temp (°C)		0	5	10	15	20	25	45	50	55	60
Max C Rate (0-100% SOC)		0.00	0.10	0.25	0.50	1.00	1.00	1.00	1.00	0.50	0.00

3. Thermal Specifications:

No.	Item	Specification	Comments
3.1	Continuous Discharge Temperature Rise	$\leq 15^{\circ}\text{C}$	Continuous 2C discharge rate
3.2	Pulse Discharge Temperature Rise	$\leq 5^{\circ}\text{C}$	5C Discharge for 10s at any SOC

4. Mechanical Specifications:

No.	Item	Specification
3.1	Cell Dimensions	Width: 156 ± 0.5 mm Height: 143.2 ± 0.5 mm Thickness: 26.5 ± 0.5 mm
3.2	Cell Weight	1.25 ± 0.05 kg
3.3	Cell Design	Z-Fold Stacking Method
3.4	Allowable Cell Orientations	Vertical, Horizontal, and Side (See below drawing in Vertical orientation)

