

40 Amp Hour Cell

NANO LITHIUM TITANATE BATTERY CELL



<i>Performance Characteristics</i>	<i>Nominal Values</i>
Nominal Voltage	2.3 V
Capacity (Minimum / Typical @40 amp [1C rate] at 25°C, CCCV charge)	40 / 42 Ah
Typical high rate capacity (240 amp at 25°C, CCCV charge)	37 Ah
Typical energy (40 amp [1C rate] at 25°C, CCCV discharge)	88 Wh
Pulse power (400 amp [10C rate], 10s pulse, 50% SOC at 25°C) (discharge, charge)	TBD
Pulse power (FreedomCAR, 10s pulse, 50% SOC at 25°C) (discharge / charge) ¹	1550 W, 3755 W
Energy density	161 Wh/L
Power density (discharge, charge) ¹	2834 W/L, 6865 W/L
Specific energy	72 Wh/kg
Specific power (discharge, charge) ¹	1260 W/kg, 3053 W/kg
Internal charge impedance (10 sec DC pulse, 50% SOC, 25°C)	0.52 mΩ
Internal discharge impedance (10 sec DC pulse, 50% SOC, 25°C)	0.71 mΩ
Max continuous charge	240 A
Max continuous discharge	240 A
Max 10 sec Pulse discharge or charge current	800 A
Internal Impedance (1 Hz AC, 10% SOC, 25°C)	0.29 mΩ

<i>Life Characteristics</i>	
Cycle life at 2C charge and 2C discharge, 100% DOD, 25°C	>25,000 to 80% initial capacity
Cycle life at 2C charge and 2C discharge, 100% DOD, 55°C	>3000 to 90% initial capacity
Calendar life at 25°C	25 years

<i>Temperature Limits²</i>	
Operating and Storage temperature range	-50°C to + 65°C cell temperature

<i>Voltage Limits³</i>	
Discharge cut off voltage at -40°C to + 55°C	1.5 V
Charge cut off voltage at -40°C to + 55°C	2.9 V

<i>Cell Dimensions⁴</i>	
Diameter (Φ) x Height (H)	66 mm (Φ) x 160 mm (H)
Weight	1.23 kg

<i>Transportation</i>	
Transportation Specifications	Tested to UN 38.3

1. Power at 25°C for 10 sec is calculated using FreedomCar discharge formulas.

2. Optimal storage temperature is 25°C.

3. In battery systems, the battery management system must enforce the voltage limits at the individual cell level.

4. Cell terminal heights are not included in the stated cell dimensions.