

## Lithium Block™ — Engineer Overview

Modular 18650-based building blocks (5P–10P) for rapid pack assembly and prototyping

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### At-a-Glance

Module Variants	Energy (M35A) and Power (P28A)
Parallel Configurations	5P, 6P, 7P, 8P, 10P
Nominal Voltage (per module)	3.6 V (4.2 V max, 2.5 V min)
Energy Range (module)	50–126 Wh (variant-dependent)
Max Discharge (module)	Up to 100 A (Energy) / 210 A (Power)
Max Charge (module)	8.5–17 A (Energy) / 30–60 A (Power)
Thermistors	Integrated 10k $\Omega$ NTC, $\beta$ =3380 K ( $\pm$ 0.5%)
Cell-level Protection	Ultrasonic wire-bond fusing ( $\sim$ 30 A Energy / $\sim$ 58 A Power per cell)
Max System Voltage	500 VDC (integration limit)
Connector	Molex 430450812 (mate 43025-0800)

### Key Features

- Compact, stackable form factor with standard 25.5 mm bus-bar spacing.

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- Gen II modules include conformally coated PCB with integrated thermistors.
- Cell-level fusing on both anode/cathode via ultrasonic bonds.
- ABS housing (UL94 V-0) with designed vent gap for event mitigation.
- Compatible with common BMS platforms (e.g., Orion).
- UN38.3 Certified
- RoHS and REACH Compliant Materials
- Built to IPC-6012 / IPC-A600 Class 2

### Application Examples



Figure 1: Segment in Forklift Accumulator

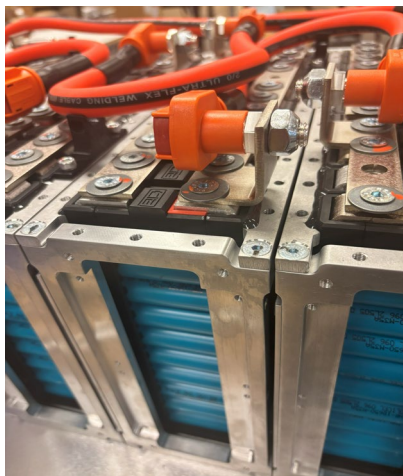


Figure 2: Collegiate FSAE Accumulator

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### Performance Illustrations

■ Discharge Temperature Characteristics

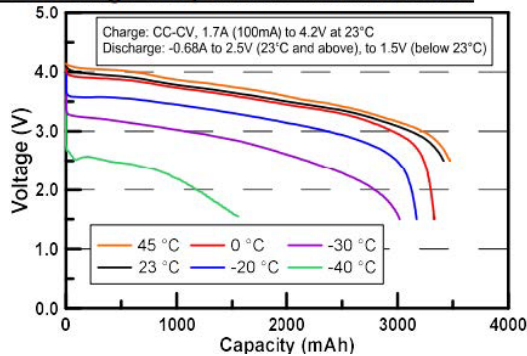


Figure 3: Energy Cells Discharge Temp.

■ Cycle Characteristics

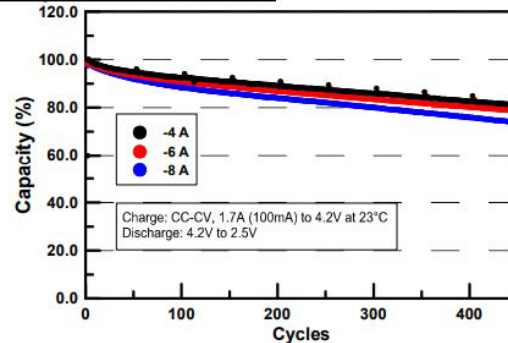


Figure 4: Energy Cell Cycle Life

■ Discharge Temperature Characteristics

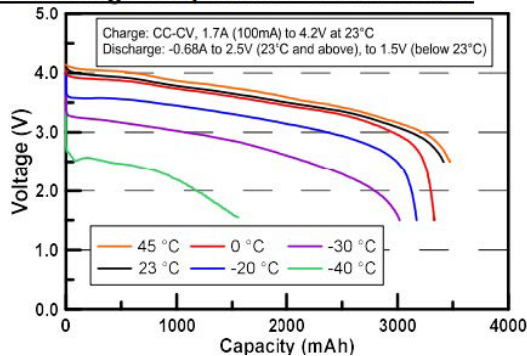


Figure 5: Power Cell Discharge Temp.

■ Cycle Characteristics

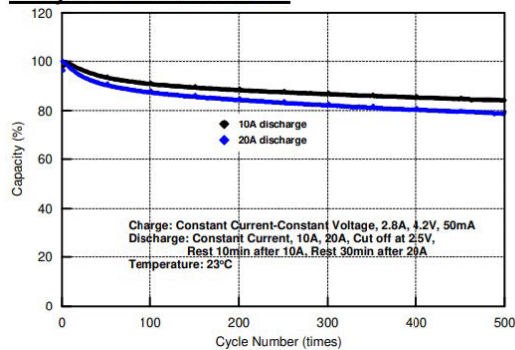


Figure 6: Power Cell Cycle Life

### Technical Specifications

#### Electrical — Energy Modules (MoliceL M35A)

Spec	5PE	6PE	7PE	8PE	10PE
Energy (nom) [Wh]	63.0	75.6	88.2	100.8	126.0
Charge Capacity (nom) [Ah]	17.5	21.0	24.5	28.0	35.0
Charge Capacity (min) [Ah]	15.8	18.9	22.1	25.2	31.5
Vmax/Vnom/Vmin [V]	4.2 / 3.6 / 2.5	4.2 / 3.6 / 2.5	4.2 / 3.6 / 2.5	4.2 / 3.6 / 2.5	4.2 / 3.6 / 2.5
Max Charge Current [A]	8.5	10.2	11.9	13.6	17.0
Max Discharge Current [A]	50	60	70	80	100

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Charge Temp [°C]	0 to 60	0 to 60	0 to 60	0 to 60	0 to 60
Discharge Temp [°C]	-40 to 60	-40 to 60	-40 to 60	-40 to 60	-40 to 60

### Electrical — Power Modules (Molicel P28A)

Spec	5PP	6PP	7PP	8PP	10PP
Energy (nom) [Wh]	50.4	60.5	70.6	80.6	100.8
Charge Capacity (nom) [Ah]	14.0	16.8	19.6	22.4	28.0
Charge Capacity (min) [Ah]	12.6	15.1	17.6	20.2	25.2
Vmax/Vnom/Vmin [V]	4.2 / 3.6 / 2.5	4.2 / 3.6 / 2.5	4.2 / 3.6 / 2.5	4.2 / 3.6 / 2.5	4.2 / 3.6 / 2.5
Max Charge Current [A]	30	36	42	48	60
Max Discharge Current [A]	175	210	210	210	210
Charge Temp [°C]	0 to 60	0 to 60	0 to 60	0 to 60	0 to 60
Discharge Temp [°C]	-40 to 60	-40 to 60	-40 to 60	-40 to 60	-40 to 60

### Mechanical & Integration

- Orientation: Any; recommended bus-bar interface up for assembly and venting.
- Bus-bar torque: 5.5 Nm using Loctite 243 (stick).
- Thread class: M6 × 1 mm; standard bus-bar hole spacing 25.5 mm.
- Creepage/clearance: design per IEC 60664; verify for your voltage and contamination level.
- Integration limit: Pack-level fuse required; pack fuse <120% of cumulative parallel rating.
- Mechanical envelope grows with P-count; typical length ranges ~116 mm (5P) to ~230 mm (10P).

### Low-Voltage I/O

Thermistors	10k $\Omega$ NTC, $\beta$ =3380 K, $\pm$ 0.5%, $\leq$ 5 V input
Sense Fuse	200 mA resettable (0ZCK0020FF2G)
Connector	Molex 430450812
Mating Connector	Molex 43025-0800 (crimp 43030-0007)
Voltage Sense (unfused) lead length	<10 mm

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### Notes on Current Ratings

Module current ratings reflect cell capability under ideal conditions and do not account for system-level factors (thermal management, wiring, duty cycle). Validate allowable currents in your assembled system and enforce limits via BMS. Over-current can cause irreversible damage or hazardous events.

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