3.7V 3Ah 18650 pack

1 Features

- 3.7V nominal; 3Ah capacity
- 11.1Wh calculated nominal energy
- 1S1P / 1 cylindrical cells
- Short-circuit and overcurrent protection
- Bluetooth device control
- Black 3D-printed enclosure
- 4.2V CC-CV charge target

2 Applications

- Wireless sensors and data loggers
- Handheld test instruments

3 Description

The AHL-LI-037-030 is a 1S1P cylindrical-cell pack design based on Samsung INR18650-30Q cells. The enclosure contains the cell assembly, protection electronics and Bluetooth device control.

The tables distinguish catalogue nominal figures, calculated design targets and physical estimates. Current and thermal targets require validation on the finished assembly.

4 Pack Information

PARAMETER	CONDITIONS	MIN	TYP	MAX	UNIT
Nominal voltage	Catalogue value		3.7		V
Nominal capacity	Catalogue value		3		Ah
Nominal energy	Calculated		11.1		Wh
Charge voltage	CC-CV setting		4.2		V
Charge current	Design target		1.5	1.5	A
Continuous discharge	25 °C; unvalidated			7.5	A
Nominal power	At current target		27.75		W
Finished mass	Estimated +/-20%	0.192	0.24	0.288	kg

Data status

Typ identifies nominal values or calculated design targets. Min and Max are the stated design limits or planning ranges. Blank cells mean no limit is specified. These are not finished-pack test results.

Connector options

Standard: XT30. Options: XT30, XT60, JST-XH, Anderson Powerpole, Radlok, Bare leads. Each build needs appropriately rated contacts, wiring and interconnects.

3.7V 3Ah 18650 pack

5 Electrical operation and protection

PARAMETER	CONDITIONS	MIN	TYP	MAX	UNIT
Charge current	Proposed setting		1.5	1.5	A
Charge termination	CV phase		0.15		A
Charge time	Capacity / current; excludes taper		2		h
Load shutdown	Pack equivalent; per-cell sensing		3		V
Discharge current	Continuous, 25 °C			7.5	A
Charge ambient	Proposed envelope	10		40	°C
Discharge ambient	Proposed envelope	0		40	°C
Charge thermal trip	Cell temperature target		45		°C
Discharge thermal trip	Cell temperature target		55		°C
Storage temperature	Dry, non-condensing	15		25	°C
Storage charge	State of charge	40		50	%

5.1 Protection and control

1S Li-ion protection; matched low-series controller. Short-circuit, overcurrent and per-cell voltage protection are required. No balancing is needed for one series group. Bluetooth device control is included. Trip settings must protect the cells and conductors and account for sensor error.

5.2 Controller compatibility

Match controller chemistry and series count to the configuration. Low-series builds may need separate Bluetooth hardware.

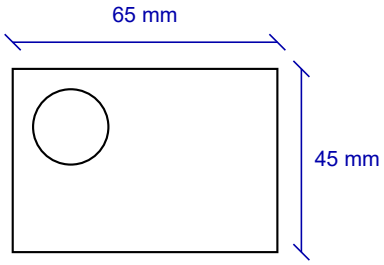
5.3 Interpretation and unassigned ratings

Min / Max are design limits, not guaranteed production limits. Blank cells are unspecified. No higher pulse rating or external pack series/parallel rating is assigned. Cycle life, impedance, self-discharge, ingress protection and certification have no pack test data.

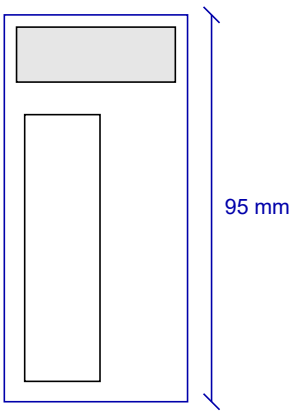
3.7V 3Ah 18650 pack

6 Mechanical dimensions and calculations

TOP / CELL LAYOUT



SIDE / COMPARTMENTS



Shaded area: insulated BMS bay

mm. Indicative geometry; no wiring or connector placement shown.

PARAMETER	CONDITIONS	MIN	TYP	MAX	UNIT
Enclosure length	Estimated; excludes leads		65		mm
Enclosure width	Estimated; excludes leads		45		mm
Enclosure height	Estimated; excludes leads		95		mm
Cell diameter	Design envelope		18.5		mm
Cell height	Design envelope		65.5		mm
Cell gap / shell wall	Design dimensions		2 / 3		mm
Cell mass	Cell-only subtotal		48		g

Calculation method

Shell: solid volume x 1.04 g/cm³ ABS density, plus 15% for features. Discharge target: half the parallel-cell current basis, capped at 20 A. Charge target: parallel-cell standard-charge current, capped at 20 A. These allowances require validation.

Cell reference: Samsung INR18650-30Q, v1.0

BMS reference: Daly DL-J10C-L7S40ATJ A0

Cell references support the proposed design, not certification of the finished assembly. Catalogue nominal capacity can differ from the cell minimum under its specified test conditions.