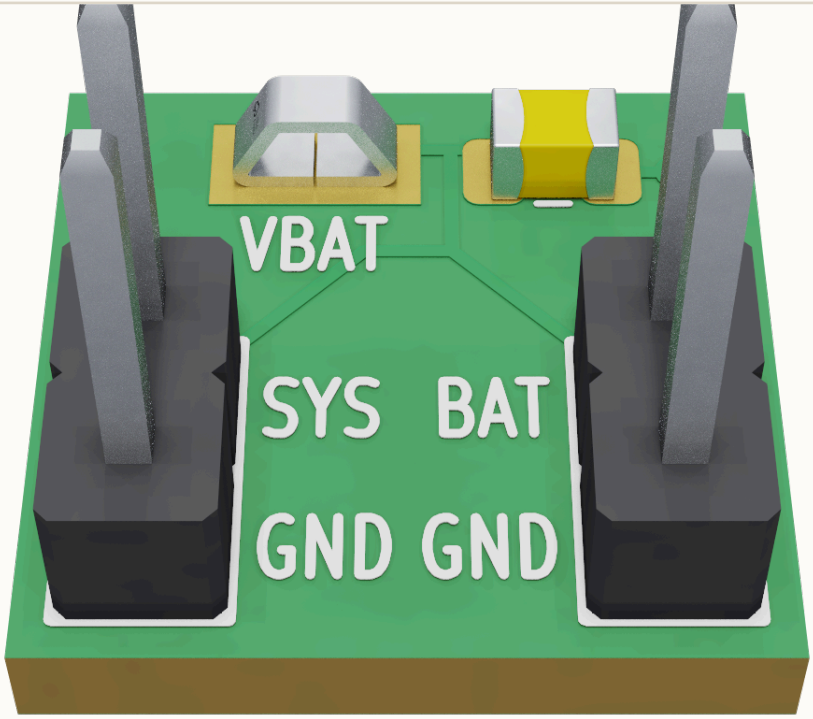
18 Battery Power

18-BATTERY-POWER - rev A - 2026-10-17 - ENGINEERING RELEASE



Assembly view

Key specifications

Interfaces	pack / module
Outline	11.36 x 11.09 mm
PCB	2 copper layers, 1.60 mm finished thickness
Fitted parts	4

Operating window

VBAT supply voltage	**3.0 to 4.2 V**
Ambient operating temperature	**0 to 70 °C**

See Electrical limits for the conditions behind these values, required external loads and contact limits.

Connector overview

CONNECTOR	USE	SIGNALS
J1	pack	VBAT, GND
J2	module	VBAT, GND

Electrical limits

Operating conditions and limits for the assembled board

Recommended operating conditions

PARAMETER	SYMBOL	CONDITIONS	MIN	TYP	MAX	UNIT
VBAT supply voltage	VBAT	Required input supply voltage	3.0	–	4.2	V
External load impedance	R(J2.1-J2.2)	Between J2.1 and J2.2	149.9	–	10010	ohm
Ambient operating temperature	TA	Ambient operating range	0	–	70	°C

Electrical characteristics

PARAMETER	SYMBOL	CONDITIONS	MIN	TYP	MAX	UNIT
VBAT supply current	IBAT	[1, 2, 3, 4]	0	–	28.01	mA
Power consumption	P	[5, 4]	–	–	117.7	mW
J2.1 to J2.2 mean-square current	I^2_J2	RMS current squared [6]	–	–	0.0007841	A^2

How to use these limits

[1] Maximum instantaneous current in the modeled window, drawn by the board itself.

[2] **Contacts:** What an attachment draws through a connector contact adds to this, up to that contact's limit.

[3] **Tolerances:** Calculated across the listed supply ranges and modeled component tolerances.

[4] **External loads:** The current and power limits require J2.1 to J2.2: 149.9 ohm min, 10010 ohm max.

[5] Worst-case input power the board itself draws across all supply rails.

[6] **Heating:** Mean-square current is RMS current squared, in A^2. Use it for cycle-averaged resistive heating under the declared steady-waveform model; startup and fault currents need separate limits.

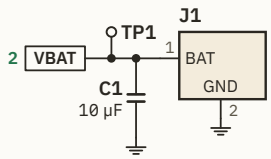
Use only the conditions printed with each value. Component absolute maximum ratings do not automatically apply to the assembled board.

Schematic

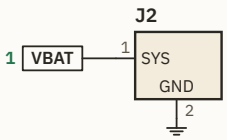
Header and header 18-BATTERY-POWER

KEY RAIL IN OUT BIDIR PASSIVE 5·p2 BLOCK 5, PAGE 2

1 Header



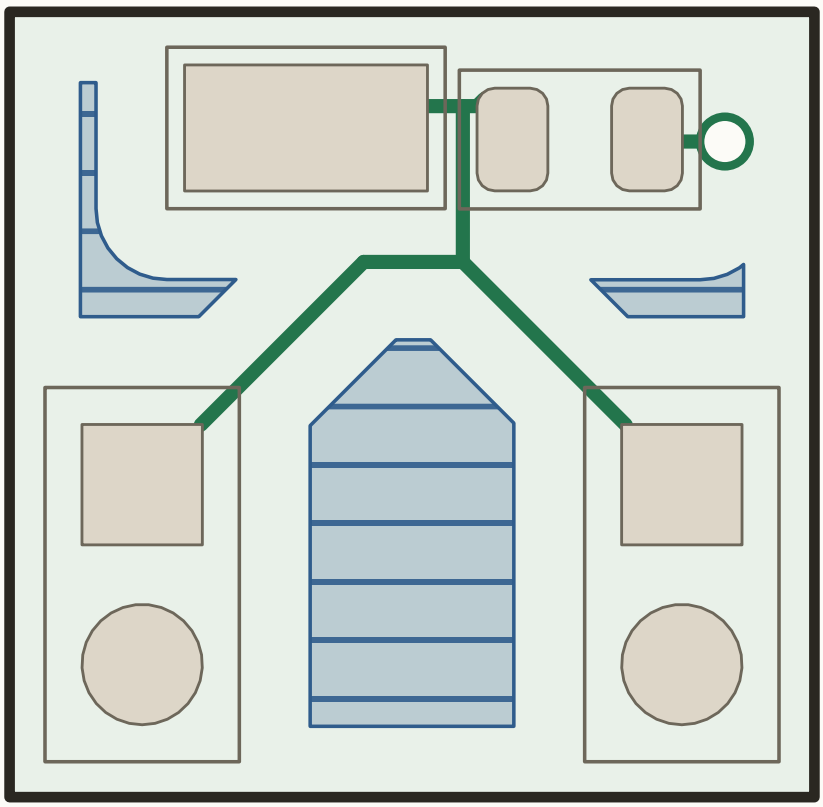
2 Header



Board layout

Copper on both layers, and the board area that no part or track uses

KEY — TOP COPPER — BOTTOM COPPER PAD VIA



TOP VIEW · BOTTOM COPPER SEEN THROUGH · 11 X 11 MM · LARGE PARTS NAMED

Unused area

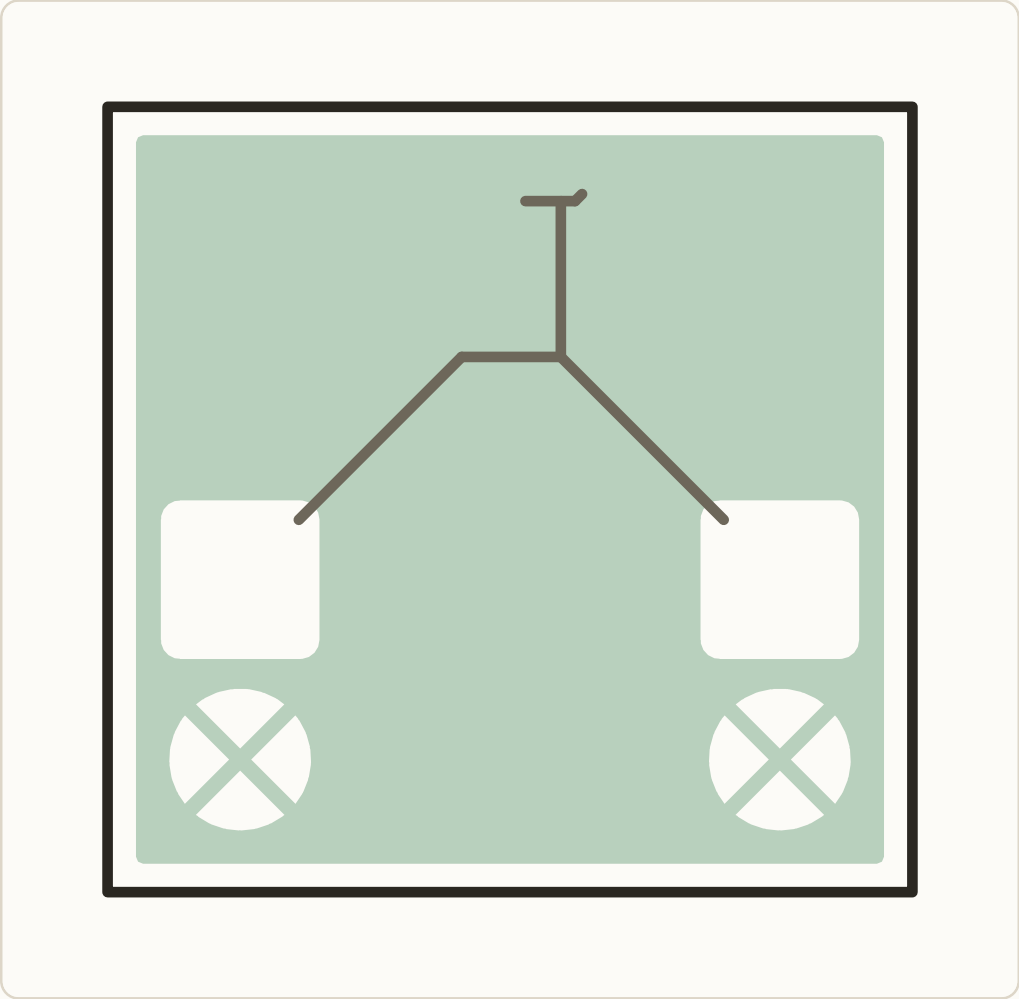
PATTERN	CAUSE	BOUNDED BY	AREA	OF BOARD
	Connector apron	beside a connector	17.1 mm²	13.6 %
	Total	at least 1 mm from everything	17.1 mm²	13.6 %

Unused area is board surface at least 1 mm from every part, track and the board edge. A part gap is the only kind a tighter placement can reclaim.

Ground plane

Ground on B.Cu under the routes on F.Cu

KEY GROUND PLANE OPENING ROUTE ON F.CU



TOP VIEW · B.CU UNDER F.CU

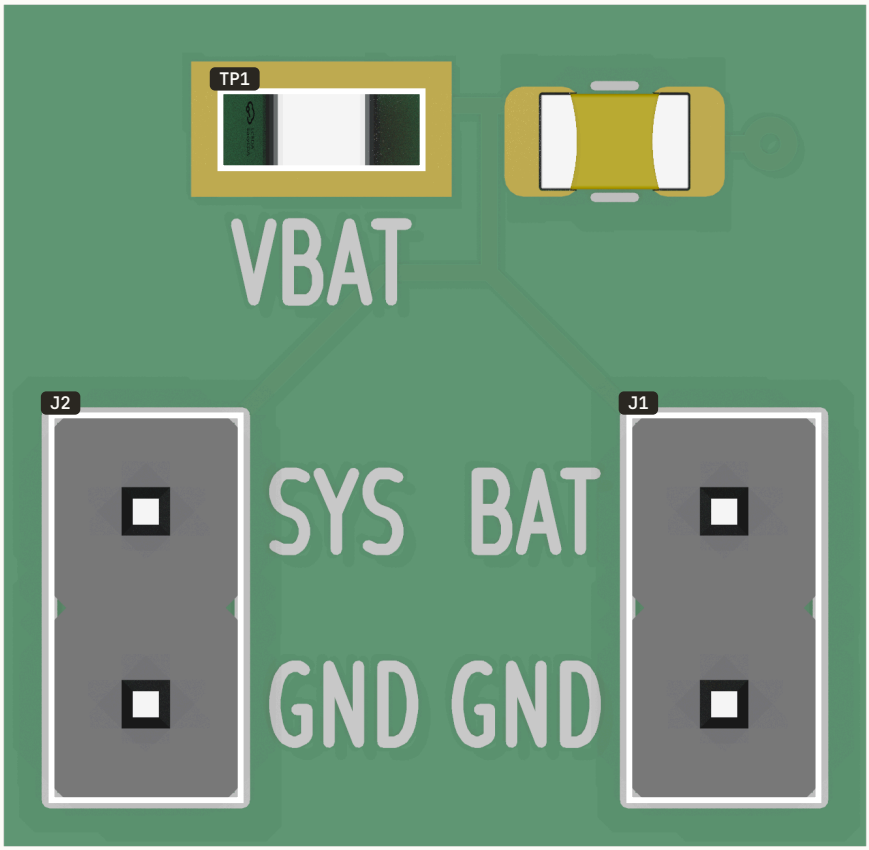
Return path

Ground plane	B.Cu, 75 % of the board
Routes on F.Cu	11 mm; no return detour of 1 mm or more

Openings in the plane add under 1 mm to the return path of a route on F.Cu above them; no route on F.Cu crosses a gap that adds more.

Board connections

Connector and test point locations viewed from the top of the assembled board



TOP VIEW - CONNECTORS AND TEST POINTS MARKED - NOT TO SCALE

Test point locations

STATION	SIGNAL	PINS	CONNECTED TO
TP1	VBAT	1	to C1, J1, J2

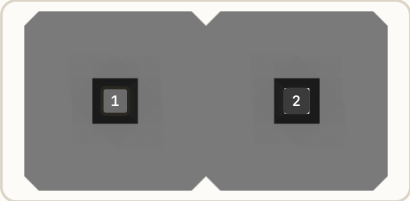
Pin schedules and mating-face views are on the following pages.

Connector pinout

Pin numbers are shown as viewed into the mating face

SIGNAL CLASS SIGNAL GROUND

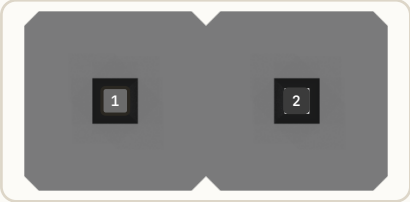
J1 - pack



TOP MATING FACE VIEW

PIN	SIGNAL	DESCRIPTION
1	VBAT	VBAT signal
2	GND	Ground reference

J2 - module



TOP MATING FACE VIEW

PIN	SIGNAL	DESCRIPTION
1	VBAT	VBAT signal
2	GND	Ground reference

Components on this board

Component identities and supplier codes

IDENTIFICATION VIEWS ARE NOT TO SCALE



C492401
module
J2 · QTY 1 · LCSC C492401



C492401
pack
J1 · QTY 1 · LCSC C492401



C2906768
VBAT
TP1 · QTY 1 · LCSC C2906768

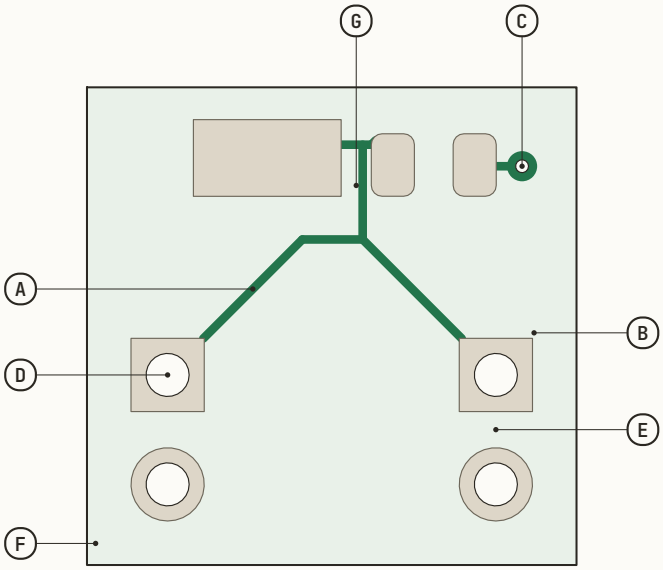
Passives

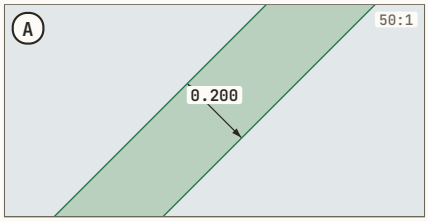
REFERENCE	VALUE / ROLE	QTY	PART
C1	pack bulk	1	C15850

Manufacturability

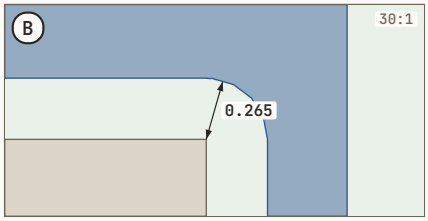
The smallest feature this board asks a fab to make, rule by rule

KEY — TOP COPPER — BOTTOM COPPER — PAD — MASK OPENING

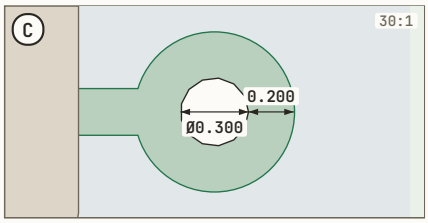




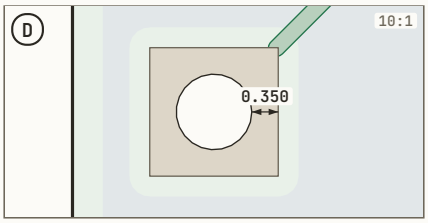
TRACK WIDTH
All 7 track segments
Required minimum 0.200; at minimum



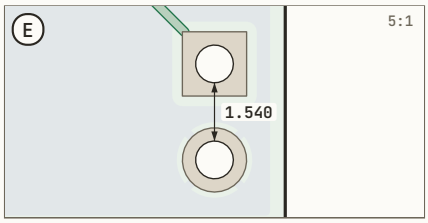
COPPER TO COPPER, OUTER
Every outer gap between nets
Required minimum 0.1524; 0.113 above



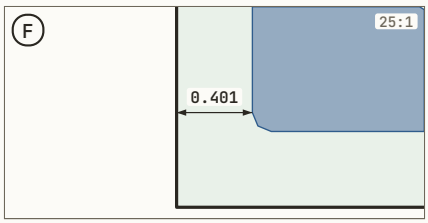
FINISHED DRILL · VIA RING
All 5 holes; the one via
Finished drill minimum 0.300; at minimum.
Via ring minimum 0.200; at minimum



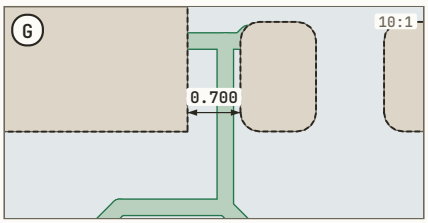
PTH RING
All 4 plated leads
Required minimum 0.300; 0.050 above



HOLE TO HOLE
All 5 holes, wall to wall
Required minimum 0.300; 1.240 above



COPPER TO EDGE
All copper, pours included
Required minimum 0.381; 0.020 above



MASK WEB
All 7 top mask openings
Required minimum 0.1016; 0.598 above

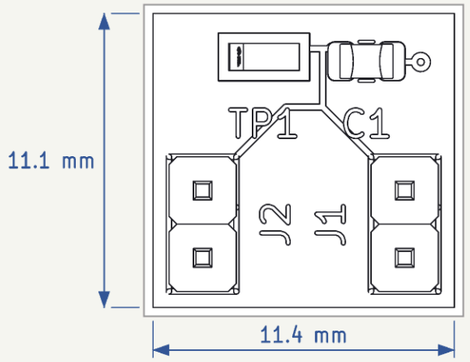
COMPATIBLE FABS

JLCPCB [1] · PCBWay [2] · OSH Park [3] · AISLER [4]

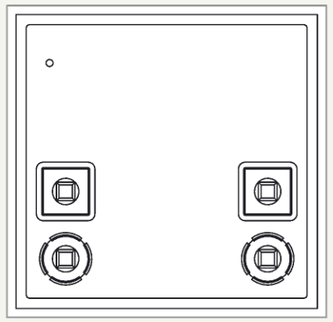
Detail minima use the strictest checked profile. Compatibility means the checked dimensional rules pass.

LAYERS	THICKNESS	ASPECT RATIO	HOLES	DRILL SIZES
2	1.6 mm	5.3 : 1	1 via, 4 PTH	2, Ø0.300–1.000

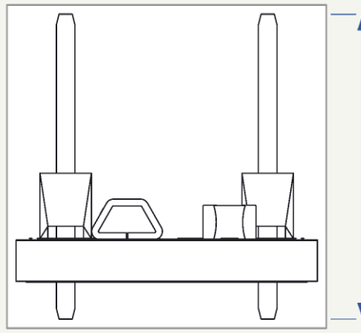
All values in mm. [1] read 2026-08-08 [2] read 2026-08-08 [3] read 2026-08-13 [4] read 2026-08-08



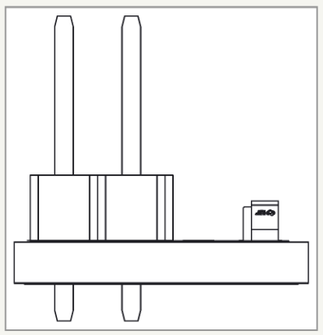
TOP VIEW



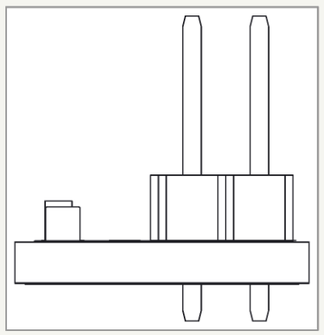
BOTTOM VIEW



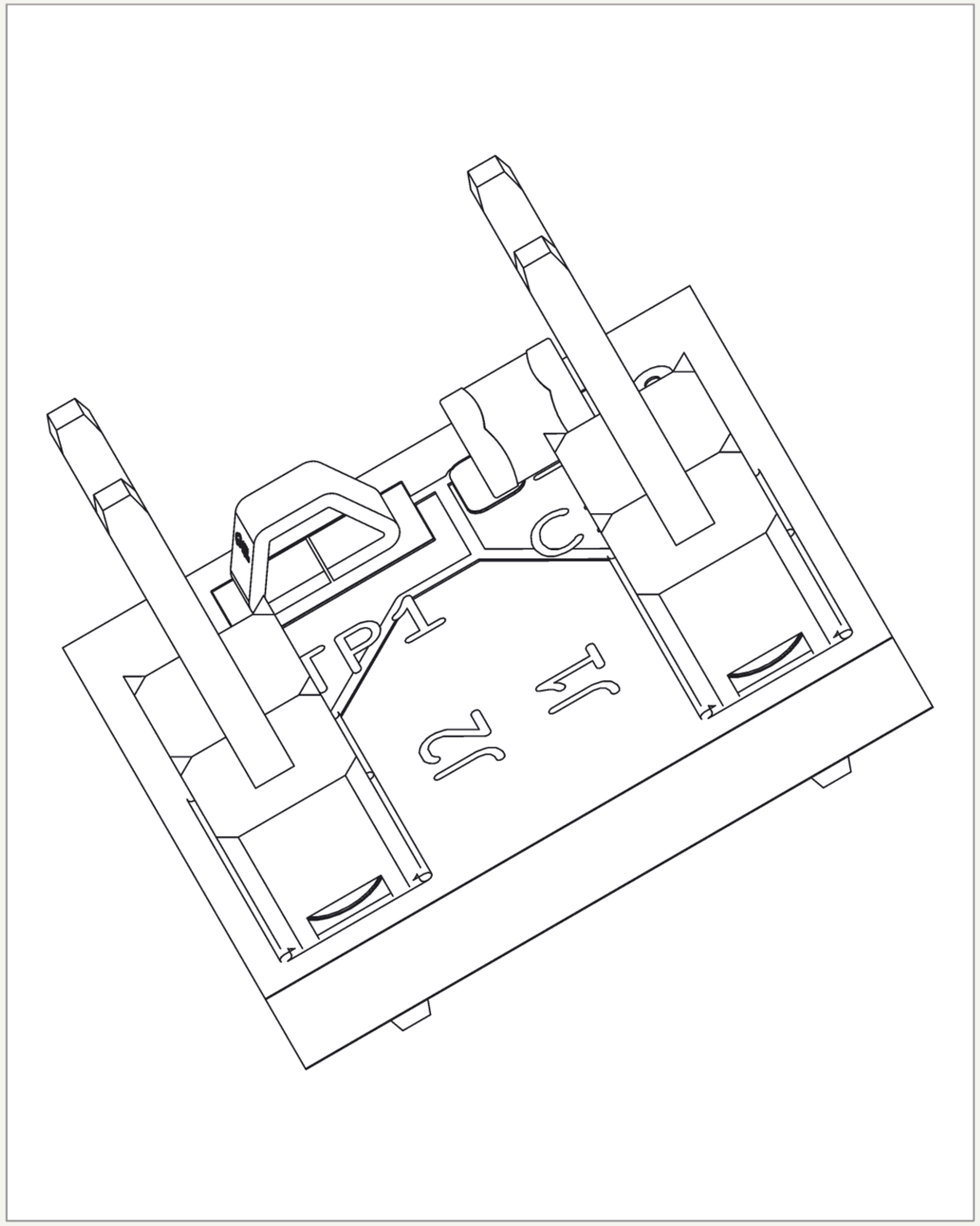
FRONT VIEW (Y)



LEFT VIEW (X)



RIGHT VIEW (X)



ISOMETRIC – NTS

TITLE 18 Battery Power assembly	DWG NO. 18–BATTERY–POWER
REV A	DATE 2026–10–17
OVERALL 11.4 x 11.1 x 11.5 mm	MATERIAL FR–4, 1.60 mm
PROJECTION REFERENCE VIEWS	SCALE NTS
UNITS mm	SHEET 1 OF 1