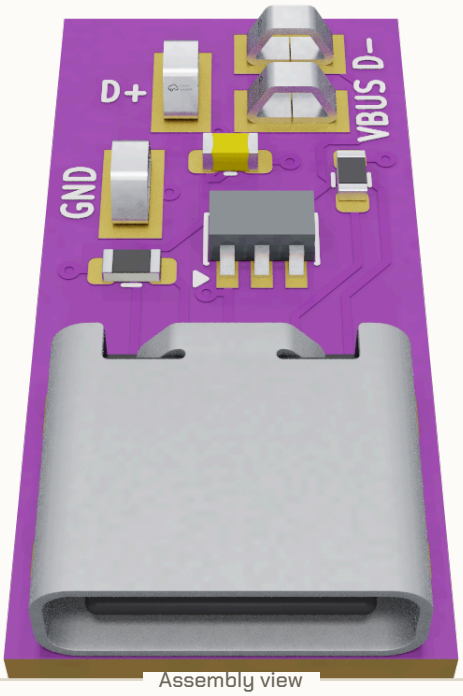
USB C Sink

USB-C-SINK - rev A - 2026-10-17 - ENGINEERING RELEASE



Assembly view

Key specifications

Interfaces	TYPE-C-31-M-12 USB 2.0 sink input
Outline	10.55 x 21.91 mm
PCB	2 copper layers, 1.60 mm finished thickness
Fitted parts	9

Operating window

VBUS supply voltage	4.75 to 5.5 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	TYPE-C-31-M-12 USB 2.0 sink input	GND, VBUS, CC1_RD, USB_DP, USB_DN, CC2_RD

Electrical limits

Operating conditions and limits for the assembled board

Recommended operating conditions

PARAMETER	SYMBOL	CONDITIONS	MIN	TYP	MAX	UNIT
VBUS supply voltage	VBUS	Required input supply voltage	4.75	—	5.5	V
Ambient operating temperature	TA	Ambient operating range	0	—	70	°C

Interface constraints

PARAMETER	SYMBOL	CONDITIONS	MIN	TYP	MAX	UNIT
J1 current per contact	I(J1)	Pins 1, 2, 7, 8 [1]	—	—	500	mA

How to use these limits

[1] **Contact current:** Each listed pin must not exceed this current. These are application design limits, not connector ratings or available output current.

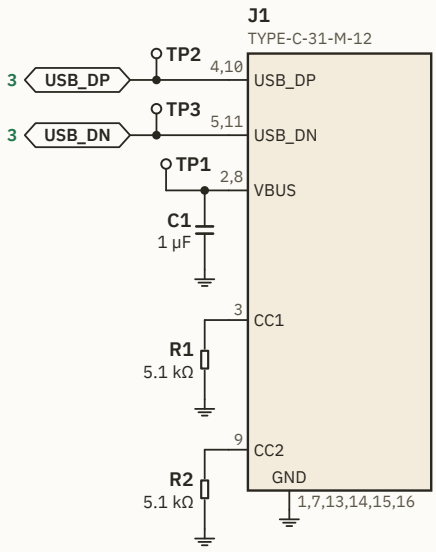
Use only the conditions printed with each value. Component absolute maximum ratings do not automatically apply to the assembled board.

Schematic

USB-C, passive network and ESD protection USB-C-SINK

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

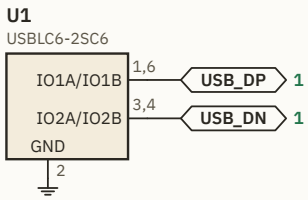
1 USB-C



2 Passive network



3 ESD protection USBLC6-2SC6

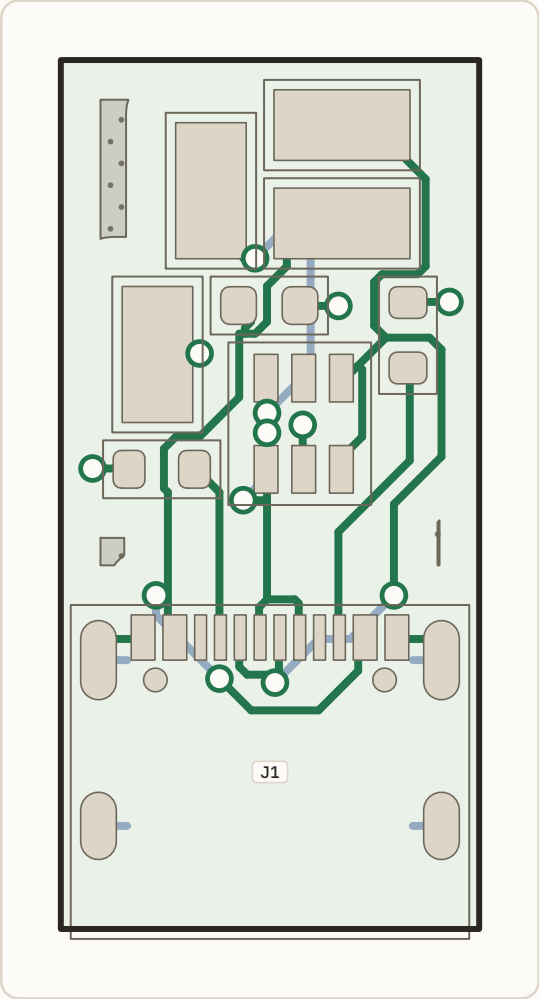


UNUSED PINS NOT SHOWN

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 22 MM · LARGE PARTS NAMED

Unused area

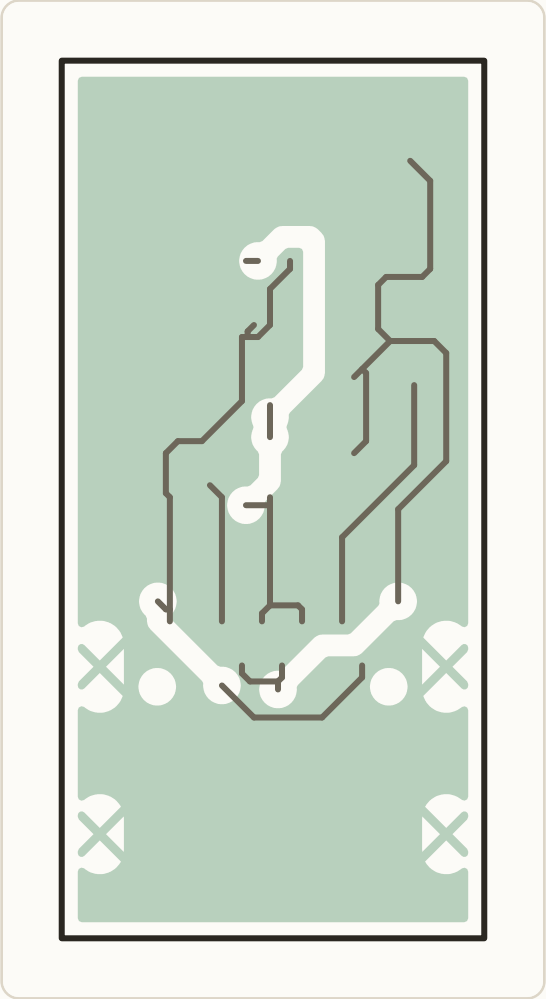
PATTERN	CAUSE	BOUNDED BY	AREA	OF BOARD
▭	Edge margin	between parts and the outline	2.7 mm²	1.2 %
	Total	at least 1 mm from everything	2.7 mm²	1.2 %

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

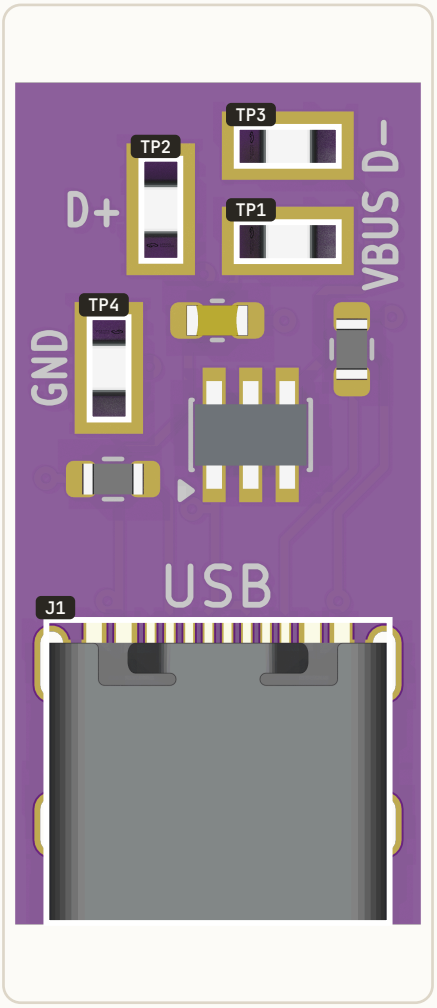
Return path

Ground plane	B.Cu, 81 % of the board
Routes on F.Cu	52 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	VBUS	1	to C1, J1
TP2	USB_DP	1	to J1, U1
TP3	USB_DN	1	to J1, U1
TP4	GND	1	to C1, J1, R1, and 2 more

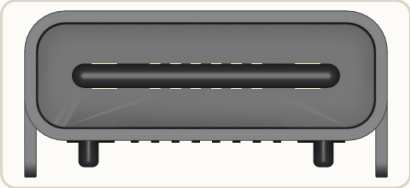
Pin schedules and mating-face views are on the following pages.

Connector pinout

Pin numbers are shown as viewed into the mating face

SIGNAL CLASS GROUND SIGNAL NO CONNECT

J1 - TYPE-C-31-M-12 USB 2.0 sink input



MATING FACE VIEW

PIN	SIGNAL	DESCRIPTION
1	GND	Ground reference
2	VBUS	VBUS signal
3	CC1_RD	CC1_RD signal
4	USB_DP	USB_DP signal
5	USB_DN	USB_DN signal
6	NC	No connection on the released board
7	GND	Ground reference
8	VBUS	VBUS signal
9	CC2_RD	CC2_RD signal
10	USB_DP	USB_DP signal
11	USB_DN	USB_DN signal
12	NC	No connection on the released board
13	GND	Ground reference
14	GND	Ground reference
15	GND	Ground reference
16	GND	Ground reference

Components on this board

Component identities and supplier codes

IDENTIFICATION VIEWS ARE NOT TO SCALE



C165948
TYPE-C-31-M-12 USB 2.0 sink input
J1 · QTY 1 · LCSC C165948



C2687116
USBLC6-2SC6 USB 2.0 steering array
U1 · QTY 1 · LCSC C2687116



C2906768
5V input
TP1 · QTY 1 · LCSC C2906768



C2906768
USB 2.0 D+
TP2 · QTY 1 · LCSC C2906768



C2906768
USB 2.0 D-
TP3 · QTY 1 · LCSC C2906768



C2906768
ground
TP4 · QTY 1 · LCSC C2906768

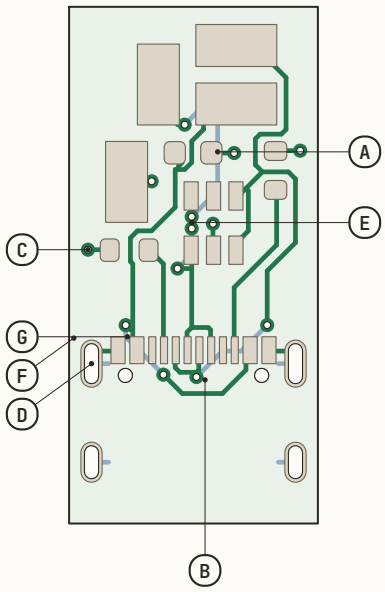
Passives

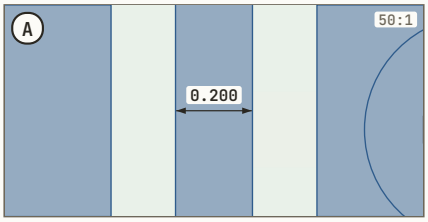
REFERENCE	VALUE / ROLE	QTY	PART
C1	VBUS bypass	1	C15849
R1	CC1 Rd 5.1k	1	C2907044
R2	CC2 Rd 5.1k	1	C2907044

Manufacturability

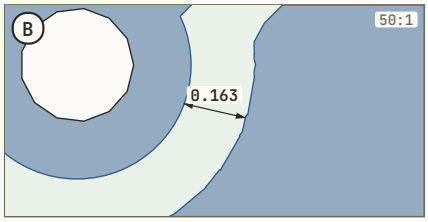
The smallest feature this board asks a fab to make, rule by rule

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

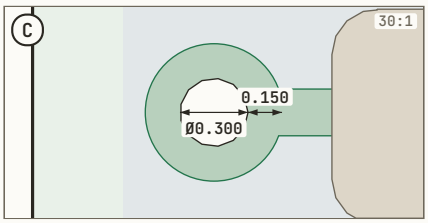




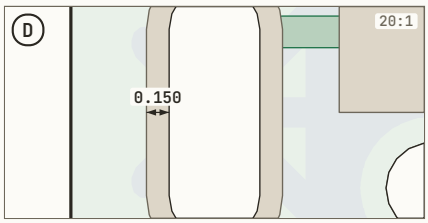
TRACK WIDTH
All 80 track segments
Required minimum 0.1524; 0.048 above



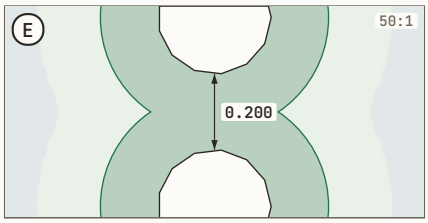
COPPER TO COPPER, OUTER
Every outer gap between nets
Required minimum 0.1524; 0.011 above



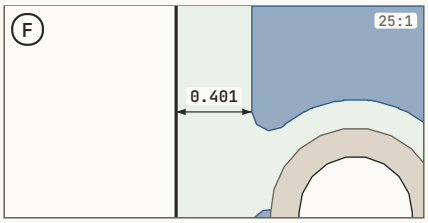
FINISHED DRILL · VIA RING
All 19 holes; all 13 vias
Finished drill minimum 0.254; 0.046 above.
Via ring minimum 0.127; 0.023 above



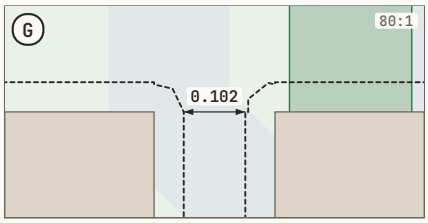
PTH RING
All 4 plated leads
Required minimum 0.127; 0.023 above



HOLE TO HOLE
All 19 holes, wall to wall
Required minimum 0.1524; 0.048 above



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



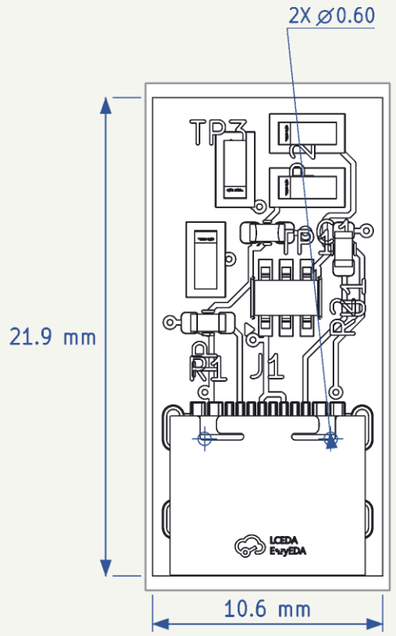
MASK WEB
All 34 top mask openings
Required minimum 0.1016; 0.0002 above

COMPATIBLE FABS oshpark-2l-1p6mm-1oz@2026-10-05+4d70b323 [1]

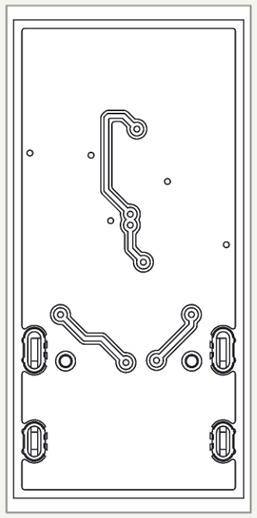
Detail minima use the fab profile this board was built for. Compatibility means the checked dimensional rules pass.

LAYERS	THICKNESS	ASPECT RATIO	HOLES	DRILL SIZES
2	1.6 mm	5.3 : 1	13 via, 4 PTH, 2 NPTH	2, Ø0.300–0.600

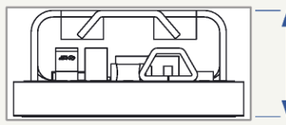
All values in mm. [1] read 2026-10-01



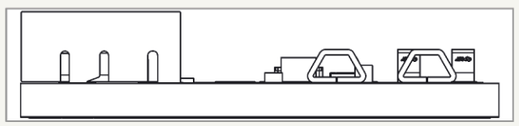
TOP VIEW



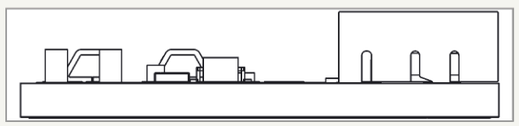
BOTTOM VIEW



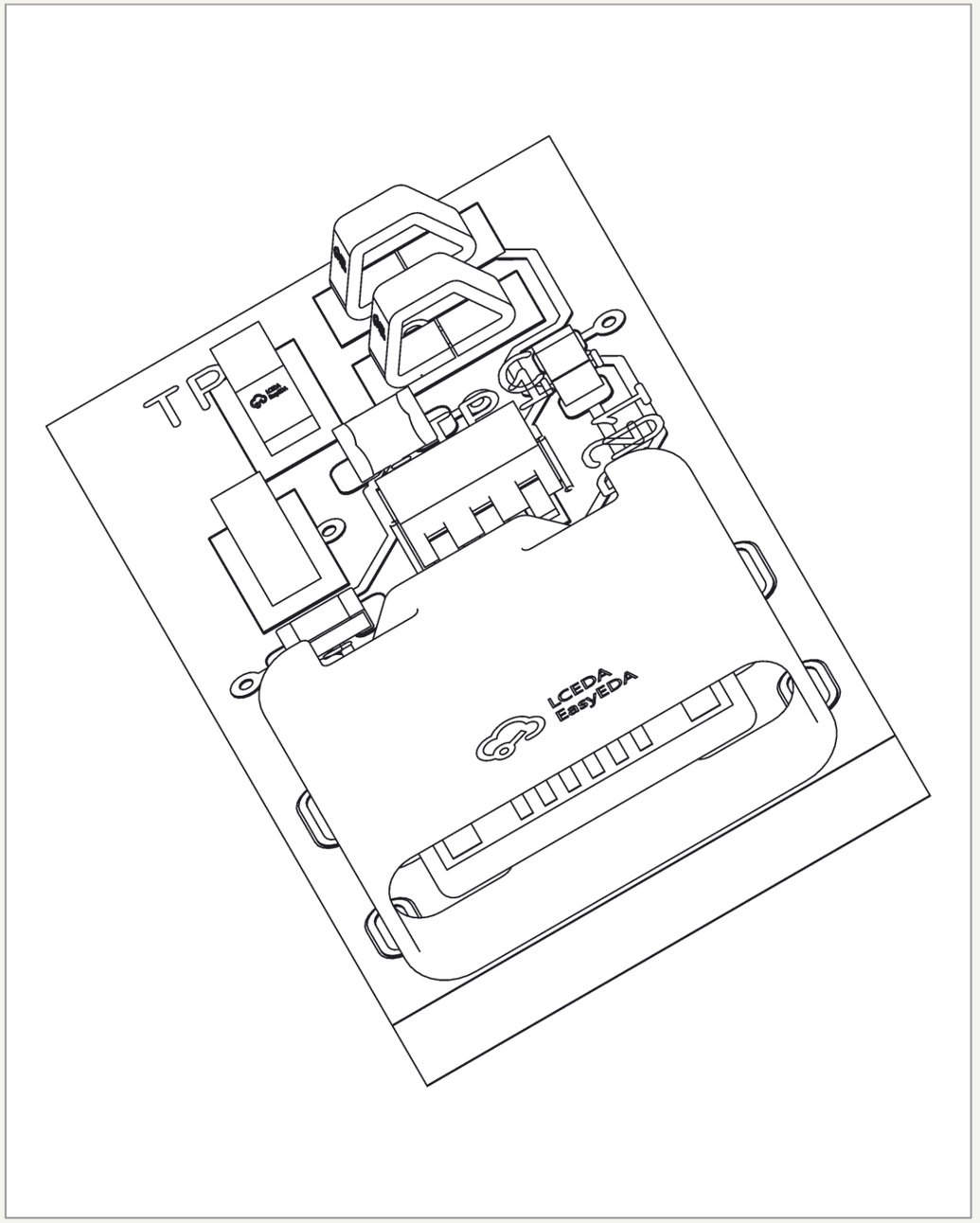
FRONT VIEW (Y)



LEFT VIEW (X)



RIGHT VIEW (X)



ISOMETRIC – NTS

TITLE	DWG NO.
USB C Sink assembly	USB-C-SINK
REV	DATE
A	2026-10-17
OVERALL	MATERIAL
10.6 x 21.9 x 4.9 mm	FR-4, 1.60 mm
PROJECTION	SCALE
REFERENCE VIEWS	NTS
UNITS	SHEET
mm	1 OF 1