



# Thinkpad USB Keyboard: Upgrade to USB-C Connector Replacement

The micro-B USB connector on the back is flimsy...

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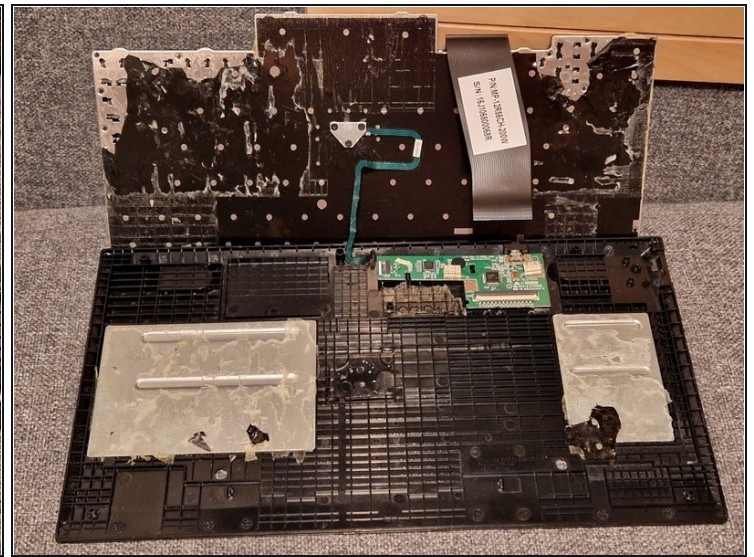
# INTRODUCTION

The micro-B USB connector on the back is flimsy and easily loses the cable.

So this guide describes how to substitute the USB connector with a USB-C type. This makes the USB stronger and the cable stays attached.

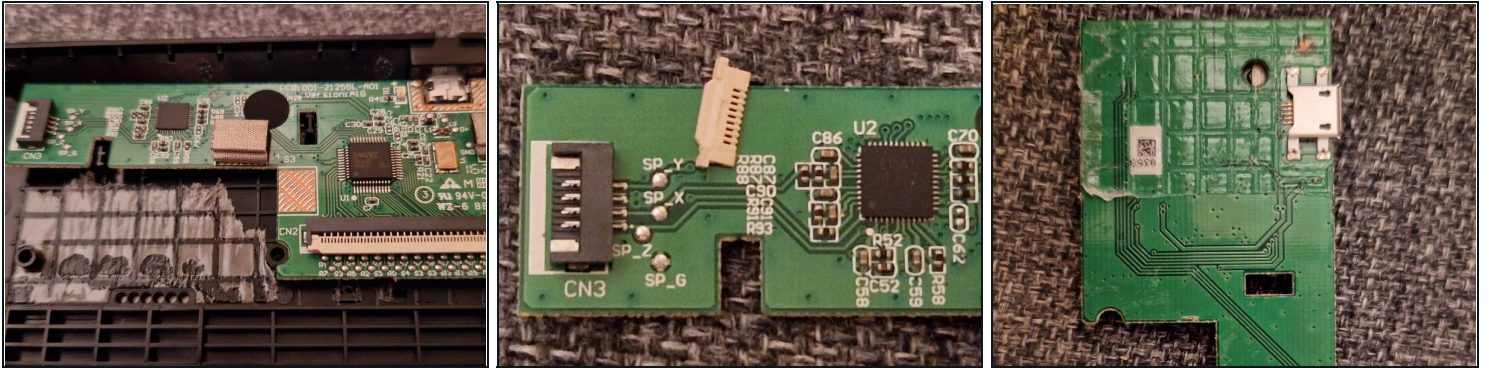
A USB4520-03-1-A SMD USB connector is chosen as the replacement part.

## Step 1 — Disassemble



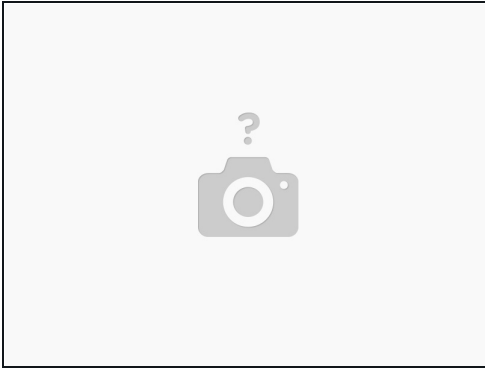
- Remove the frame with a soft thin plastic tool (or finger-nails)
- Carefully remove the keyboard from the back-cover. There is quite a lot of double sided tape. Be careful to not bend the metal frame of the keyboard.
- As a result, you will be able to separate the keyboard from the back cover. Only two flex PCB cables are still connecting them.

## Step 2 — Disconnect the flex PCB connections



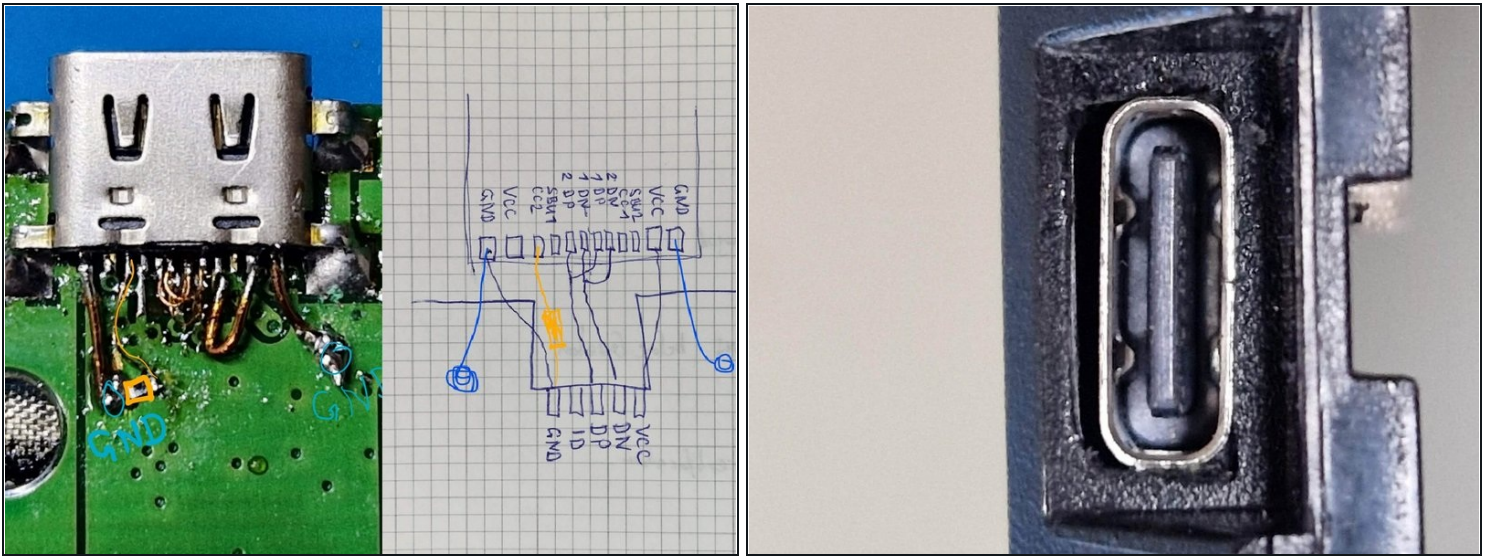
- Both flex PCB connections need to be disconnected. This is done by lifting the lids on CN2 and CN3.
- Careful to not lose the lid of connector CN2. It might come lose.
- The PCB needs to be removed from the back shell. It is also glued in with double sided tape. Fortunately the back of the PCB is not having any components.

### Step 3 — Prepare the new connector



- The USB-C connector component chosen was the USB4520-03-1-A made by GCT
- You can buy it e.g. at Digi-Key
  - Datasheet <https://gct.co/files/drawings/usb4520.pdf>
  - Digi-Key: <https://www.digikey.com/en/products/details/usb4520-03-1-a>
- After unsoldering the Micro-B connector the sides of the rectangular cutout needs to be filed out very little to make space for the slightly wider new connector
- File out also the opening in the back shell to allow the new part to fit through.

## Step 4 — Soldering in the new connector



- In the image the soldering and how it maps to the pads on the PCB are shown.
- The GND can be connected to the large copper area. Just scratch away a bit of the green isolating layer. A bit of flux helps.
- The soldering of the data lines is a bit fiddly and rather for people with some soldering skills. Thin coil wire is a helpful.
- In yellow the CC2 connection is shown. It requires a 5.1kOhm resistor to GND for correct identification by USB standard. The yellow rectangle represents the small SMD resistor.
- If rotation of the cable is not needed, the data lines can be soldered to only the two 1DP and 1DN pins.
- After testing, reassemble the whole keyboard. The last image shows how the USB-C fits into the opening.

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Arbeite die Schritte in umgekehrter Reihenfolge ab, um dein Gerät wieder zusammenzubauen.