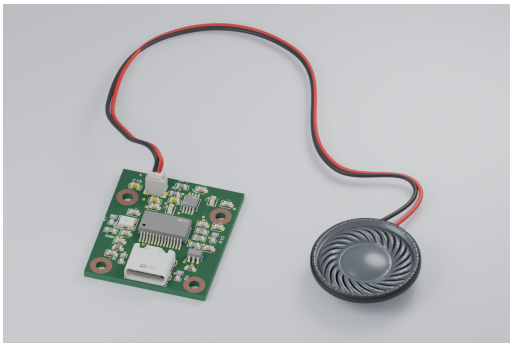
USB-C Speaker Board

1.1 Description

With the USB-C port facing you, plug the speaker straight down into **J2**, the white connector near the upper-left edge. Then connect the board to a computer with a USB-C data cable, and select **USB AUDIO DAC** in the computer's sound output settings. Music, voice and notification sounds play through the speaker. The board mixes left and right into mono.



Assembly view

1.2 Device specifications

Parameter	Specification
Audio	USB playback, 16-bit stereo at 32, 44.1 or 48 kHz; mixed to mono
Compatible speaker	8 Ω, 1 W Same Sky CMS-23558N-L152B
Speaker connector	2-pin JST SH, 1.0 mm pitch, top entry; pin 1 positive
Header height	4.3 mm above PCB before mating
PCB dimensions	26 × 30 × 1.6 mm
Mounting holes	4 × Ø2.2 mm for M2 screws; 20 × 20 mm center spacing

1.3 Using the board

Start at low system volume. Select USB AUDIO DAC as the audio output and play the test chime in the online guide.

Device guide

2 Protocol reference

The computer's USB Audio Class 1 driver handles playback and identification. Use the normal audio output API in an app. The RP2350 USB Motherboard would need a USB Audio host driver to stream to this board.

Operation	Host interface	Device behavior
Identify	Enumerate USB devices	Reports **USB AUDIO DAC**, VID `08BB`, PID `27C4`.
Play audio	Select the playback output and stream PCM	Accepts 16-bit stereo at 32, 44.1 or 48 kHz. Both channels feed the speaker.
Set volume	System or application volume control	Adjusts playback level.
Mute	System mute control	Silences the speaker.
Suspend	USB bus suspend	Disables the amplifier.

USB audio interface datasheet · Amplifier datasheet

Speaker connection

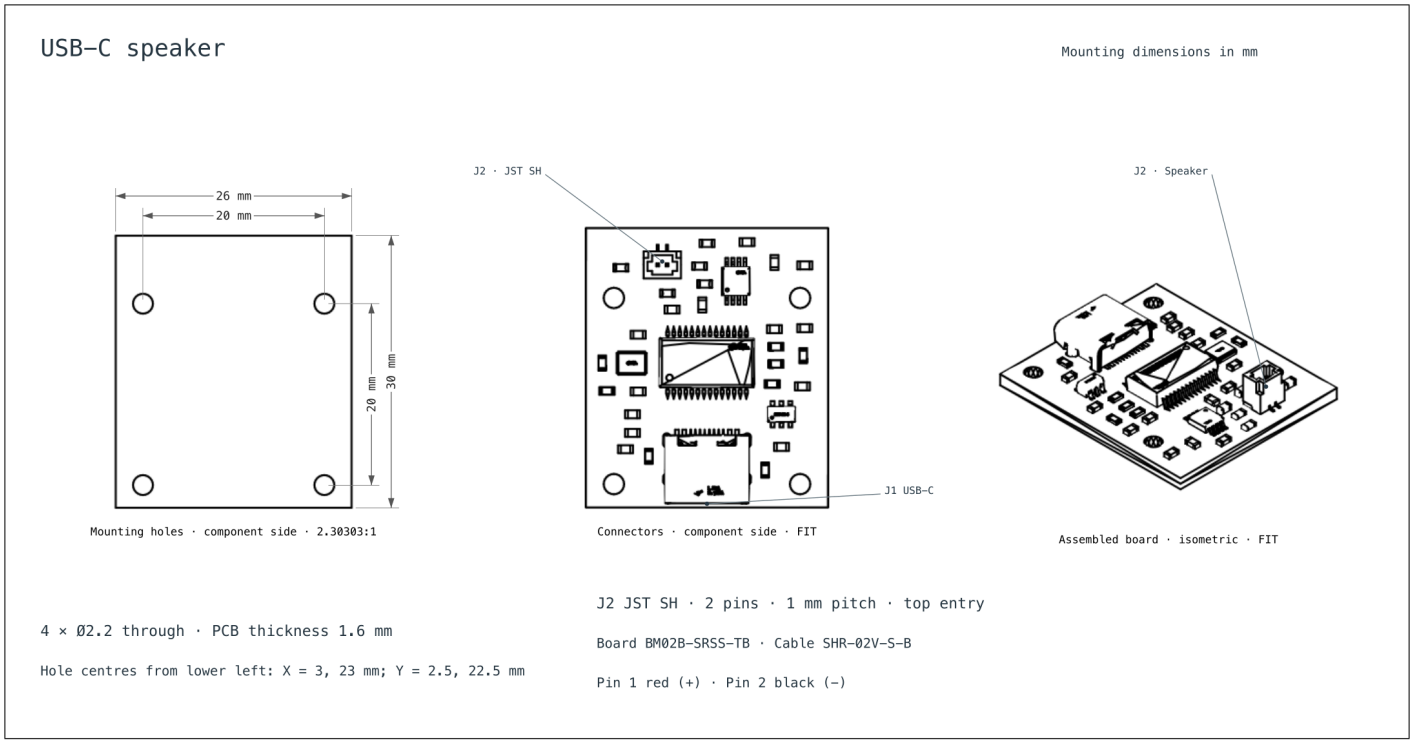
J2 accepts the **Same Sky CMS-23558N-L152B**, the 8 Ω, 1 W speaker used for the tscircuitboy advance. The 23 mm diameter speaker is 5.5 mm thick. Its 152 mm lead ends in a **JST SH SHR-02V-S-B** cable housing. It mates with the **BM02B-SRSS-TB** top-entry board header (two pins, 1.0 mm pitch). Align the keyed housings and press the plug straight down. Allow room above J2 to remove the plug and leave an opening in the enclosure over the speaker.

J2 pin	Speaker wire	Signal
1	Red	Speaker +
2	Black	Speaker −

Both wires are driven by the amplifier. Keep both isolated from enclosure ground. The speaker's 1 W rating describes its power handling. This board limits gain for a low-power USB port.

3 Mechanical information

3.1 Assembly and mounting



Component-side plan and isometric assembly. Dimensions in millimeters.

3.2 Installation dimensions

The PCB is **26 × 30 × 1.6 mm**. All components mount on top of the two-layer board. J2 reaches **4.3 mm above** the PCB before the speaker is plugged in. Four **Ø2.2 mm** holes accept M2 screws on a **20 × 20 mm** grid. With J1 at the bottom and the components facing you, the hole centres are at X = 3 and 23 mm, Y = 2.5 and 22.5 mm, measured from the lower-left corner.

3.3 Design resources

Device guide · **Full-size mounting drawing** · **Drawing TSX** · **PCB source**