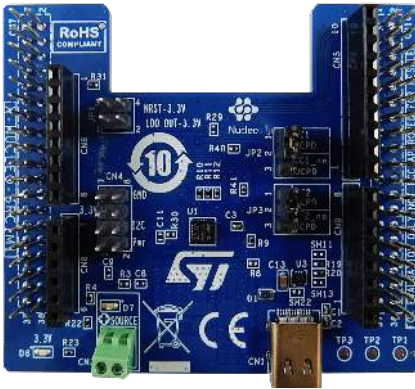


USB Type-C™ Power Delivery source expansion board based on TCPP02-M18 for STM32 Nucleo



Features

- Supports all USB Type-C™ Power Delivery SPR profiles up to 100 W
- Manages source role data/power configuration
- Compliant with USB 2.0 dual role data according to STM32 USB data capability
- 8/20 μ s surge and overcurrent protections, and discharge for V_{BUS}
- Short to V_{BUS} protection for configuration channel pins (CC1 and CC2)
- ESD protection (IEC61000-4-2 level 4 \pm 8 kV contact discharge) for CC1, CC2, D+, and D-
- Overvoltage and overcurrent protections, and discharge for V_{CONN}
- Common mode filter on D+/D- data lines
- Two power modes to optimize the current consumption
- Compliant with programmable power supplies (PPS)
- Free comprehensive development firmware library
- Compliant with STM32 Nucleo-64 boards featuring an STM32 with UCPD feature for Power Delivery and without UCPD feature for a 5 V solution only

Description

The **X-NUCLEO-SRC1M1** expansion board allows evaluating the features of the **TCPP02-M18** for the USB Type-C™ and the protections for V_{BUS} and CC lines suitable for source applications.

The expansion board is designed to be stacked on top of any STM32 Nucleo-64 development board with Power Delivery (UCPD) peripheral embedded in the microcontroller.

You can also stack it on top of any other STM32 Nucleo-64 development board not supporting the UCPD peripheral for 5 V, source only, to demonstrate the USB Type-C™ basic operations (attach, detach and 5 V power supply current capability information).

When using an STM32 Nucleo-64 development board with a Power Delivery peripheral, data functionalities as a host device or dual role data (DRD) are also allowed.

The **X-NUCLEO-SRC1M1** provides an effective demonstration of the source operation of the USB Type-C™ connector when an external compatible source is connected to the board. The integrated **ST715PU33R** LDO linear regulator can supply the connected **STM32 Nucleo** development board.

The **X-NUCLEO-SRC1M1** is compliant with the latest USB Type-C™ and Power Delivery specifications.

The companion software package (**X-CUBE-TCPP**) contains the application examples for the development boards embedding UCPD-based microcontrollers (for example, **NUCLEO-G071RB**, **NUCLEO-G474RE**, and **NUCLEO-G0B1RE**) and for those not supporting the UCPD peripheral (**NUCLEO-F446RE**).

| Product summary | |
|--|---------------------------------------|
| USB Type-C™ Power Delivery source expansion board based on TCPP02-M18 for STM32 Nucleo | X-NUCLEO-SRC1M1 |
| USB Type-C™ port protection for source application | TCPP02-M18 |
| USB Type-C™ software expansion for STM32Cube | X-CUBE-TCPP |
| Applications | USB Type-C™ and Power Delivery |

1 Schematic diagrams

Figure 1. X-NUCLEO-SRC1M1 circuit schematic (1 of 3)

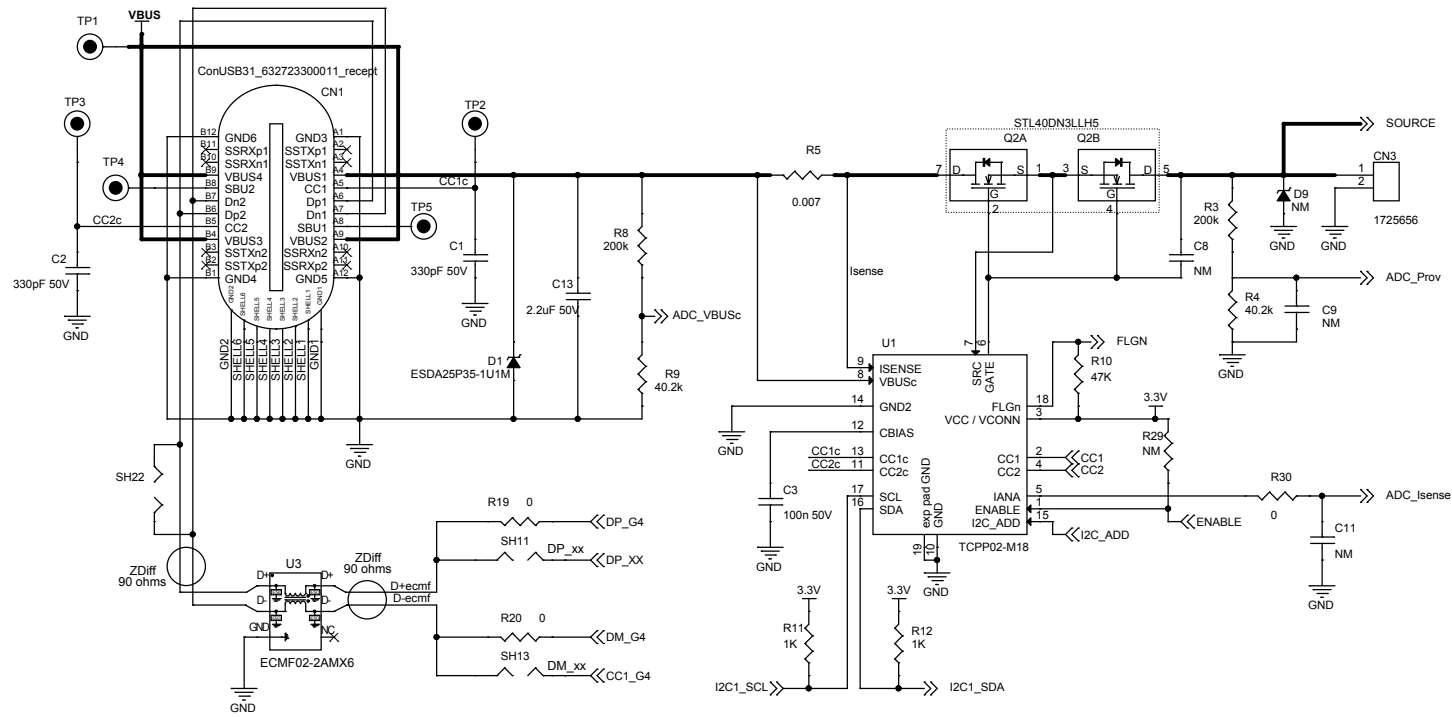


Figure 2. X-NUCLEO-SRC1M1 circuit schematic (2 of 3)

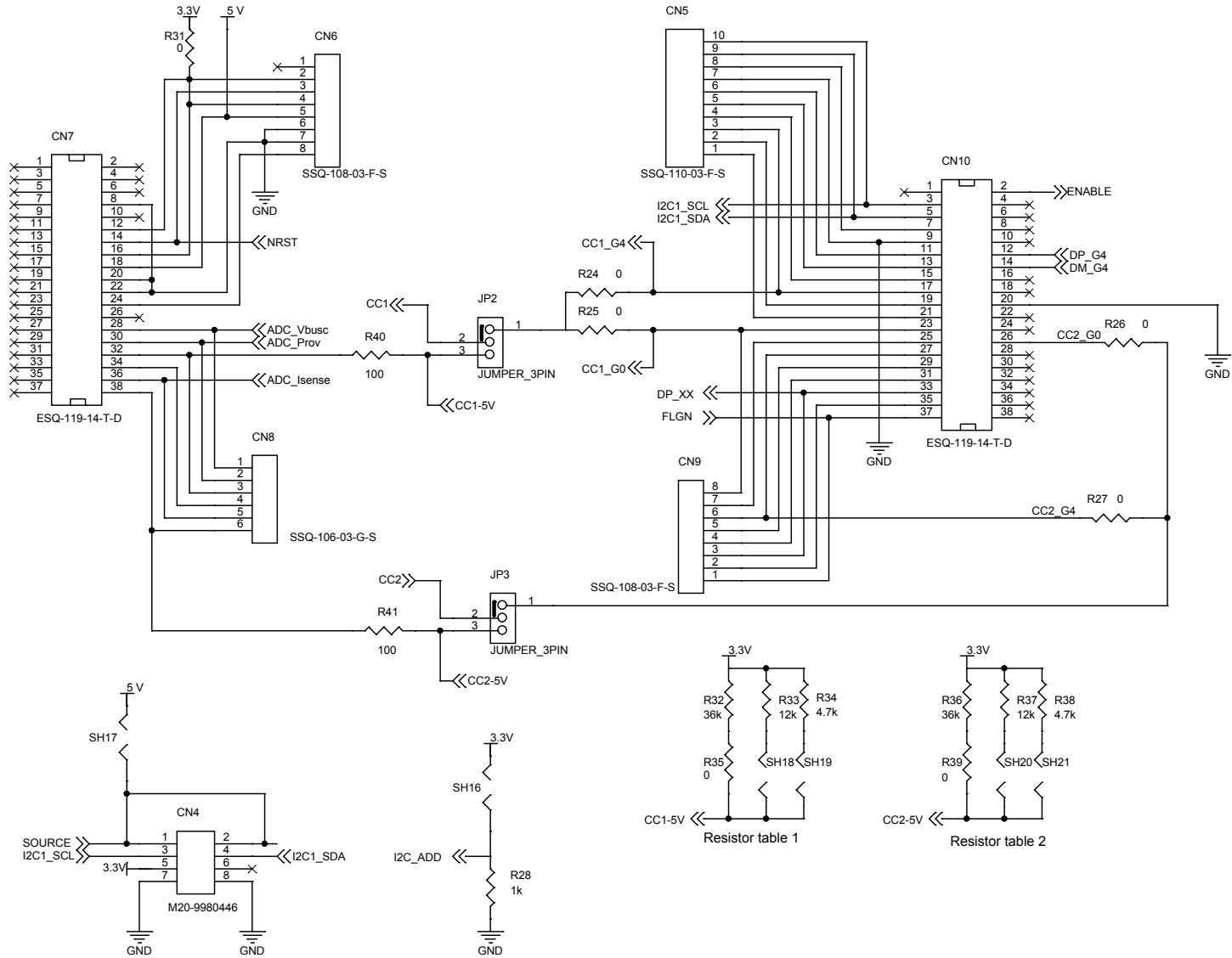
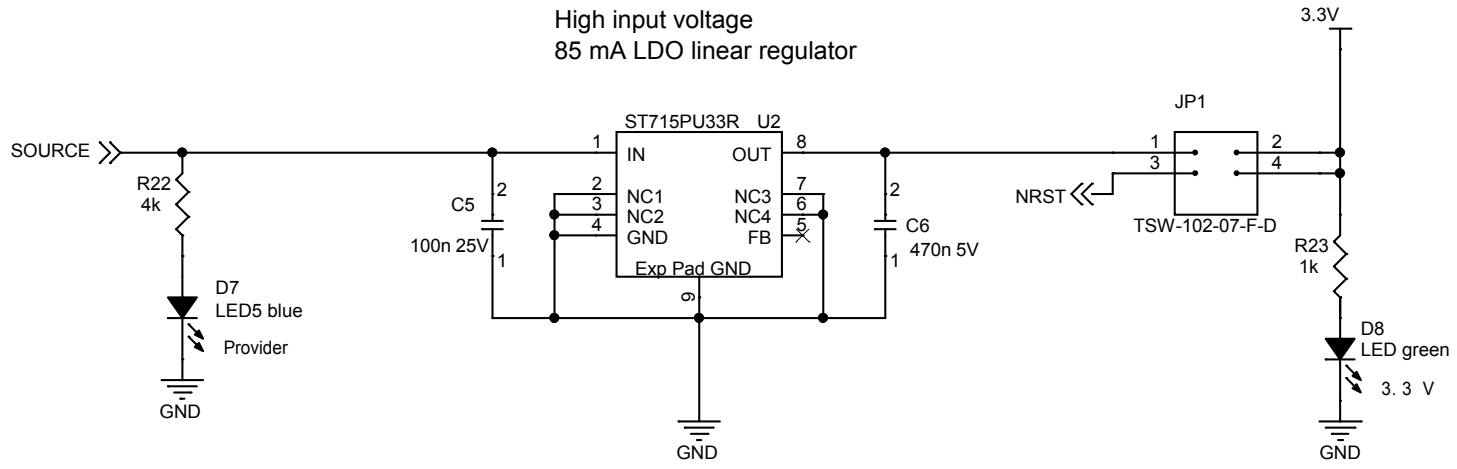


Figure 3. X-NUCLEO-SRC1M1 circuit schematic (3 of 3)

High input voltage
85 mA LDO linear regulator



2 Board versions

Table 1. X-NUCLEO-SRC1M1 versions

| Finished good | Schematic diagrams | Bill of materials |
|---------------------------------|-------------------------------------|------------------------------------|
| XNUCLEO\$SRC1M1A ⁽¹⁾ | XNUCLEO\$SRC1M1A schematic diagrams | XNUCLEO\$RSC1M1A bill of materials |

1. This code identifies the X-NUCLEO-SRC1M1 evaluation board first version.

Revision history

Table 2. Document revision history

| Date | Revision | Changes |
|-------------|----------|---------------------------------|
| 14-Dec-2021 | 1 | Initial release. |
| 09-May-2022 | 2 | Updated cover page description. |

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