

## Description

The CY53782/CY53782H (CY53782(H)) is a highly integrated USB Type-C® PD3.1 Dual-Role Power (DRP) controller to support Extended Power Range (EPR) / Adjustable Voltage Supply (AVS) up to 36V and Standard Power Range (SPR) / Programmable Power Supply (PPS) up to 21V.

The CY53782(H) is targeting for operating with external MCU through the I2C Interface pins (SCL, SDA), interrupt or UART mechanism. With the I2C registers and commands defined by the CY53782(H), the MCU could control the CY53782(H) to play as a sink controller to get the desired Request Data Object (RDO) from a PD3.1 compliant source adapter, or to play as a source PD controller to provide Power Data Object (PDO) capability to supply a Type-C connector equipped device (TCD). The CY53782(H) could consume as low as 50uA to meet requirement of equipped battery-power devices during the power down mode.

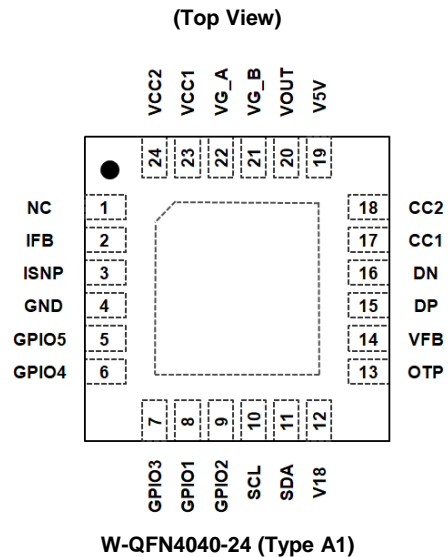
The CY53782(H) supports the QC2.0/3.0 functions and dead battery during the sink role, and provides both I2C control and VFB feedback for the DC/DC controller during the power negotiation. Meanwhile, the host MCU further could inquire about status of various I2C registers and control GPIO pins for intended applications. In addition, the CY53782(H) integrates Rp/Rd termination resistors for DRP, and operates from 3.3V up to 36V with low side current sense topology.

Based on high-voltage process, the CY53782(H) offers VBUS short protection for CC1/CC2 pins up to 34V. The smart built-in firmware of the CY53782(H) offers comprehensive safety protection schemes, including over-voltage protection (OVP), under-voltage protection (UVP), over-current protection (OCP), and moisture detection between DP and DN.

## Features

- Compliant with USB PD Rev 3.1 V1.8 EPR mode
- USB PD3.1 DRP controller
- Support EPR / AVS up to 36V with 100mV/step (CY53782H only)
- Support SPR / PPS up to 21V with 20mV/step and 50mA/step
- Support power down consumption as low as 50uA
- Support status register for system monitor and control
- Support I2C commands for source PDO capability selections and sink RDO voltage/current selections
- Support I2C commands and UART for external MCU to monitor and control, to program system parameters and GPIOs
- Support QC2.0/3.0 Sink controller
- Support dual gate drivers for N-MOS VBUS power switches
- Support dead-battery mode
- Operating voltage 3.3V to 36V with low side current sense
- Support VBUS and VOUT internal discharge paths
- Support OVP/UVP/OCP with auto restart
- Support moisture detection between DP and DN
- VBUS short protection for CC1/CC2 pins up to 34V

## Pin Assignments



## Applications

- Power Banks/Notebooks/Monitors
- Type-C Connector Equipped DC-Power Devices

## Typical Application Circuit

