

Description

The CY43070/CY43070H (CY43070(H)) is a single-chip synchronous buck controller (SBC) with USB Type-C® PD3.1 source controller to support Standard Power Range (SPR) / Programmable Power Supply (PPS) up to 21V, and Extended Power Range (EPR) / Adjustable Voltage Supply (AVS) up to 28V. It is targeted for DC power request and control for single-port or multiple-port charging applications.

The integration of SBC and PD3.1 decoder functions in the CY43070(H) results in small footprint and reduced PCB size for high-power density charging applications. By leveraging the MOS switches used by synchronous buck regulation, the PD output MOS switch for each port could be saved to reduce BOM cost. Meanwhile, the desired PD output power profile can be selected from the pre-loaded power data object (PDO) on the One-Time-Programmable (OTP) memory by external resistor to save extra 3rd party OTP programming cost and eases inventory control.

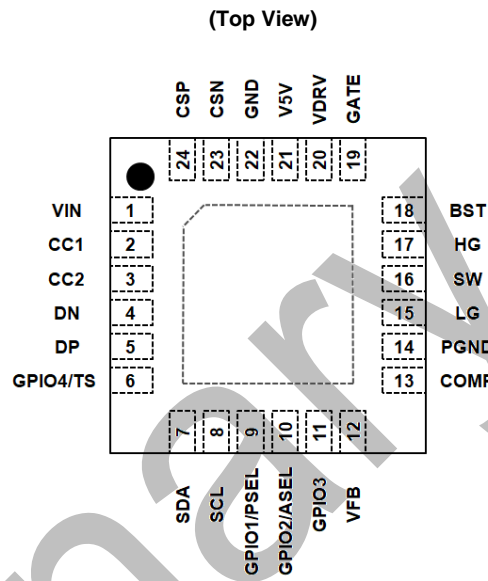
To support higher power efficiency, extreme low standby power, and smart power sharing for multiple-port applications, the CY43070(H) integrates I2C interface, I2C master/slave addressing scheme, interrupt and wake-up mechanism. Up to 8 port addresses is supported through resistor selection, the CY43070(H) can dynamically allocates pre-set power profile to each attached charging port and enter or exit standby mode for optimal power conservation.

Based on high-voltage process, the CY43070(H) offers VBUS short protection on CC1/CC2 pins up to 36V. Meanwhile, the CY43070(H) provides comprehensive safety protections, including over-voltage protection (OVP), over-current protection (OCP), over-thermal protection (OTP) and moisture detection between DP and DN pins.

Features

- Single chip buck controller with Type-C PD3.1 source controller
- Support USB PD3.1 v1.8 EPR/AVS up to 28V (CY43070H only)
- Support USB PD3.1 v1.8 SPR/PPS up to 21V
- Operating switching frequency from 125KHz to 425KHz
- Support high PWM duty cycle up to 99%
- Operating input voltage 3V to 36V
- Support By-Pass mode to enable input pass-through output
- Smart jitter for EMI performance
- Support legacy BC1.2, AFC, FCP, and QC3.0/4/4+/5.0
- Support I2C based topology up to 8 ports without external MCU
- Support I2C addresses up to 8 and assigned by resistor
- Support preloaded PDO profiles up to 8 and selected by resistor
- Support extreme low standby power (<100uA) with wake-up
- Comprehensive protection scheme - OVP, OCP, OTP and moisture detection between DP and DN
- VBUS short protection on CC1/CC2 pins up to 36V
- **Totally Lead-Free & Fully RoHS Compliant (Notes 1 & 2)**
- **Halogen and Antimony Free. "Green" Device (Note 3)**

Pin Assignments



W-QFN4040-24 (Type A1)

Applications

- Extreme low standby power multiple-port Type C PD3.1 SPR(EPR) chargers, adaptors, power strips or power hubs.
- Type C PD3.1 SPR(EPR) charging for high voltage battery of portable outdoor generators
- Type C PD3.1 SPR(EPR) chargers for general purpose charging applications

Typical Application Circuit

