



## **Type-C USB Port Mainstream Device that Triggered Exploding Demand**

The Type-C USB port has emerged as the standard port for notebook computer and smart phones, which replaces the convention Micro USB port. The rapid change in port type triggered abundant business opportunities, including portable power supply, hub and connection cable. New breeds of these devices are forthcoming in response to the urgent needs in market. Three types of Type-C USB control chips launched by ON Semiconductors are presented to help you keep up with the latest market needs in control.

## **The Diversity of Type-C USB Control Chips Satisfy Different Needs**

The design of many models of new notebook computers adopts the Type-C USB port to allow for slim and lightweight computers. The Type-C USB can fit in the port on both sides that makes it support higher input/output of current. As such, the Type-C USB port emerged as the mainstream port for consumer electronics. In response, ON Semiconductors unveiled a variety of this product to satisfy different application needs.

### **FUSB307B - USB Type-C Port Controller with USB-PD**

FUSB307B is a Type-C port controller (TCPC) designed for supporting up to 4 Type-C USB ports and featured the USB-PD function. This solution provides a Type-C Rev 1.3 test circuit that allows for manual activation/deactivation test. It automatically performs power supply in sequential order and disables the tasks of the  $\mu$ Processor or Type-C port manager (TCPM). The FUSB307B supports the USB-PD 1.0 version specification and could be served as the standard TCPC port with TCPM function and also the USB-PD port 1.0 version and compatible with the 1.2 version. Furthermore, this device also supports the USB Type-C Rev 1.3 compatible, USB-PD Rev 3.0 Version 1.1 compatible, and could engage in Fast Role Swap, Sink transmit, and Extended Data Message(Chunked). Under the USB-PD interface specification, it supports automatic GoodCRC packet response and automatic retry of sending packet. It supports all types of SOP and the VBUS source and Sink control and integrates 3W Capable VCONN to CCx switch. It featured 10 digits VBUS ADC, programmable GPIO, 4 selective I<sup>2</sup>C address. When the battery cannot function normally, VBUS supplies power, as the LDO output supplies power for TCPM.

The FUSB307B is primarily applicable to portable and wireless, automatic and consumer electronics, including smart phone, tablet PC, digital camera, desktop PC, Notebook PC, chargeable docks, speakers, and wall-mounted adapters.

### **NCP81239 - USB Power Delivery 4-Switch Buck Boost Controller**

The NCP81239 USB power delivery (PD) controller is 4-switch synchronized Buck Boost controller and is applicable to Notebook, tablet and desktop systems. It may also be used in a variety of consumer electronics with the standard USB PD Type-C cable. It optimizes its performance with battery voltage or adapter voltage for conversion along the power rail.

When the USB PD or Type-C port controller is used, the NCP81239 is fully compatible with the USB power delivery specification. The NCP81239 is applicable to the application of voltage supply limited by dynamic control slew rate. This type of application requires the voltage to be higher or lower than the input voltage. The NCP81239 can drive 4 N channel MOSFET switches for buck or boost voltage, and supports all USB PD applications in role swap function of consumer and provider regulated by USB power delivery specification..

The NCP81239 USB PD controller operating within the range from 4.5 V to 28 V, and supports all types of application extensively. Featured with a I<sup>2</sup>C port, it allows for the connection between uC with different devices to satisfy the power requirements of the USB-PD. The switching frequency ranges from 150 kHz to 1200 kHz, and optimizes the operation with proper balance between efficiency and dimension. In the conversion period, it

performs the function of conversion speed control that allows for achieving the USB-PD specification easily. It supports USB-PD, QC2.0 and QC3.0 profiles with protection against overvoltage and overcurrent.

NCP81239 is applicable to most consumer electronics, calculation, POS, Type-C USB, USB PD with end products including desktop PC, hub, docking station, power bank, and car charger.

### **LC709501F - Power Bank Controller with USB Power Delivery**

LC709501F is the Lithium ion switching power charging controller of power bank. This device controls all the functions of power bank application. It controls Type-C Port IC including Quick Charge 3.0 HVDCP. The built-in switch allows for quick charging with output ranging from 5V to 12V. The high power output of Type-C USB and quick charge could be realized through an external MOSFET.

LC709501F supports USB type-C DRP with port control IC, and eliminate the control IC for connecting MCU to Type-C port. In addition, it is not necessary for the customers to develop MCU software and helps to save cost, as the HV Boost IC and QC communication IC can be eliminated.

The portable device communication function displays the status of the power bank information on smart phone. Customers find out the information on the portable power supply on the screen of the smart phone, and proceed buck charge or boost charge. It also featured low quiescent current at 15 $\mu$ A under power saving mode. Power saving mode helps to make the battery more durable. The use of external MOSFET for power adjustment supports 30W application and USB BC1.2, universal adapter, battery measurement, and safety. It is compatible with JEITA battery management and supports safe charging and timer, and helps to prevent battery problem from charging.

LC709501F is principally applicable to Lithium-ion switching charger control and USB related charger and power bank application.