



**ON Semiconductor®**

# **Power Bank Solution**

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**LC709501F-A06 EVB Quick Guide**

**Jan 10, 2017**

**ON Semiconductor®**



## 1. LC709501F-A06 EVB Overview

## 2. A06 EVB Functions

\*\*\*Support USB Power Delivery(PD)

New

- USB1 PD(5V-12V) Output

New

- USB1 PD(5V-12V) Input

New

- USB1&USB3 2-port(PD & 5V) Output

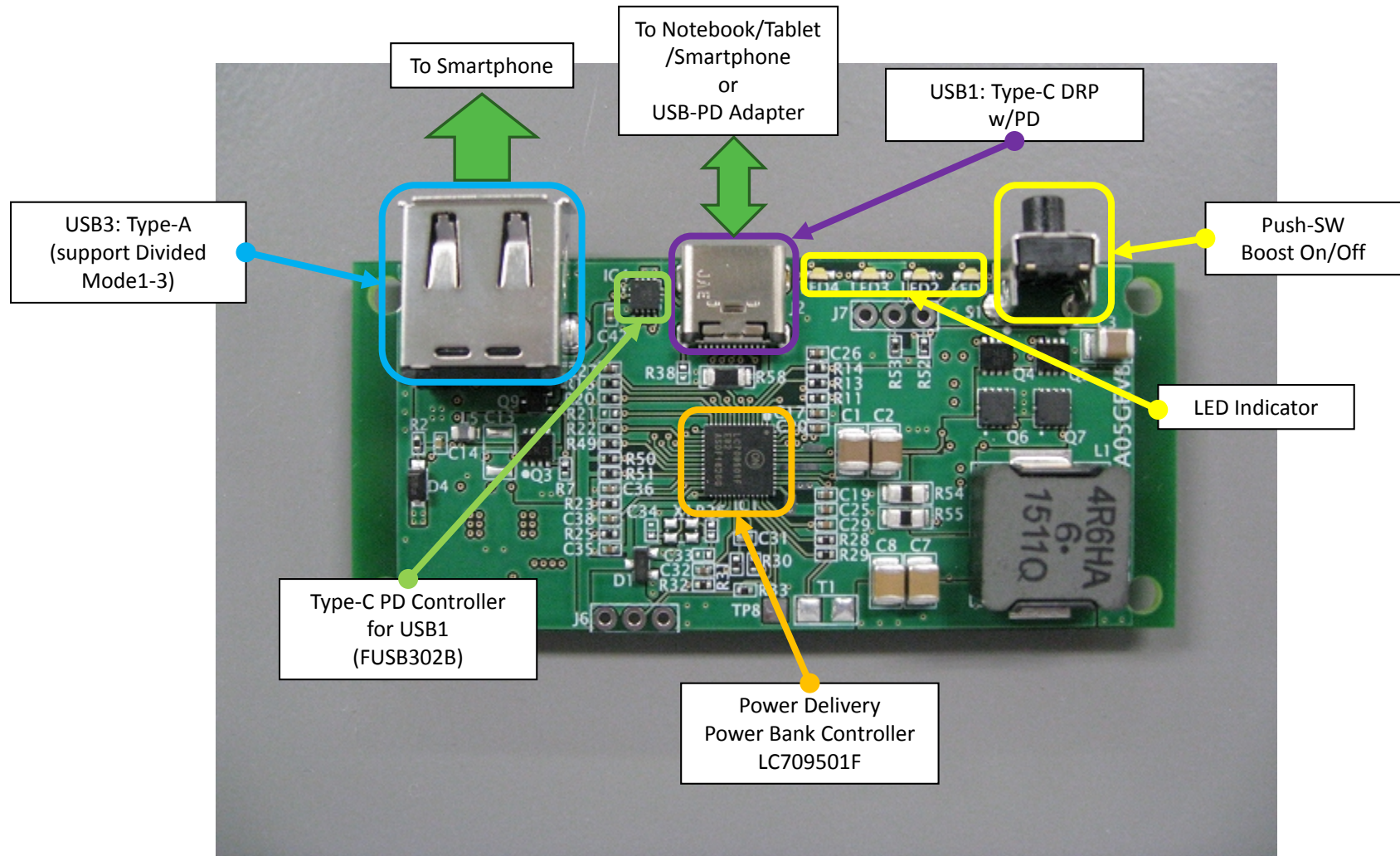
- USB1 QC3.0 Output (for none-PD device)

- USB1&USB3 2-port(QC3.0 & 5V) Output

- USB1 5V Output

- USB3 5V Output

# LC709501F : A06(Type-C w/PD, Type-A) EVB Overview



# LC709501F: A06 Feature details

|          |                            |                     |                 |
|----------|----------------------------|---------------------|-----------------|
| Hardware | Board                      |                     | LC709501A05GEVB |
| Software | Version                    |                     | LC709501F-FW06  |
| Input    | Types                      | Type-C(DRP)         | ✓               |
|          | Mode                       | SDP                 | Auto Detection  |
|          |                            | CDP                 |                 |
|          |                            | DCP                 |                 |
|          |                            | Divided Mode1(1A)   |                 |
|          |                            | Divided Mode2(2.1A) |                 |
|          |                            | Divided Mode3(2.4A) |                 |
|          |                            | Power Delivery      |                 |
|          | Charge                     | 5V                  | ✓ 3.0A          |
|          |                            | 9V                  | ✓ 3.0A          |
|          |                            | 12V                 | ✓ 2.25A         |
|          | Max Charge Wattage input1  | Input               | 27W             |
| Output-1 | Types of output1           | Type-C(DRP)         | ✓               |
|          | Mode of output1            | SDP(HOST)           | N/A             |
|          |                            | DCP                 | ✓               |
|          |                            | Divided Mode1(1A)   | N/A             |
|          |                            | Divided Mode2(2.1A) | N/A             |
|          |                            | Divided Mode3(2.4A) | N/A             |
|          |                            | QC3.0               | ✓               |
|          |                            | QC2.0               | ✓               |
|          |                            | Power Delivery      | ✓               |
|          | Discharge of output1       | 5V                  | ✓ 3.0A          |
|          |                            | 9V                  | ✓ 3.0A          |
|          |                            | 12V                 | ✓ 2.25A         |
|          | Max Charge Wattage output1 | Output1             | 27W             |
|          |                            |                     |                 |
|          |                            |                     |                 |
|          |                            |                     |                 |

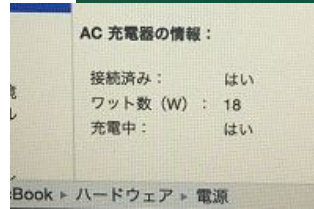
|                    |                                 |                     |      |
|--------------------|---------------------------------|---------------------|------|
| Output-2           | Types of output2                | Type-A              | ✓    |
|                    | Mode of output2                 | SDP(HOST)           | N/A  |
|                    |                                 | DCP                 | ✓    |
|                    |                                 | Divided Mode1(1A)   | ✓    |
|                    |                                 | Divided Mode2(2.1A) | ✓    |
|                    |                                 | Divided Mode3(2.4A) | N/A  |
|                    |                                 | QC3.0               | N/A  |
|                    |                                 | QC2.0               | N/A  |
|                    | Discharge of output2            | 5V                  | ✓ 2A |
|                    |                                 | 9V                  | N/A  |
|                    |                                 | 12V                 | N/A  |
|                    | Max Charge Wattage output2      | Output2             | 10W  |
|                    |                                 |                     |      |
|                    |                                 |                     |      |
| HOST               | PassThru                        |                     | N/A  |
|                    | HOST (Smartphone Communication) | Host                | N/A  |
|                    |                                 | Android             | N/A  |
|                    |                                 | iOS                 | N/A  |
| Smart phone Insert | Auto Detect                     | Case GND            | -    |
|                    |                                 | GND HighZ           | -    |
|                    |                                 | VDD Drop            | ✓    |
| LED                | LED                             |                     | 4    |
| Button             | Button                          |                     | ✓    |
| Error              | OVP                             |                     | ✓    |
|                    | OC                              |                     | ✓    |
|                    | SHORT                           |                     | ✓    |
|                    | Thermal                         |                     | ✓    |

# LC709501F : A06 EVB Functions

|                            | USB1                            | USB3         | Function                                  |       |
|----------------------------|---------------------------------|--------------|-------------------------------------------|-------|
|                            | Type-C DRP w/PD                 | Type-A       |                                           |       |
| LC709501F-A06<br>Ver. 0.01 | Note-PC/Tablet<br>/Smartphone_1 | N/A          | USB1 PD(5V-12V)<br>Output                 | FUNC1 |
|                            | PD Adapter                      | N/A          | USB1 PD(5V-12V)<br>Input                  | FUNC2 |
|                            | Note-PC/Tablet<br>/Smartphone_1 | Smartphone_2 | USB1&USB3<br>2-port (PD & 5V)<br>Output   | FUNC3 |
|                            | (None-PD)<br>Smartphone_1       | N/A          | USB1 QC3.0 Output                         | -     |
|                            | Smartphone_1                    | Smartphone_2 | USB1&USB3<br>2-port(QC3.0 & 5V)<br>Output | -     |
|                            | N/A                             | Smartphone_2 | USB3 5V Output                            | -     |
|                            |                                 |              |                                           |       |

# LC709501F : <FUNC1> USB1 PD(5V-12V) Output

USB1: Apple macbook  
Type-C DRP



USB1 PD+12V Output

USB1 Voltmeter

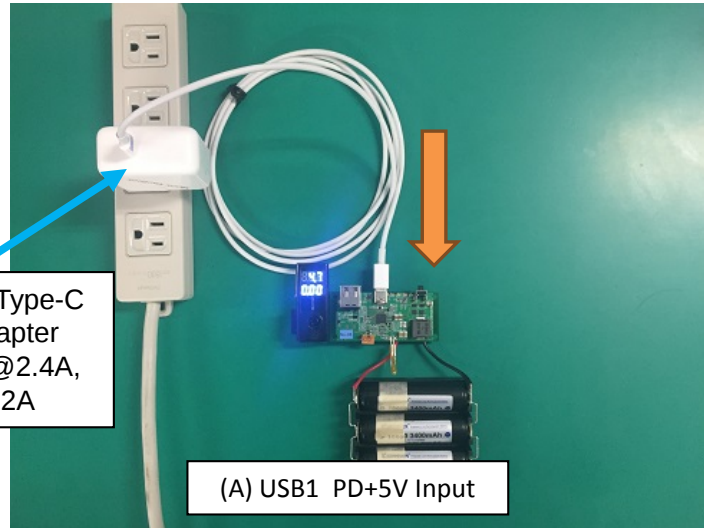
## <FUNC1> USB1 PD(5V-12V) Output

- ◆ When a PD device is plugged into USB1 Type-C DRP connector, it will automatically detect the PD device by the communication of the "USB Power Delivery" specifications and check the chargeable types to supply voltage within the range of 5V~12V.  
ex.) macbook:12V output
- ◆ LED1 will flash during power supply.
- ◆ Power supply will automatically stop when full-charge is detected on the smartphone.
- ◆ Type-C cable can be connected upside down for the automatic detection and power supply.

USB1: LG G5  
Type-C DRP

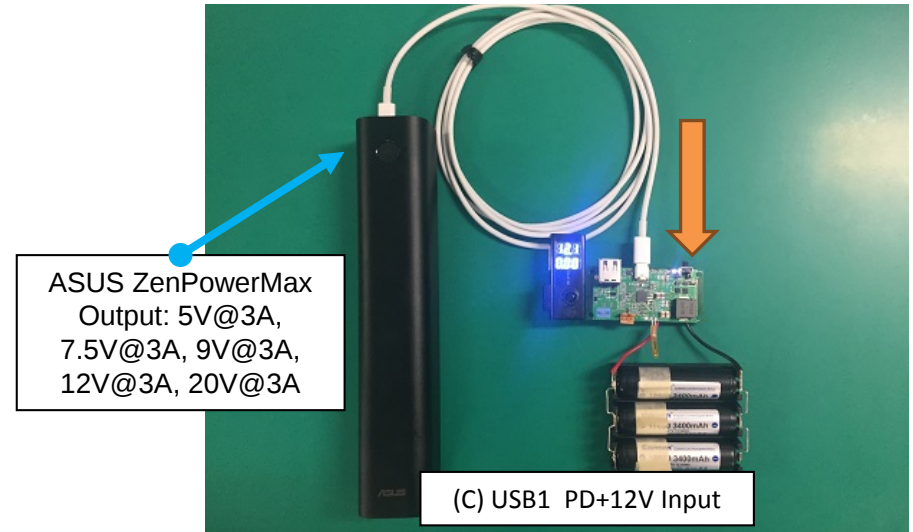
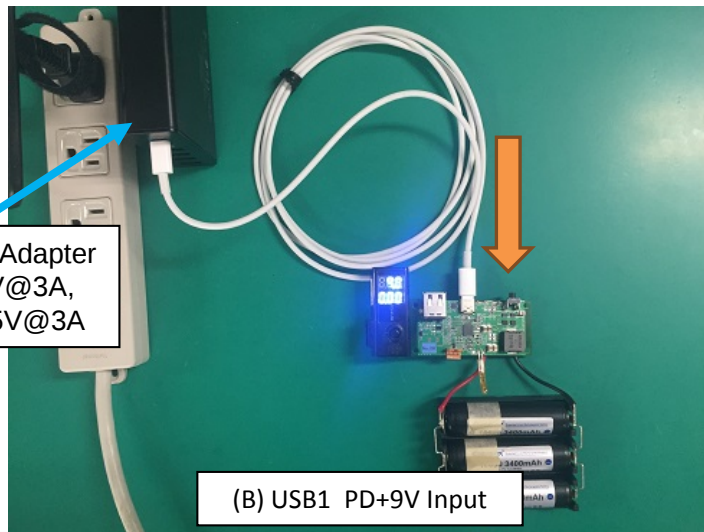
USB1 PD+9V Output

# LC709501F : <FUNC2> USB1 PD(5V-12V) Input



## <FUNC2> USB1 PD(5V-12V) Input

- ◆ When an USB adapter is plugged into an USB1 Type-C DRP connector, it choose the most suitable voltage by the communication of the “USB Power Delivery” specifications, it will automatically start to charge the internal battery.
- ◆ Number of LEDs will flash based on the battery remaining amount while charging internal battery.
- ◆ Battery charging will automatically stop once it is fully charged.



## LC709501F : <FUNC3> USB1&USB3 2-port(PD & 5V) Output

USB1:  
Xiaomi MI 5  
Android 6.0.0  
USB Type-C x1(DRP)  
QC3.0 support

USB3: Apple  
macbook  
Type-C DRP

**<FUNC3> USB1&USB3 2-port(PD&5V) Output**

- ◆ Two smartphones can be charged at the same time when Smartphone\_1 is connected to USB1 Type-C DRP and Smartphone\_2 is connected to USB2 Type-A connector.
- ◆ At this time, USB3 is supplied with a voltage of 5V fixed, USB1 is supplied a voltage within a range of 5V – 12V.
- ◆ LED1 is flashing while charging two smartphones.

### USB3 5V Output

## USB1 PD 12V Output