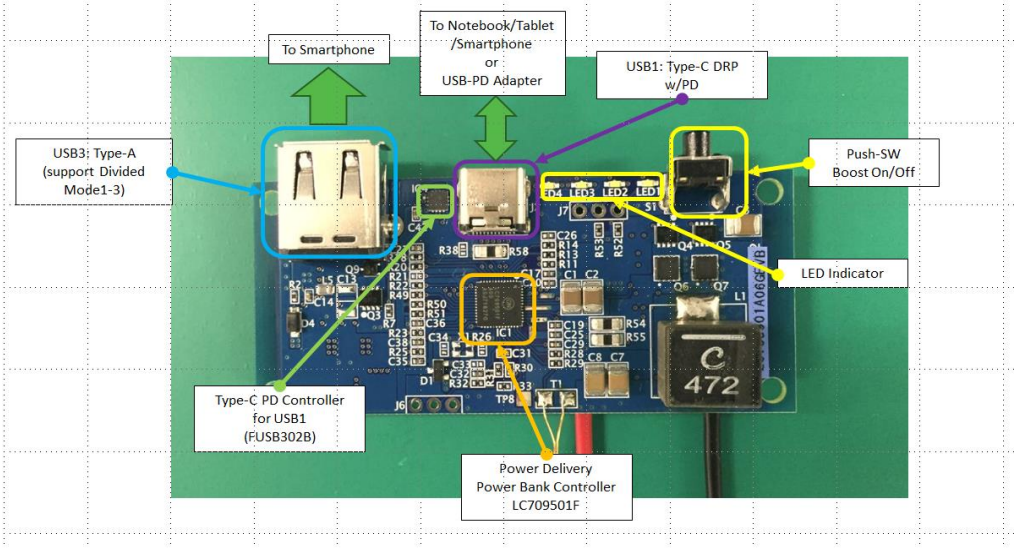
CONFIDENTIAL

ON Semiconductor®

Power Bank Controller

Software Documentation for LC709501F-RF06

Rev. 0.02



Revision History

REV	*DATE*	*DESCRIPTION*
1	July.6, 2017	1st version release
2	July.31, 2019	2nd version release

LC709501F-RF06 Software Features

1. Input-Output
  USB1: Type-C(DRP), Power Delivery supported
        Input 5V max. 3A, 9V max. 3A, 12V max.2.37A
        Output BC1.2 QC3.0 class-A supported
  USB3: Type-A Output 5V max. 2.4A

2. Development Environment
  EDE for Xstormy16 Version 1.36 with LC709501F
  - Compiler user options: -O2 -Wreturn-type -Wimplicit-function-declaration
  - Assembler user options: (none)
  - Linker user options: -Xlinker -Map -Xlinker LC709501F-RF06.map

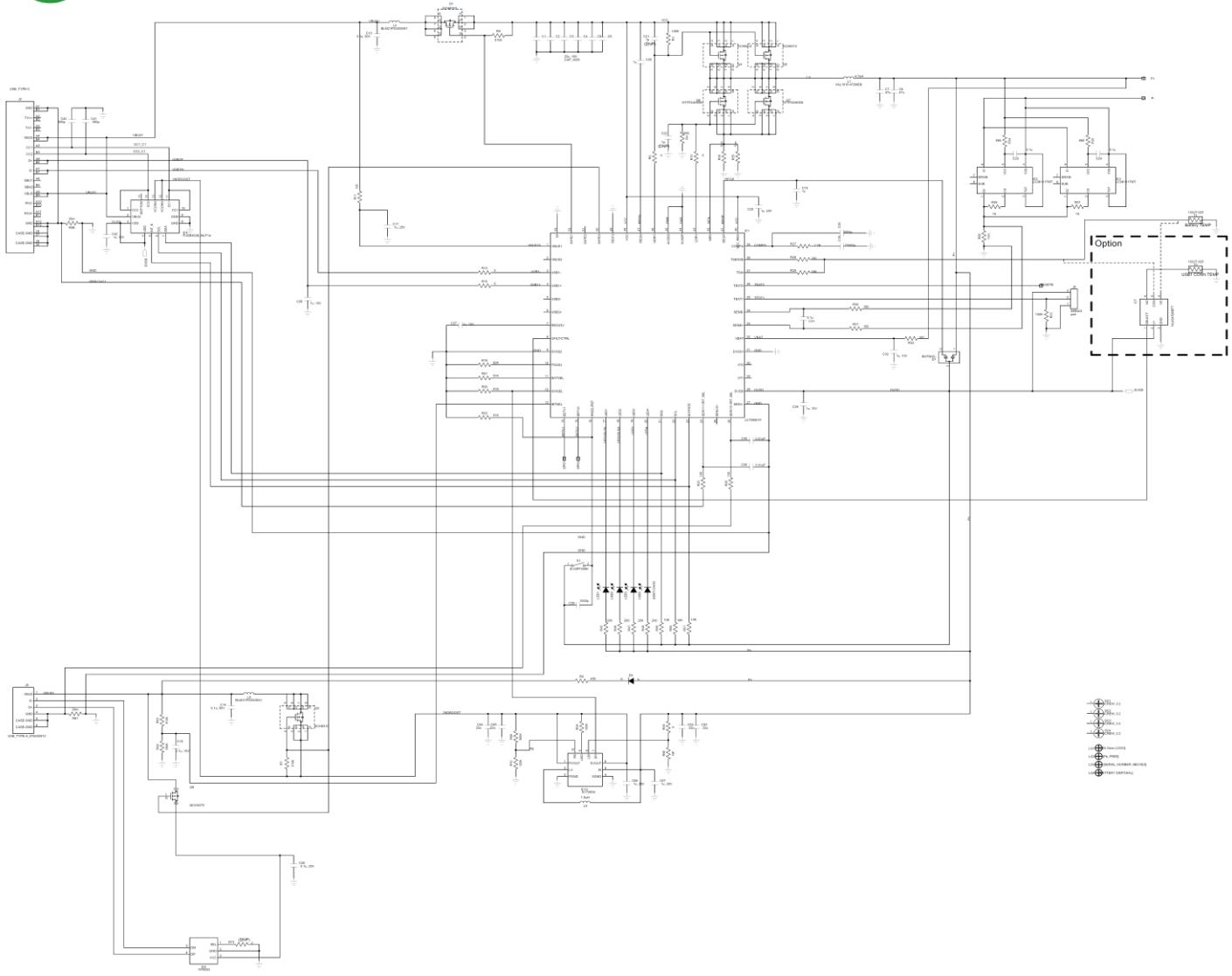
3. Details

Hardware	Board	LC709501A06GEVB	
Software	Version	LC709501F-RF06	
Input	Types	Type-C(DRP)	✔
	Mode	SDP	Auto Detection
		CDP	
		DCP	
		Divided Mode1(1A)	
		Divided Mode2(2.1A)	
		Divided Mode3(2.4A)	
		Type-C	
		Power Delivery	
	Charge	5V	✔ 3.0A
		9V	✔ 3.0A
		12V	✔ 2.37A
	Max Charge Wattage input1	Input	28.5W
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)	✔
		QC3.0	N/A
		QC2.0	N/A
	Discharge of output2	5V	✔ 2.4A
		9V	N/A
		12V	N/A
	Max Charge Wattage output2	Output2	12W
	PassThru		N/A
HOST	HOST (Smartphone Communication)	Host	N/A
		Android	N/A
		iOS	N/A
Smart phone Insert	Auto Detect	Case GND	N/A
		GND HighZ	N/A
		VDD Drop	✔
LED	LED		4
Button	Button		✔
Error	OVP		✔
	OCP		✔
	SHORT		✔
	Thermal		✔

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Schematic for the LC709501A06GEVB Evaluation Board



LC709501F-RF06 Configuration Parameter Lists CONFIDENTIAL

No.	Name	Set Range	Set Step	Unit	Initial Value	Description
1	bp	4200/4350	-	mV	4200	Item: Battery Profile Category: Battery Data sheet Symbol: V_CHG Relate: Battery specification Affect: Buck charge voltage/RSOC of battery Set charging voltage on battery datasheet. Prohibit “bp” from setting other than 4200/4350.
2	dc	2000-24400	100	mAh	13000	Item: Battery Design Capacity Category: Battery Data sheet Symbol: DC Relate: Battery specification Affect: RSOC of battery, shutdown Set "battery capacity" on battery datasheet. i.e.: Set 9600(3200x3) when use 3pcs of 3200mAh Li-ion Rechargeable Battery.
3	vp5_tc	30-1000	10	mA	200	Item: Boost 5V mode Termination Current Category: Boost Data sheet Symbol: I_BTERM Relate: Set specification Affect: Boost mode, shutdown Set current through USB of the shutdown in the Boost 5V mode output. When the voltage more than "Boost 5V mode Termination Voltage" and current values less than "vp5_tc" are detected in the 5V output in succession at the same time, Boost operation.
4	vp5_tv	4750-5250	50	mV	4750	Item: Boost 5V mode Termination Voltage Category: Boost Data sheet Symbol: - Relate: Set specification Affect: Boost mode, shutdown Set voltage of USB of the shutdown in the Boost 5V mode output. When the current less than "Boost 5V mode Termination Current" and voltage values more than "vp5_tv" are detected in the 5V output in succession at the same time, Boost operation.
5	vp5_uvp	4400-4750	50	mV	4400	Item: Boost 5V mode Lower Limit Voltage Category: Boost Data sheet Symbol: V_BUVP Relate: Set specification Affect: Boost mode, shutdown, error Set minimum voltage of USB output. When output voltage is less than "vp5_uvp" in Boost 5V mode, boost is stopped as abnormal status.
6	vp5_ovp	5200-5600	100	mV	5600	Item: Boost 5V mode Upper Limit Voltage Category: Boost Data sheet Symbol: V_BOVP Relate: Set specification Affect: Boost mode, shutdown, error Set maximum voltage of USB output. When output voltage is more than "vp5_ovp" in Boost 5V mode, boost is stopped as abnormal status.
7	vp5_oc	1500-3300	100	mA	3300	Item: Boost 5V mode Over Current Category: Boost Data sheet Symbol: I_OUTOCP Relate: Set specification Affect: Boost mode, shutdown, error Set maximum current through USB output. When output current is more than "vp5_oc" in Boost 5V mode (5V-7.5V), boost is stopped as abnormal status.
8	vp5_mc	1500-3000	10	mA	3000	Item: Boost 5V mode Maximum Current Category: Boost Data sheet Symbol: I_MC_5V Relate: Set specification Affect: Boost mode, PD source capability Set maximum current through USB output. This value is used for Source Capability of Power Delivery.

9	vp9_tc	100-1000	10	mA	200	Item: Boost 9V mode Termination Current Category: Boost Data sheet Symbol: I_BTERM Relate: Set specification Affect: Boost mode, shutdown Set current through USB of the shutdown in the Boost 9V mode output. When the voltage more than "Boost 9V mode Termination Voltage" and current values less than "vp9_tc" are detected in the 9V output in succession at the same time, Boost operation.
10	vp9_tv	8200-9800	50	mV	8200	Item: Boost 9V mode Termination Voltage Category: Boost Data sheet Symbol: - Relate: Set specification Affect: Boost mode, shutdown Set voltage of USB of the shutdown in the Boost 9V mode output. When the current less than "Boost 9V mode Termination Current" and voltage values more than "vp9_tv" are detected in the 9V output in succession at the same time, Boost operation.
11	vp9_uvp	7200-8100	100	mV	7200	Item: Boost 9V mode Lower Limit Voltage Category: Boost Data sheet Symbol: V_BUVP Relate: Set specification Affect: Boost mode, shutdown, error Set minimum voltage of USB output. When output voltage is less than "vp9_uvp" in Boost 9V mode, boost is stopped as abnormal status.
12	vp9_ovp	9800-13500	100	mV	9900	Item: Boost 9V mode Upper Limit Voltage Category: Boost Data sheet Symbol: V_BOVP Relate: Set specification Affect: Boost mode, shutdown, error Set maximum voltage of USB output. When output voltage is more than "vp9_ovp" in Boost 9V mode, boost is stopped as abnormal status.
13	vp9_oc	1500-3300	100	mA	3300	Item: Boost 9V mode Over Current Category: Boost Data sheet Symbol: I_OUTOCP Relate: Set specification Affect: Boost mode, shutdown, error Set maximum current through USB output. When output current is more than "vp9_oc" in Boost 9V mode(7.5V-10.5V), boost is stopped as abnormal status.
14	vp9_mc	1500-3000	10	mA	3000	Item: Boost 9V mode Maximum Current Category: Boost Data sheet Symbol: I_MC_9V Relate: Set specification Affect: Boost mode, PD source capability Set maximum current through USB output. This value is used for Source Capability of Power Delivery.
15	vp12_tc	100-1000	10	mA	200	Item: Boost 12V mode Termination Current Category: Boost Data sheet Symbol: I_BTERM Relate: Set specification Affect: Boost mode, shutdown Set current through USB vp12_tvof the shutdown in the Boost 12V mode output. When the voltage more than "Boost 12V mode Termination Voltage" and current values less than "vp12_tc" are detected in the 12V output in succession at the same time, Boost operation.
16	vp12_tv	10900-13100	50	mA	10900	Item: Boost 12V mode Termination Voltage Category: Boost Data sheet Symbol: - Relate: Set specification Affect: Boost mode, shutdown Set voltage of USB of the shutdown in the Boost 12V mode output. When the current less than "Boost 12V mode Termination Current" and voltage values more than "vp12_tv" are detected in the 12V output in succession at the same time, Boost operation.
17	vp12_uvp	9600-10800	100	mV	9600	Item: Boost 12V mode Lower Limit Voltage Category: Boost Data sheet Symbol: V_BUVP Relate: Set specification Affect: Boost mode, shutdown, error Set minimum voltage of USB output. When output voltage is less than "vp12_uvp" in Boost 12V mode, boost is stopped as abnormal status.

18	vp12_ovp	13100-13500	100	mV	13200	Item: Boost 12V mode Upper Limit Voltage Category: Boost Data sheet Symbol: V_BOVP Relate: Set specification Affect: Boost mode, shutdown, error Set maximum voltage of USB output. When output voltage is more than "vp12_ovp" in Boost 12V mode, boost is stopped as abnormal status.
19	vp12_oc	1500-3000	100	mA	2500	Item: Boost 12V mode Over Current Category: Boost Data sheet Symbol: I_OUTOCP Relate: Set specification Affect: Boost mode, shutdown, error Set maximum current through USB output. When output current is more than "vp12_oc" in Boost 12V mode (10.5V-12V), boost is stopped as abnormal status.
20	vp12_mc	1500-2250	10	mA	2250	Item: Boost 12V mode Maximum Current Category: Boost Data sheet Symbol: I_MC_12V Relate: Set specification Affect: Boost mode, PD source capability Set maximum current through USB output. This value is used for Source Capability of Power Delivery.
21	vpcnt_tc	30-1000	10	mA	200	Item: Boost Cont. Termination Current Category: Boost Data sheet Symbol: I_BTERM Relate: Set specification Affect: Boost mode, shutdown Set current through USB of the shutdown in the boost output during QC Continuous mode. When the voltage more than "Boost Cont. Termination Voltage" and current values less than "vpcnt_tc" are detected in the QC Continuous mode output in succession at the same time, Boost operation.
22	vpcnt_tv	4750-13100	50	mA	4750	Item: Boost Cont. Termination Voltage Category: Boost Data sheet Symbol: - Relate: Set specification Affect: Boost mode, shutdown Set voltage of USB of the shutdown in the QC Continuous mode output. When the current less than "Boost Cont. Termination Current" and voltage values more than "vpcnt_tv" are detected in the QC Continuous mode output in succession at the same time, Boost operation.
23	vpcnt_uvp	4400-4750	100	mV	4400	Item: Boost Cont. Lower Limit Voltage Category: Boost Data sheet Symbol: V_BUVP Relate: Set specification Affect: Boost mode, shutdown, error Set minimum voltage of USB output. When output voltage is less than "vpcnt_uvp" in the QC Continuous mode, boost is stopped as abnormal status.
24	vpcnt_ovp	13100-13500	100	mV	13500	Item: Boost Cont. Upper Limit Voltage Category: Boost Data sheet Symbol: V_BOVP Relate: Set specification Affect: Boost mode, shutdown, error Set maximum voltage of USB output. When output voltage is more than "vpcnt_ovp" in the QC Continuous mode, boost is stopped as abnormal status.
25	vp5_tc2	30-1000	10	mA	200	Item: Boost2 5V mode Termination Current Category: Boost2 Data sheet Symbol: I_BTERM Relate: Set specification Affect: Boost mode, shutdown Set current through USB of the shutdown in the Boost2 5V mode output. When the voltage more than "Boost2 5V mode Termination Voltage" and current values less than "vp5_tc2" are detected in the 5V output in succession at the same time, Boost operation.
26	vp5_tv2	4750-5250	50	mV	4750	Item: Boost2 5V mode Termination Voltage Category: Boost2 Data sheet Symbol: - Relate: Set specification Affect: Boost mode, shutdown Set voltage of USB of the shutdown in the Boost2 5V mode output. When the current less than "Boost2 5V mode Termination Current" and voltage values more than "vp5_tv2" are detected in the 5V output in succession at the same time, Boost operation.

27	vp5_uvp2	4400-4750	100	mV	4400	Item: Boost2 5V mode Lower Limit Voltage Category: Boost2 Data sheet Symbol: V_BUVP Relate: Set specification Affect: Boost mode, shutdown, error Set minimum voltage of USB output. When output voltage is less than "vp5_uvp2" in Boost2 5V mode, boost is stopped as abnormal status.
28	vp5_ovp2	5200-5600	100	mV	5600	Item: Boost2 5V mode Upper Limit Voltage Category: Boost2 Data sheet Symbol: V_BOVP Relate: Set specification Affect: Boost mode, shutdown, error Set maximum voltage of USB output. When output voltage is more than "vp5_ovp2" in Boost2 5V mode, boost is stopped as abnormal status.
29	vp5_oc2	1500-3000	100	mA	3000	Item: Boost2 5V mode Over Current Category: Boost2 Data sheet Symbol: I_OUTOCP Relate: Set specification Affect: Boost mode, shutdown, error Set maximum current through USB output. When output current is more than "vp5_oc2" in Boost2 5V mode, boost is stopped as abnormal status.
30	bp_ic	1500-3000	100	mA	3000	Item: Input Current Category: Buck Data sheet Symbol: - Relate: Set specification Affect: Buck charge Set the upper limit of VBUS input current from the unknown adaptor. The Maximum input current is limited by the Maximum input wattage of an application.
31	bp_pc	200-500	1	mA	500	Item: Buck Pre-charge Current Category: Buck Data sheet Symbol: I_PRE Relate: Set Specification, Battery Specification Affect: Buck charge Set the Pre-charge current at Buck charge. Refer “Buck charge" of the datasheet about the detailed information. Pre-charge current is decided by the specifications of an Application.
32	bp_tc	200-800	1	mA	650	Item: Buck Termination Current Category: Buck Data sheet Symbol: I_TERM Relate: Set Specification, Battery Specification Affect: Buck charge Set the Termination current at Buck charge. Refer “Buck charge" of the datasheet about the detailed information. The Termination current is decided by the specifications of an Application.
33	bp5_uvp	4400-4500	100	mV	4400	Item: Buck 5V Lower Limit Voltage Category: Buck Data sheet Symbol: V_BUVP Relate: Set Specification Affect: Buck charge, error Set the lower limit of VBUS voltage at Buck charge or Boost charge. Refer “Protection" of the datasheet about the detailed information. This value is decided by the specifications of an Application.
34	bp5_ovp	5250-6500	100	mV	6000	Item: Buck 5V Upper Limit Voltage Category: Buck Data sheet Symbol: V_BOVP Relate: Set Specification Affect: Buck charge, error Set the upper limit of VBUS voltage at Buck charge or Boost charge. This limitation is applied to 5V mode. Refer "Protection" of the datasheet about the detailed information. This value is decided by the specifications of an Application.
35	bp5_cc	1000-6000	50	mA	6000	Item: Buck 5V mode CC Current Category: Buck Data sheet Symbol: I_CHG Relate: Set Specification, Battery Specification Affect: Buck charge, error Set the Constant charge current at Buck charge. Refer "Buck charge" of the datasheet and battery specifications to fix the value.

36	bp9_cc	1000-6000	50	mA	6000	Item: Buck 9V mode CC Current Category: Buck Data sheet Symbol: I_CHG Relate: Set Specification, Battery Specification Affect: Buck charge, error Set the Constant charge current at 9V mode of Buck charge. Refer "Buck charge" of the datasheet and battery specifications to fix the value.
37	bp12_cc	1000-6000	50	mA	6000	Item: Buck 12V mode CC Current Category: Buck Data sheet Symbol: I_CHG Relate: Set Specification, Battery Specification Affect: Buck charge, error Set the Constant charge current at 12V mode of Buck charge. Refer "Buck charge" of the datasheet and battery specifications to fix the value.
38	bp_tmax	120(2H)- 1440(24H)	1(1min)	min	900(15H)	Item: Buck Charge Maximum Time Category: Buck Data sheet Symbol: T_CMAX Relate: Battery specification Affect: Buck charge Set the maximum time for Buck Charge operation. Power Bank will stop this time or more back-charge operation for safety.
39	cb	2600-4700	50	K	3300	Item: Constant-B Category: Thermometer Data sheet Symbol: CB Relate: Thermistor specification Affect: Buck charge, Boost charge, RSOC, error Set the B-constant of NTC thermistor. Refer the specification of thermistor to fix the value.
40	cell_hot	2732(0℃) -3532(80℃) > cell_warm	50(5℃)	K	3332(60℃)	Item: Cell Temp "HOT" Level Category: Thermometer Data sheet Symbol: T_HOT Relate: Battery specification Affect: Buck charge, error Set the upper limit of temperature measured by NTC thermistor at Buck Charge. Refer “Buck charge" of the datasheet. And check the highest temperature that charging is permitted in battery specifications.
41	cell_warm	2732(0℃) -3532(80℃) > cell_cool	50(5℃)	K	3182(45℃)	Item: Cell Temp "WARM" Level Category: Thermometer Data sheet Symbol: T_WARM Relate: Battery specification Affect: Buck charge Set the upper limit of temperature measured by NTC thermistor at Buck Charge. Refer “Buck charge" of the datasheet. And check the highest temperature that charging is permitted in battery specifications.
42	cell_cool	2732(0℃) -3532(80℃) > cell_cold	50(5℃)	K	2832(10℃)	Item: Cell Temp "COOL" Level Category: Thermometer Data sheet Symbol: T_COOL Relate: Battery specification Affect: Buck charge Set the lower limit of temperature measured by NTC thermistor at Buck Charge. Refer “Buck charge" of the datasheet. And check the lowest temperature that charging is permitted in battery specifications.
43	cell_cold	2732(0℃) -3532(80℃)	50(5℃)	K	2732(0℃	Item: Cell Temp "COLD" Level Category: Thermometer Data sheet Symbol: T_COLD Relate: Battery specification Affect: Buck charge Set the lower limit of temperature measured by NTC thermistor at Buck Charge. Refer “Buck charge" of the datasheet. And check the lowest temperature that charging is permitted in battery specifications.
44	cell_cold2	2532(-20℃) -3532(80℃)	50(5℃)	K	2532(-20℃)	Item: Cell Temp "COLD2" Level Category: Thermometer Data sheet Symbol: T_COLD2 Relate: Battery specification Affect: Boost charge Set the lower limit of temperature measured by NTC thermistor at Boost Charge. Check the lowest temperature that discharging is permitted in battery specifications.

45	cell_hot2	2532(-20℃) -3532(80℃)	50(5℃)	K	3332(60℃)	Item: Cell Temp "HOT2" Level Category: Thermometer Data sheet Symbol: T_HOT2 Relate: Battery specification Affect: Boost charge Set the upper limit of temperature measured by NTC thermistor at Boost Charge. Check the highest temperature that discharging is permitted in battery specifications.
46	reg_senb	100(10mΩ) -400(40mΩ)	10 (0.1mOhm)	Ohm	100 (10mOhm)	Item: Register Value of "SENB" Category: Buck Data sheet Symbol: - Relate: Set specification Affect: Buck charge Set the sense resistor values for the battery current measurement.
47	reg_senv1	100(10mΩ) -400(40mΩ)	10 (0.1mOhm)	Ohm	200 (20mOhm)	Item: Register Value of "SENV1" Category: Boost Data sheet Symbol: - Relate: Set specification Affect: Boost charge Set the sense resistor value for the current measurement of USB1.
48	reg_senv2	100(10mΩ) -400(40mΩ)	10 (0.1mOhm)	Ohm	200 (20mOhm)	Item: Register Value of "SENV2" Category: Boost Data sheet Symbol: - Relate: Set specification Affect: Boost charge Set the sense resistor value for the current measurement of USB2.
49	reg_senv3	100(10mΩ) -400(40mΩ)	10 (0.1mOhm)	Ohm	200 (20mOhm)	Item: Register Value of "SENV3" Category: Boost Data sheet Symbol: - Relate: Set specification Affect: Boost charge Set the sense resistor value for the current measurement of USB3.
50	usb1_type	2:micro-B 3:Type-C	-	Value	3	Item: Connector type of "USB1" Category: USB Data sheet Symbol: - Relate: Set specification Affect: USB port function Set the input connector type of "USB1".
51	usb2_type	0:NoUsed 1:Type-A 3:Type-C	-	Value	0	Item: Connector type of "USB2" Category: USB Data sheet Symbol: - Relate: Set specification Affect: USB port function Set the connector type of "USB2".
52	usb3_type	0:NoUsed 4:Type-A(Ext.)	-	Value	4	Item: Connector type of "USB3" Category: USB Data sheet Symbol: - Relate: Set specification Affect: USB port function Set the connector type of "USB3". USB3 only supports 5V output by external boost IC.
53	usb1_usbpd	0:No support 1:Support	-	Value	1	Item: USB1 USB-PD support Category: USB Data sheet Symbol: - Relate: Set specification Affect: USB port function Set the USB-PD support setting value of the USB1 port. This item is valid when USB1 is Type-C.

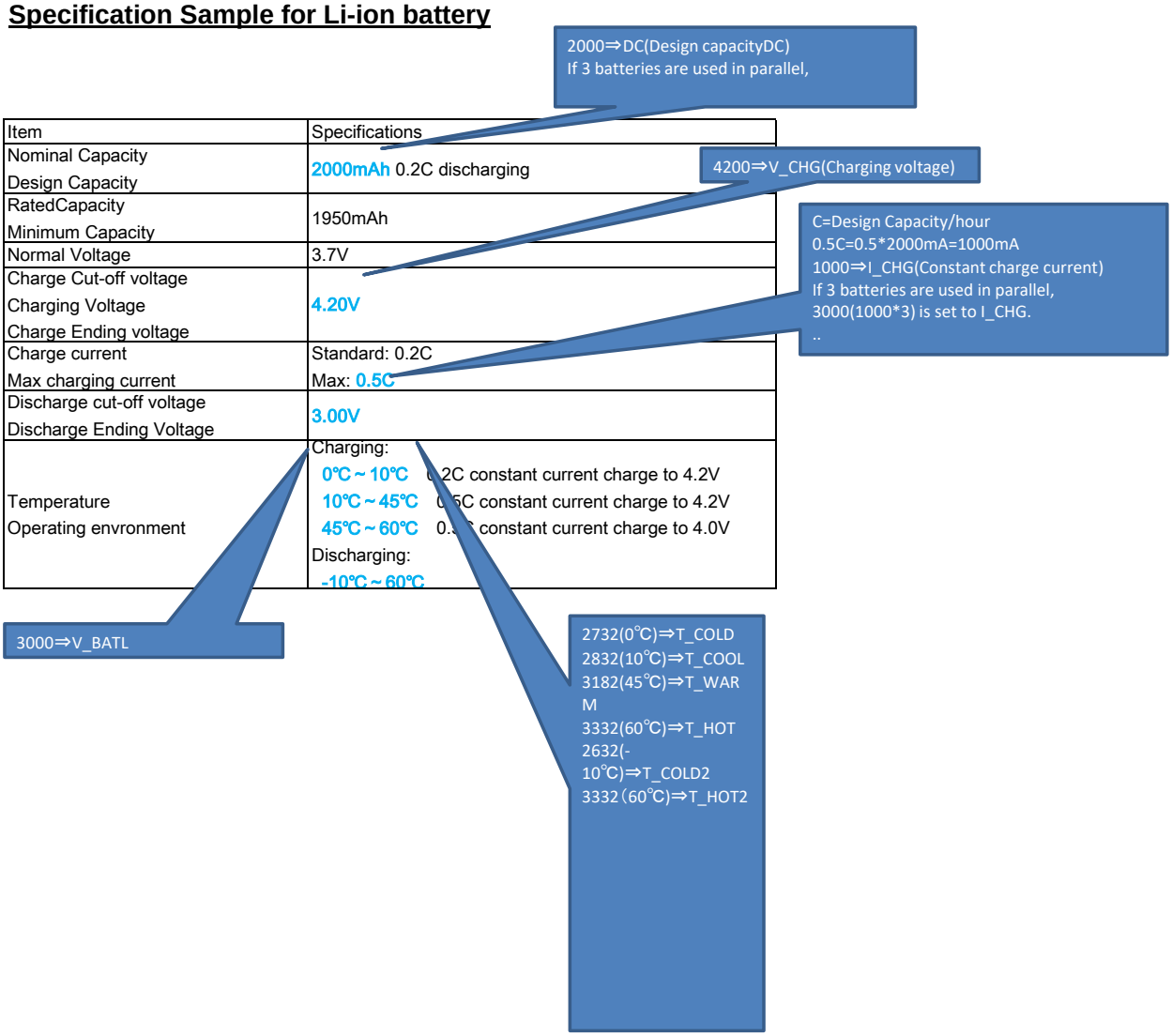
54	usb2_usbpd	0:No support 1:Support	-	Value	0	Item: USB2 USB-PD support Category: USB Data sheet Symbol: - Relate: Set specification Affect: USB port function Set the USB-PD support setting value of the USB2 port. This item is valid when USB2 is Type-C.
55	usb3_usbpd	0:No support	-	Value	0	Item: USB3 USB-PD support Category: USB Data sheet Symbol: - Relate: Set specification Affect: USB port function Set to zero.
56	usb1_qc3out	0:No support 1:Support	-	Value	1	Item: USB1 QC3.0-Output support Category: USB Data sheet Symbol: - Relate: Set specification Affect: USB port function Set the QC3.0-Output support setting value of the USB1 Type-C port. This item is valid when USB1 is Type-C and DRP.
57	usb2_qc3out	0:No support 1:Support	-	Value	0	Item: USB2 QC3.0-Output support Category: USB Data sheet Symbol: - Relate: Set specification Affect: USB port function Set the QC3.0-Output support setting value of the USB2 Type-C/Type-A port.
58	usb3_qc3out	0:No support	-	Value	0	Item: USB3 QC3.0-Output support Category: USB Data sheet Symbol: - Relate: Set specification Affect: USB port function Set to zero.
59	usb1_qctest	0: Fixed zero	-	Value	0	Item: USB1 QC-Test Category: USB Data sheet Symbol: - Relate: Set specification Affect: USB port function Set to zero.
60	usb2_qctest	0: Fixed zero	-	Value	0	Item: USB2 QC-Test Category: USB Data sheet Symbol: - Relate: Set specification Affect: USB port function Set to zero.
61	usb3_qctest	0: Fixed zero	-	Value	0	Item: USB3 QC-Test Category: USB Data sheet Symbol: - Relate: Set specification Affect: USB port function Set to zero.
62	usb1_typecmode	0: No use 1: DRP 2: SINK	-	Value	1	Item: USB1 Type-C controller Port Mode Category: USB Data sheet Symbol: - Relate: Set specification Affect: USB port function Set the USB Type-C port's power role value of the USB1 port. This item is valid when USB1 is Type-C. If USB1 is Type-C, set either DRP or SINK. If USB1 is micro-B, set zero.

63	usb2_typecmode	0: No use 1: DRP 3: SOURCE	-	Value	0	Item: USB2 Type-C controller Port Mode Category: USB Data sheet Symbol: - Relate: Set specification Affect: USB port function Set the USB Type-C port's power role value of the USB2 port. This item is valid when USB2 is Type-C. If USB2 is Type-C, set either DRP or SOURCE. If USB2 is Type-A, set zero.
64	usb3_typecmode	0: No use	-	Value	0	Item: USB3 Type-C controller Port Mode Category: USB Data sheet Symbol: - Relate: Set specification Affect: USB port function Set to zero
65	usb1_typechostcurr	0: No use 1: Default 2: 1.5A 3: 3.0A	-	Value	3	Item: USB1 Type-C Host Current Category: USB Data sheet Symbol: - Relate: Set specification Affect: USB port function Set the source's USB Type-C current advertisement value of the USB1 port. This item is valid when USB1 is Type-C. If USB1 is Type-C, set either Default or 1.5A or 3.0A. If USB1 is micro-B, set zero.
66	usb2_typechostcurr	0: No use 1: Default 2: 1.5A 3: 3.0A	-	Value	0	Item: USB2 Type-C Host Current Category: USB Data sheet Symbol: - Relate: Set specification Affect: USB port function Set the source's USB Type-C current advertisement value of the USB2 port. This item is valid when USB2 is Type-C. If USB2 is Type-C, set either Default or 1.5A or 3.0A. If USB2 is micro-B, set zero.
67	usb3_typechostcurr	0: No use	-	Value	0	Item: USB3 Type-C Host Current Category: USB Data sheet Symbol: - Relate: Set specification Affect: USB port function Set to zero.
68	bp_tcwt	0: no full charge stop 1-6000	1	Sec	10	Item: Buck Terminal Current Wait Time Category: Buck Data sheet Symbol: - Relate: Set specification Affect: Buck charge Set the time to judge full charge in buck charging.
69	vp_tcwt	0: no full charge stop 1-6000	1	Sec	5	Item: Boost Terminal Current Wait Time Category: Boost Data sheet Symbol: - Relate: Set specification Affect: Boost charge Set the time to judge full charge in boost charging.
70	vbus_pass	0:No support 1:Support	-	Value	0	Item: VBUS PassThrough Support Category: Pass-Through Data sheet Symbol: - Relate: Set specification Affect: Pass-Through Only between USB1 and USB2.
71	data_pass	0:No support 1:Support	-	Value	0	Item: Data PassThrough Support Category: Pass-Through Data sheet Symbol: - Relate: Set specification Affect: Pass-Through Only between USB1 and USB2 (Valid only when "vbus_pass" is supported)

72	pass_tc	30-1000	1	mA	250	Item: Boost PassThrough Termination Current Category: Pass-Through Data sheet Symbol: - Relate: Set specification Affect: Pass-Through Set the termination current value of the boost.
73	pass_tv	4500-5250	50	mV	4700	Item: Boost PassThrough Termination Voltage Category: Pass-Through Data sheet Symbol: - Relate: Set specification Affect: Pass-Through Set the termination voltage value of the boost.
74	pass_tcwt	0: no full charge stop 1-6000	1	Sec	5	Item: Boost PassThrough Terminal Current Wait Time Category: Pass-through Data sheet Symbol: - Relate: Set specification Affect: Pass-Through Set the time to judge full charge in boost charging.
75	usb_temp_err	2732(0℃) -3532(80℃) > usb_temp_warm	50 (5℃)	K	0xFFFF (Not use)	Item: USB connector temperature "ERROR" level Category: USB Data sheet Symbol: - Relate: Set specification Affect: USB port function Set the "ERROR" temperature threshold. When not using USB connector temperature, set 0xFFFF.
76	usb_temp_warn	2732(0℃) -3532(80℃)	50 (5℃)	K	0xFFFF (Not use)	Item: USB connector temperature "WARNING" level Category: USB Data sheet Symbol: - Relate: Set specification Affect: USB port function Set the "WARNING" temperature threshold. When not using USB connector temperature, set 0xFFFF.
77	buck_and_boost	0:No support 1:Support	-	Value	0	Item: Simultaneous Buck charge and Boost charge support Category: Buck Data sheet Symbol: - Relate: Set specification Affect: Buck charge This function can be supported when USB1 is charge port and USB3 is discharge port.

*** Please use the item in a range. When the item of the value out of the range is used, be unstable movement.**

Specification Sample for Li-ion battery



Item	Specifications
Nominal Capacity Design Capacity	2000mAh 0.2C discharging
RatedCapacity Minimum Capacity	1950mAh
Normal Voltage	3.7V
Charge Cut-off voltage Charging Voltage Charge Ending voltage	4.20V
Charge current Max charging current	Standard: 0.2C Max: 0.5C
Discharge cut-off voltage Discharge Ending Voltage	3.00V
Temperature Operating envronment	Charging: 0℃ ~ 10℃ 0.2C constant current charge to 4.2V 10℃ ~ 45℃ 0.5C constant current charge to 4.2V 45℃ ~ 60℃ 0.2C constant current charge to 4.0V Discharging: -10℃ ~ 60℃

Sample of Specification for NTC thermistor

Nominal resistance	Resistance Torelance	B value at 25/50	B value at 25/85K
10kΩ	±1%	4050K±1%	4100K±1%

The resistance of R36 connected to TSW is determined by this value.

Set this value to Constant-B.

