# IP5356 Register specification document

1 I2C interface

The IP5356 supports the LED1 LED2 to be multiplexed into the I2C connection mode. After the device is connected and powered on in the corresponding mode, other functions are disabled and the device enters the I2C mode. IP5356 i2c communication frequency supports up to 300K, 8bit register address, 8bit register data, send and receive are high in the front (MSB), I2C device address has two groups, one group: write 0xE8, read 0xE9; The other group: write as 0xEA and read as 0xEB.
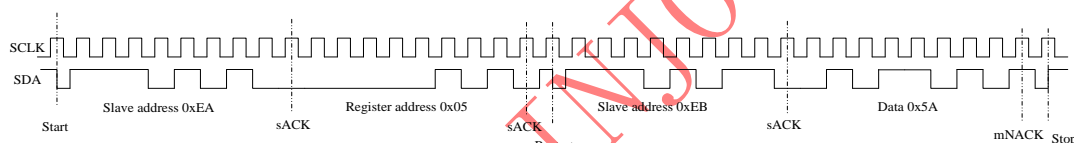
Such as：

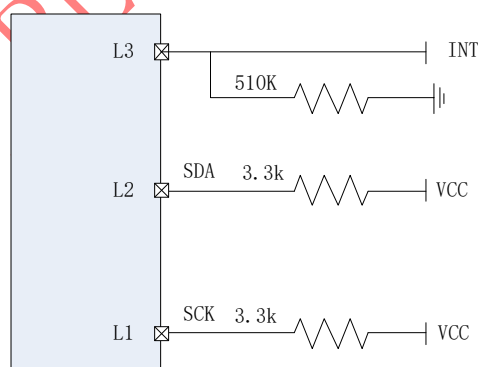Data 0x5A is written to register 0x05 of I2C device address 0xEA.
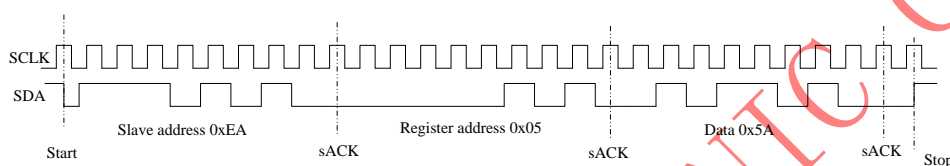
I2C WRITE

Read back data from register 0x05 of I2C device address 0xEA.

I2C Read

2 I2C Application Notes

IIC Mode

1) The IP5356_LED_CL standard supports I2C by default.

2) The maximum frequency of IP5356 I2C supports 300K. Considering the MCU clock deviation, it is recommended to use about 200K clock for MCU communication when applying I2C.

3) When the IP5356 switches from hibernation state to working state (key, load access, 5V charging access), the IP5356 first detects whether L1 and L2 pins are pulled up to 3.3V (VCC). If L1 and L2 are pulled up to 3.3V at the same time, the IP5356 enters the I2C mode, and L3 outputs a high level of 3.1V. If L1 and L2 are not detected at the same time, it will enter the LED light display mode, and will detect each time it enters the working state from sleep.

4) Since I2C detection will be carried out when IP5356 enters the working state from hibernation, the MCU needs to configure SDA and SCK as input or high-resistance states during hibernation, and cannot read and write I2C data until the INT is detected to be high for more than 100ms. Otherwise, the IC cannot enter the I2C state because L1 or L2 is not pulled up when it enters the working state from sleep.

5) Since the IP5356 will perform I2C detection when it enters the working state from hibernation and the digital level inside IP5356 is 3.3V, the MCU must have VCC power supply. If the MCU uses an external LDO power supply, when the BAT is out of power or less than 2V, the VIN will connect 5V to supply power to the IP5356. The VCC system will perform I2C detection when the power is on, but the MCU has no power, and the status of SDA and SCK is uncertain, which may lead to the failure of L1 and L2 to enter I2C mode without detecting pull-up.

6) If you want to modify a register of IP5356, you need to read out the value of the corresponding register first, perform the and or operation on the bit to be modified, and then write the calculated value into this register, ensure that only the bit to be modified and the value of other open bits cannot be changed at will. The default value of the register is based on the read value. The IC default values may vary from batch to batch.

7) MCU operation process: INT continuous high 100ms can read and write the I2C register, you can initialize the register (need to modify the special function to modify the register, if you do not need to modify the register can not write the register) and then read the IC internal information (power, charge and discharge state, key state) characteristic requirements (such as special indicator, charge and discharge management, fast charge request management) operation.

8) IP5356 has two groups of I2C addresses, namely 0xEA and 0xE8. When reading and writing registers, you need to check whether the I2C address corresponding to the current register address is 0xE8 or 0Xea.

9) The default value of the IP5356 register is only for customers to refer to the configuration of the current function. If you need to operate the register, you need to read it out and calculate it before writing it back to the register.

3 Typical application note

3.1 Charge and discharge state judgment

Charging status flag bit: 0xEA 0xD0[5]=1.

Discharge status flag bit: 0xEA 0xD0[4]=1.

Full of status flag bit: 0xEA 0xE9[6:4]=101.

The current input voltage of port B (VIN) is valid: 0xEA 0xC4[7]=1.

The current input voltage of port C (VBUS) is valid: 0xEA 0xC4[4]=1 && 0xEA 0xD0[7]=1.

3.2 The MCU reads the internal information of IP5356 to do the power display

Cell percentage Power data (%) : 0xEA 0x7B[7:0]

I2C address: 0xEA, Register address : 0x7B

Bit(s)	Name	Description	R/W
7:0	SOC_CAP	Cell percentage Power data (%)	R

3.3 The MCU adjusts the charging voltage of the cell through the register

Operation procedure:

A、 The MCU is configured 0xE8 0x33[4]=0 to set the register to configure the full voltage.

I2C address: 0xEA, Register address : 0x33

Bit(s)	Name	Description	R/W	RESET
4	En_Vset_Det	The battery voltage VSET is enabled 1：VSET detection sets the full voltage of the battery cell 0：Register sets the full voltage	R/W	1

B、 The MCU then sets different charging voltages by adjusting the value 0xEA 0x3A[3:2].

C、 If the customer needs to fine-tune the battery charging voltage, you can adjust 0xEA 0x3A[1:0] to adjust the constant voltage voltage, IP5356 default voltage 14mv.

I2C address: 0xEA, Register address :0x3A

Bit(s)	Name	Description	R/W	RESET
3:2	VSET_BAT	Charging constant voltage setting 00: 4.2V 01: 4.3V 10: 4.35V 11: 4.4V	R/W	00
1:0	R_CV	Charging constant voltage voltage 00: add 0mV 01: add 14mV 10: add 28mV 11: add 42mV	R/W	01

3.4 **The MCU uses registers to turn off and on the input/output fast charge protocol for all ports**

A、The input DPDM fast charge protocol is turned off and on through the register.

B、Disable the input DPDM fast charge protocol: 0xE8 0x81[4:1]=0000.

C、 Open the input DPDM fast charge protocol: 0xE8 0x81[4:1]=1111. After rewriting 1, the USB port automatically restores the fast charge without reinserting or restarting the USB port.

D、 Turn off and on the input PD fast charge protocol through the register:

Turn off the input PD fast charge: 0xE8 0xD4[0]=0.

Open the input PD fast charge: 0xE8 0xD4[0]=1.

After closing the input PD protocol, you need to restart the USB input port, otherwise you can not close the fast charge input. You do not need to restart the USB port to enable the input PD fast charge. The steps are as follows:

Step 1: Turn off the input PD fast charge, set 0xE8 0xD4[0]=0.

Step 2: Restart the TYPE-C input port and set 0xE8 0xD1[5:4]=01. Then set 0xE8 0xD1[5:4]=11.

E、Turn off and open the output fast charge protocol through the register:

Disable the output fast charge DPDM protocol: 0xE8 0x85[7:1]=0000000.

Turn off the VBUS output PD fast charge: 0xE8 0xD4[0]=0.

Open the output fast charge DPDM protocol: 0xE8 0x85[7:1]=1111111.

Open the VBUS output PD fast charge: 0xE8 0xD4[0]=1.

After operating the output protocol, you need to restart the USB output, otherwise there will be compatibility problems, the steps are as follows:

Step 1: First turn off the MOS of VOUT1/VOUT2/VBUS port and set register: 0xEA 0x86[2:0]=111.

Step 2: Turn off or enable the output fast charge protocol: 0xE8 0x85[7:1], 0XE8 0xD4 [0].

Step 3: Redetect and open the loaded VOUT1/VOUT2/VBUS USB port and set register:
0xEA 0x86[5:3]=111.

3.5 **The MCU uses registers to turn off and on the input and output DPDM fast charging protocols of different ports**

I2C address 0xE8, Register address: 0x25

Bit(s)	Name	Description	R/W	RESET
3	En_Vbus_Sinkqc	The VBUS input fast charge is enabled 1: enable 0: disable	R/W	1
2	En_Vin_Sinkqc	The VIN input fast charge is enabled 1: enable 0: disable	R/W	1

I2C address 0xE8, Register address: 0x18

Bit(s)	Name	Description	R/W	RESET
2	En_ Vbus _Qc	The VBUS port fast charge function is enabled 1: enable 0: disable	R/W	1

I2C address 0xE8, Register address: 0x10

Bit(s)	Name	Description	R/W	RESET
2	En_ Vout1_qc	The VOUT1 port fast charge function is enabled 1：enable 0：disable	R/W	1

I2C address 0xE8, Register address: 0x14

Bit(s)	Name	Description	R/W	RESET
2	En_ Vout2_qc	The VOUT2 port fast charge function is enabled 1: enable 0: disable	R/W	1

3.6 **The MCU reads the voltage of the NTC pin to determine the different temperatures**

Operation procedure:

A、 MCU Configured First 0xE8 0xFD[0]=0 ,The NTC function was disabled.

I2C address 0xE8, Register address: 0xFD

Bit(s)	Name	Description	R/W	RESET
0	En_ntc	The NTC is enabled 1: enable 0: disable	R/W	1

B、 The MCU adjusts the current source on the NTC PIN via the 0xE8 0xF6[5:4] register.

I2C address 0xE8, Register address: 0xF6

Bit(s)	Name	Description	R/W	RESET
5:4	NTC_20uA_Sel	NTC PIN Current control selection 00: Internal state machine automatic control 01: Internal state machine automatic control 10: 80uA 11: 20uA	R/W	00

C、 The MCU reads the register's NTC ADC and determines the NTC temperature

I2C address 0xEA, Register address: 0x64

Bit(s)	Name	Description	R/W
7:0	NTCVADC[7:0]	NTC voltage data low 8bit Voltage of the NTC PIN	R

I2C address 0xEA, Register address: 0x65

Bit(s)	Name	Description	R/W
7:0	NTCVADC[15:8]	NTC voltage data up to 8bit Voltage of the NTC PIN NTC= NTCVADC*0.26855mV	R

4 Read/write operation register

*Reserved register can not be randomly written data, do not change the original value, otherwise unexpected results may occur. The operation of the register must be carried out in accordance with read - modify - write, and only the bit to be used can be modified, and other unused bit values cannot be modified.

*The register default values in this document only represent a certain specification. The register default values of most specifications do not correspond to this document. Therefore, pay special attention to the bitwise operation when reading and writing.

4.1 SYS_CTL0(Boost and Charger enable registers)

I2C address 0xE8, Register address: 0x00

Bit(s)	Name	Description	R/W	RESET
7:4		Reserved	R/W	XX
3：2	En_C2B_Det	Unplug the input to charge whether to automatically turn boost output: 1X: The system directly enters the standby mode without turning boost 01: Boost turns on automatically when the output is loaded, and shuts down when there is no load 00: Automatically turn on boost regardless of whether the output is loaded or not	R/W	00
1	En_Boost	Output enable 1: enable 0: disable	R/W	1
0	En_Charger	Charge enable 1: enable 0: disable	R/W	1

4.2 SYS_CTL1 (Light load shutdown control register)

I2C address 0xE8, Register address: 0x03

Bit(s)	Name	Description	R/W	RESET
7:6		Reserved	R/W	XX
5:4	Set_Ilow_Time	Light load shutdown time setting 00: 8S 01: 16S 10: 32S 11: 64S	R/W	10
3	En_Ipow_Low	Select VSYS Power Enable for light load shutdown 1: enable 0: disable	R/W	0
2	En_Isys_Low	Select VSYS current Enable for light load shutdown 1: enable 0: disable	R/W	1
1:0		Reserved	R/W	XX

4.3 CHG_CTL0 (12V charging undervoltage loop voltage control register)

I2C address 0xE8, Register address: 0x0B

Bit(s)	Name	Description	R/W	RESET
7:3		Reserved	R/W	XX
2:0	12V_Uvloop	Charge 12V undervoltage loop voltage 000: 10.7V 001: 10.9V 010: 11.3V 011: 11.4V 100: 11.5V 101: 11.6V 110: 11.7V 111: 11.8V	R/W	011

4.4 CHG_CTL1 (9V charging undervoltage loop voltage control register)

I2C address 0xE8, Register address: 0x0C

Bit(s)	Name	Description	R/W	RESET
7:6		Reserved	R/W	XX
5:3	9V_ Uvloop	Charge 9V undervoltage loop voltage 000: 7.98V 001: 8.13V 010: 8.43V 011: 8.50V 100: 8.58V 101: 8.65V 110: 8.73V 111: 8.80V	R/W	100
2:0		Reserved	R/W	XX

4.5 CHG_CTL2 (5V charging undervoltage loop voltage control register)

I2C address 0xE8, Register address: 0x0D

Bit(s)	Name	Description	R/W	RESET
7:6		Reserved	R/W	XX
5:3	Ppath_ Uvloop	Charge and discharge loop voltage 000: 4.46V 001: 4.54V 010: 4.7V 011: 4.75V 100: 4.79V 101: 4.83V 110: 4.88V 111: 4.92V	R/W	111
2:0	5V_ Uvloop	Charge 5V undervoltage loop voltage 000: 4.46V 001: 4.54V 010: 4.7V 011: 4.75V 100: 4.79V 101: 4.83V 110: 4.88V 111: 4.92V	R/W	001

4.6 SYS_CTL2 (Light load shutdown control register)

I2C address 0xE8, Register address: 0x0F

Bit(s)	Name	Description	R/W	RESET
7:5		Reserved	R/W	XX
4	Wled_Act	Button switch lighting mode selection 0: Long press 2S 1: Tap twice in a row	R/W	0
3	Lowcur_Off_Act	Exit Normally on N hours button mode selection 0: Short press 1: Same way to enter normal N hours	R/W	0
2	Lowcur_On_Act	Enter normally open N hours key mode selection 0: Tap twice in a row 1: Long press 2S	R/W	0
1	Dsb_Ahort	Whether to disable the short press function by pressing twice 0: Short press is not shielded 1: Mask short press	R/W	1
0		Reserved	R/W	X

4.7 VOUT1_CTL0 (VOUT1 Control register)

I2C address 0xE8, Register address: 0x10

Bit(s)	Name	Description	R/W	RESET
7:4		Reserved	R/W	XX
3	En_Vout1_Dcp	The common 5V DCP function of port VOUT1 is enabled 1: enable 0: disable	R/W	1
2	En_ Vout1_qc	The VOUT1 port fast charge function is enabled 1: enable 0: disable	R/W	1
1	En_ Vout1_det	VOUT1 Load detection enabled (does not control DM DP detection) 1: enable 0: disable	R/W	1
0	En_ Vout1_mos	VOUT1 MOS output channel is enabled 1: enable 0: disable	R/W	1

4.8 VOUT1_CTL1 (VOUT1 Control register)

I2C address 0xE8, Register address: 0x13

Bit(s)	Name	Description	R/W	RESET
7:4		Reserved	R/W	XX
3:2	Set_ Vout1_Ilow_Time	VOUT1 port Light load shutdown time setting 00: 2S 01: 4S 10: 8S 11: 16S	R/W	11
1	En_ Vout1_Vhgilow	Charging Status Light Load off VOUT1 is enabled 1: enable 0: disable	R/W	1
0	En_ Vout1_ Chgilow	Discharge status Light load off VOUT1 is enabled 1: enable 0: disable	R/W	1

4.9 VOUT1_CTL2 (VOUT1 Control register)

I2C address 0xE8, Register address: 0x1C

Bit(s)	Name	Description	R/W	RESET
7:1		Reserved	R/W	XX
0	En_Vout1_DmDp_Det	VOUT1 port DM DP load detection is enabled 1: enable 0: disable	R/W	1

4.10 VOUT2_CTL0 (VOUT2 Control register)

I2C address 0xE8, Register address: 0x14

Bit(s)	Name	Description	R/W	RESET
7:4		Reserved	R/W	XX
3	En_Vout2_Dcp	The VOUT2 port common 5V DCP is enabled 1: enable 0: disable	R/W	1
2	En_ Vout2_qc	The VOUT2 port fast charge function is enabled 1: enable 0: disable	R/W	1
1	En_ Vout2_det	VOUT2 Load detection enabled (does not control DM DP detection) 1: enable 0: disable	R/W	1
0	En_ Vout2_mos	VOUT2 MOS output channel is enabled 1: enable 0: disable	R/W	1

4.11 VOUT2_CTL1 (VOUT2 Control register)

I2C address 0xE8, Register address: 0x17

Bit(s)	Name	Description	R/W	RESET
7:4		Reserved	R/W	XX
3:2	Set_ Vout2_Ilow_Time	VOUT2 port Light load shutdown time setting 00: 2S 01: 4S 10: 8S 11: 16S	R/W	11
1	En_ Vout2_Chgilow	Charging Status Light Load off VOUT2 is enabled 1：enable 0：disable	R/W	1
0	En_ Vout2_ Chgilow	Discharge status Light load off VOUT2 is enabled 1：enable 0：disable	R/W	1

4.12 VOUT2_CTL2 (VOUT2 Control register)

I2C address 0xE8, Register address: 0x1D

Bit(s)	Name	Description	R/W	RESET
7:1		Reserved	R/W	XX
0	En_Vout2_DmDp_Det	VOUT2 port DM DP load detection is enabled 1: enable 0: disable	1	1

4.13 VBUS_CTL0 (VBUS Control register)

I2C address 0xE8, Register address: 0x18

Bit(s)	Name	Description	R/W	RESET
7:4		Reserved	R/W	XX
3	En_Vbus_Dcp	The VBUS port common 5V DCP is enabled 1: enable 0: disable	R/W	1
2	En_ Vbus _Qc	The VBUS port fast charge function is enabled 1: enable 0: disable	R/W	1
1		Reserved	R/W	X
0	En_ Vbus _Mos	VBUS MOS output channel is enabled 1: enable 0: disable	R	1

4.14 VBUS_CTL1 (VBUS Control register)

I2C address 0xE8, Register address: 0x1B

Bit(s)	Name	Description	R/W	RESET
7:4		Reserved	R/W	XX
3:2	Set_ Vbus_Ilow_Time	VBUS port Light load shutdown time setting 00: 2S 01: 4S 10: 8S 11: 16S	R/W	11
1	En_ Vbus _Chgilow	Charging Status Light Load off VBUS is enabled 1：enable 0：disable	R/W	1
0	En_ Vbus _ Chgilow	Discharge status Light load off VBUS is enabled 1：enable 0：disable	R/W	1

4.15 VBUS_CTL2 (VBUS Control register)

I2C address 0xE8, Register address: 0x1E

Bit(s)	Name	Description	R/W	RESET
7:1		Reserved	R/W	XX
0	En_Vbus_DmDp_Det	VBUS port DM DP load detection is enabled 1: enable 0: disable	R/W	1

4.16 CHG _CTL1 (Charging timeout control register)

I2C address 0xE8, Register address: 0x21

Bit(s)	Name	Description	R/W	RESET
7:5		Reserved	R/W	XX
4:2	Set_chg_time	Charge timeout setting 0: disable 1: 12hours 2: 18hours 3: 24hours 4: 30hours 5: 36hours 6: 42hours 7: 48hours	R/W	100
1:0		Reserved	R/W	XX

4.17 CHG _CTL2 (Charging timeout control register)

I2C address 0xE8, Register address: 0x22

Bit(s)	Name	Description	R/W	RESET
7		Reserved	R/W	X
6:4	Set_cv_time	Charge CV Timeout Setting 0: disable 1: 2hours 2: 3hours 3: 4hours 4: 5hours 5: 6hours 6: 7hours 7: 8hours	R/W	011
3:1	Set_tk_time	Charge Trickle timeout setting 0: disable 1: 2hours 2: 3hours 3: 4hours 4: 5hours 5: 6hours 6: 7hours 7: 8hours	R/W	001
0		Reserved	R/W	X

4.18 PPATH_CTL0 (Charging and discharging simultaneously control register)

I2C address 0xE8, Register address: 0x24

Bit(s)	Name	Description	R/W	RESET
7:5		Reserved	R/W	XX
5	En_Ppath_Vbus	VBUS input 5V Simultaneous charge and discharge Enables 5V 1: enable 0: disable	R/W	1
4:0		Reserved	R/W	XX

4.19 PPATH_CTL1

I2C address 0xE8, Register address: 0xF5

Bit(s)	Name	Description	R/W	RESET
7		Reserved	R/W	XX
6	En_Ppath_VIN	VIN input 5V Simultaneous charge and discharge Enables 5V 1: enable 0: disable	R/W	1
5:0		Reserved	R/W	XX

4.20 SYS_ CTL3(Input fast charge and MOS control register)

I2C address 0xE8, Register address: 0x25

Bit(s)	Name	Description	R/W	RESET
7:4		Reserved	R/W	XX
3	En_Vbus_Sinkqc	The VBUS input fast charge is enabled 1: enable 0: disable	R/W	1
2	En_Vin_Sinkqc	The VIN input fast charge is enabled 1: enable 0: disable	R/W	1
1:0		Reserved	R/W	XX

4.21 CHG_CTL3 (Charge and discharge the current control register simultaneously)

I2C address 0xE8, Register address: 0x26

Bit(s)	Name	Description	R/W	RESET
7		Reserved	R/W	XX
6:0	Chg_Iset_Ppath	Both charge and discharge input current Settings I=25mA*N The calibration value is about 0.5A, if you need to adjust, you can increase or decrease the corresponding gear on the calibration value	R/W	XX

4.22 CHG_ CTL4 (VIN 12V charge current control register)

I2C address 0xE8, Register address: 0x27

Bit(s)	Name	Description	R/W	RESET
7		Reserved	R/W	XX
6:0	Chg_Iset_Vin12V	VIN 12V input current Settings I=25mA*N The calibration value is about 1.5A, if you need to adjust, you can increase or decrease the corresponding gear on the calibration value	R/W	XX

4.23 CHG_ CTL5 (VIN 5V charge current control register)

I2C address 0xE8, Register address: 0x28

Bit(s)	Name	Description	R/W	RESET
7		Reserved	R/W	XX
6:0	Chg_Iset_Vin5v	VIN 5V input current Settings I=25mA*N The calibration value is about 2A, if you need to adjust, you can increase or decrease the corresponding gear on the calibration value	R/W	XX

4.24 CHG_ CTL6 (VBUS 5V charge current control register)

I2C address 0xE8, Register address: 0x29

Bit(s)	Name	Description	R/W	RESET
7		The same charge and discharge is enabled with the same charge and discharge current (0x26) as the input current 1: enable 0: disable	R/W	1
6:0	Chg_Iset_Vbus5v	VBUS 5V input current Settings I=25mA*N The calibration value is about 2.5A, if you need to adjust, you can increase or decrease the corresponding gear on the calibration value	R/W	XX

4.25 CHG_ CTL7 (VIN 9V charge current control register)

I2C address 0xE8, Register address: 0x2B

Bit(s)	Name	Description	R/W	RESET
7		After full input fast charge whether to request return 5V 0: Do not return to 5V and maintain the input fast charge 1: Return 5V to charge	R/W	0
6:0	Chg_Iset_Vin9v	VIN 9V input current Settings I=25mA*N The calibration value is about 2A, if you need to adjust, you can increase or decrease the corresponding gear on the calibration value	R/W	XX

4.26 CHG_ CTL8 (VBUS 12V charge current control register)

I2C address 0xE8, Register address: 0x6E

Bit(s)	Name	Description	R/W	RESET
7		Reserved	R/W	XX
6:0	Chg_Iset_Vbus12v	VBUS 12V input current Settings I=25mA*N The calibration value is about 1.5A, if you need to adjust, you can increase or decrease the corresponding gear on the calibration value	R/W	XX

4.27 CHG_ CTL9 (VBUS 9V charge current control register)

I2C address 0xE8, Register address: 0x6F

Bit(s)	Name	Description	R/W	RESET
7		Reserved	R/W	XX
6:0	Chg_Iset_Vbus9v	VBUS 9V input current Settings I=25mA*N The calibration value is about 2A, if you need to adjust, you can increase or decrease the corresponding gear on the calibration value	R/W	XX

4.28 SYS_CTL4 (Key off)

I2C address 0xE8, Register address: 0x31

Bit(s)	Name	Description	R/W	RESET
7:3		Reserved	R/W	XX
2	En_Long_Wk	Press and hold the 2S button to wake up the enabler 1: enable 0: disable	R/W	0
1:0	Set_Key	Press the button to select the shutdown mode 00: Disable The shutdown button Enables the shutdown function 01: Press the button for a short time to shut down 10: Press twice to power off 11: Press and hold the 2S button to shut down	R/W	10

4.29 SYS_CTL5 (The VSET detection function is enabled after N hours of normal operation)

I2C address 0xE8, Register address: 0x33

Bit(s)	Name	Description	R/W	RESET
7:6	Set_Lowcur_Time	Normally open N hours Time setting 00: 2H 01: 4H 10: 6H 11: 8H	R/W	00
5	En_Lowcur	Enabled after N hours 1: enable 0: disable	R/W	0
4	En_Vset_Det	The battery voltage VSET is enabled 1: VSET detection sets the full voltage of the battery cell 0: Register sets the full voltage	R/W	1
3:0		Reserved	R/W	XX

4.30 POW_LOW(Light load shutdown power setting register)

I2C address 0xE8, Register address: 0x44

Bit(s)	Name	Description	R/W	RESET
7:6		Reserved	R/W	XX
5:0	Set_Pow_low	Isys Light load shutdown output power threshold setting POW_LOW=17.7*N mw The default is light load shutdown based on ISYS current	R/W	XX

4.31 ISYS_LOW(Light load shutdown current setting register)

I2C address 0xE8, Register address: 0x45

Bit(s)	Name	Description	R/W	RESET
7:6		Reserved	R/W	XX
5:0	Set_isys_low	Isys Light load shutdown ADC output current threshold Settings ISYS_LOW=5.4*N mA	R/W	XX

4.32 VOUT1_ IMOSLOW(VOUT1 port light load current setting register)

I2C address 0xE8, Register address: 0x49

Bit(s)	Name	Description	R/W	RESET
7:0	Set_vout1_imoslow	VOUT1 port output current Light load off The MOS current threshold is set IMOS_LOW=2.68*N mA	R/W	XX

4.33 VOUT2_ IMOSLOW(VOUT2 port light load current setting register)

I2C address 0xE8, Register address: 0x4A

Bit(s)	Name	Description	R/W	RESET
7:0	Set_vout2_imoslow	VOUT2 port output current Light load off The MOS current threshold is set IMOS_LOW=2.68*N mA	R/W	XX

4.34 VBUS_ IMOSLOW(VBUS port light load current setting register)

I2C address 0xE8, Register address: 0x4B

Bit(s)	Name	Description	R/W	RESET
7:0	Set_vbus_imoslow	VBUS port output current Light load off The MOS current threshold is set IMOS_LOW=2.68*N mA	R/W	XX

4.35 FCAP(Coulometer capacity setting register)

I2C address 0xE8, Register address: 0x4C

Bit(s)	Name	Description	R/W	RESET
7:0	FCAP	Set the total capacity of the coulometer FCAP=385*N mAH IP5356_LED_CL This model is set by the LED5 PIN external pull-down resistor by default, if you need to set the register, you need to switch the capacity setting to the internal register setting (0x78 bit7).	R/W	XX

4.36 MFP_ CTL0(LED4/LED5 Function selection)

I2C address 0xE8, Register address: 0x65

Bit(s)	Name	Description	R/W	RESET
7:4		Reserved	R/W	XX
3:2	LED5	LED5 GPIO Function selection 00: LED5 01: LED5_ADC	R/W	01
1:0	LED4	LED4 GPIO Function selection 00: LED4 01: LED4_ADC	R/W	00

4.37 MFP_ CTL1(LED6 Function selection)

I2C address 0xE8, Register address: 0x66

Bit(s)	Name	Description	R/W	RESET
7		Reserved	R/W	XX
6:4	LED6	LED6 GPIO Function selection 000: LED6 001: Fast charge lamp 100: LED6_ADC 101: Apple decode function, also turn on the enable bit	R/W	101
3:0		Reserved	R/W	XX

4.38 EN_FCAP(External capacity enable register)

I2C address 0xE8, Register address: 0x78

Bit(s)	Name	Description	R/W	RESET
7	En_Fcap	FCAP External capacity enable register 1: Use an external resistor to set the cell capacity 0: Use the internal register to set the cell capacity	R/W	1
6:0		Reserved	R/W	XX

4.39 NTC_ CTL0 (NTC Current selection)

I2C address 0xE8, Register address: 0xF6

Bit(s)	Name	Description	R/W	RESET
7：6		Reserved	R/W	XX
5:4	NTC_20uA_Sel	NTC PIN Current control selection 00: Internal state machine automatic control 01: Internal state machine automatic control 10: 80uA 11: 20uA	R/W	00
3:0		Reserved	R/W	XX

4.40 NTC_ CTL1 (NTC Control register)

I2C address 0xE8, Register address: 0xFD

Bit(s)	Name	Description	R/W	RESET
7	En_chg_ml	Charging NTC mid-low temperature (about 5 ° C) charging current halved 1: enable 0: disable	R/W	0
6	En_chg_mh	The charging current at high temperature (about 41 ° C) in NTC is reduced by half 1: enable 0: disable	R/W	0
5	En_boost_lt	Discharge NTC low temperature (about -20℃) disables boost 1: enable 0: disable	R/W	1
4	En_boost_ht	Discharge NTC at high temperature (about 61 ° C) to turn off boost 1: enable 0: disable	R/W	1
3	En_chg_lt	Charging NTC low temperature (about 0℃) Turn off boost enable 1: enable 0: disable	R/W	1
2	En_chg_ht	Charging NTC high temperature off (about 46 ° C) boost enable 1: enable 0: disable	R/W	1
1		Reserved	R/W	X
0	En_ntc	NTC Function 1: enable 0 disable	R/W	1

4.41 SINK_QC_EN (The charge input fast charge function is enabled)

I2C address 0xE8, Register address: 0x81

Bit(s)	Name	Description	R/W	RESET
7	Set_qc_maxv	Input DM DP Fast charge request maximum voltage selection 1: 12V 0: 9V	R/W	1
6:5		Reserved	R/W	X
4	En_sink_sfcp	Sink SFCP 1: enable 0: disable	R/W	1
3	En_sink_afc	Sink AFC 1: enable 0: disable	R/W	1
2	En_sink_fcp	Sink FCP 1: enable 0: disable	R/W	1
1	En_sink_qc	Sink Enter the fast charge function 1: enable 0: disable	R/W	1
0		Reserved	R/W	X

4.42 SYS_CTL5 (Line complement enable register)

I2C address 0xE8, Register address: 0x84

Bit(s)	Name	Description	R/W	RESET
7:2		Reserved	R/W	XX
1	Set_dcp_apple	DCP Apple mode selection 1: 2.4A 0: 2.1A	R/W	1
0	En_Lc	Line complement is enabled 1: enable 0: disable	R/W	1

4.43 SRC_QC_EN (The output fast charge function is enabled)

I2C address 0xE8, Register address: 0x85

Bit(s)	Name	Description	R/W	RESET
7	En_src_sfcp	SRC SFCP 1: enable 0: disable	R/W	1
6		Reserved	R/W	X
5	En_src_scp	SRC SCP 1: enable 0: disable	R/W	1
4	En_src_fcp	SRC FCP 1: enable 0: disable	R/W	1
3	En_src_afc	SRC AFC 1: enable 0: disable	R/W	1
2	En_src_qc3.0	SRC QC3.0 1: enable 0: disable	R/W	1
1	En_src_qc2.0	SRC QC2.0 1: enable 0: disable	R/W	1
0	En_src_dcp_apple	SRC Apple mode 1: enable 0: disable	R/W	1

4.44 SRC_QC_EN2 (The output fast charge function is enabled)

I2C address 0xE8, Register address: 0x86

Bit(s)	Name	Description	R/W	RESET
7:6	Src_at_same	Select the output DCP mode in the co-charge and co-discharge state 11: Short circuit 10: Float in the air 0X: Auto	R/W	11
5:0		Reserved	R/W	XX

4.45 BST_VSET (Output voltage setting register)

I2C address 0xE8, Register address: 0xAA

Bit(s)	Name	Description	R/W	RESET
7:3		Reserved	R/W	XX
2	BST_VSET_R	BOOST Output voltage control mode selection 1: Set using the register TRSEL_REG value 0: Automatically controlled by hardware status	R/W	0
1:0	TRSEL_REG	TRSEL_REG[9:8] BOOST_VSET=3.2V+10Mv* TRSEL_REG[9:0] The maximum output voltage does not exceed 12V	R/W	XX

4.46 BST_VSET (Output voltage setting register)

I2C address 0xE8, Register address: 0xAB

Bit(s)	Name	Description	R/W	RESET
7:0	TRSEL_REG	TRSEL_REG[7:0] BOOST_VSET=3.2V+10Mv* TRSEL_REG[9:0] The maximum output voltage does not exceed 12V	R/W	XX

4.47 BST_5V (Output voltage setting register)

I2C address 0xE8, Register address: 0xAD

Bit(s)	Name	Description	R/W	RESET
7:4		Reserved	R/W	XX

Bit(s)	Name	Description	R/W	RESET
3:0	TRSEL_REG	5V gear output voltage setting 4.6V+0.1*N The output is calibrated to 5V at the factory, and if it needs to be adjusted, the corresponding gear can be increased and decreased in the register of the default value	R/W	XX

4.48 BST_12V_9V (Output voltage setting register)

I2C address 0xE8, Register address: 0xAE

Bit(s)	Name	Description	R/W	RESET
7:4	TRSEL_REG	12V gear output voltage setting 11.2V+0.1*N The output is calibrated to 12V at the factory, and if it needs to be adjusted, the corresponding gear can be increased and decreased in the register of the default value	R/W	XX
3:0	TRSEL_REG	9V gear output voltage setting 8.2V+0.1*N The output is calibrated to 9V at the factory, and if it needs to be adjusted, the corresponding gear can be increased and decreased in the register of the default value	R/W	XX

4.49 VOUT1_5V (5V Output current setting register)

I2C address 0xE8, Register address: 0xB1

Bit(s)	Name	Description	R/W	RESET
7		Reserved	R/W	XX
6:0	TRSEL_REG	50mA*N The output is calibrated to 3.3A at the factory, and the corresponding gear can be increased and decreased in the register of the default value when adjustment is required	R/W	XX

4.50 VOUT1_9V (9V Output current setting register)

I2C address 0xE8, Register address: 0xB3

Bit(s)	Name	Description	R/W	RESET
7		Reserved	R/W	XX
6:0	TRSEL_REG	50mA*N The output is calibrated to 2.3A at the factory, and the corresponding gear can be increased and decreased in the register of the default value when adjustment is required	R/W	XX

4.51 VOUT1_12V (12V Output current setting register)

I2C address 0xE8, Register address: 0xB4

Bit(s)	Name	Description	R/W	RESET
7		Reserved	R/W	XX
6:0	TRSEL_REG	50mA*N The output is calibrated to 1.7A at the factory, and the corresponding gear can be increased and decreased in the register of the default value when adjustment is required	R/W	XX

4.52 VOUT2_5V (5V Output current setting register)

I2C address 0xE8, Register address: 0xB5

Bit(s)	Name	Description	R/W	RESET
7		Reserved	R/W	XX
6:0	TRSEL_REG	50mA*N The output is calibrated to 3.3A at the factory, and the corresponding gear can be increased and decreased in the register of the default value when adjustment is required	R/W	XX

4.53 VOUT2_9V (9V Output current setting register)

I2C address 0xE8, Register address: 0xB7

Bit(s)	Name	Description	R/W	RESET
7		Reserved	R/W	XX
6:0	TRSEL_REG	50mA*N The output is calibrated to 2.3A at the factory, and the corresponding gear can be increased and decreased in the register of the default value when adjustment is required	R/W	XX

4.54 VOUT2_12V (12V Output current setting register)

I2C address 0xE8, Register address: 0xB8

Bit(s)	Name	Description	R/W	RESET
7		Reserved	R/W	XX
6:0	TRSEL_REG	50mA*N The output is calibrated to 1.7A at the factory, and the corresponding gear can be increased and decreased in the register of the default value when adjustment is required	R/W	XX

4.55 VBUS_5V (5V Output current setting register)

I2C address 0xE8, Register address: 0xB9

Bit(s)	Name	Description	R/W	RESET
7		Reserved	R/W	XX
6:0	TRSEL_REG	50mA*N The output is calibrated to 3.3A at the factory, and the corresponding gear can be increased and decreased in the register of the default value when adjustment is required	R/W	XX

4.56 VBUS _9V (9V Output current setting register)

I2C address 0xE8, Register address: 0xBB

Bit(s)	Name	Description	R/W	RESET
7		Reserved	R/W	XX
6:0	TRSEL_REG	50mA*N The output is calibrated to 2.3A at the factory, and the corresponding gear can be increased and decreased in the register of the default value when adjustment is required	R/W	XX

4.57 VBUS _12V (12V Output current setting register)

I2C address 0xE8, Register address: 0xBC

Bit(s)	Name	Description	R/W	RESET
7		Reserved	R/W	XX
6:0	TRSEL_REG	50mA*N The output is calibrated to 1.7A at the factory, and the corresponding gear can be increased and decreased in the register of the default value when adjustment is required	R/W	XX

4.58 TYPEC_CTL0 (PD Control register)

I2C address 0xE8, Register address: 0xD1

Bit(s)	Name	Description	R/W	RESET
7:6		Reserved	R/W	XX
5:4	CC_MODE_SEL	TYPEC CC Mode selection 00: UFP 01: DFP 11: DRP	R/W	11
3:0		Reserved	R/W	XX

4.59 TYPEC _CTL1 (PD Control register)

I2C address 0xE8, Register address: 0xD5

Bit(s)	Name	Description	R/W	RESET
7		Reserved	R/W	XX

6:5	PD_SINK_VMAX	PD SINK Charging input maximum voltage setting 00: 5V 01: 9V 10: 12V	R/W	10
4:0		Reserved	R/W	XX

4.60 VIN_VBUS_OV (Charge input overvoltage register)

I2C address 0xEA, Register address: 0x01

Bit(s)	Name	Description	R/W	RESET
7:6	VBUS_OV	VBUS Enter the overvoltage Settings 00: 6V 01: 10V 10: 14.5V 11: 16V	R/W	10
5:4	VIN_OV	VIN Enter the overvoltage Settings 00: 6V 01: 10V 10: 14.5V 11: 16V	R/W	10
3:0		Reserved	R/W	XX

4.61 BATLOW (Analog cell low shutdown voltage)

I2C address 0xEA, Register address: 0x03

Bit(s)	Name	Description	R/W	RESET
7:1		Reserved	R/W	XX
0	BATLOW_SET_A	Analog BATLOW voltage setting (falling edge protection voltage - rising edge recovery voltage) 0: 2.9V-3.0V 1: 3.0V-3.1V	R/W	1

4.62 GPIO_20UA_EN (GPIO Current output enable register)

I2C address 0xEA, Register address: 0x19

Bit(s)	Name	Description	R/W	RESET
7:5		Reserved	R/W	XX
4	LED6_20uA_EN	LED6 20uA Output enable 1: enable 0: disable	R/W	0
3	LED5_20uA_EN	LED5 20uA Output enable 1: enable 0: disable	R/W	1
2	LED4_20uA_EN	LED4 20uA Output enable 1: enable 0: disable	R/W	0
1	LED3_20uA_EN	LED3 20uA Output enable 1: enable 0: disable	R/W	0
0	NTC_20uA_EN	NTC 20uA/80uA Output enable 1: enable 0: disable	R/W	1

4.63 SYS_CTL5 (VOUT2 PD fast charge register)

I2C address 0xEA, Register address: 0x1F

Bit(s)	Name	Description	R/W	RESET
7	Pdsrc_CL	CL PIN The pull-up function is enabled，Used for VOUT2 as PD output 1: enable 0: disable	R/W	0
6:0		Reserved	R/W	XX

4.64 TEMP_LP (ICInternal temperature ring setting)

I2C address 0xEA, Register address: 0x27

Bit(s)	Name	Description	R/W	RESET
7:6		Reserved	R/W	XX
5:4	Loop_set	Boost and Charge temperature ring Settings	R/W	10

			R/W	RESET
		11: 137℃		
		10: 127℃		
		01: 122℃		
		00: 103℃		
3:0		Reserved	R/W	XX

4.65 LC_SET (Line complement select register)

I2C address 0xEA, Register address: 0x30

Bit(s)	Name	Description	R/W	RESET
7:1		Reserved	R/W	XX
0	Lc_set	Line complement voltage selection 1: 300mV2A 0: 150mV2A	R/W	0

4.66 CHG_CTL10 (Constant voltage charge voltage setting register)

I2C address 0xEA, Register address: 0x3A

Bit(s)	Name	Description	R/W	RESET
7:4		Reserved	R/W	XX
3:2	VSET_BAT	Charging constant voltage setting 00: 4.2V 01: 4.3V 10: 4.35V 11: 4.4V	R/W	00
1:0	R_CV	Charging constant voltage voltage 00: Add 0mV 01: Add 14mV 10: Add 28mV 11: Add 42mV	R/W	01

4.67 TYPEC _CTL2 (PD Control register)

I2C address 0xE8, Register address: 0x42

Bit(s)	Name	Description	R/W	RESET
7:1		Reserved	R/W	XX
0	EN_PD	The PD fast charge function is enabled 1: enable 0: disable	R/W	1

5 Read only status indicator register

5.1   BATVADC_DAT0 (VBAT Voltage register)

I2C address 0xEA, Register address: 0x50

Bit(s)	Name	Description	R/W
7:0	BATVADC[7:0]	BATVADC data low 8bit VBATPIN voltage	R

5.2   BATVADC_DAT1 (VBAT Voltage register)

I2C address 0xEA, Register address: 0x51

Bit(s)	Name	Description	R/W
7:0	BATVADC[15:8]	BATVADC data high 8bit VBAT=BATVADC*0.26855mv VBATPIN voltage	R

5.3   VSYSVADC_DAT0 (VSYS Voltage register)

I2C address 0xEA, Register address: 0x52

Bit(s)	Name	Description	R/W
7:0	VSYSVADC[7:0]	VSYS voltage data low 8bit VSYSPIN voltage	R

5.4   VSYSVADC_DAT1 (VSYS Voltage register)

I2C address 0xEA, Register address: 0x53

Bit(s)	Name	Description	R/W
7:0	VSYSVADC[15:8]	VSYS voltage data high 8bit VSYSPIN voltage VSYS= VSYSVADC*1.611328mV	R

5.5   IVIN/IVBUS_IADC_DAT0 (Charging current register)

I2C address 0xEA, Register address: 0x54

Bit(s)	Name	Description	R/W
7:0	IVIN/IVBUS ADC[7:0]	Low 8bit charging input current data VIN or VBUS charging current	R

5.6   IVIN/IVBUS_IADC_DAT0 (Charging current register)

I2C address 0xEA, Register address: 0x55

Bit(s)	Name	Description	R/W
7:0	IVIN/IVBUSADC [15:8]	High 8bit charging input current data VIN or VBUS charging current Iin= IVIN/IVBUSADC*0.671387mA	R

5.7   IVOUT1_IADC_DAT0 (VOUT1 Output current register)

I2C address 0xEA, Register address: 0x56

Bit(s)	Name	Description	R/W
7:0	IVOUT1ADC[7:0]	VOUT1 Low 8 bits of output current data VOUT1 output current	R

5.8   IVOUT1_IADC_DAT1 (VOUT1 Output current register)

I2C address 0xEA, Register address: 0x57

Bit(s)	Name	Description	R/W
7:0	IVOUT1ADC[15:8]	VOUT1 High 8bit output current data VOUT1 output current IOUT1= IVOUT1ADC*0.671387mA	R

5.9 IVOUT2_IADC_DAT0 (VOUT2 Output current register)

I2C address 0xEA, Register address: 0x58

Bit(s)	Name	Description	R/W
7:0	IVOUT2ADC[7:0]	VOUT2 Low 8bit output current data VOUT2 output current	R

5.10 IVOUT2_IADC_DAT2 (VOUT2 Output current register)

I2C address 0xEA, Register address: 0x59

Bit(s)	Name	Description	R/W
7:0	IVOUT2ADC [15:8]	VOUT2 High 8bit output current data VOUT2 output current IOUT2= IVOUT2ADC*0.671387mA	R

5.11 IBUS_IADC_DAT0(VBUS Output current register)

I2C address 0xEA, Register address: 0x5A

Bit(s)	Name	Description	R/W
7:0	IVBUSADC [7:0]	VBUS Low 8bit output current data IVBUSADC output current	R

5.12 IBUS_IADC_DAT2(VBUS Output current register)

I2C address 0xEA, Register address: 0x5B

Bit(s)	Name	Description	R/W
7:0	IVBUSADC [15:8]	VBUS High 8bit output current data IVBUSADC output current IVBUS= IVBUSADC*0.671387mA	R

5.13 VINVADC_DAT0 (VIN Voltage register)

I2C address 0xEA, Register address: 0x5C

Bit(s)	Name	Description	R/W
7:0	VINVADC[7:0]	VIN input voltage data low 8bit VINPIN voltage	R

5.14 VINVADC_DAT1 (VIN Voltage register)

I2C address 0xEA, Register address: 0x5D

Bit(s)	Name	Description	R/W
7:0	VINVADC[15:8]	VIN input voltage data high 8bit VINPIN voltage VIN= VINVADC*1.611328mV	R

5.15 VOUT1VADC_DAT0 (VOUT1 Voltage register)

I2C address 0xEA, Register address: 0x5E

Bit(s)	Name	Description	R/W
7:0	VOUT1VADC[7:0]	VOUT1 output voltage data low 8bit VOUT1PIN voltage	R

5.16 VOUT1VADC_DAT1 (VOUT1 Voltage register)

I2C address 0xEA, Register address: 0x5F

Bit(s)	Name	Description	R/W
7:0	VOUT1VADC[15:8]	VOUT1 output voltage data high 8bit VOUT1PIN voltage VOUT1= VOUT1VADC*1.611328mV	R

5.17 VOUT2VADC_DAT0 (VOUT2 Voltage register)

I2C address 0xEA, Register address: 0x60

Bit(s)	Name	Description	R/W
7:0	VOUT2VADC[7:0]	VOUT2 output voltage data low 8bit VOUT2PIN voltage	R

5.18 VOUT2VADC_DAT1 (VOUT2 Voltage register)

I2C address 0xEA, Register address: 0x61

Bit(s)	Name	Description	R/W
7:0	VOUT2VADC[15:8]	VOUT2 output voltage data high 8bit VOUT2PIN voltage VOUT2= VOUT2VADC*1.611328mV	R

5.19 VBUSVADC_DAT0 (VBUS Voltage register)

I2C address 0xEA, Register address: 0x62

Bit(s)	Name	Description	R/W
7:0	VBUSVADC[7:0]	VBUS input or output voltage data low 8bit VBUSPIN voltage	R

5.20 VBUSVADC_DAT1 (VBUS Voltage register)

I2C address 0xEA, Register address: 0x63

Bit(s)	Name	Description	R/W
7:0	VBUSVADC[15:8]	VBUS input or output voltage data high 8bit VBUS PIN voltage VBUS= VBUSVADC*1.611mV	R

5.21 NTCVADC_DAT0 (NTC Voltage register)

I2C address 0xEA, Register address: 0x64

Bit(s)	Name	Description	R/W
7:0	NTCVADC[7:0]	NTC voltage data low 8bit NTC PIN voltage	R

5.22 NTCVADC_DAT1 (NTC Voltage register)

I2C address 0xEA, Register address: 0x65

Bit(s)	Name	Description	R/W
7:0	NTCVADC[15:8]	NTC voltage data high 8bit NTC PIN voltage NTC= NTCVADC*0.26855mV	R

5.23 LED4VADC_DAT0 (LED4 Voltage register)

I2C address 0xEA, Register address: 0x68

Bit(s)	Name	Description	R/W
7:0	LED4VADC[7:0]	LED4 voltage data low 8bit LED4 PIN voltage	R

5.24 LED4VADC_DAT1 (LED4 Voltage register)

I2C address 0xEA, Register address: 0x69

Bit(s)	Name	Description	R/W
7:0	LED4VADC[15:8]	LED4 voltage data high 8bit LED4 PIN voltage LED4= LED4VADC*0.26855mV	R

5.25 LED5VADC_DAT0 (LED5 Voltage register)

I2C address 0xEA, Register address: 0x6A

Bit(s)	Name	Description	R/W
7:0	LED5VADC[7:0]	LED5 voltage data low 8bit LED5PIN voltage	R

5.26 LED5VADC_DAT1 (LED5 Voltage register)

I2C address 0xEA, Register address: 0x6B

Bit(s)	Name	Description	R/W
7:0	LED5VADC[15:8]	LED5 voltage data high 8bit LED5 PIN voltage LED5= LED5VADC*0.26855mV	R

5.27 LED6VADC_DAT0 (LED6 Voltage register)

I2C address 0xEA, Register address: 0x6C

Bit(s)	Name	Description	R/W
7:0	LED6VADC[7:0]	LED6 voltage data low 8bit LED6 PIN voltage	R

5.28 LED6VADC_DAT1 (LED6 Voltage register)

I2C address 0xEA, Register address: 0x6D

Bit(s)	Name	Description	R/W
7:0	LED6VADC[15:8]	LED6 voltage data high 8bit LED6 PIN voltage LED6= LED6VADC*0.26855mV	R

5.29 IBATIADC_DAT0 (BAT current register)

I2C address 0xEA, Register address: 0x6E

Bit(s)	Name	Description	R/W
7:0	IBATIADC[7:0]	Cell current low 8bit IBATIADC data	R

5.30 IBATIADC_DAT1 (BAT current register)

I2C address 0xEA, Register address: 0x6F

Bit(s)	Name	Description	R/W
7:0	IBATIADC[15:8]	Cell current high 8bit IBATIADC data IBAT=IBATVADC*1.6785mA Current does not distinguish between positive and negative directions	R

5.31 ISYS_IADC_DAT0 (IVSYS current register)

I2C address 0xEA, Register address: 0x70

Bit(s)	Name	Description	R/W
7:0	ISYSIADC[7:0]	IVSYS current low 8bit VSYSIADC data	R

5.32 IVSYS_IADC_DAT1 (IVSYS current register)

I2C address 0xEA, Register address: 0x71

Bit(s)	Name	Description	R/W
7:0	IVSYSIADC[15:8]	IVSYS current high 8bit VSYSIADC data IVSYS=ISYSVADC*0.671387mA Current does not distinguish between positive and negative directions	R

5.33 VSYS_POW_DAT0 (VSYS Power register)

I2C address 0xEA, Register address: 0x74

Bit(s)	Name	Description	R/W
7:0	VSYS_POW_ADC [7:0]	VSYS power low 8bit ADC data	R

5.34 VSYS_POW _DAT1 (VSYS Power register)

I2C address 0xEA, Register address: 0x75

Bit(s)	Name	Description	R/W
7:0	VSYS_POW_ADC[15:8]	VSYS power high 8bit ADC data VSYS_POW= VSYS_POW_ADC 4.431mW	R

5.35 SOC_CAP_DATA (Battery data register)

I2C address 0xEA, Register address: 0x7B

Bit(s)	Name	Description	R/W
7:0	SOC_CAP	Cell percentage Power data (%)	R

5.36 SOC_CAP_SET (Battery setting register)

I2C address 0xEA, Register address: 0x87

Bit(s)	Name	Description	R/W
7:0	SOC_CAP_SET	Cell percentage power control register The corresponding percentage power data can be written directly to the register value	R/W

5.37 FORCE_STANDBY (Software shutdown)

I2C address 0xEA, Register address: 0x86

Bit(s)	Name	Description	R/W
7	Force_Standby	Write 1 to set the IP5356 to sleep	R/W
6:0		Reserved	R

5.38 STATE_CTL0 (Charge status control register)

I2C address 0xEA, Register address: 0x90

Bit(s)	Name	Description	R/W
7:6		Reserved	R
5:4	DCP_SINK_STATE	Enter SINKDCP fast charge enable control 00: State machine automatic control 01: Off 10: State machine automatic control 11: On	R/W
3:0		Reserved	R

5.39 STATE_CTL1 (Enter PD status control register)

I2C address 0xEA, Register address: 0x91

Bit(s)	Name	Description	R/W
7:4		Reserved	R
3:2	PD_SINK_STATE	Enter SINK CC PD fast charge enable control 00: State machine automatic control 01: Off 10: State machine automatic control 11: On	R/W
1:0		Reserved	R

5.40 STATE_CTL2 (Charge path control register)

I2C address 0xEA, Register address: 0x92

Bit(s)	Name	Description	R/W
7:2		Reserved	R/W
1:0	CHG_MOS_STAET	Enter charging path selection 00: State machine automatic control 01: Select VIN charging 10: State machine automatic control 11: Select VBUS charging	R/W

5.41 STATE_CTL3(PD output control register)

I2C address 0xEA, Register address: 0x97

Bit(s)	Name	Description	R/W
7:6	PD_SRC_STATE	VBUS PD output fast charge enable control 00: State machine automatic control 01: Off 10: State machine automatic control 11: On	R/W
5:0		Reserved	R

5.42 FCP_STATUS (Output FCP indicator register)

I2C address 0xEA, Register address: 0xA1

Bit(s)	Name	Description	R/W
7:6	FCP_VSEL	SRC FCP voltage 00: 5V 01: 9V 10: 12V	R
5:0		Reserved	R

5.43 STATUS_SRC0 (Output fast charge status indicator register)

I2C address 0xEA, Register address: 0xA4

Bit(s)	Name	Description	R/W
7:4	VOUT2_STATE	VOUT2 output fast charging protocol flag bit 0110: QC OK 1001: QC2(9V 12V) 1010: QC3 1100: FCP/SCP 1101: AFC 1110: SFCP 0001: DCP	R
3:0	VOUT1_STATE	VOUT1 output fast charging protocol flag bit 0110: QC OK 1001: QC2(9V 12V) 1010: QC3 1100: FCP/SCP 1101: AFC 1110: SFCP 0001: DCP	R

5.44 STATUS_SRC1 (Output fast charge status indicator register)

I2C address 0xEA, Register address: 0xA5

Bit(s)	Name	Description	R/W
7		Reserved	R
6:4	CHAL_STATE	Output port where SRC fast charging is located 000: none 001: VOUT1 010: VOU2 100: VBUS	R
3:0	VBUS_STATE	VBUS output fast charging protocol flag bit 0110: QC OK 1001: QC2(9V 12V) 1010: QC3 1100: FCP/SCP 1101: AFC 1110: SFCP 0001: DCP	R

5.45 STATUS_SRC2 (Output fast charge status indicator register)

I2C address 0xEA, Register address: 0xA8

Bit(s)	Name	Description	R/W
7	LOW_VSET_OK	Low voltage fast charge flag	R
6:0		Reserved	R

5.46 AFC_STATUS (Output AFC indicator register)

I2C address 0xEA, Register address: 0xAF

Bit(s)	Name	Description	R/W
7		Reserved	R
5:4	AFC_VSEL	SRC AFC Output voltage 00: 5V 01: 9V 11: 12V	R
3:0		Reserved	R

5.47 PD_STATE0 (System status indicator register)

I2C address 0xEA, Register address: 0xB1

Bit(s)	Name	Description	R/W
7:1		Reserved	R
0	Sink_pd_Ok	PD SINK Enter the connection flag bit 1: effective 0: invalid	R

5.48 PD_STATE1 (System status indicator register)

I2C address 0xEA, Register address: 0xC2

Bit(s)	Name	Description	R/W
7	Src _Pd_Ok	PD SRC Output connection flag bit 1: effective 0: invalid	R
6:0		Reserved	R

5.49 PD_STATE2 (System status indicator register)

I2C address 0xEA, Register address: 0xC3

Bit(s)	Name	Description	R/W
7:1		Reserved	R
0	Src_Pps_Ok	PPS SRC Output connection flag bit 1: effective 0: invalid	R

5.50 SYS_STATE0 (System status indicator register)

I2C address 0xEA, Register address: 0xC4

Bit(s)	Name	Description	R/W
7	VINOK	VIN Voltage effective mark 1: VIN is active 0: VIN is out of power.	R
5	VBUSOV	VBUS Enter the overvoltage flag 1: VBUS Input overvoltage 0: VBUS Input is not overvoltage	R
4	VBUSOK	VBUS voltage effective mark, TYPEC charging and discharging the bit will be effective 1: VBUS is active 0: VBUS is out of power	R
3:0		Reserved	R

5.51 SYS_STATE1 (System status indicator register)

I2C address 0xEA, Register address: 0xC5

Bit(s)	Name	Description	R/W
7:3		Reserved	R
2	VBATLOW	Battery voltage VBATLOW mark 1: The cell is low charge effective 0: The cell voltage is not low	R
1	VSYS_OV	VSYS Overvoltage mark 1: VSYS Overvoltage 0: VSYS is not overvoltage	R
0	VIN_OV	VIN Input the overvoltage flag 1: VIN Input overvoltage 0: VIN Input is not overvoltage	R

5.52 SYS_STATE2 (System status indicator register)

I2C address 0xEA, Register address: 0xCD

Bit(s)	Name	Description	R/W
7			
6	Src_qc_ok	Output fast charging effective flag bit 1: effective 0: invalid QC5V and PD5V are not fast charging OK	R
5:0		Reserved	R

5.53 SYS_STATE3 (System status indicator register)

I2C address 0xEA, Register address: 0xD0

Bit(s)	Name	Description	R/W
7	VINOK	Charging input path selection status 0: VIN port charging 1: VBUS port charging	R
6	VBUSOV	1: Simultaneous charge and discharge state 0: Not in simultaneous charge and discharge state	R
5	Charge_en	Charging state 1: Charging state 0: Non-charged state	R
4	Boost_en	Discharge state 1: Discharge state 0: Non-discharge state	R
3		Reserved	R
2:0	Sys_state	Current system status 000: Standby mode 001: Enable the boost delay state 010: Enable boost state 011: Shutdown delay state 100: Enable the charge delay state 101: charge on 110: charge Transfer boost delay status 111: When charging boost, wait for the output test result	R

5.54 SYS_STATE4 (System status indicator register)

I2C address 0xEA, Register address: 0xD4

Bit(s)	Name	Description	R/W
7:3		Reserved	R
2:0	Chg_qc_state	Charge input fast charge status 000: Standby mode 001: The application for fast charge is delayed by 0.5S. Procedure 010: No fast charge has been requested 011: Fast charge input 100: Enter the status of fast charge pending application, such as trickle charge 101: Simultaneous charging and discharging state	R

5.55 LOWCUR _STATE (System status indicator register)

I2C address 0xEA, Register address: 0xE1

Bit(s)	Name	Description	R/W
7	Lowcur_state	Normally on for N hours 1: Entered normal N hour mode 0: The N hour mode is not entered	R
6:0		Reserved	R

5.56 CHG_STATE1 (System status indicator register)

I2C address 0xEA, Register address: 0xE8

Bit(s)	Name	Description	R/W
7	Vbus_mosi_ state	The VBUS port input MOS status 1: On 0: Off	R
6	Vin_mos_ state	The VIN port input MOS status 1: On 0: Off	R
5：4	Vchg_state	00: 5V charging 01: 7V charging 10: 9V charging 11: 12V charging	R
3:0		Reserved	R

5.57 CHG_STATE2 (System status indicator register)

I2C address 0xEA, Register address: 0xE9

Bit(s)	Name	Description	R/W
7	Sink_QC_OK	Input fast charge valid flag bit (both DM DP fast charge and PD fast charge are valid) 1: effective 0: invalid	R
6：4	chg_ state	Charging state 000: Uncharged state 001/010/011: Charging state 100: Constant voltage disconnect detects the cell voltage 101: Full state 110: Charge timeout state	R
3	Charge_en_ state	Charge enabled flag 1: Charging state 0: Not in charging state	R
2:0		Reserved	R

5.58 MOS_STATE (Output MOS status indicator register)

I2C address 0xEA, Register address: 0xEB

Bit(s)	Name	Description	R/W
7	At_same	Simultaneous charge and discharge flag bit 0: Not in the same charge and discharge 1: In the same charge and discharge	R
6	Mos_vbus_state	VBUS port outputs the MOS status 0: Off state 1: On state	R
5	Mos_vout2_state	VOUT2 port outputs the MOS status 0: Off state 1: On state	R
4	Mos_vout1_state	VOUT1 port outputs the MOS status 0: Off state 1: On state	R
3	Src_qc_ok	Output fast charging effective flag bit 1: effective 0: invalid QC5V and PD5V are also considered fast charging OK, 0xCD bit6 is recommended	R
2:0		Reserved	R

5.59 ILOW_STATE (System light load status indicator register)

I2C address 0xEA, Register address: 0xF2

Bit(s)	Name	Description	R/W
7		Reserved	R
6	Isys_low	Isys output current Light load flag 1: effective 0: invalid	R
5		Reserved	R
4	Pow_low	Isys output power Light load flag 1: effective 0: invalid	R
3:0		Reserved	R

5.60 TYPEC_STATE (System light load status indicator register)

I2C address 0xEA, Register address: 0xF3

Bit(s)	Name	Description	R/W
7	cc_src_ok	cc_src_ok, type c concatenated to src(as output) 1: effective 0: invalid	R
6	cc_sink_ok,	cc_sink_ok, type c concatenates to sink(as input) 1: effective 0: invalid	R
5:0			R

5.61 KEYIN_STATE (Key status indicator register)

I2C address 0xEA, Register address: 0xF4

Bit(s)	Name	Description	R/W
7	On_off_2short	Short press the button twice to mark the position, Need to write 1 clear 0 1: effective 0: invalid	R/W
6	On_off_long	Press and hold the button for 2 seconds to mark the position, Need to write 1 clear 0 1: effective 0: invalid	R/W
5	On_off_short	Key short press flag, Need to write 1 clear 0 1: effective 0: invalid	R/W
4:0		Reserved	R/W

5.62 NTC_STATE (NTC and output MOS current status indicator register)

I2C address 0xEA, Register address: 0xFB

Bit(s)	Name	Description	R/W
7	Ntc_ht	NTC High temperature marker 1: effective 0: invalid	R
6	Ntc_mht	NTC Medium high temperature mark 1: effective 0: invalid	R
5	Ntc_mlt	NTC Medium low temperature marker 1: effective 0: invalid	R
4	Ntc_lt	NTC Low temperature marker 1: effective 0: invalid	R
3:	Mos_vbus_ilow	VBUS Output port light load flag bit 1: effective 0: invalid	R
2	Mos_vout2_ilow	VOUT2 Output port light load flag bit 1: effective 0: invalid	R
1	Mos_vout1_ilow	VOUT1 Output port light load flag bit 1: effective 0: invalid	R
0		Reserved	R

5.63 OCP_STATE (System overcurrent status indicator register)

I2C address 0xEA, Register address: 0xFC

Bit(s)	Name	Description	R/W
7:3		Reserved	R/W
2	Boost_uv	Boost Overcurrent flag bi, Need to write 1 clear 0 1: There's a trigger boost overcurrent signal 0: No boost overcurrent signal was triggered When the first overcurrent signal is detected, write 1 to clear 0 first, and then read again. If two or more overcurrent signals are detected continuously within 600ms, the overcurrent signal is considered valid	0
1		Reserved	R/W
0	Boost_scdt	Boost Short-circuit marker, Need to write 1 clear 0 1: There's a trigger short circuit signal 0: No trigger short circuit signal When the first short-circuit signal is detected, write 1 to clear 0 first, and then read again. If two or more short-circuit signals are detected continuously within 600ms, the short-circuit signal is considered valid	0

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