IP5310 Register documentation

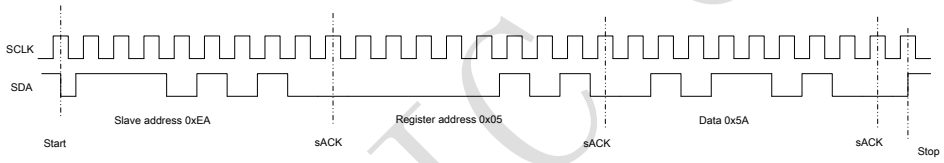
1 , I2C protocol

The i2c speed support 400Kbps. Support 8 bit address width and 8bit data width. Transmit and receive MSB first. The default slave address is 0Xea .

I2C acts as slave and is controlled by the master. The SCK line of the I2C interface is driven by the master. The SDA line could be pulled up to VCC by a 2.2Kohm resister and pulled

down by either the master or the slave. A typical WRITE sequence for writing 8bits data to a register is shown in below figure. A start bit isgiven by the master, followed by the slave address, register address and 8-bit data. After each 8-bit address or data transfer, the IP5310 gives an ACK bit. The master stops writing by sending a stop bit.

All 8 bits data must be written before the register is updated. Example: Write 8bit data 0x5a to register 0x05, and the slave address is 0Xea



Note : Sack generated by Slave, Mack generated by Master, and Mnack is a NACK generated by Master

Figure1 I2C WRITE

A typical READ sequence is shown in below figure. First the master has to write the slave address, followed by the register address. Then a restart bit and the slave address specify that a READ is generated. The master then clocks out 8 bits at a time to read data.

Example: Read 8bit data 0x5A from register 0x05, and the slave address is 0Xea

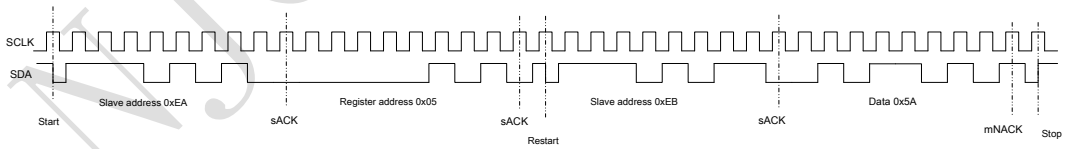
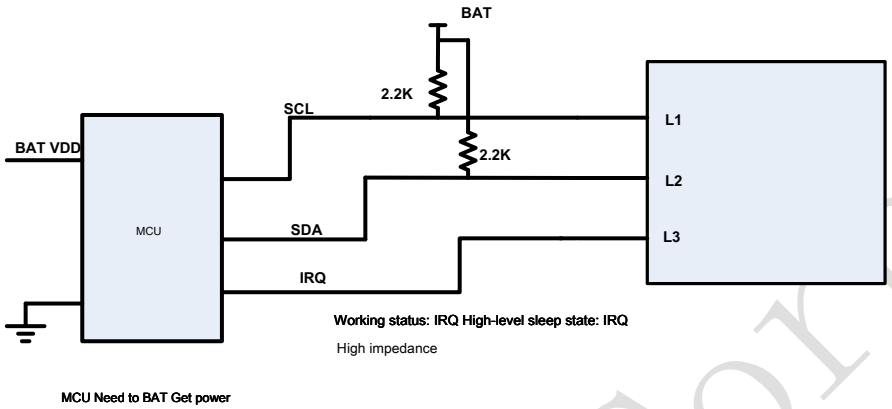


Figure2 I2C Read

2 , I2C Application notes



I2C Connection diagram

1 , IP5310 Standard products are not supported by default I2C , Need to be customized separately I2C Version, please follow IP5310_I2C Model samples and orders

2 If you want to modify IP5310 When a certain register address=, you need to read out the value of the corresponding register address= first. BIT Write the calculated value into this register address after performing the AND operation of the bit =, **Make sure to modify only what needs to be modified bit other bit The value of cannot be changed at will**

3 , Recommendations:

1 , use IRQ Signal judgment IP5310 Whether it is in working state or standby state: IRQ=1 Work, IRQ=0 Is in standby

2 , Register address = 0x70 of bit3 judgment IP5310 Is it charging or discharging: bit3=1 When charging, bit3=0 Time discharge

3 , Register address = 0x71 of bit3 Determine whether the battery is fully charged: bit3=1 Time is full, bit3=0 Time is not full

4 , I2C Communication waveform introduction

I2c master When writing, first pass 8bit Data 9 A bit read slave return ack , ack Low means successful writing, high means unsuccessful writing.

I2c master When reading, the last one byte Transmission is slave Return data, master return nack (High level), means reading is over; if master What is returned is ack (Low level), it means the reading is not over, master Will continue reading. So the ninth bit of ack The signal depends master End is a read or write operation: because IP5310 Can only do slave : If IP5310 Register address = write data, IP5310 return ack Is low; if from IP5310 Read data, IP5310 return nack High level), (**master Must send NACK , Otherwise there will be exceptions) on behalf of the end of reading**

3 , Register address

Marked as " Reserved "The register address = bit has a special control function, and the original value cannot be changed, otherwise unexpected results will occur. The operation of the register address = must be performed in accordance with "read -> modify -> write", only modify To be used bit , Cannot modify other unused bit Value.

SYS_CTL0

Register Address = 0X00 Bit(s)

	Name	Description	R/W	Reset
7:6		Reserved		10
5		Boost enable 0: disable 1: enable Note: disable Rear IP5310 There is no way to shut down automatically under light load, you need to press the button to send a double-click pulse signal to shut down and go to sleep	RW	1
4		Charger enable 0: disable 1: enable Note: After charging and charging after full charge, without unplugging the input enable – disable- enable , You can turn on charging again	RW	1
3		Insert the load and turn on automatically 0: disable 1:enable		1
2		5V Normally open mode enabled 0: disable 1: enable Boost Normally open enable, Boost After the normally open is enabled, the light load will not be automatically closed Boost Output, but will close I2C	RW	0
1:0		Reserved		00

SYS_CTL1

Register Address = 0X01 Bit(s)

	Name	Description	R/W	Reset
7		shut down boost Control signal selection for boost 1 :Press 0 : Short press twice	R/W	0
6		switch WLED Flashlight control signal selection 1 : Short press twice 0 :Press	R/W	0
5		Short press the switch boost 0: disable 1: enable	R/W	0
4		Button shutdown enable 0: disable 1:enable	R/W	1
3		reserved	R/W	0
2		VIN Whether to open after unplugging Boost 0 : Not open, 1 : Open	R/W	1
1		reserved	R/W	0
0		Batlow 3.0V Low power shutdown enable 0 : disable 1: enable	RW	1

SYS_CTL2

Register Address = 0X0E Bit(s)

	Name	Description	R/W	Reset
7:6		led Light load off time display 0 : Same as light load shutdown time (0x0e[2:0]) 1 : Same as auto power off display (0x0e [5:3])	R/W	0
5:3		Auto power off display time 000: 8s 001:16s 010:32s 011:63s 100:8min 101:16min 110:32min 111:63min	R/W	0
2:0		Boost Low current shutdown time 000: 8s 001:16s 010:32s 011:63s 100:8min 101:16min 110:32min 111:63min	RW	000

SYS_CTL3

Register Address = 0X18 Bit(s)

	Name	Description	R/W	Reset
7:3		Reserved	R/W	0
2		CC TRY enable (IP5310 Typec External discharge priority) 0:disable 1:enable	RW	0
1		TYPEC CC SRC enable(IP5310 Typec Mouth discharge) 0:disable 1:enable	RW	0
0		CC SNK enable(Typec Mouth-pair IP5310 Charge) 0:disable 1:enable	RW	1

SYS_CTL4

Register Address = 0X1A Bit(s)

	Name	Description	R/W	Reset
7:4		Reserved	R/W	0
3 : 2	Force_ccsrc_off The button close has been forced to open CC SRC (Typec Mouth-pair	External discharge) 00 : disable 01 :dog 10 :Press 11 : Short press twice	RW	00
1 : 0	Force_ccsrc_on Button forced to open CC SRC (Typec Mouth discharge) if	0x1a bit[3:2] versus bit[1:0] Set to the same, equivalent to on/off 00 : disable 01 :dog 10 :Press 11 : Short press twice	RW	00

SYS_CTL5

Register Address = 0X0A Bit(s)

	Name	Description	R/W	Reset
7	En_vset_r	VSET external PIN Select battery full voltage enable 1 : enable 0: Register address = (reg_22[3:2])	R/W	0
6:0	reserved			

Charger_CTL0

Register Address = 0x20 Bit(s)

	Name	Description	R/W	Reset
7 : 2		Reserved		
1:0		Pulse charging stop setting 11:4.2/4.305/4.35/4.395 10: 4.185/4.29/4.335/4.38 01: 4.17/4.275/4.32/4.365 00: 4.14/4.26/4.305/4.35 Corresponding to 4.2V/4.3V/4.35V/4.4V The charging cut-off voltage is recommended 01 or 00 Gear	RW	01

Charger_CTL1

Register Address = 0x21 Bit(s)

	Name	Description	R/W	Reset
7:6	R_ISTOP	Battery end stop charging current detection 11:600mA 10:500mA 01:400mA 00:300mA IP5310 Fullness detection detects current first and then battery voltage (0X20bit1 : 0)	RW	01
5		reserved		0
4:2	R_VIL	Charging undervoltage loop setting (output end when charging VOUT Voltage 111 : 4.8 110 : 4.75 101 : 4.7	RW	011

		100 : 4.65 011 : 4.6 010 : 4.55 001 : 4.5 000 : 4.45 Note: when charging IC Will detect the output VOUT Voltage to automatically adjust the charging current when the VOUT When the voltage is greater than the set value, the charging current is charged with the maximum current. When the voltage is less than the set value, the charging current is automatically reduced to maintain this voltage; if the customer requires charging and discharging, a sampling resistor can be added to the output terminal to detect and charge. The load current at the output of the discharge state is greater than 100mA Can set the under-voltage loop to the highest, and give priority to external load		
1 : 0		reserved		

Charger_CTL2

Register Address = 0x22 Bit(s)

	Name	Description	R/W	Reset
7 : 4		Reserved		
3:2		Battery voltage setting 11 : 4.4V 10 : 4.35v 01 : 4.3v 00 : 4.2v	RW	00
1:0		4.2V Constant voltage charging voltage boost setting 11 : Pressurized 42mV 10 : Pressurized 28mV 01 : Pressurized 14mV 00: Not pressurized 4.2V It is recommended to pressurize 28mV ;	RW	01

Charger_CTL2

Register Address = 0x23 Bit(s)

	Name	Description	R/W	Reset
7 : 6		Reserved		
5		VIN Charge CC Loop selection 1 : VIN CC Loop 0 : BAT CC Loop		
4 0	Bit4 with Bit0 Combination must be adjusted	4.3V/4.35V/4.4V Constant voltage charging voltage boost setting 11 : Pressurized 42mV 10 : Pressurized 28mV 01 : Pressurized 14mV 00: Not pressurized It is recommended to at least pressurize 14mV	RW	01

CHG_DIG_CTL0

Register Address = 0x24 Bit(s)

	Name	Description	R/W	Reset
7 : 5		Reserved		
4:0		VIN mouth Charger(VIN End) current setting: I=0.05+b0*0.1+b1*0.2+b2*0.4+b3*0.8+b4*1.6A	RW	

CHG_DIG_CTL1

Register Address = 0x26 Bit(s)

	Name	Description	R/W	Reset
7 : 5		Reserved		
4:0		VBUS mouth Charger(BAT End) current setting: I=0.05+b0*0.1+b1*0.2+b2*0.4+b3*0.8+b4*1.6A	RW	

REG_READ0

Register Address = 0X70 Bit(s)

	Name	Description	R/W	Reset
7 : 4		Reserved		
3	charge_en	Charge enable flag 1 : Charging is on	R	X

		0 : Charge off		
2 : 0		Reserved		

REG_READ1

Register Address = 0X71 Bit(s)

	Name	Description	R/W	Reset
7:4		Reserved		
3		End of charge sign 0: 1: End of charge	R	X
2 : 0		Reserved		

REG_READ2

Register address = 0X 72 Bit(s)

	Name	Description	R/W	Reset
7:3				
2	Load sign	0 : Heavy load 1 : Light load	R	X
1:0				

REG_READ3

Register Address = 0X74 Bit(s)

	Name	Description	R/W	Reset
7:4	Battery power	1111: Battery power C>=75%; 0111 Battery power 50%<C<=75%; 0011: Battery power 25%<C<=50%; 0001: Battery power 3%<C<=25%%; 0000: Battery power C<=3%;		

REG_READ4

Offset = 0 X77

Bit(s)	Name	Description	R/W	Reset
7 : 3				
2	KEY Double-click logo	for 1 , Indicating that a double-click key write 1 Clear	R/W	0
1	KEY Button long press sign	for 1 , Indicating that a long press of the key has occurred 1 Clear	R/W	0
0	KEY Button short press sign	for 1 , Indicating that short press to write 1 Clear	R/W	0

4 , Liability and Copyright Declaration

Yingjixin Technology Co., Ltd. has the right to make corrections, modifications, enhancements, improvements or other changes to the products and services provided by the customer.

Obtain the latest relevant information before ordering, And verify that the information is complete and up-to-date. All products are sold at the time of order confirmation

The sales terms and conditions provided.

Yingjixin Technology Co., Ltd. is not responsible for application assistance or customer product design. Customers should respond to their products and applications using Infineon

Use your own responsibility. To minimize the risks associated with customer products and applications, customers should provide adequate design and operational safety verification.

The customer recognizes and agrees that although any application related information or support may still be provided by Ingenics, they will be solely responsible for satisfying their production

Products and all laws, regulations and safety-related requirements related to the use of Ingenics products in their applications. Customers declare and agree that they have the

With all the professional skills and knowledge required to implement safety measures, it is possible to foresee the dangerous consequences of failures, monitor failures and their consequences, and reduce

The probability of failure of adult personal injury and take appropriate remedial measures. The customer will be fully compensated for the use of any Yingji in such critical applications

Core products and any losses caused to Yingjixin and its agents.

For Ingenics product manuals or data sheets, only without any tampering with the content and with relevant authorizations, conditions, restrictions and declarations

Only allowed copying. Ingenics assumes no responsibility or obligation for such tampered documents. Copying third-party information may require

Subject to additional restrictions.

Yingjixin will update the content of this document from time to time. The actual parameters of the product may vary depending on the model or other matters.

Any express or implied warranty or authorization.

When reselling Ingenics products, if there is a difference or false component in the statement of the product parameters compared with the parameters marked by Ingenics, then

Loss of all express or implied authorization of related Ingenics products, and this is an unfair and fraudulent business act. Yingjixin is against any such false

None of the statements assumes any responsibility or obligation.