

FR5086D 开发板使用手册

Dual Mode Bluetooth SOC

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 **FREQCHIP** 富芮坤

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1、FR5086D 开发板硬件设计

1.1 FR5086D 开发板硬件资源，见图 1.1

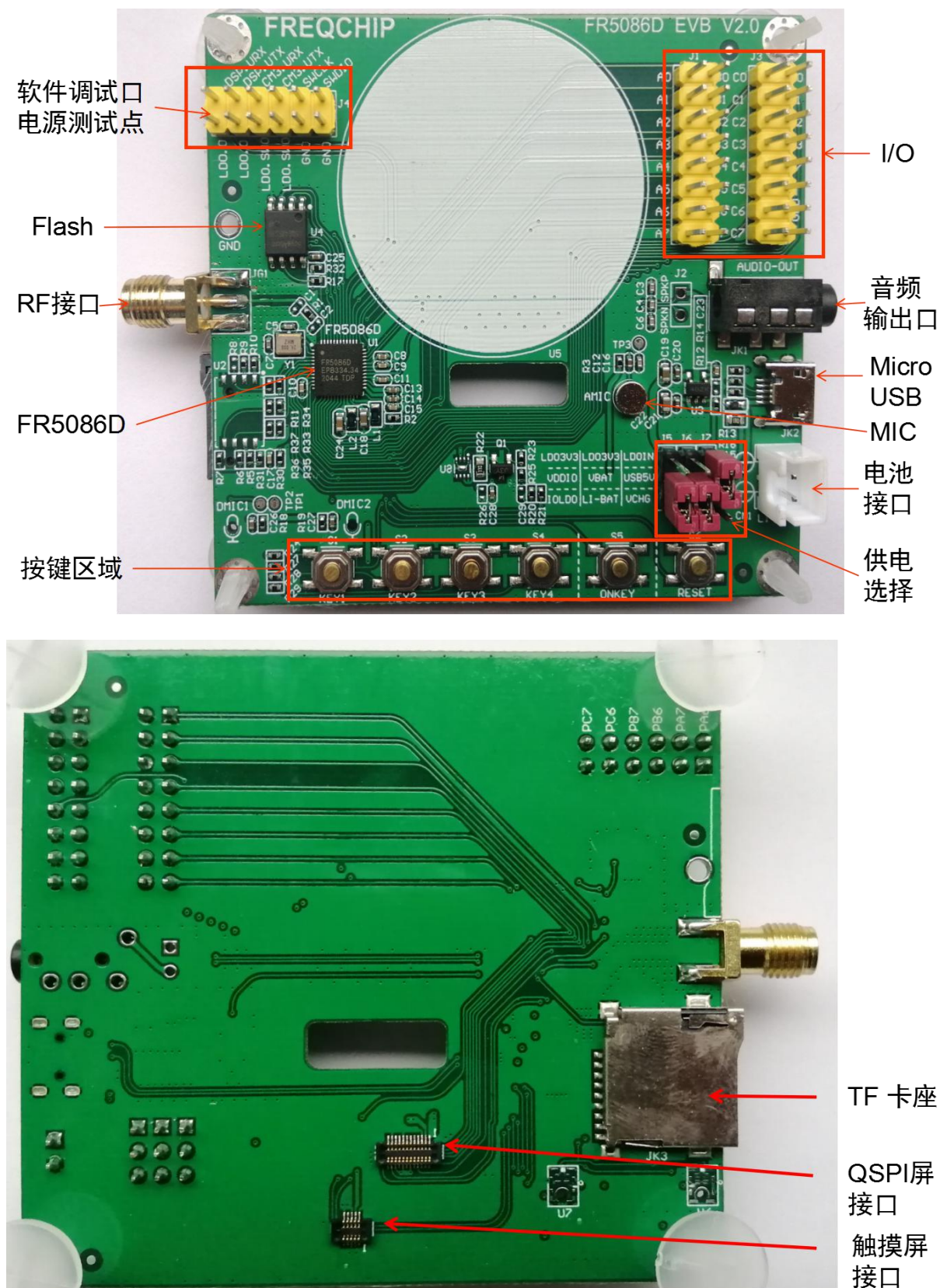
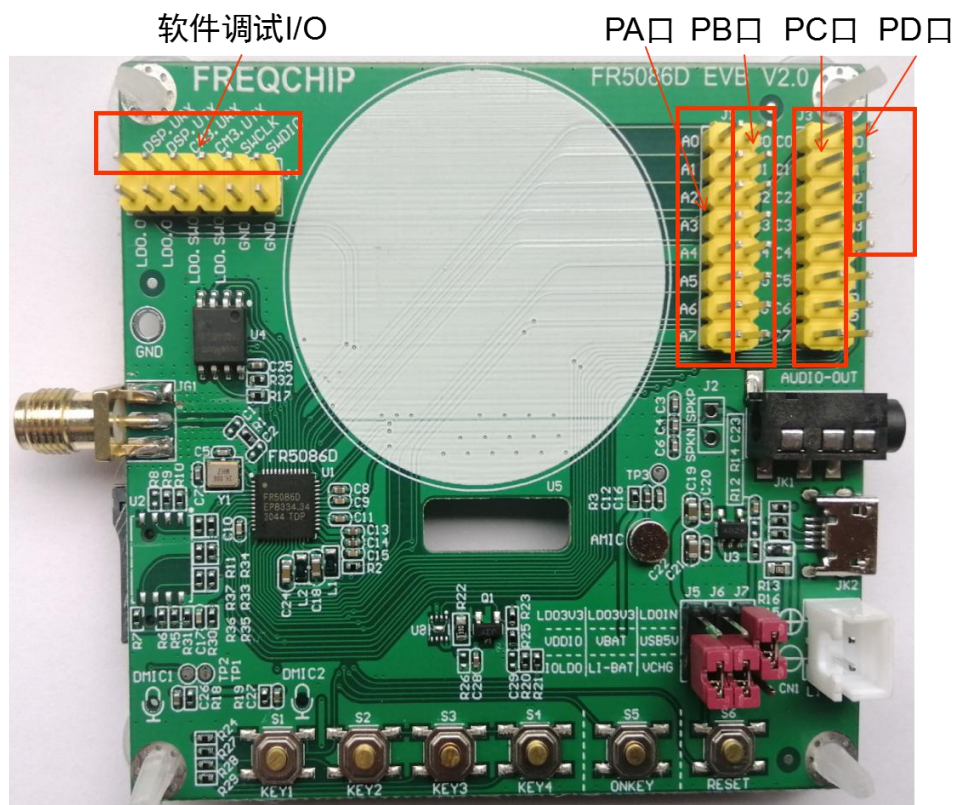


图 1.1

1.2 FR5086D 开发板 IO 口分配, 见图 1.2



见图 1.2

1.3 FR5086D 开发板跳线帽配置说明, 见图 1.3

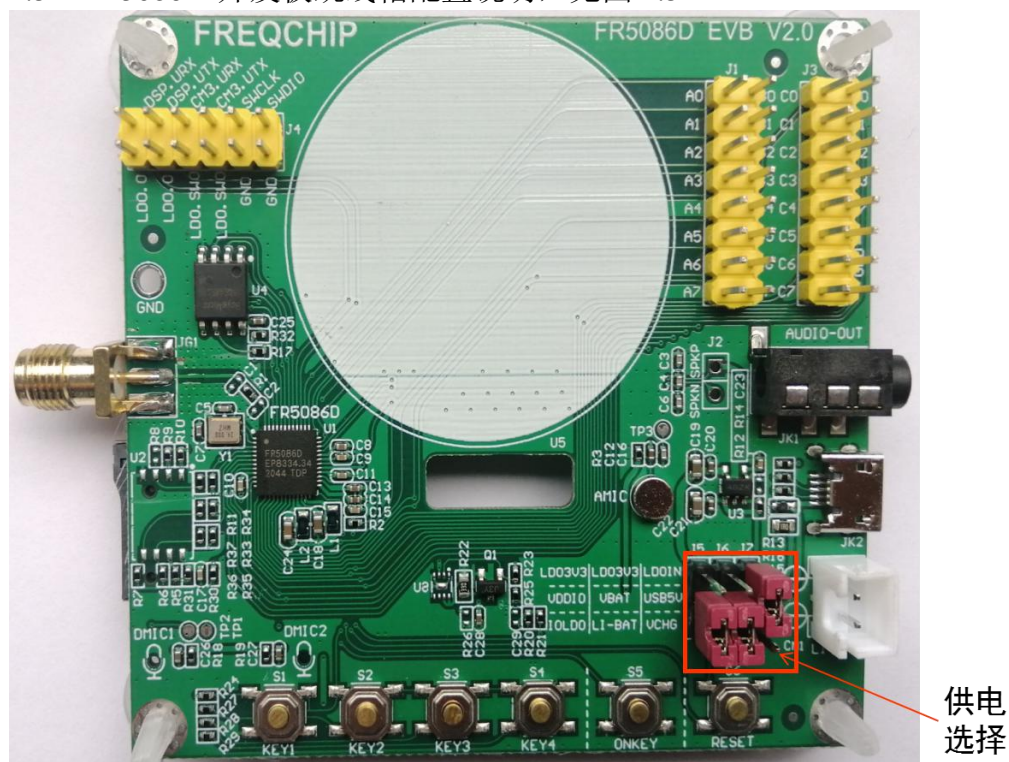


图 1.3

1.3.1 电源选择:

1.3.1.1 LDO3V3: 外部 LDO 供电

VDDIO: 外设电源供电

IOLDO: 蓝牙芯片自带 LDO 供电

1.3.1.2 LDO3V3: 外部 LDO 供电

VBAT: 蓝牙芯片电源供电

Li-BAT: 外部电池供电

1.3.1.3 LDOIN: 外部 LDO 电源输入

USB5V: 外部 5V 电源输入

VCHG: 蓝牙芯片充电输入脚

1.3.2 I/O 接口说明

DSP.URX: PA6

DSP.URX: PA7

CM3.URX: PB6 软件烧录口 RX

CM3.UTX: PB7 软件烧录口 TX

A0~A7: PA 口

B0~B7: PB 口

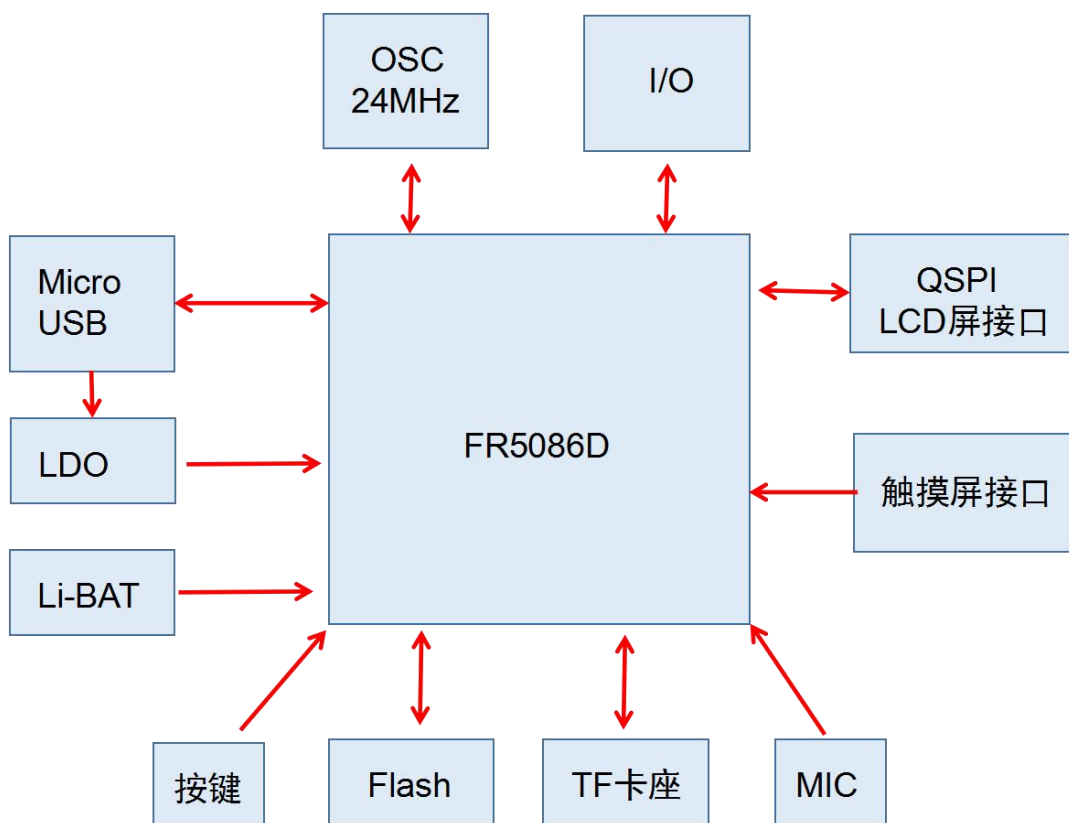
C0~C7: PC 口

D0~D7: PD 口

2、FR5086D 开发板原理图

原理图见附图。

3、FR5086D 开发板系统框图，如图 1.4



如图 1.4

4、FR5086D 开发板产品特性

- *双核双模蓝牙 V5.0 版本（CM3+DSP 核心），支持 BR/EDR/BLE
- *预留 J-Link 调试接口(CM3 部分：PC6 SWCLK、PC7 SWDIO)，支持 J-Link V9
- *RF 天线接口
- *1 个 QSPI 屏接口
- *1 个触摸屏接口
- *1 个 ONKEY 按键、1 个复位按键、1 路 ADC 按键
- *TF 卡座
- *USB-OTG 功能
- *支持 6 路 PWM 输出
- *支持 4 路 10 位 ADC、2 路 I2C、2 路 UART、2 路 QSPI

*支持 1 路模拟 MIC、4 通道数字 MIC 输入

*支持蓝牙音频播放、本地提示音播放、蓝牙通话

*内置充电管理，充电电流最大 200mA，软件可配置充电电流、充满电压参数

* ϕ 3.5mm 音频输出接口

5、开发板使用说明

5.1 开发使用电池供电或者 USB 接口供电（注：使用两芯线的充电线）。

5.2 将开发板 CM3.URX、CM3.UTX、GND 与串口板的 TX、RX、GND 相连接（CM3 部分软件烧录）。

5.3 电脑端打开串口调试助手（查看调试信息）或者 fr5080_config 工具（烧录 CM3 软件）。

5.4 QSPI 屏接口和触摸接口可外接显示屏和触摸屏，接口定义见附件屏资料。

5.5 音频座接 ϕ 3.5mm 插头耳机可以听音乐播放。

6、FR5086D 开发板软件烧录

6.1 双击打开 fr5080_config 烧录工具，选择串口端口号、波特率、点击打开，如图 6.1

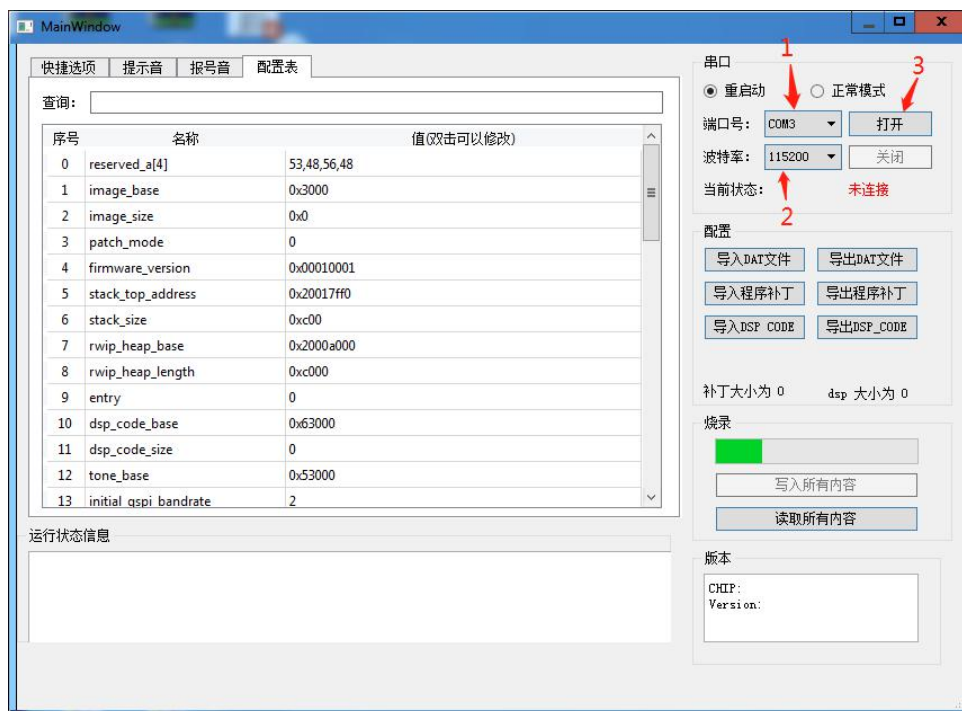


图 6.1

6.2 导入程序补丁和导入 DSP CODE 文件，如图 6.2

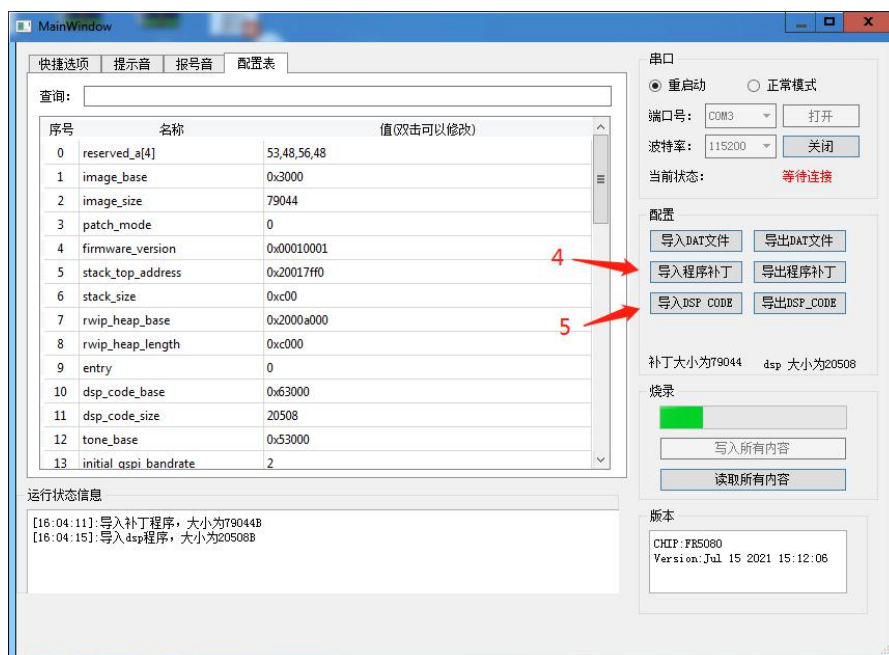


图 6.2

6.3 给 FR5086D 芯片供电(3.0~4.2V)或者先供电按复位键，烧录工具显示已连接(Flash),点击写入所有内容，软件开始烧录，烧录完成后提示烧录成功。如图 6.3

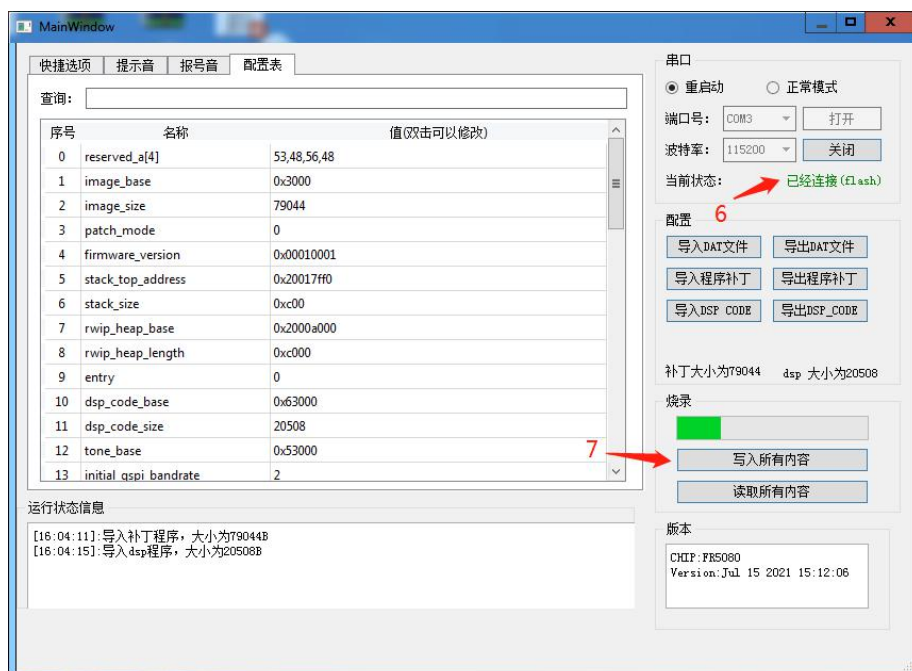


图 6.3

6.4 DSP 软件烧录方法

6.4.1 将开发板 SWCLK(PC6 RX)、SWDIO (PC7 TX)、GND 与串口板的 TX、RX、GND 相连接 (DSP 部分软件烧录)。

6.4.2 双击打开 fr5080_config 烧录工具，选择串口端口号、波特率、点击打开，如图 6.4



图 6.4

6.4.3 导入 DAT 文件，按复位键，点击写入所有内容，如图 6.5



图 6.5

7、FR5086D 技术支持

关于 FR5086D 技术支持，请关注以下二维码公众号



A

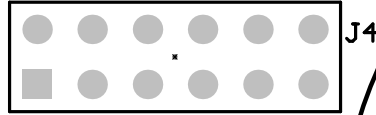


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Drawn By:		Date: 2021/4/6	

FREQCHIP

FR5086D EVB V2.0

DSP.URX
DSP.UTX
CM3.URX
CM3.UTX
SWCLK
SWDIO

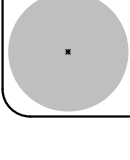
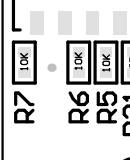
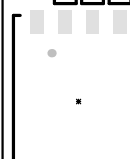
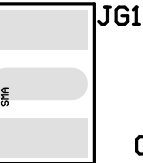


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LDO.0
LDO.SW0
LDO.SW0
GND
GND

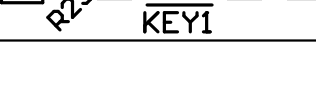
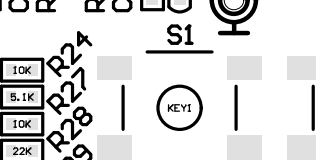
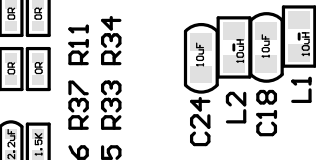
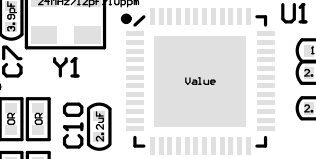
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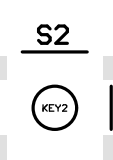
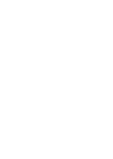
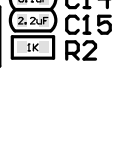
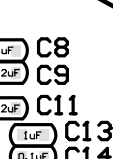
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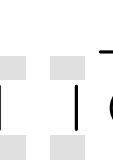
FR5086D



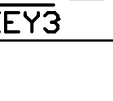
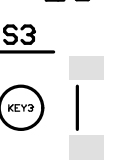
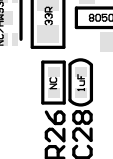
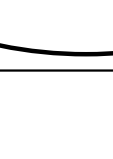
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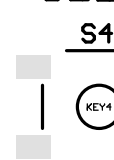
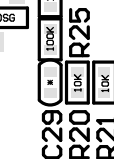
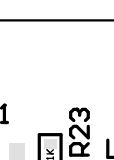
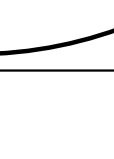
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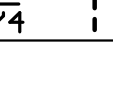
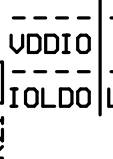
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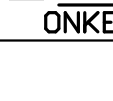
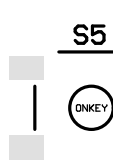
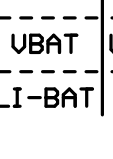
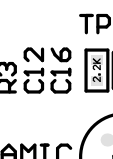
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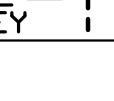
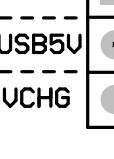
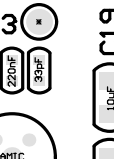
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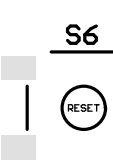
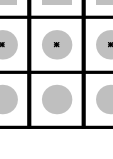
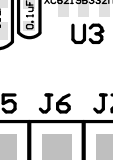
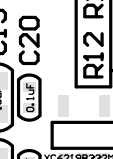
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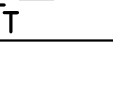
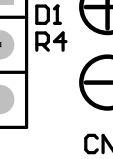
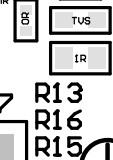
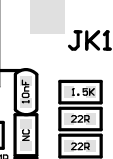
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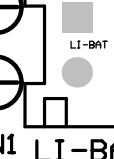
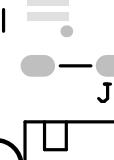
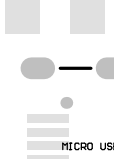
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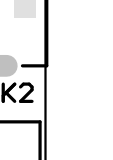
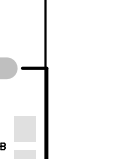
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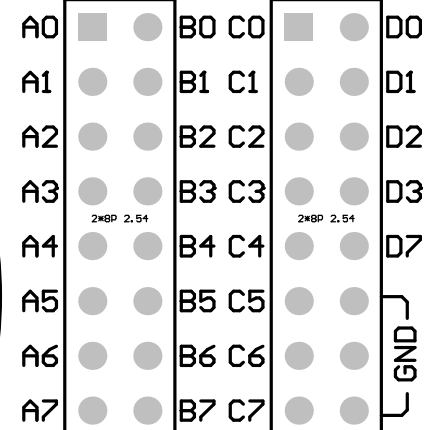
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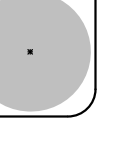
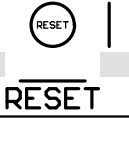
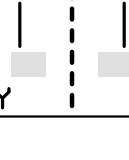
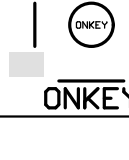
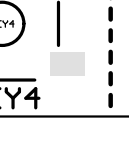
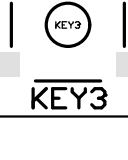
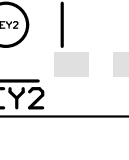
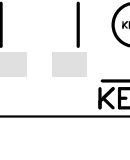
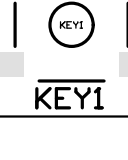
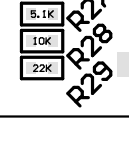
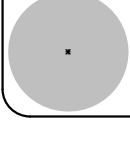
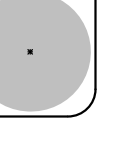
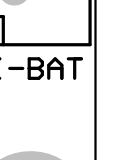
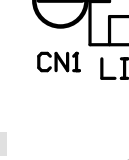
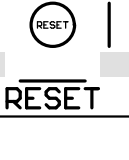
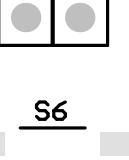
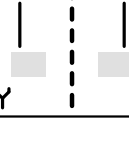
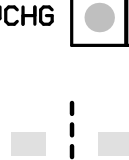
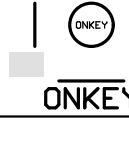
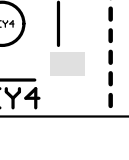
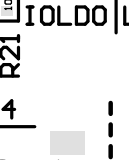
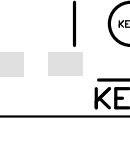
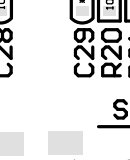
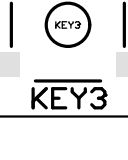
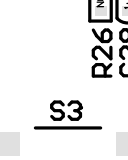
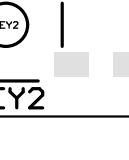
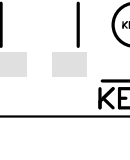
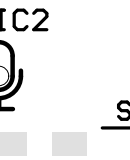
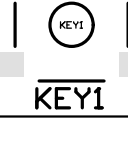
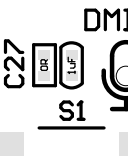
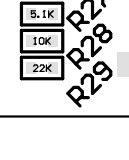
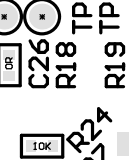
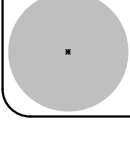
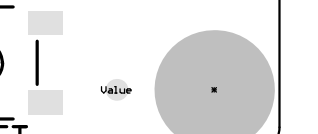
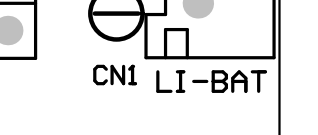
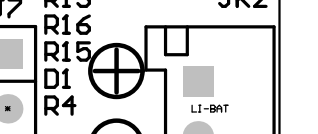
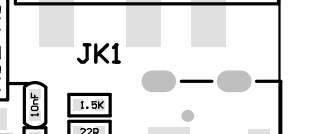
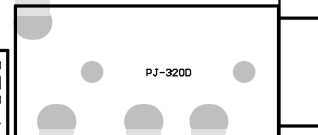
J1

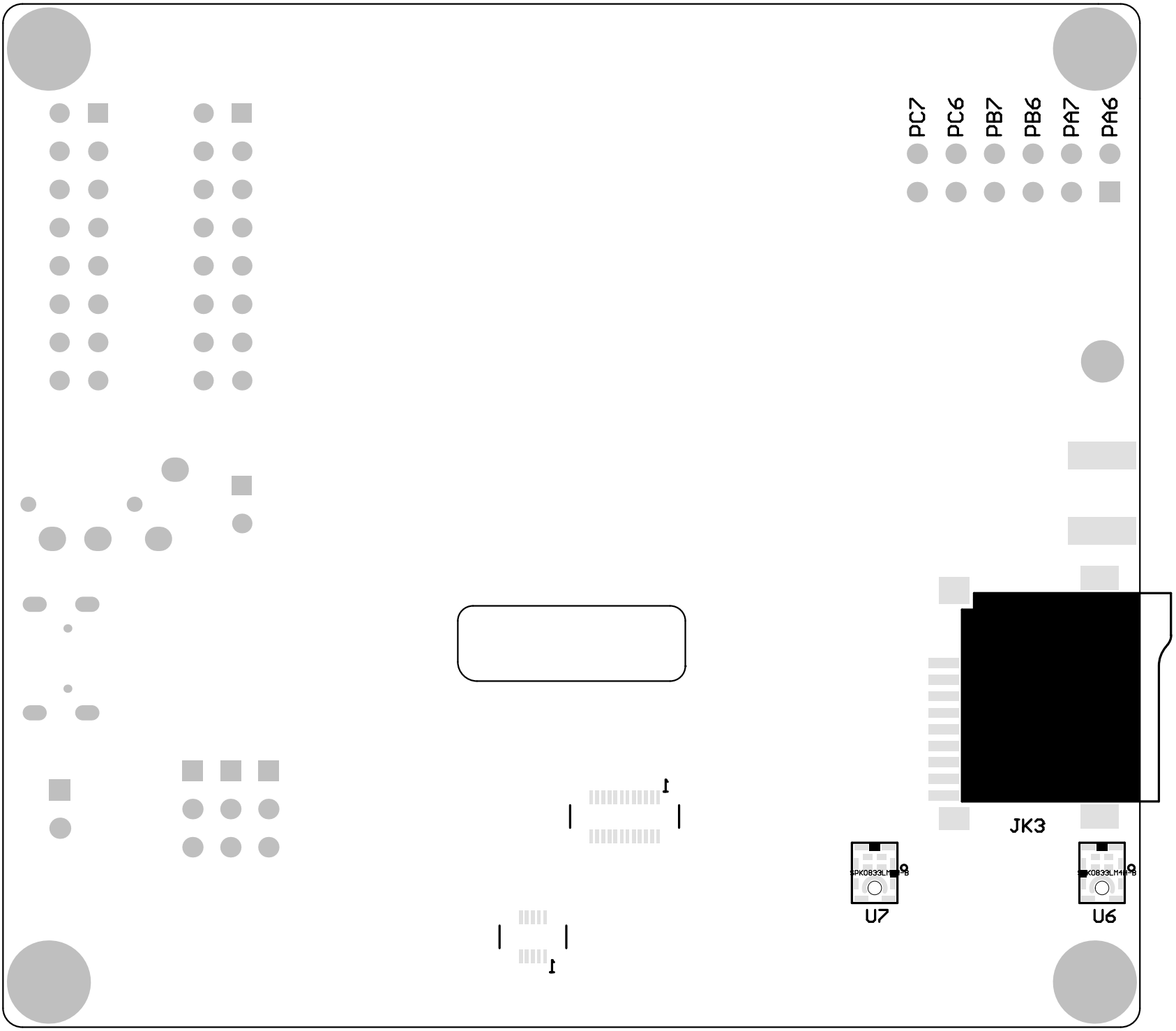
J3

Value

A0
A1
A2
A3
A4
A5
A6
A7
B0
B1
B2
B3
B4
B5
B6
B7
C0
C1
C2
C3
C4
C5
C6
C7
D0
D1
D2
D3
D7
GND

AUDIO-OUT

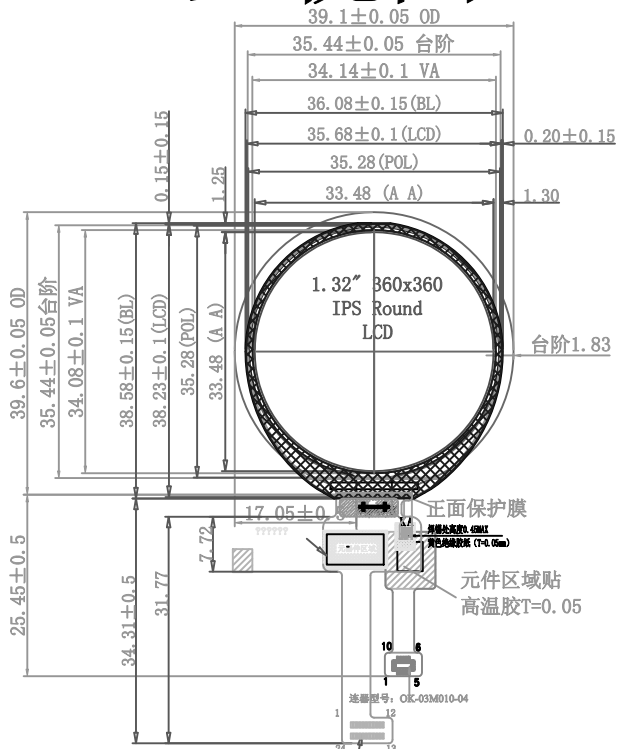




PX/MUX	4'h0	4'h1	4'h2	4'h3	4'h4	4'h5	4'h6	4'h7	4'h8	4'h9	4'hA	4'hB	4'hC	4'hD	4'hE	4'hF	UP/DOWN	Default Conf	pmu_diag_en
QSPI_CLK	qspi_sclk																PULL UP	qspi_sclk	pmu_reg8f[4]
QSPI_CSN	qspi_n_ss																PULL UP	qspi_n_ss	
QSPI_IO0	qspi_mio0																PULL UP	qspi_mio0	
QSPI_IO1	qspi_mio1																PULL UP	qspi_mio1	
QSPI_IO2	qspi_mio2																PULL UP	qspi_mio2	
QSPI_IO3	qspi_mio3																PULL UP	qspi_mio3	
Blank																			
PA0	gpioa0	dsp_gpio0	col0	I2C0_SCL	ssp_sclk	pwm0	pdm0_sck	i2s_sclk	sdc_clk	cm3_uart_rxd		!pwm1	qspil_sclk	bt_diag0	mdm_diag0	soc_diag0			pmu_diag0
PA1	gpioa1	dsp_gpio1	col1	I2C0_SDA	ssp_csn	pwm1	pdm0_sda	i2s_frm	sdc_cmd	cm3_uart_txd		!pwm0	qspil_n_ss	bt_diag1	mdm_diag1	soc_diag1			pmu_diag1
PA2	gpioa2	dsp_gpio2	col2	I2C1_SCL	ssp_mosi	pwm2	pdm1_sck	i2s_mosi	sdc_dat0			!pwm3	qspil_mio0	bt_diag2	mdm_diag2	soc_diag2			pmu_diag2
PA3	gpioa3	dsp_gpio3	col3	I2C1_SDA	ssp_miso	pwm3	pdm1_sda	i2s_miso	sdc_dat1			!pwm2	qspil_mio1	bt_diag3	mdm_diag3	soc_diag3			pmu_diag3
PA4	gpioa4	dsp_gpio4	col4	I2C0_SCL	ssp_sclk	pwm4	pdm0_sck	i2s_sclk	sdc_dat2		cdc_i2s_clk	!pwm5	qspil_mio2	bt_diag4	mdm_diag4	soc_diag4			pmu_diag4
PA5	gpioa5	dsp_gpio5	col5	I2C0_SDA	ssp_csn	pwm5	pdm0_sda	i2s_frm	sdc_dat3		cdc_i2s_frm	!pwm4	qspil_mio3	bt_diag5	mdm_diag5	soc_diag5			pmu_diag5
PA6	gpioa6	dsp_gpio6	col6	I2C1_SCL	ssp_mosi	pwm0	pdm1_sck	i2s_mosi		dsp_uart_rxd	cdc_i2s_mosi	!pwm1	cm3_uart_rxd	bt_diag6	mdm_diag6	soc_diag6			pmu_diag6
PA7	gpioa7	dsp_gpio7	col7	I2C1_SDA	ssp_miso	pwm1	pdm1_sda	i2s_miso		dsp_uart_txd	cdc_i2s_miso	!pwm0	cm3_uart_txd	bt_diag7	mdm_diag7	soc_diag7			pmu_diag7
PB0	gpiob0	dsp_gpio0	col8	I2C1_SCL	ssp_sclk	pwm2	pdm0_sck	i2s_sclk		cdc_i2s_sclk	cdc_tst_pin0(dac_r[0])	!pwm3	burn_spi_sclk	bt_diag8	mdm_diag8	soc_diag8			pmu_diag8
PB1	gpiob1	dsp_gpio1	col9	I2C1_SDA	ssp_csn	pwm3	pdm0_sda	i2s_frm	clk_out	cdc_i2s_frm	cdc_tst_pin1(dac_r[1])	!pwm2	burn_spi_csn	bt_diag9	mdm_diag9	soc_diag9			pmu_diag9
PB2	gpiob2	dsp_gpio2	col10	I2C0_SCL	ssp_mosi	pwm4	pdm1_sck	i2s_mosi		cdc_i2s_mosi	cdc_tst_pin2(dac_r[2])	!pwm5	burn_spi_mosi	bt_diag10	mdm_diag10	soc_diag10			pmu_diag10
PB3	gpiob3	dsp_gpio3	col11	I2C0_SDA	ssp_miso	pwm5	pdm1_sda	i2s_miso	clk_out	cdc_i2s_miso	cdc_tst_pin3(dac_r[3])	!pwm4	burn_spi_miso	bt_diag11	mdm_diag11	soc_diag11			pmu_diag11
PB4	gpiob4	dsp_gpio4	col0	I2C1_SCL	ssp_sclk	pwm0	pdm0_sck	i2s_sclk	SARADC0		cdc_tst_pin4(dac_l[0])	!pwm1	clk_out	bt_diag12	mdm_diag12	soc_diag12			pmu_diag12
PB5	gpiob5	dsp_gpio5	col1	I2C1_SDA	ssp_csn	pwm1	pdm0_sda	i2s_frm	SARADC1		cdc_tst_pin5(dac_l[1])	!pwm0	clk_out	bt_diag13	mdm_diag13	soc_diag13			pmu_diag13
PB6	gpiob6	dsp_gpio6	col2	I2C0_SCL	ssp_mosi	pwm2	pdm1_sck	i2s_mosi	SARADC2	cm3_uart_rxd	cdc_tst_pin6(dac_l[2])	!pwm3	USB_DP	bt_diag14	mdm_diag14	soc_diag14			pmu_diag14
PB7	gpiob7	dsp_gpio7	col3	I2C0_SDA	ssp_miso	pwm3	pdm1_sda	i2s_miso	SARADC3	cm3_uart_txd	cdc_tst_pin7(dac_l[3])	!pwm2	USB_DM	bt_diag15	mdm_diag15	soc_diag15			pmu_diag15
PC0	gpioc0	dsp_gpio0	col12	I2C1_SCL	ssp_sclk	pwm4	pdm0_sck	i2s_sclk	dsp_jtag_tck	cdc_i2s_sclk	sdc_clk	!pwm5	qspil_sclk	bt_diag16	mdm_diag16	soc_diag16			pmu_diag8
PC1	gpioc1	dsp_gpio1	col13	I2C1_SDA	ssp_csn	pwm5	pdm0_sda	i2s_frm	dsp_jtag_tms	cdc_i2s_frm	sdc_cmd	!pwm4	qspil_n_ss	bt_diag17	mdm_diag17	soc_diag17			pmu_diag9
PC2	gpioc2	dsp_gpio2	col14	I2C0_SCL	ssp_mosi	pwm0	pdm1_sck	i2s_mosi	dsp_jtag_tdo	cdc_i2s_mosi	sdc_dat0	!pwm1	qspil_mio0	bt_diag18	mdm_diag18	soc_diag18			pmu_diag10
PC3	gpioc3	dsp_gpio3	col15	I2C0_SDA	ssp_miso	pwm1	pdm1_sda	i2s_miso	dsp_jtag_tdi	cdc_i2s_miso	sdc_dat1	!pwm0	qspil_mio1	bt_diag19	mdm_diag19	soc_diag19			pmu_diag11
PC4	gpioc4	dsp_gpio4	col16	I2C1_SCL	ssp_sclk	pwm2	pdm0_sck	i2s_sclk	clk_out		sdc_dat2	!pwm3	qspil_mio2	bt_diag20	mdm_diag20	soc_diag20			pmu_diag12
PC5	gpioc5	dsp_gpio5	col17	I2C1_SDA	ssp_csn	pwm3	pdm0_sda	i2s_frm	cm3_svw		sdc_dat3	!pwm2	qspil_mio3	bt_diag21	mdm_diag21	soc_diag21			pmu_diag13
PC6	gpioc6	dsp_gpio6	col18	I2C0_SCL	ssp_mosi	pwm4	pdm1_sck	i2s_mosi	cm3_swck	dsp_uart_rxd	clk_out	!pwm5		bt_diag22	mdm_diag22	soc_diag22			pmu_diag14
PC7	gpioc7	dsp_gpio7	col19	I2C0_SDA	ssp_miso	pwm5	pdm1_sda	i2s_miso	cm3_swd	dsp_uart_txd	clk_out	!pwm4		bt_diag23	mdm_diag23	soc_diag23			pmu_diag15
PD0	gpiod0	dsp_gpio0	row0	I2C1_SCL	ssp_sclk	pwm0	pdm0_sck	i2s_sclk	clk_out	dsp_uart_rxd	cdc_tst_pin8(adc[0])	!pwm1		bt_diag24	mdm_diag24	soc_diag24			pmu_diag0
PD1	gpiod1	dsp_gpio1	row1	I2C1_SDA	ssp_csn	pwm1	pdm0_sda	i2s_frm	clk_out	dsp_uart_txd	cdc_tst_pin9(adc[1])	!pwm0		bt_diag25	mdm_diag25	soc_diag25			pmu_diag1
PD2	gpiod2	dsp_gpio2	row2	I2C0_SCL	ssp_mosi	pwm2	pdm1_sck	i2s_mosi	sdc_clk		cdc_tst_pin10(adc[2])	!pwm3	qspil_sclk	bt_diag26	mdm_diag26	soc_diag26			pmu_diag2
PD3	gpiod3	dsp_gpio3	row3	I2C0_SDA	ssp_miso	pwm3	pdm1_sda	i2s_miso	sdc_cmd		cdc_tst_pin11(adc[3])	!pwm2	qspil_n_ss	bt_diag27	mdm_diag27	soc_diag27			pmu_diag3
PD4	gpiod4	dsp_gpio4	row4	I2C1_SCL	ssp_sclk	pwm4	pdm0_sck	i2s_sclk	sdc_dat0		cdc_tst_pin12(adc_clock)	!pwm5	qspil_mio0	bt_diag28	mdm_diag28	soc_diag28			pmu_diag4
PD5	gpiod5	dsp_gpio5	row5	I2C1_SDA	ssp_csn	pwm5	pdm0_sda	i2s_frm	sdc_dat1		cdc_tst_pin13(dac_clock)	!pwm4	qspil_mio1	bt_diag29	mdm_diag29	soc_diag29			pmu_diag5
PD6	gpiod6	dsp_gpio6	row6	I2C0_SCL	ssp_mosi	pwm0	pdm1_sck	i2s_mosi	sdc_dat2			!pwm1	qspil_mio2	bt_diag30	mdm_diag30	soc_diag30			pmu_diag6
PD7	gpiod7	dsp_gpio7	row7	I2C0_SDA	ssp_miso	pwm1	pdm1_sda	i2s_miso	sdc_dat3			!pwm0	qspil_mio3	bt_diag31	mdm_diag31	soc_diag31			pmu_diag7
USB_DP	USB_DP	CM3 UART_RXD																	
USB_DM	USB_DM	CM3 UART_TXD																	
TESTEN	Dedicated pin (fixed @1'b0)					PULLDOWN													
RESETN	Dedicated pin (reset for test mode / digital logic)					PULLUP													
包含所有gpio，没有区分芯片型号																			
I2S Support : Audio/PCM/External source																			

1	2	3	4	5	6
客 户 确 认 (修改意见)	编 号		原始内容	修改内容	修改日期
	A				
	B				

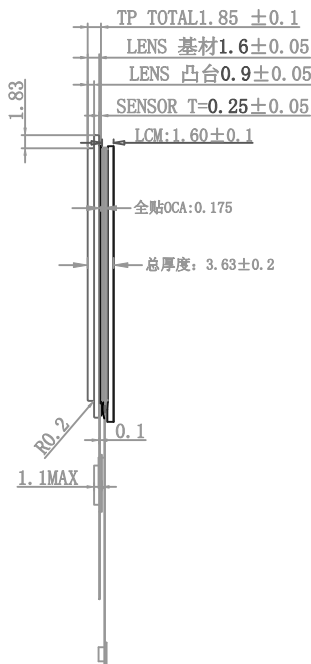
正视图



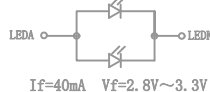
- 技术参数:
1. IC: 海砾创CST716 360*360
 2. TP结构: G+F; CG旭硝子
 3. 表面硬度: >6H;
 4. 透光率: ≥86% (550nm);
 5. 工作环境: -20℃~+70℃, ≤90%RH
 6. 储存环境: -30℃~+80℃, ≤90%RH
 7. 未注尺寸公差按±0.15mm;
 8. 产品符合RoHS指令;

OK-03GM024-04(亚奇)

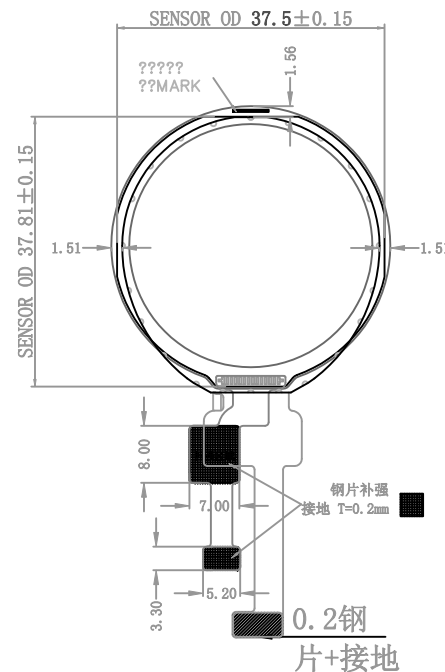
侧视图



LED CIRCUIT DIAGRAM



背视图

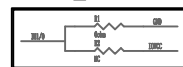


Pin Assignment	
NO	SYMBOL
1	LEDA
2	LEDK
3	GND
4	NC
5	NC
6	NC
7	NC
8	GND
9	VCCIO
10	VDD33
11	GND
12	RESET
13	NC
14	D/C
15	GND
16	SIO3
17	GND
18	SIO2
19	GND
20	IM1/O
21	SPI_CLK
22	SIO1/MISO
23	SIO0/MOSI
24	SPI_CS

QSPI+4SPI

NO.	PIN
1	GND
2	EINT3. 3V
3	GND
4	SDA3. 3V
5	SCL3. 3V
6	GND
7	RESET3. 3V
8	GND
9	VI03. 3V
10	GND

默认Q_SPI 出样



IM4	IM3	IM2	IM1	IM0	
1	1	1	1	1	\pxsm1, ql; 4-wire
1	1	1	0	0	8-bit data serial
					Q SPI

1. Main material	5. Surface Hardness	8. Circuit rate	DRAWN BY: 绘 图:	TITLE: XSJ132HYB2405A-T342	VIEW: 投影方式:
2. Linearity	6. Operation temperature	9. Insulation resistance	CHECKED BY: 审 核:	CUSTOMER ID:	UNITS 单 位: mm
3. Light Transparency	7. Storage temperature	10. Operating force	APPROVED BY: 批 准:	VERSION NUMBER: 版本号:	SCALE 比 例: 1:1
4. Resistance between terminals	11. Pen sliding guarantee area :0.8mm inside of transparent insulation(150gf/100,000times)		Standard tolerance: 标准公差: ±0.20	DATE: 日 期: 2020.12.30	
	Sheet#°	1/1	General:	威海鑫视界电子科技有限公司	
	Size#°	A4	Angles:		

