
ILI2312C3P3V1

PCBA 规格书

Rex-liu
2019-V2.1

客户确认 Approved By Customer	
客户料号 Customer Part No.	
审核 Checked By	
核准 Approved By	

PCBA 版本说明

Version	Date	Page	Description
V1.0	2018/3/25	All	量产
V2.0	2019/4/01	All	加入环保丝印
V2.1	2019/4/28	All	加入产品图片

1: 描述

LIL23124478 是一款使用奕力电容触摸芯片 ILI2312 触摸屏控制 PCBA，设计使用驱动 44 个通道与感应 78 个通道，最大支持 32inch 触摸屏方案，可支持触摸屏叠构，GG/GFF/OGS/G1F/GF2, 等主流电容触摸结构，可广泛应用于 All-In-One PC、ATM、广告机、POS、HMI、工业触摸屏等。

LIL23124478---PCBA 符合最新的 RoHS 环保要求及 EMC 测试标准

2: 特点

- 122 个通道设计，支持主流屏比
- 兼容 Windows XP、7/8/10、安卓、Linux 及 Mac 系统
- 支持全速 SUB (12M bps)
- 支持 TP 结构 GG/GFF/OGS/G1F/GF2
- PCBA 物料使用符合最新环保 RoHS 要求
- 符合最新 EMC 测试标准

Item	Specification	Typical System EMC Performance
EMI	CISPR 22, 30MHz~1GHz	Under -4dB
ESD	IEC 61000-4-2, Level 4 Air: +/- 15kV; Contact: +/- 8kV	Class B
RS	IEC 61000-4-3, Level 3: 10V/m	Class A
EFT	IEC 61000-4-4, Level 4 AC power line: 4kV; I/O port: 2kV	Class A
CS	IEC 61000-4-6, Level 3: 10Vrms	Class A

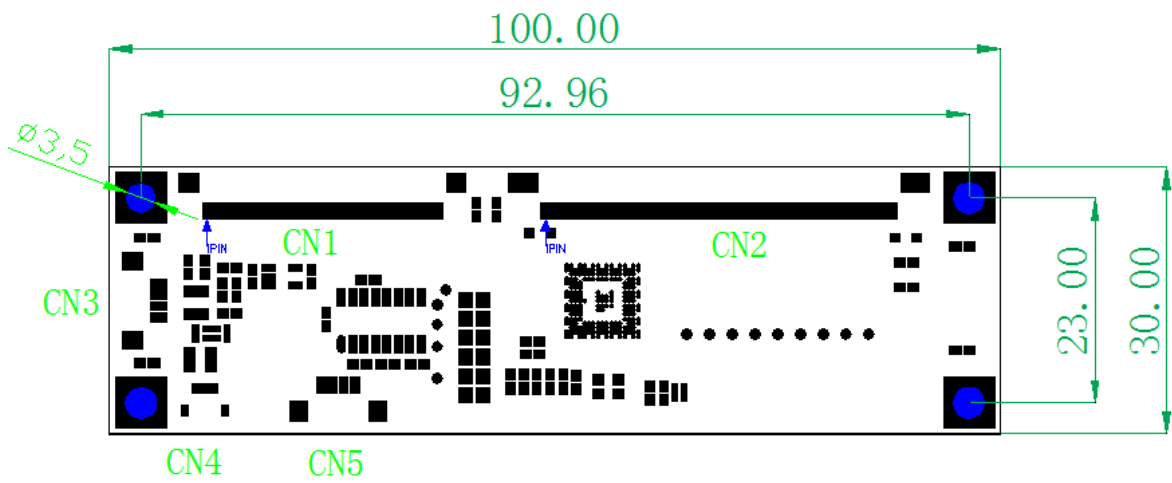
3: PCBA 规格

3.1: 描述

项目	规格
PCB 尺寸	L: 100mm, W: 30mm, H: 4.6mm
支持最大 TP 尺寸	32"
驱动通道(TX)	44 channels
感应感应(RX)	78 channel
传输界面	USB: full speed (12M bps) IIC:400kHz
输入电压	USB: 5V +/- 10% IIC: 3.3V
操作温度	-20°C ~ 60°C at RH 20% (min) to 90% (max)
储存温度	5°C ~ 40°C at RH 20% (min) to 70% (max)
支持解析度	X: 16384, Y:9600
工作最大电流	Active Mode: 100mA (max)

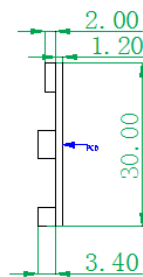
3.2: PCBA 尺寸

正视图



侧视图

侧视图



3.3: USB 连接器 pin 定义



4-Pin, Pin Pitch=1.25mm, Part Number: MOLEX/53261-0419										
Pin	1	2	3	4						
Name	USB5V	DN	DP	GNDIN						

3.4: RS232 连接器 pin 定义



4-Pin, Pin Pitch=1.25mm, Part Number: MOLEX/53261-0419										
Pin	1	2	3	4						
Name	USB5V	RXD	TXD	GNDIN						

3.5: IIC 连接器 pin 定义

4-Pin, Pin Pitch=1.25mm, Part Number: FH19SC-6S-0.5SH										
Pin	1	2	3	4	5	6				
Name	VDDIN	GNDIN	SDA	SCL	INT	RST				

3.6: FPC 连接器 pin 定义

Connector CN1, 54-Pin, Pin Pitch=0.5mm, Part Number: TBD																				
Pin	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Name	ESD-D	NC	NC	NC	NC	NC	NC	NC	NC	TX1	TX2	TX3	TX4	TX5	TX6	TX7	TX8	TX9	TX10	TX11
Pin	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
Name	TX12	TX13	TX14	TX15	TX16	TX17	TX18	TX19	TX20	TX21	TX22	TX23	TX24	TX25	TX26	TX27	TX28	TX29	TX30	TX31
Pin	41	42	43	44	45	46	47	48	49	50	51	52	53	54						
Name	TX32	TX33	TX34	TX35	TX36	TX37	TX38	TX39	TX40	TX41	TX42	TX43	TX44	ESD-D						

Connector CN2, 80-Pin, Pin Pitch=0.5mm, Part Number: TBD																				
Pin	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Name	ESD-D	RX1	RX2	RX3	RX4	RX5	RX6	RX7	RX8	RX9	RX10	RX11	RX12	RX13	RX14	RX15	RX16	RX17	RX18	RX19
Pin	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
Name	RX20	RX21	RX22	RX23	RX24	RX25	RX26	RX27	RX28	RX29	RX30	RX31	RX32	RX33	RX34	RX35	RX36	RX37	RX38	RX39
Pin	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
Name	RX40	RX41	RX42	RX43	RX44	RX45	RX46	RX47	RX48	RX49	RX50	RX51	RX52	RX53	RX54	RX55	RX56	RX57	RX58	RX59
	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80
Name	RX60	RX61	RX62	RX63	RX64	RX65	RX66	RX67	RX68	RX69	RX70	RX71	RX72	RX73	RX74	RX75	RX76	RX77	RX78	ESD-D

4: 电器特性

4.1 绝对最大值

Parameter	Symbol	Min	Max	Unit
USB5V input power supply voltage	V_{BUS}	-0.3	6.0	V
VCC input power supply voltage	V_{CC}	-0.3	3.6	V
V_{DD} to GND	V_{DD}	-0.3	3.6	V
V_{DD3A} to GND	V_{DD3A}	-0.3	3.6	V
V_{DD3C} to GND	V_{DD3C}	-0.3	3.6	V
V_{DD3D} to GND	V_{DD3D}	-0.3	3.6	V
V_{DD16} to GND	V_{DD16}	-0.3	1.65	V
V_{TX} to GND	V_{TX}	-0.3	35	V
ESD Susceptibility HBM (Human Body Mode)	HBM		2000	V

4.2: 推荐工作条件

Parameter	Symbol	Min	Max	Unit
USB5V input power supply voltage	V_{BUS}	4.5	5.5	V
VCC input power supply voltage	V_{CC}	3.0	3.6	V
V_{DD} to GND	V_{DD}	3.0	3.6	V
V_{DD3A} to GND	V_{DD3A}	3.0	3.6	V
V_{DD3C} to GND	V_{DD3C}	3.0	3.6	V
V_{DD3D} to GND	V_{DD3D}	3.0	3.6	V
V_{DD16} to GND	V_{DD16}	1.5	1.7	V
V_{TX} to GND	V_{TX}	18	22	V
Operating Ambient Temperature Range	T_A	-20	60	°C
Storage Ambient Temperature Range	T_{ST}	5	40	°C

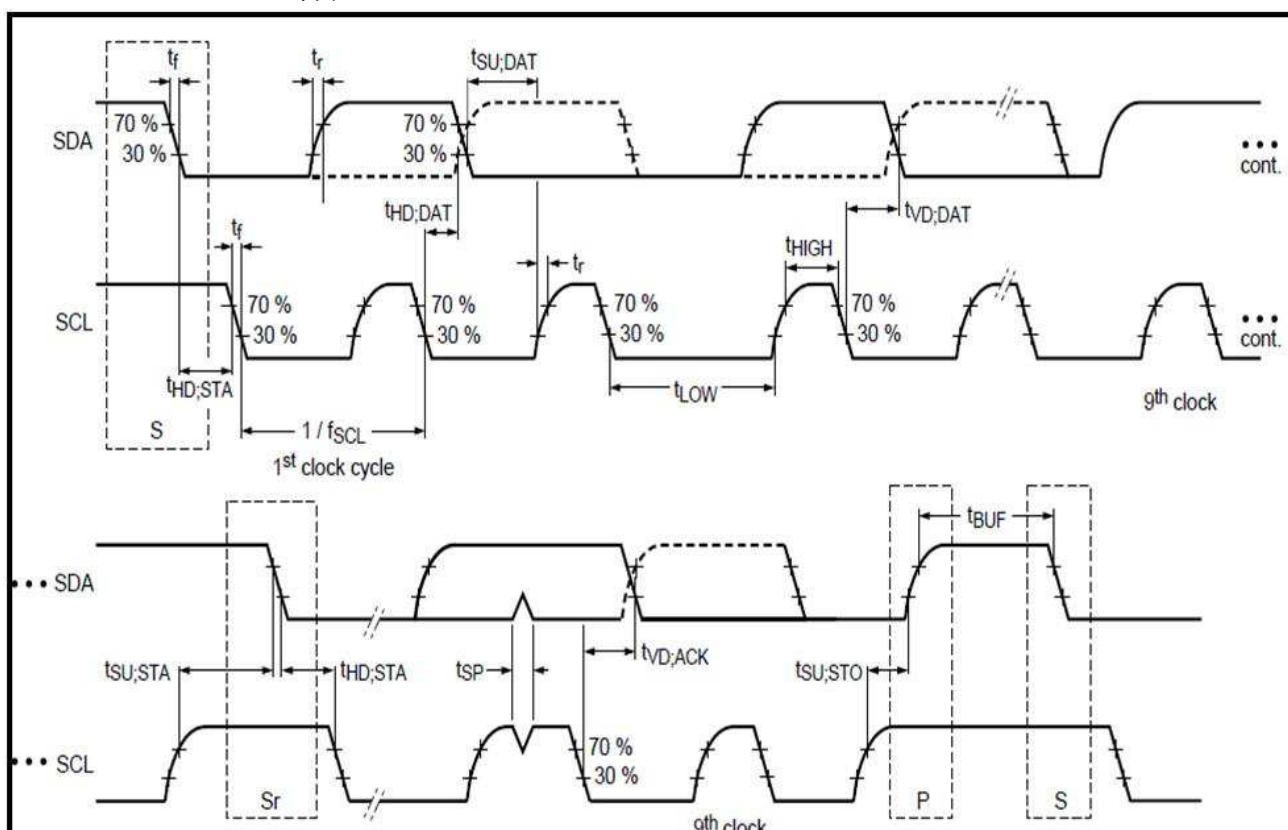
4.3: USB 直流特性

Item	Symbol	Min	Typ.	Max	Unit	Condition
Input Low	V_{IL}			0.8	V	
Input High (driven)	V_{IH}	2.0			V	
Differential input sensitivity	V_{DI}	0.2			V	(D+) – (D-)
Differential common-mode range	V_{CM}	0.8		2.5	V	Includes V_{DI} range
Single-ended receiver threshold	V_{SE}	0.8		2.0	V	
Receiver hysteresis	V_{RH}		200		mV	
Output low (driven)	V_{OL}	0		0.3		
Output high (driven)	V_{OH}	2.8		3.6		
Output signal cross voltage	V_{CRS}	1.3		2.0		
Pull-up resistor	R_{PU}	1.425		1.575		
Pull-down resistor	R_{PD}	14.25		15.75		
Termination Voltage for upstream port pull up (RPU)	V_{TRM}	3.0		3.6		

4.4: 晶振特性

Item	Symbol	Min	Typ.	Max	Unit	Condition
Input clock frequency	f_{XIN}		12		MHz	External crystal

4.5: I2C AC 特性



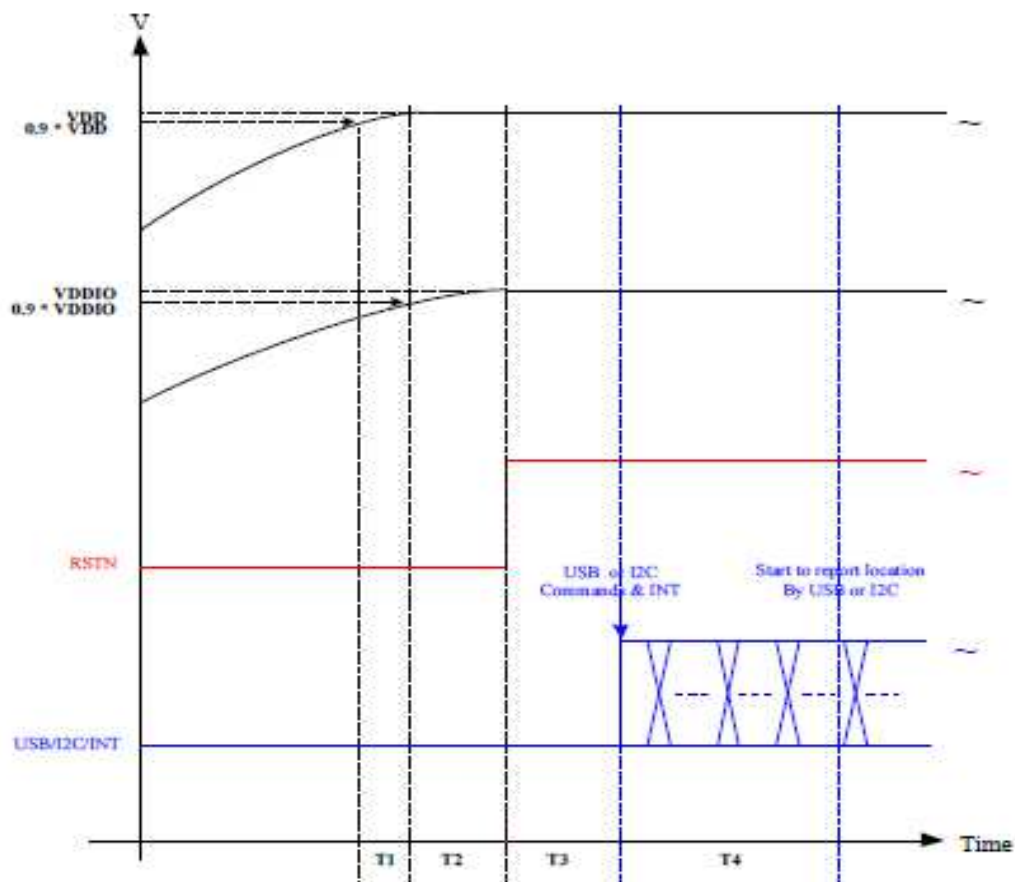
4.6: I2C DC 特性

Parameter	Symbol	Standard-mode		Fast-mode		Unit
		Min	Max	Min	Max	
SCL clock frequency	f_{SCL}	0	100	0	400	kHz
Hold time START condition	$t_{HD,STA}$	4.0	-	0.6	-	us
LOW period of the SCL clock	t_{LOW}	4.7	-	1.3	-	us
HIGH period of the SCL clock	t_{HIGH}	4.0	-	0.6	-	us
Set-up time for a repeated START condition	$t_{SU,STA}$	4.7	-	0.6	-	us
Data hold time	$t_{HD,DAT}$	300	-	300	-	ns
Data set-up time	$t_{SU,DAT}$	250	-	100	-	ns
Rise time of both SDA and SCL signals (30% to 70%)	t_r	-	1000	20	300	ns
Fall time of both SDA and SCL signals (70% to 30%)	t_f	-	300	20	300	ns
Set-up time for STOP condition	$t_{SU,STO}$	4.0	-	0.6	-	us
Bus free time between a STOP and START condition	t_{BUF}	4.7	-	1.3	-	us
Capacitive load for each bus line	C_b	-	400	-	400	pF
Noise margin at the LOW level for each connected device	V_{nL}	$0.1V_{DD}$	-	$0.1V_{DD}$	-	V
Noise margin at the HIGH level for each connected device	V_{nH}	$0.2V_{DD}$	-	$0.2V_{DD}$	-	V

*SCL = I2C Host must to support clock stretching mode for using 400 kHz.

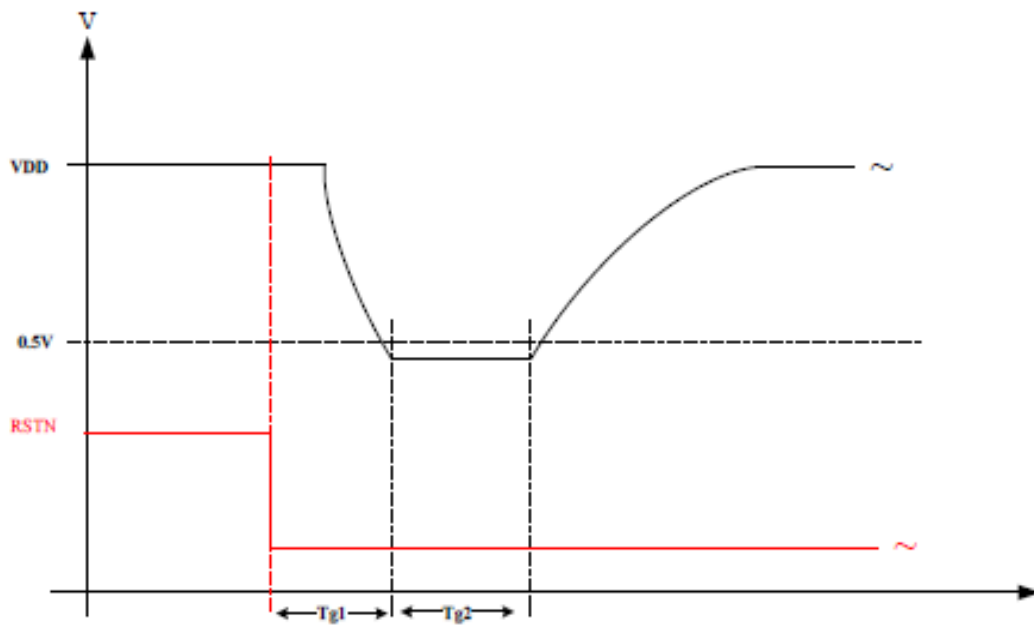
5: 电源时序

5.1: 电源 on 时序



1. T1: the time difference between $0.9 \cdot V_{DD}$ and $0.9 \cdot V_{DDIO}$. T1 must be ≥ 0 sec.
2. T2: the time difference between $0.9 \cdot V_{DDIO}$ and RSTN. T2 must be ≥ 200 us.
3. T3: the time difference between RSTN and Commands. T3 must be ≥ 150 ms.
4. T4: IC start to report point location to host. T4 must be ≥ 300 ms.

5.2: 电源 off to on 时序



Tg1 : the time difference between power-off and power-on. Tg1 must be $> 10\mu\text{s}$.

Tg2 : the time difference between power-off and power-on. Tg2 must be $> 10\mu\text{s}$.

Note. During the power off time, the VDD must be lower than 0.5V that make sure the touch controller have been correctly reset.