



# 样品规格承认书

## Specification

客户名称(CUSTOMER)		
型号名称(LCM CODE (Ver.))	PV03200DX39B	
描述(Description)	3.2"	
<p>客户确认:</p> <p><b>CUSTOMER</b></p> <p><b>APPROVED:</b></p>		
APPROVED BY	CHECK BY	PREPARED BY



## RECORDS OF REVISION

Date	Rev.	Description	Note	Page
2014-12-16	0	First issue.		



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## 1. SPECIFICATIONS

### 1.1 Features

Item	Standard Value
Display Type	240(R+G+B) * 320 Dots
LCD Type	a-Si TFT, Positive, Transmissive
Best Viewing Direction	6 O'clock
Backlight	6 LED White Color
Interface	MCU 8/16BIT
Glass manufacturers	HSD
Controller/driver IC	ILI9341V

### 1.2 Mechanical Specifications

Item	Standard Value	Unit
Outline Dimension	77.6(L) x55.04(W) x2.5(T)	mm
Active Area	64.8 (L) x48.6(W)	mm
Pixel pitch	0.2025 (L) x 0.2025 (W)	mm

Note : For detailed information please refer to LCM drawing

### 1.3 Absolute Maximum Ratings

Item	Symbol	Condition	Min.	Max.	Unit
Power Supply Voltage	V <sub>CC</sub>	-	-0.3	4.6	V
LCD Driver Supply Voltage	V <sub>GH-VSS</sub>	-	-0.3	18.5	V
Input voltage	V <sub>in</sub>		-0.3	4.6	V
Operating Temperature	T <sub>OP</sub>	-	-20	+70	°C
Storage Temperature.	T <sub>ST</sub>	-	-30	+80	°C
Storage Humidity	H <sub>D</sub>	T <sub>a</sub> < 40 °C	-	90	%RH



## 1.4 Electrical Characteristics

Item	Symbol	Min.	Type	Max.	Unit	Remark
Power voltage	VCI	3.0	3.3	3.6	V	
	VGH	-	15	-	V	
	VGL	-	-7.5	-	V	
TFT Common Voltage	VCOM	-1.5	-	3.5	V	
Input logic high voltage	V <sub>IH</sub>	0.7VCC	-	VCC	V	
Input logic low voltage	V <sub>IL</sub>	0	-	0.3VCC	V	

## 1.5 Optical Characteristics

Ta = 25°C

Item	Symbol	Conditions	Min.	Typ.	Max.	Reference
View Angle	θ <sub>x+</sub> , θ <sub>x-</sub>	C <sub>≥</sub> 10°, Ø=0°	35	45	--	Note6-1
	θ <sub>y+</sub>		35	45	--	Note6-1
	θ <sub>y-</sub>		10	20	--	Note6-1
Contrast Ratio	C	θ=0°, Ø=0°	400	500	-	--
Response Time(rise)	tr	θ=0°, Ø=0°	-	25 ms	30 ms	Note6-3
Response Time(fall)	tf	θ=0°, Ø=0°	-	25ms	30ms	Note6-3
Luminance	B	θ=0° §=0°	160	-	-	cd/m <sup>2</sup>

\*Note (1) Definition of Contrast Ratio (CR):

The contrast ratio can be calculated by the following expression.

$$\text{Contrast Ratio (CR)} = L63/L0$$

L63: Luminance of gray level 63

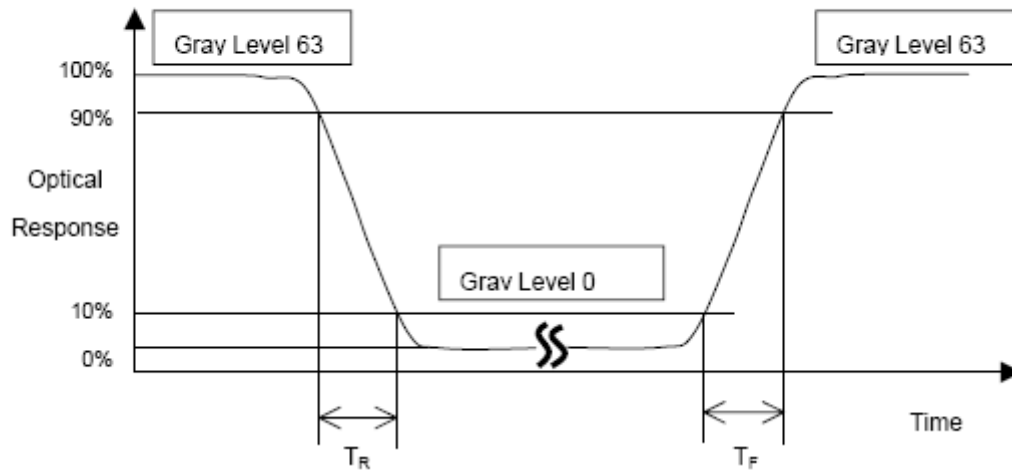
L0: Luminance of gray level 0

$$\text{CR} = \text{CR (5)}$$

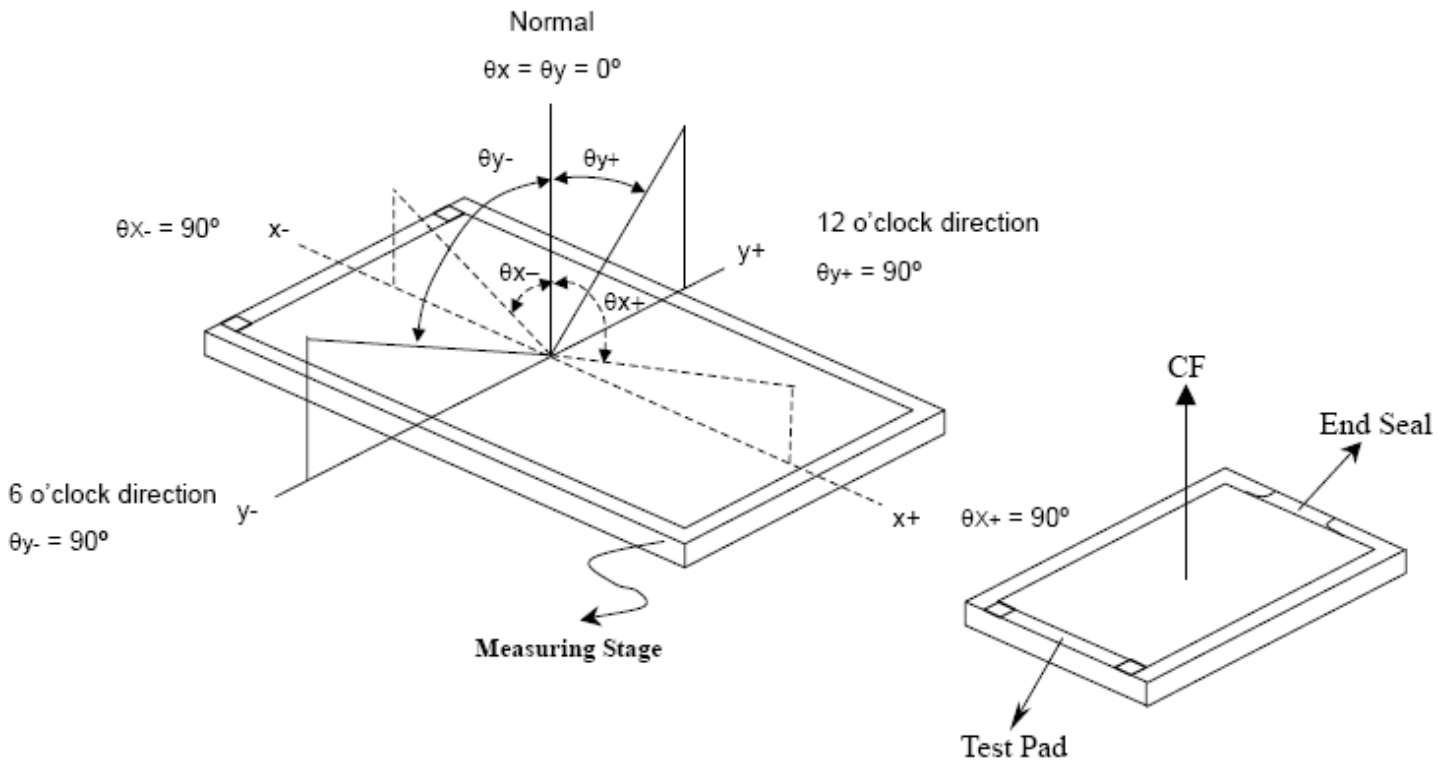


**CR (X) is corresponding to the Contrast Ratio of the point X at Figure in NOTE(6).**

\*Note (2) Definition of Response Time ( $T_R$ ,  $T_F$ ):



\*Note(3) Definition of Viewing Angle



## 1.6 Backlight & LED Characteristics

### Maximum Ratings

Item	Symbol	Conditions	Min.	Max.	Unit
Forward Current	IF	Ta =25°C	-	25	mA
Reverse Voltage	VR	Ta =25°C	-	5	V



<b>Power Dissipation</b>	<b>PO</b>	<b>Ta =25°C</b>	<b>-</b>	<b>320</b>	<b>mW</b>
<b>Operating Temperature</b>	<b>T<sub>OP</sub></b>	<b>-</b>	<b>-20</b>	<b>70</b>	<b>°C</b>
<b>Storage Temperature</b>	<b>T<sub>ST</sub></b>	<b>-</b>	<b>-30</b>	<b>80</b>	<b>°C</b>
<b>Solder Temp. for 3 Seconds</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>260</b>	<b>°C</b>

**Electrical / Optical Characteristics**

**VSS = 0V, Ta =25°C**

Item	Symbol	Conditions	Min.	Typ.	Max.	Unit
<b>Forward Voltage</b>	<b>VF</b>	<b>IF= 15mA*6</b>	<b>-</b>	<b>3.2</b>	<b>-</b>	<b>V</b>
<b>Reverse Current</b>	<b>IR</b>	<b>VR= 5V</b>	<b>-</b>	<b>-</b>	<b>50</b>	<b>uA</b>
<b>Average Brightness (without LCD)</b>	<b>IV</b>	<b>IF= 15Ma*6</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>cd/m<sup>2</sup></b>
<b>CIE Color Coordinate (without LCD)</b>	<b>X</b>	<b>IF= 15mA*6</b>	<b>0.27</b>	<b>-</b>	<b>0.315</b>	<b>-</b>
	<b>Y</b>		<b>0.27</b>	<b>-</b>	<b>0.315</b>	
<b>Color</b>	<b>WHITE</b>					

\*1 This value will be changed while mass production.

## 2. MODULE STRUCTURE

### 2.1 Counter Drawing

见附页

### 2.2 Interface Pin Description

NO	SYMBOL	FUNCTION
1-4	DB0-DB3(NC)	NC
5	GND	GROUND
6	IOVCC(1.8V/2.8V)	Digital power
7	CS	Chip reset signal ( “L” □Active) At Least 10ms
8	RS	data / command select signal( “L” □ register index; ” H” □data
9	WR	Write signal ( “L” □active)
10	RD	Read signal ( “L” □active)
11	NC	NC
12	XR	Touch
13	YD	Touch
14	XL	Touch
15	YU	Touch



16	LEDA	Led
17-20	LEDK1-K4	K1~K4 Led cathode
21	NC	NC
22	DB4(NC)	NC
23-30	DB8-DB15	DATABUS (DB8-DB15)
31	RESET	RESET SIGNAL ( “L” □active) 200ms
32	VDD(2.8V)	2.8V Input
33	VDD(2.8V)	2.8V Input
34	GND	GROUND
35-37	DB5-DB7(NC)	NC
38-39	LEDK5-K6	K5~K6 Led cathode

## 2.3 Timing Characteristics

Please refer to ILI9341V DATASHEET.

## 2.4 Display Command

Please refer to ILI9341V DATASHEET.

## 3. INSPECTION SPECIFICATIONN

### 3.1. 产品的检验要求

#### 3.1.1 检查距离：250±50mm

#### 3.1.2 检验环境：万级洁净度，温度：(23±2)℃，湿度：(65±5)%RH

### 3.2. 不良说明

#### 3.2.1 点缺陷说明

名称	特征说明	点不良定义
亮点	目视在黑画面时可见发亮的点且大小不变的点	点不良大小≥ 单个Pixel的50% 判为一个亮暗点
暗点	目视在RGB画面时可见暗色的点且大小不变的点	
连接点不良	相邻2个子像素同时出现显示不良(定义为2Dot不良)	

### 3.3 · 外观检查标准





项目	说明或图示	判断标准	可接受数量	
			可视区	非可视区
黑点 白点	 <p><math>\Phi=(a+b)/2</math></p>	$\Phi \leq 0.15$	不计	不计
		$0.1 < \Phi \leq 0.15$	2	
		$0.15 < \Phi \leq 0.2$	1	
		$0.2 < \Phi \leq 0.25$	0	
亮点 暗点	亮点	$1/2 \text{ Dot} < \Phi \leq 1 \text{ Dot}$	1	不计
	暗点	$1/2 \text{ Dot} < \Phi \leq 1 \text{ Dot}$	4	不计
	连接亮点		0	
	连接暗点		2	
偏光片 黑线 白线		$\Phi \leq 0.2$	不计	
		$0.2 < \Phi \leq 0.4$	2	
		$0.4 < \Phi$	0	
		$W \leq 0.05$	不计	
项目	说明或图示	$0.05 < W \leq 0.1, L \leq 2.5$	2	不计
		$L \leq 2.5, 0.1 \leq w \leq 0.15$	2	
		$0.15 < W$	按黑白点判定	
		判断标准	可接受数量	



## **4. PRECAUTION RELATING PRODUCT HANDLING**

### **4.1 SAFETY**

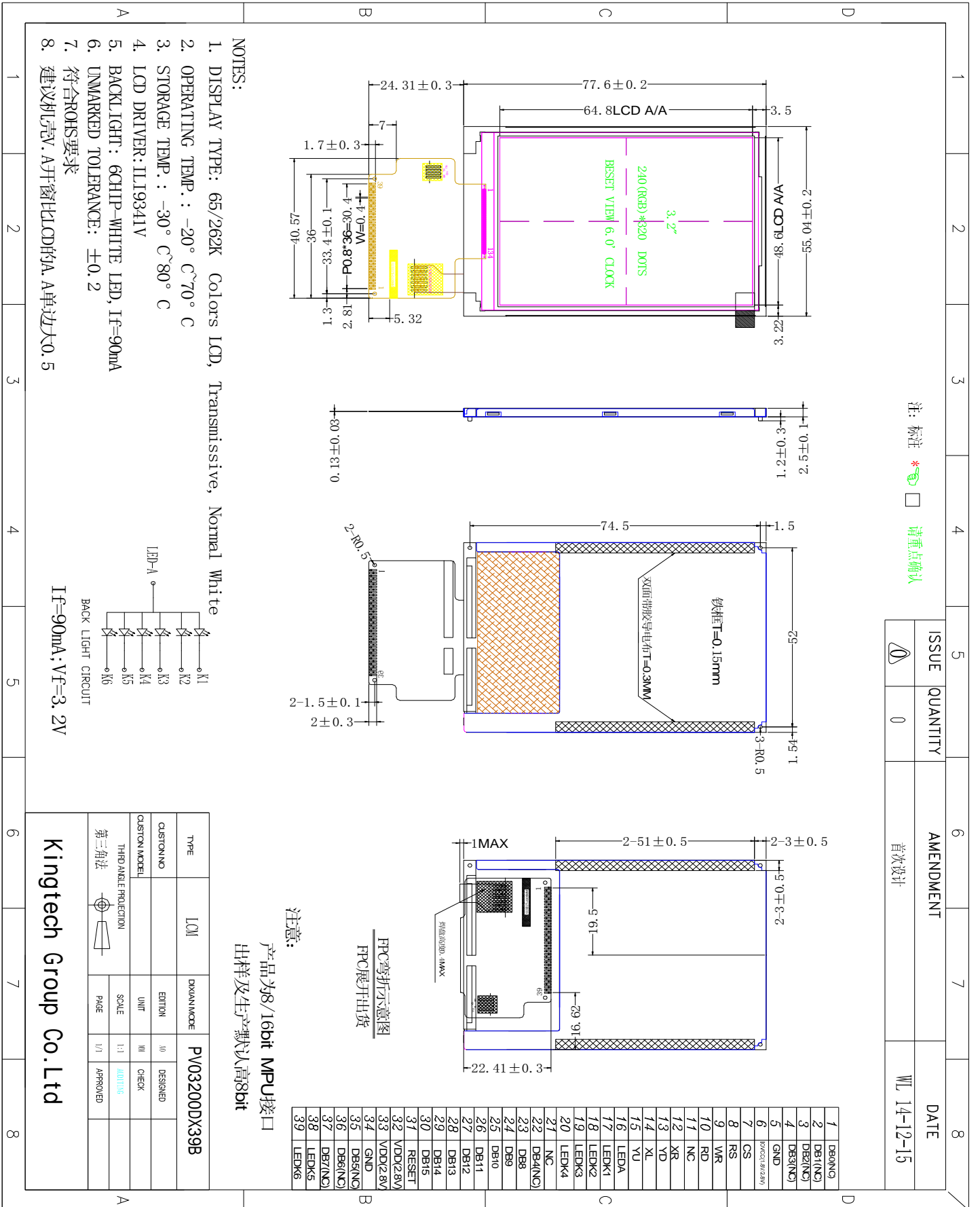
- 4.1.1** If the LCD panel breaks , be careful not to get the liquid crystal to touch your skin.
- 4.1.2** If the liquid crystal touches your skin or clothes , please wash it off immediately by using soap and water.

### **4.2 HANDLING**

- 4.2.1** Avoid any strong mechanical shock which can break the glass.
- 4.2.2** Avoid static electricity which can damage the CMOS LSI—When working with the module, be sure to ground your body and any electrical equipment you may be using.
- 4.2.3** Do not remove the panel or frame from the module.
- 4.2.4** The polarizing plate of the display is very fragile. So , please handle it very carefully, Do not touch, push or rub the exposed polarizing with anything harder than an HB pencil lead (glass , tweezers , etc.)
- 4.2.5** Do not wipe the polarizing plate with a dry cloth, as it may easily scratch the Surface of plate.
- 4.2.6** Do not touch the display area with bare hands , this will stain the display area.
- 4.2.7** Do not use ketonic solvent & aromatic solvent. Use with a soft cloth soaked with A cleaning naphtha solvent.
- 4.2.8** To control temperature and time of soldering is  $280 \pm 10^{\circ}\text{C}$  and 3-5 sec.
- 4.2.9** To avoid liquid (include organic solvent) stained on LCM.

### **4.3 STORAGE**

- 4.3.1** Store the panel or module in a dark place where the temperature is  $25^{\circ}\text{C} \pm 5^{\circ}\text{C}$  and the humidity is below 65% RH.
- 4.3.2** Do not place the module near organics solvents or corrosive gases.
- 4.3.3** Do not crush, shake , or jolt the module.

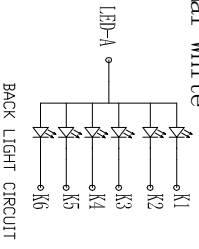


注: 标注 \* 请重点确认

ISSUE	QUANTITY	AMENDMENT	DATE
0		首次设计	WL 14-12-15

**NOTES:**

1. DISPLAY TYPE: 65/262K Colors LCD, Transmissive, Normal White
2. OPERATING TEMP.: -20° C~70° C
3. STORAGE TEMP.: -30° C~80° C
4. LCD DRIVER: ILI9341V
5. BACKLIGHT: 6CHIP-WHITE LED, If=90mA
6. UNMARKED TOLERANCE: ±0.2
7. 符合ROHS要求
8. 建议机壳V.A开窗比LCD的5A.A单边大0.5



If=90mA; Vf=3.2V

TYPE	LCM	DRAWING CODE	PV03200DX39B
CUSTOM NO.		EDITION	10
CUSTOM MODEL		UNIT	III
THIRD ANGLE PROJECTION	第三角法	SCALE	1:1
		PAGE	1/1
		APPROVED	

Kingtech Group Co. Ltd

1	DB0(ND)
2	DB1(ND)
3	DB2(ND)
4	DB3(ND)
5	GND
6	DB0(ND)
7	CS
8	RS
9	WR
10	RD
11	NC
12	XR
13	YD
14	XL
15	YL
16	LEDA
17	LEDK1
18	LEDK2
19	LEDK3
20	LEDK4
21	NC
22	DB4(ND)
23	DB8
24	DB9
25	DB10
26	DB11
27	DB12
28	DB13
29	DB14
30	DB15
31	RESET
32	VDD(2.8V)
33	VDD(2.8V)
34	GND
35	DB5(ND)
36	DB6(ND)
37	DB7(ND)
38	LEDK5
39	LEDK6