

规格书

型号： S95417-AAA

| 客户 | | | | | |
|----|----|----|----|----|----|
| 批准 | 审核 | 检查 | 批准 | 审核 | 拟制 |
| | | | | | |

用于承认规格书

用于承认规格书和样品

| | | | | | |
|------|-------|----|------------|--|--|
| 标准文本 | 产品规格书 | 型号 | S95417-AAA | | |
|------|-------|----|------------|--|--|

1. 概述

1-1 范围:

此份规格书涵盖了 LCD 从同丰光华到客户的运输过程中应该注意的所有要求。

1-2 产品:

LCD 模块 (LCM)

1-3 型号:

S95417-AAA

2. 产品特征

- (1) 显示类型: 2.4" TFT; Transmissive; 6 o'clock
- (2) 显示色彩: 262K
- (3) 驱动 IC: S6D1121
- (4) 背光模式: WHITE LED

3. 机械规格

| 项目 | 规格 | 单位 |
|-------|--------------------------------|------|
| 外形尺寸 | 42.72(L) x 60.26 (W) x 3.35(T) | mm |
| 可视区域 | 36.72(L) x 48.96(W) | mm |
| 显示内容 | 240RGB x 320 Dots | --- |
| 分辨率 | 240 x 3 x 320 | Dots |
| 像素点尺寸 | 51(L) x 153 (W) | um |
| 像素排列 | STRIPE TYPE | --- |
| 结构类型 | COG+FPC+BL+TP | --- |
| 背光类型 | WHITE LED | — |
| 重量 | 待定 | g |

S95417-AAA

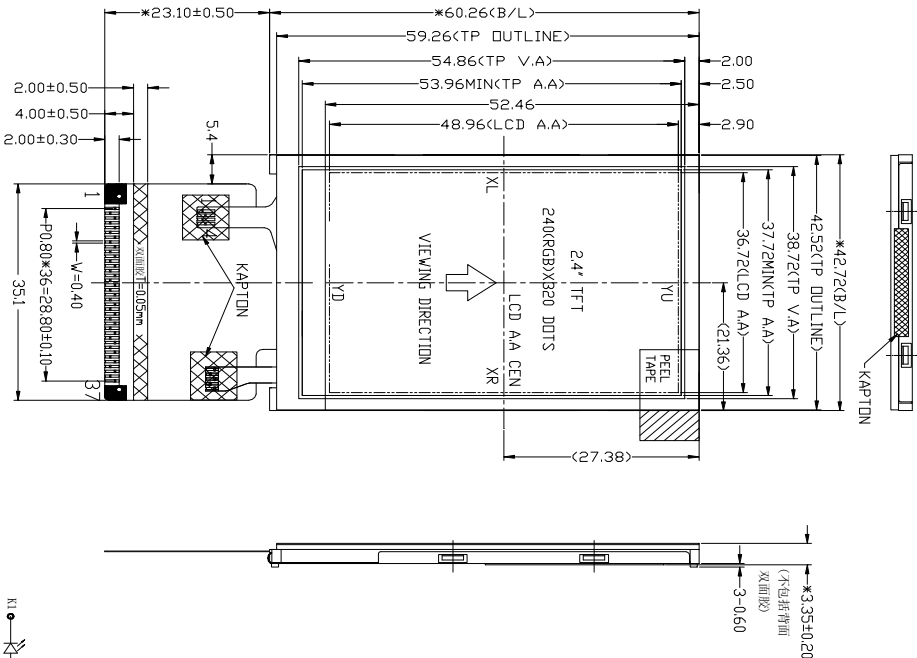
型号

产品规格书

标准文本

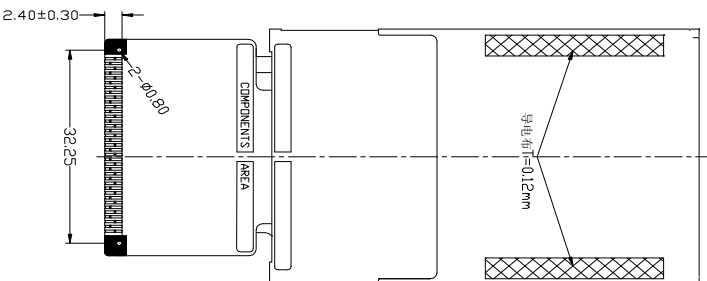
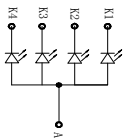
外形尺寸

| NO. | Pin Name |
|-----|----------|
| 1 | DB0 |
| 2 | DB1 |
| 3 | DB2 |
| 4 | DB3 |
| 5 | GND |
| 6 | VCC |
| 7 | CS |
| 8 | R8 |
| 9 | R9 |
| 10 | R10 |
| 11 | IM0 |
| 12 | XL |
| 13 | YU |
| 14 | XR |
| 15 | YD |
| 16 | LEDA |
| 17 | LEDK1 |
| 18 | LEDK2 |
| 19 | LEDK3 |
| 20 | LEDK4 |
| 21 | NC |
| 22 | DB4 |
| 23 | DB10 |
| 24 | DB11 |
| 25 | DB12 |
| 26 | DB13 |
| 27 | DB14 |
| 28 | DB15 |
| 29 | DB16 |
| 30 | DB17 |
| 31 | RESET |
| 32 | VCC |
| 33 | VCC |
| 34 | GND |
| 35 | DB5 |
| 36 | DB6 |
| 37 | DB7 |

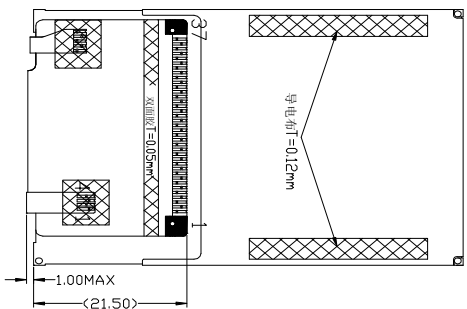


NOTE:
 1. GENERAL TOLERANCE: ±0.20.
 2. (...) IS REFERENCE DIMENSION.
 3. * CRITICAL DIMENSION
 4. COMPLIABLY ROHS.

LED CIRCUIT DIAGRAM



弯折示意图，展开出货



| | | | | | | | | | | | | | | | | | | | | | | |
|-------------|----|-------------|-----------|------|------|--------|---------------------|-------|------------|------------|-------------|----------|-------|--------------|-------------|----------------|------|----|-------|-----|-------|--------|
| VER. SYMBOL | 01 | first issue | AMENDMENT | SIGN | DATE | 09-1-4 | CUSTOMER'S APPROVAL | DRAWN | ME CHECKED | EB CHECKED | PEL CHECKED | APPROVED | TITLE | MODULE SPEC. | DRAWING NO. | STR-S95417-AAA | UNIT | mm | SCALE | PIT | SHEET | 1 OF 1 |
|-------------|----|-------------|-----------|------|------|--------|---------------------|-------|------------|------------|-------------|----------|-------|--------------|-------------|----------------|------|----|-------|-----|-------|--------|

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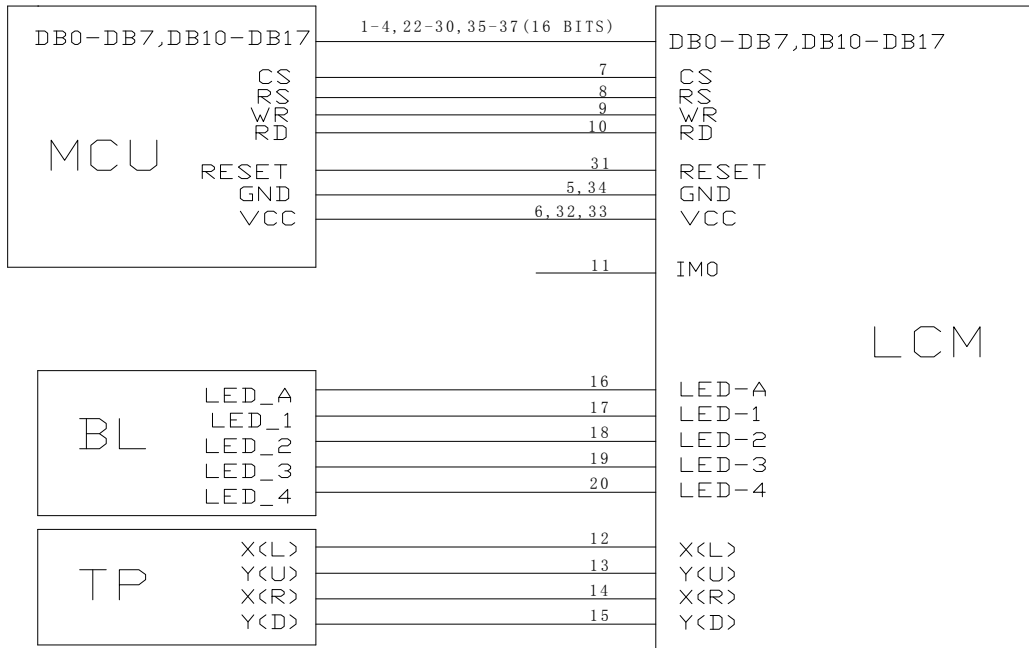
接口定义

| PIN NO. | FUNCTION DESCRIPTIONS | SYMBOL |
|---------|--------------------------------------|------------------------------------|
| 1 | Data BUS0 | DB0 |
| 2 | Data BUS1 | DB1 |
| 3 | Data BUS2 | DB2 |
| 4 | Data BUS3 | DB3 |
| 5 | GROUND | GND1 |
| 6 | Power Supply | VCC1 |
| 7 | CHIP SELECT PIN | CS |
| 8 | COMMAND AND DATA REGISTER SELECT PIN | RS |
| 9 | WRITE SIGNAL | WR |
| 10 | READ SIGNAL | RD |
| 11 | IM0 | 8/16 select IM0=1:8Bit IM0=0 16Bit |
| 12 | TP X_LEFT | XL |
| 13 | TP Y_UP | YU |
| 14 | TP X_RIGHT | XR |
| 15 | TP Y_DOWN | YD |
| 16 | POWER SUPPLY+ FOR BACKLIGHT ANODE | LED_A |
| 17 | POWER SUPPLY- FOR BACKLIGHT CATHODE | LED_1 |
| 18 | POWER SUPPLY- FOR BACKLIGHT CATHODE | LED_2 |
| 19 | POWER SUPPLY- FOR BACKLIGHT CATHODE | LED_3 |
| 20 | POWER SUPPLY- FOR BACKLIGHT CATHODE | LED_4 |
| 21 | NC | NC |
| 22 | Data BUS4 | DB4 |
| 23 | Data BUS10 | DB10 |
| 24 | Data BUS11 | DB11 |
| 25 | Data BUS12 | DB12 |
| 26 | Data BUS13 | DB13 |
| 27 | Data BUS14 | DB14 |
| 28 | Data BUS15 | DB15 |
| 29 | Data BUS16 | DB16 |
| 30 | Data BUS17 | DB17 |
| 31 | RESET PIN | RESET |
| 32 | Power Supply | VCC |
| 33 | Power Supply | VCC |
| 34 | GROUND | GND |
| 35 | Data BUS5 | DB5 |
| 36 | Data BUS6 | DB6 |
| 37 | Data BUS7 | DB7 |

| IM0 | INTERFACE MODE |
|-----|---------------------------------------|
| L | 16 bit,DB0~DB7,DB10~DB17 |
| H | 8 bit,DB10~DB17,DB0~DB7 Connected GND |

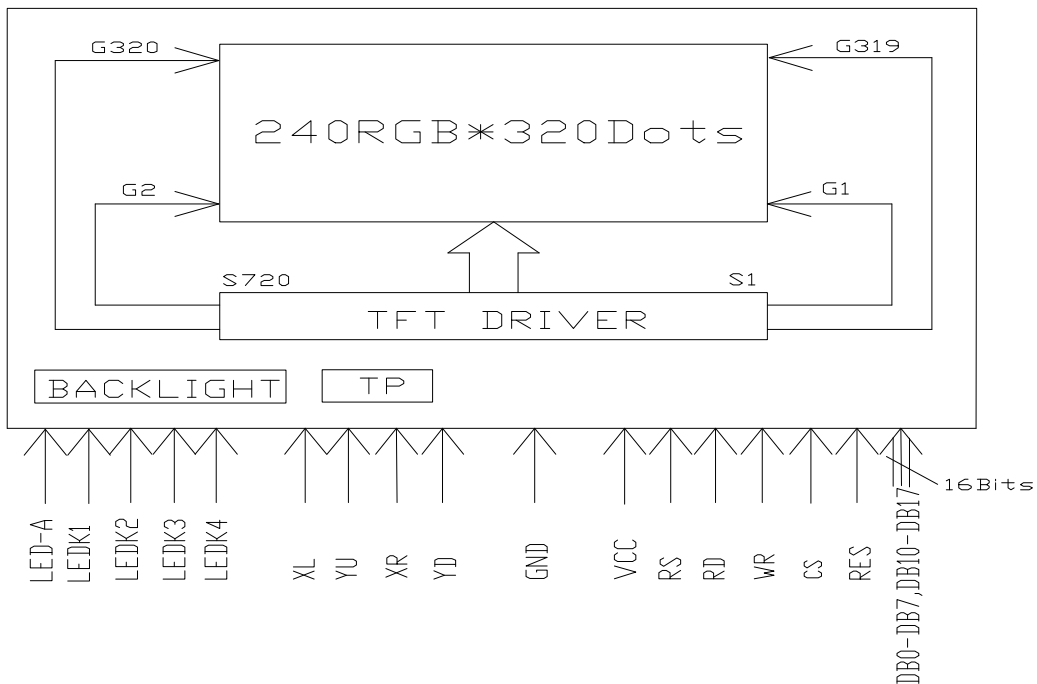
| | | | |
|------|-------|----|------------|
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|------|-------|----|------------|

应用电路



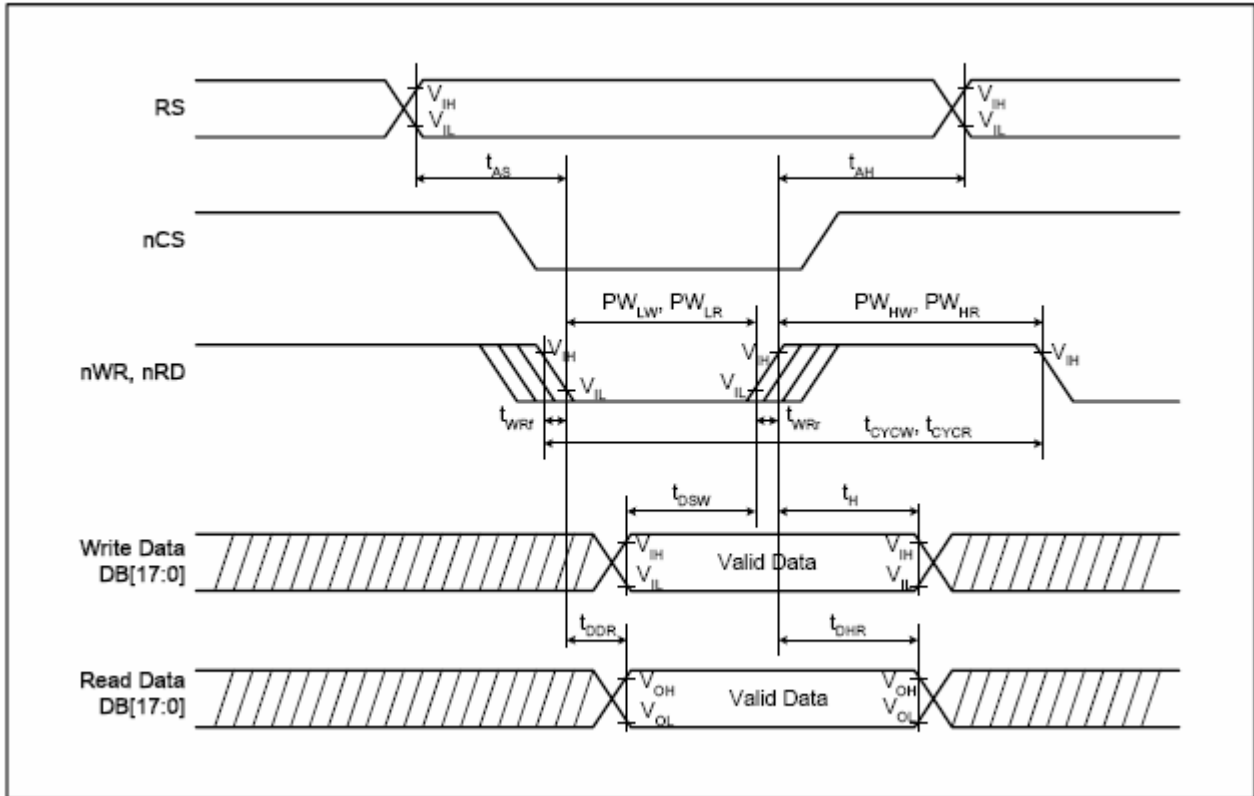
| IM0 | INTERFACE MODE |
|-----|---------------------------------------|
| L | 16 bit,DB0~DB7,DB10~DB17 |
| H | 8 bit,DB10~DB17,DB0~DB7 Connected GND |

功能框图



接口时序

i80-System Interface Timing Characteristics



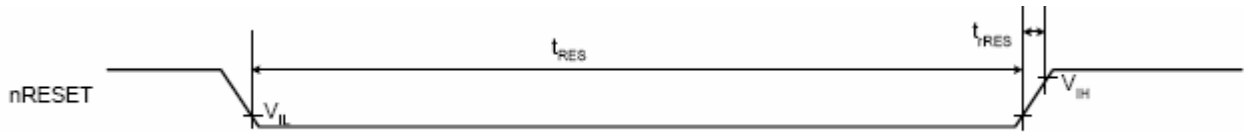
Normal Write Mode (IOVCC = 1.65~3.3V, VCC=2.4~3.3V)

| Item | Symbol | Unit | Min. | Typ. | Max. | Test Condition |
|-------------------------------|------------------------------------|-------------------|------|------|------|----------------|
| Bus cycle time | Write | t _{CYCW} | ns | 100 | - | - |
| | Read | t _{CYCR} | ns | 300 | - | - |
| Write low-level pulse width | PW _{LW} | ns | 50 | - | 500 | - |
| Write high-level pulse width | PW _{HW} | ns | 50 | - | - | - |
| Read low-level pulse width | PW _{LR} | ns | 150 | - | - | - |
| Read high-level pulse width | PW _{HR} | ns | 150 | - | - | - |
| Write / Read rise / fall time | t _{WRr} /t _{WRf} | ns | - | - | 25 | - |
| Setup time | Write (RS to nCS, E/nWR) | t _{AS} | ns | 10 | - | - |
| | Read (RS to nCS, RW/nRD) | | | 5 | - | - |
| Address hold time | t _{AH} | ns | 5 | - | - | - |
| Write data set up time | t _{DSW} | ns | 10 | - | - | - |
| Write data hold time | t _H | ns | 15 | - | - | - |
| Read data delay time | t _{DDR} | ns | - | - | 100 | - |
| Read data hold time | t _{DHR} | ns | 5 | - | - | - |

| | | | | |
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复位时序

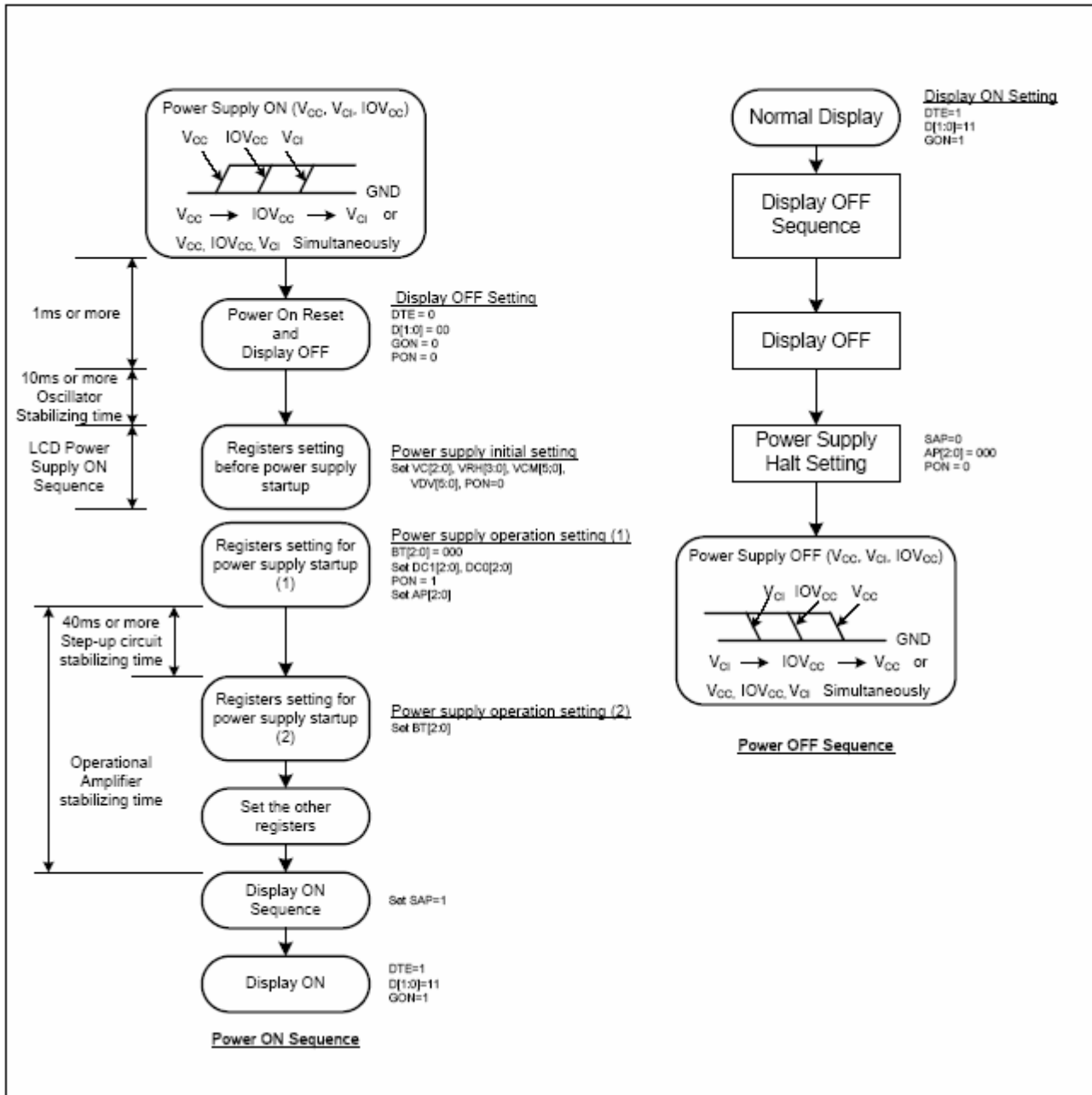
Reset Input Timing



Reset Timing Characteristics (VCC = 1.8 ~ 3.3 V, IOVCC = 1.65 ~ 3.3 V)

| Item | Symbol | Unit | Min. | Typ. | Max. |
|-----------------------|-----------|---------|------|------|------|
| Reset low-level width | t_{RES} | ms | 1 | - | - |
| Reset rise time | t_{RES} | μ s | - | - | 10 |

上电/下电时序:



| | | | | | | |
|------|-------|----|------------|--|--|--|
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|------|-------|----|------------|--|--|--|

极限技术参数

| 项目 | 符号 | 条件 | 标准值 | | | 单位 |
|------|------|---------|------|-----|---------|----|
| | | | 最小值 | 典型值 | 最大值 | |
| 逻辑电压 | VCC | Ta=25°C | -0.3 | --- | +4.6 | V |
| 输入电平 | VIN | Ta=25°C | -0.3 | --- | VCC+0.3 | V |
| 使用温度 | TOPR | --- | -20 | --- | +70 | °C |
| 存储温度 | TSTG | --- | -30 | --- | +80 | °C |

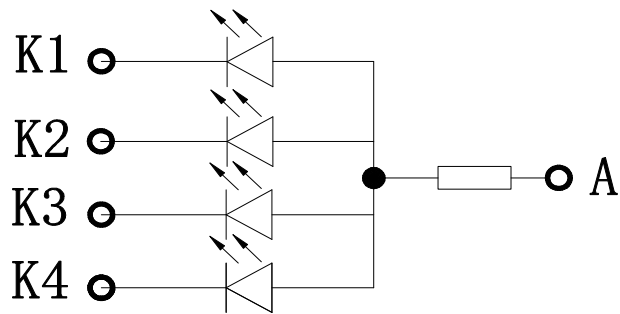
电气参数

| 项目 | 符号 | 条件 | 标准值 | | | 单位 |
|-------|-----|--|----------|-----|----------|----|
| | | | 最小值 | 典型值 | 最大值 | |
| 逻辑电压 | VCC | Ta= +25°C | --- | 2.8 | --- | V |
| 输入高电平 | VIH | VCC=1.8~3.3V | 0.8IOVCC | --- | IOVCC | V |
| 输入低电平 | VIL | VCC=1.8~3.3V | -0.3 | --- | 0.2IOVCC | V |
| 输出高电平 | VOH | IOH=-0.1mA | 0.8IOVCC | --- | --- | V |
| 输出低电平 | VOL | IOVCC=1.65~3.3V VCC=2.2~3.3V IOL=0.1mA | --- | --- | 0.2IOVCC | V |

| | | | | |
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背光参数

背光供电方式



极限参数值

| 参数 | 符号 | 规格 | 单位 |
|------|------|-------------|----|
| 功耗 | PD | 360 | mW |
| 顺向电流 | Ifm | 20 | mA |
| 反向电压 | VR | 5 (每粒灯) | V |
| 操作温度 | TOPR | -10℃ ~ +60℃ | ℃ |
| 储存温度 | TSTG | -20℃ ~ +70℃ | ℃ |

电气参数

| 参数 | 符号 | 光源 | 条件 | 标准值 | | | 单位 |
|-------|----|-------|-----------|------|-----|------|-------------------|
| | | | | 最小值 | 典型值 | 最大值 | |
| 驱动电压 | Vf | WHITE | If = 60mA | 3.0 | 3.2 | 3.4 | V |
| LCM亮度 | Iv | WHITE | | 100 | 120 | 150 | cd/m ² |
| 色坐标 | X | WHITE | If = 60mA | 0.25 | — | 0.29 | — |
| | Y | | | 0.25 | — | 0.29 | — |

光电参数

| Item | Symbol | Conditions | Specifications | | | Unit | Note | |
|----------------|--------|--|----------------|-------|-------|-------|--|---|
| | | | Min. | Typ. | Max. | | | |
| Transmittance | T% | Viewing normal angle $\theta_x = \theta_y = 0^\circ$ | 4.7 | | | % | All left side data are based on CMO's following condition -- NTSC: 60% Light : C light (Machine:BM5A) Normal Polarizer Reference Only | |
| Contrast Ratio | CR | | 150 | 250 | - | - | | |
| Response Time | T_R | | - | 10 | 20 | ms | | |
| | T_F | | - | 20 | 30 | ms | | |
| Chromaticity | Red | | X_R | 0.604 | 0.634 | 0.664 | | - |
| | | | Y_R | 0.296 | 0.326 | 0.356 | | - |
| | Green | | X_G | 0.260 | 0.290 | 0.320 | | - |
| | | | Y_G | 0.551 | 0.581 | 0.611 | | - |
| | Blue | | X_B | 0.102 | 0.132 | 0.162 | | - |
| | | | Y_B | 0.096 | 0.126 | 0.156 | | - |
| White | X_W | 0.262 | 0.292 | 0.322 | - | | | |
| | Y_W | 0.306 | 0.336 | 0.366 | - | | | |
| Viewing Angle | Hor. | θ_{x+} | - | 45 | - | deg. | | |
| | | θ_{x-} | - | 45 | - | | | |
| | Ver. | θ_{y+} | - | 35 | - | | | |
| | | θ_{y-} | - | 15 | - | | | |

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

The contrast ratio can be calculated by the following expression.

$$\text{Contrast Ratio (CR)} = L_{63} / L_0$$

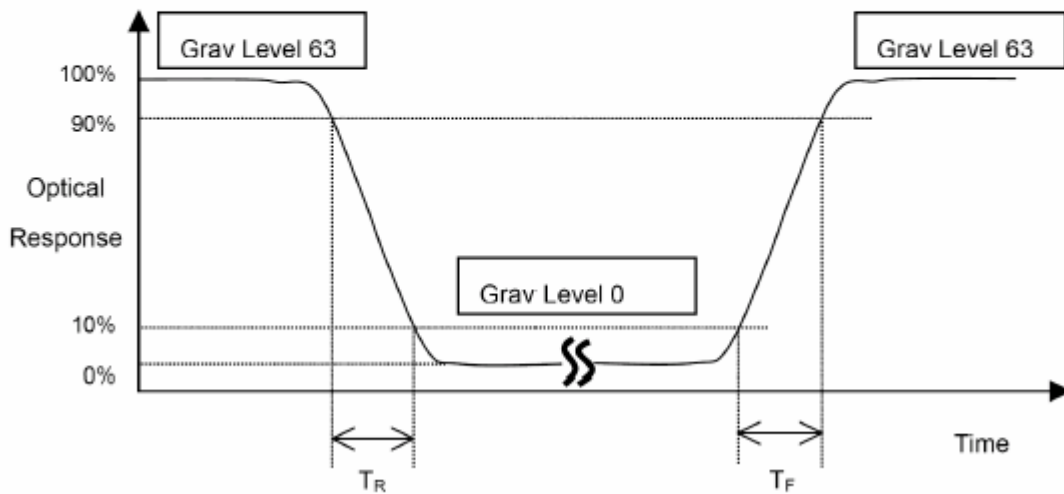
L63: Luminance of gray level 63

L0: Luminance of gray level 0

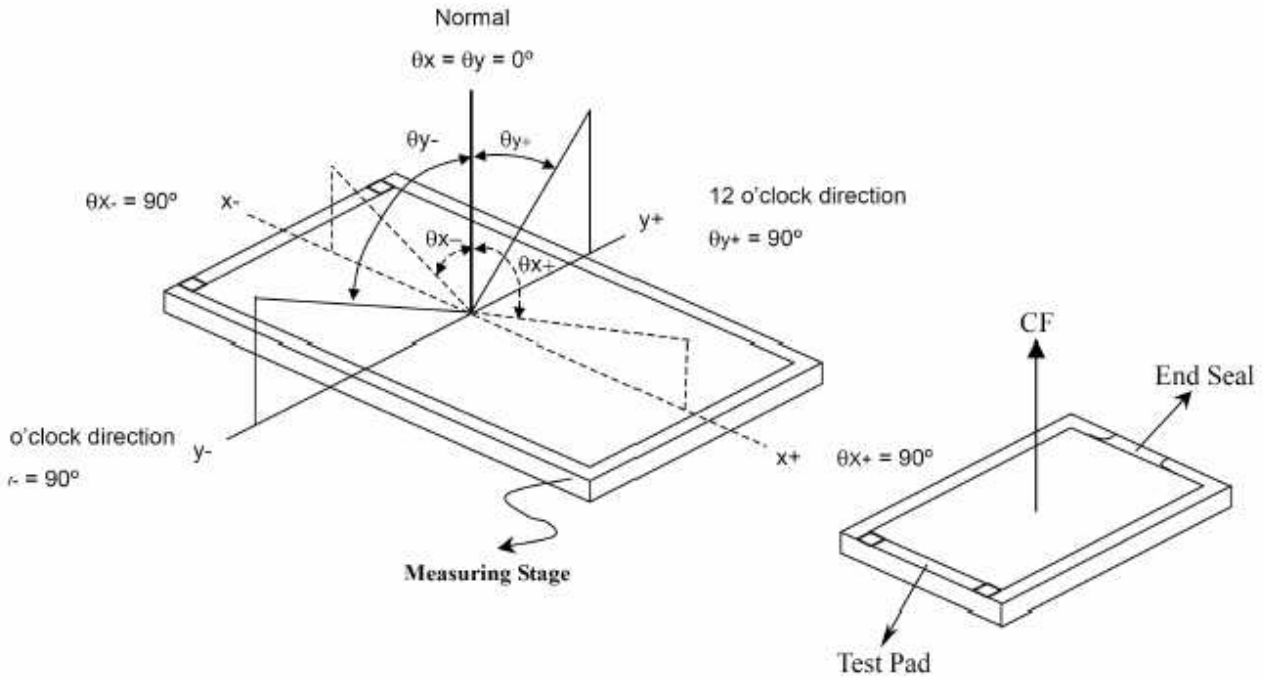
$$CR = CR(10)$$

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):



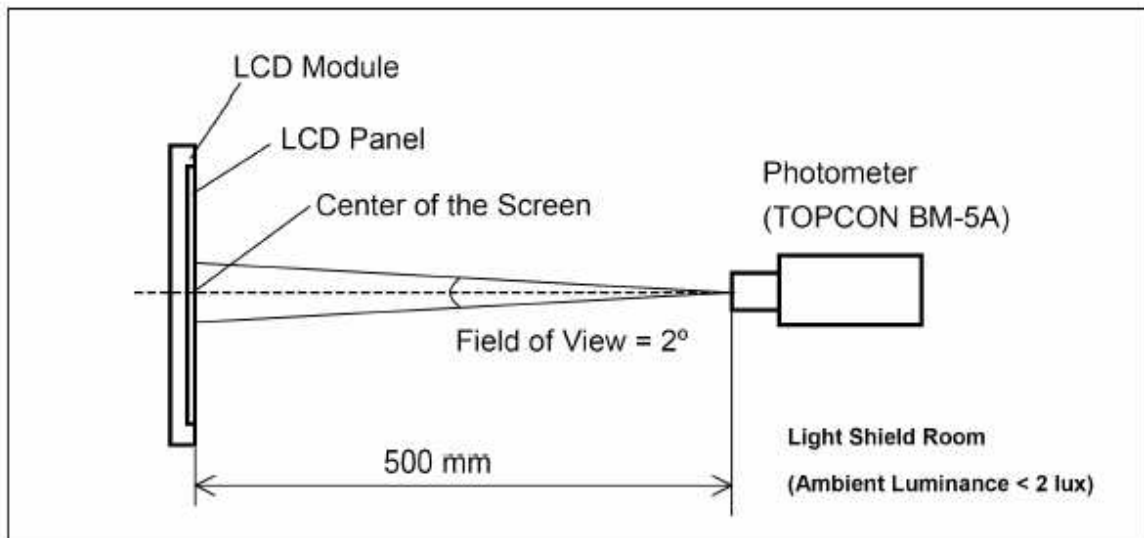
*Note(3) Definition of Viewing Angle



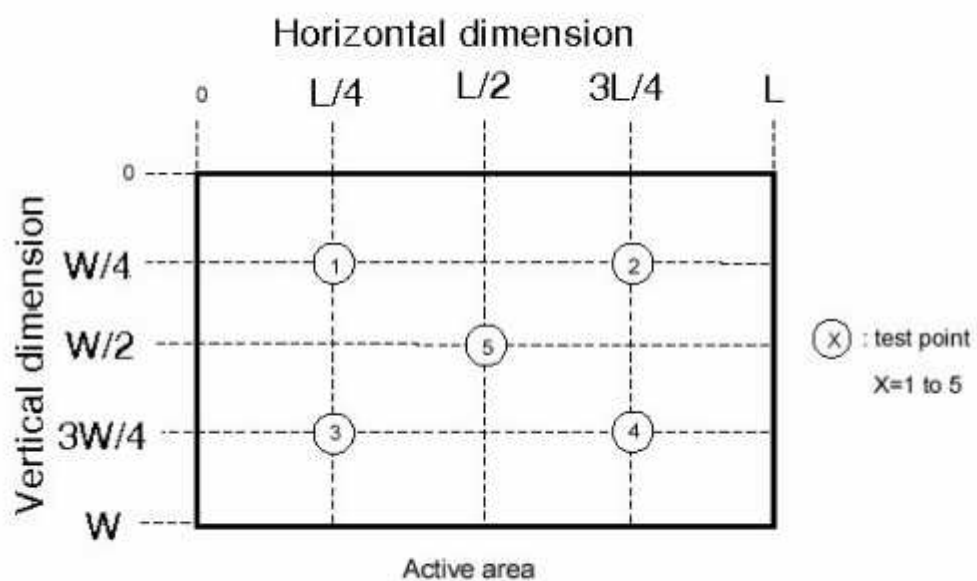
*** The above "Viewing Angle" is the measuring position with Largest Contrast Ratio; not for good image quality. View Direction for good image quality is 6 O'clock. Module maker can increase the "Viewing Angle" by applying Wide View Film.

*Note (4) Measurement Set-Up:

The LCD module should be stabilized at a given temperature for 20 minutes to avoid abrupt temperature change during measuring. In order to stabilize the luminance, the measurement should be executed after lighting Backlight for 20 minutes in a windless room.



*Note (5)



| | | | | |
|------|-------|----|------------|--|
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极限环境参数

| 项目 | 符号 | 条件 | 标准 |
|------|------|-----------|------------|
| 操作温度 | TOPR | -20℃~+70℃ | 外观无缺陷，功能正常 |
| 储存温度 | TSTG | -30℃~+80℃ | 外观无缺陷，功能正常 |
| 湿度 | — | See Note | 无缩合，凝聚现象 |

NOTE: 测试条件

- (1) 温度和湿度: 25±2℃, 60±5%RH (特殊条件除外)
- (2) 操作状态: 样品在正常工作时测试

可靠性测试

| 项目 | 条件 | 标准 |
|------|--|------------|
| 操作温度 | 高温 +60℃ 72 小时 | 外观无缺陷，功能正常 |
| | 低温 -10℃ 72 小时 | |
| 储存温度 | 高温 +70℃ 120 小时 | 外观无缺陷，功能正常 |
| | 低温 -20℃ 120 小时 | |
| 恒温恒湿 | 40℃ 90%RH 72HRS | 外观无缺陷，功能正常 |
| 振动 | 时间: 每个方向振动三十分钟 (X,Y,Z) 频率: 10~55Hz (1 min) 振幅: 1.5mm | 外观无缺陷，功能正常 |
| 冷热冲击 | -20℃(30mins) ←5℃(5mins)→+60℃(30mins) 10 cycles | 外观无缺陷，功能正常 |

NOTE: 以上测试后须在室温放置 2 小时检查样品