Version : *Preliminary*

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Http://www.lcdfriends.com

TECHNICAL   SPECIFICATION

MODEL   NO. : PA079DS1T1

☐Customer's Confirmation

Date

By

☐PVI's Confirmation

Confirmed By

Prepared By

PRIME VIEW INTERNATIONAL CO.,LTD.
3,LI SHIN RD. 1,SCIENCE-BASED INDUSTRIAL
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Date : FEB. 02,2000

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TECHNICAL   SPECIFICATION

CONTENTS

PRIME VIEW

1. Application

This technical specification applies to 7.9" color TFT-LCD module1.The applications of the panel are car TV, portable DVD , Video Display, multimedia applications and others AV system.

2. Features

. Compatible with NTSC & PAL system

. separate sync input(NTSC)

. Pixel in stripe configuration

. Slim and compact

. High Brightness

. Image Reversion:Up/Down and Left/Right

3. Mechanical Specifications

Parameter	Specifications	Unit
Screen Size	7.9 (diagonal)	inch
Display Format	1440(H)× 234(V)	dot
Active Area	161.28 (H)× 117.936 (V)	mm
Dot Pitch	0.112(H)× 0.504 (V)	mm
Pixel Configuration	Stripe	
Outline Dimension	191.4 (W)× 144.6 (H)× 11.5 (D)	mm
Weight	365	g

4. Mechanical Drawing of TFT-LCD Module

◈ PRIME VIEW
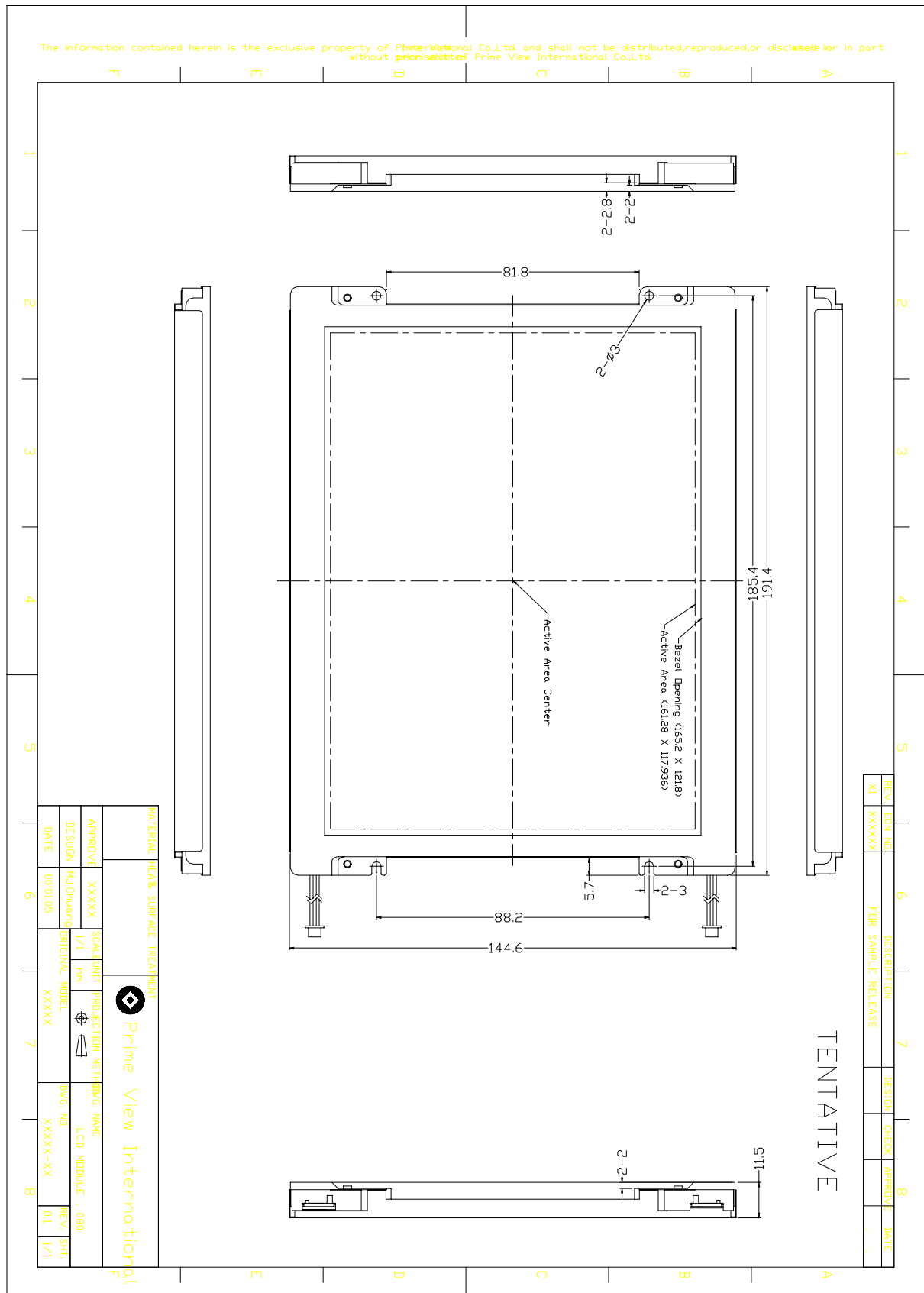
5. Input / Output Terminals

5-1) TFT-LCD Panel Driving

Pin No	Symbol	I/O	Description	Remark
1	$\overline{HSY}$	I/O	Horizontal Sync. Input / Output	Note 5-1
2	FRP	O	Video Polarity Alternating Signal	
3	CSY	I	Composite Sync. Signal	Note 5-1
4	V_{GH}	I	Supply Voltage for Gate Driver (Hi level)	Note 5-2
5	V_{GL}	I	Supply Voltage for Gate Driver (Low level)	Note 5-3
6	V_B	I	Video Signal (Blue)	
7	V_R	I	Video Signal (Red)	
8	V_G	I	Video Signal (Green)	
9	GND	I	Ground	
10	V_{DD}	I	Supply voltage for Controller	Note 5-4
11	V_{SH}	I	Supply voltage for source driver	Note 5-5
12	GND	I	Ground	
13	CKC	I	Control pin for select I/O signal	Note 5-1
14	$\overline{VSY}$	I/O	Vertical Sync. Input/ Output	Note 5-1
15	PSI	O	Synchronize Pulse for Decoder	
16	PSC	O	Synchronize Pulse for DC-DC Converter	
17	NC	-	No Connection	
18	UD	I	UP/DOWN Control	Note 5-7
19	RL	I	Right/Left Shift Control	Note 5-6
20	NP	I	NTSC/PAL Input	Note 5-8

Note 5-1：Pin 13 (CKC) can select the function for Pin 1 ($\overline{HSY}$), Pin 3 (CSY), and Pin 14 ($\overline{VSY}$) .

| Pin 13 (CKC)	Pin 1 ($\overline{HSY}$)	Pin 3 (CSY)	Pin 14 ($\overline{VSY}$)
Hi	$\overline{HSY}$ Output	CSY Input	$\overline{VSY}$ Output
Low	External Horizontal Sync Input	External Clock Input	External Vertical Sync Input

Note 5-1-1: CKC= High:
   a. If CKC=1,the phase lock loop (PLL) is adopted in the LCD module.
   b. Inputs CSY, the controller of LCD module will separate the Vertical Sync and Horizontal Sync from CSY.
   c. Output Horizontal Sync ($\overline{HSY}$, Pin 1) and Vertical Sync ($\overline{VSY}$, Pin 14)..

d. The internal detect will detect Vertical Sync to reset the vertical counter.

Note 5-1-2: CKC= Low
a. If CKC=0, the phase lock loop (PLL) is not adopted in the LCD module.
b. If CKC=0, the external clock input frequency of Pin 3 is 28.77 MHz.
c. Input external Horizontal Sync (Pin 1) to synchronize the LCD module. External Horizontal Sync and External Vertical Sync input pulse can be high going or low going.
d. The pulse width of external Horizontal Sync input is 4.7μs± 2 μs. The pulse width of external Vertical Sync input is 2H~4H.
e. The pulse length of external input Vertical Sync of NTSC system is 262H± 4H and PAL system is 312H± 4H.

Note 5-1-3: The timing chart of $\overline{HSY}$ and external Horizontal input:

CKC=1 $\overline{HSY}$
(Output)

CKC=0   External
Horizontal
Sync
(Input)
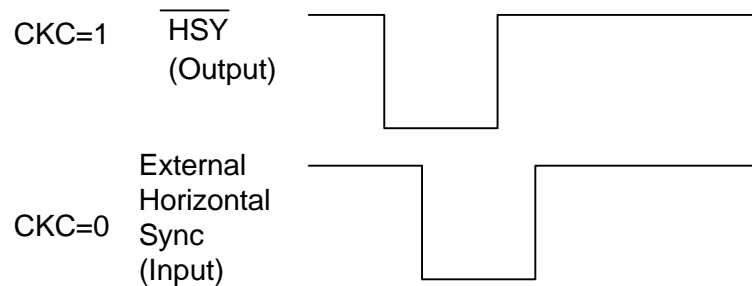
Note 5-1-4: If there is any question about CKC=0, please contact PVI.

Note 5-2：V_{GH} TYP.＝+17V

Note 5-3：V_{GL} TYP.＝-12V

Note 5-4：V_{DD} TYP.＝+3.3V(Ver. ASIC +5V)

Note 5-5：V_{SH} TYP.＝+5V

Note 5-6 : Default Low (0V) for shift Right; Input Hi (+3.3V) for inverse (shift Left).

Note 5-7 : Default Hi (+3.3V) for DOWN; Low (0V) for UP.

Note 5-8 : NTSC= LOW(0V),PAL=Hi(+3.3V)

5-2) Backlight driving

Pin No	Symbol	Description	Remark
1	VL1	Input terminal (Hi voltage side)	
2	NC	NO Connection	
3	VL2	Input terminal (Low voltage side)	Note 5-9

Note 5-9：Low voltage side of backlight inverter connects with Ground of inverter circuits.

5-3) Input / Output Connector

A) LCD Module Connector

FFC Down Connector
20 Pins
Pitch：1.0 mm

B) Backlight Connector

JST   BHR-03VS-1
Pin No.：3
Pitch：4 mm

Red: High Voltage
White: Low Voltage

6. Absolute Maximum Ratings:

GND = 0 V ， Ta = 25 ℃

Parameter		Symbol	MIN.	MAX.	Unit	Remark
Supply Voltage for Source Driver		V_{SH}	-0.3	+7.0	V	
Supply Voltage for Gate Driver	H Level	V_{GH}	-0.3	+40	V	
	L Level	V_{GL}	-20	+0.3	V	
Supply voltage for controller		V_{DD}	TBD	TBD	V	
Analog input signals		V_B, V_R, V_G	+0.2	+5.05	V	
Digital input signals			-0.5	$0.3+V_{DD}$	V	Note 6-1
Digital output signals			-0.5	$0.3+V_{DD}$	V	Note 6-2
Storage Temperature			-30	+80	℃	
Operation Temperature			-20	+70	℃	

Note 6-1 : $\overline{HSY}$, CSY, $\overline{VSY}$, CKC,

Note 6-2 : $\overline{HSY}$, $\overline{VSY}$, PSI, PSC

7. Electrical Characteristics

7-1) Recommended Operating Conditions:
 A) Driving for TFT-LCD Panel

GND = 0V ， Ta = 25 ℃

Parameter		Symbol	MIN.	TYP	MAX.	Unit	Remark
Supply voltage for source driver		V_{SH}	4.5	5.0	5.5	V	
Supply voltage for gate driver	H Level	V_{GH}	15	17	19	V	
	L level	V_{GL}	-14	12	-10	V	
Supply voltage for controller		V_{DD}	+3.0	+3.3	+3.6	V	
Analog input Voltage	Amplitude	V_B, V_R, V_G	TBD	TBD	TBD	V	
	DC component		TBD	TBD	TBD	V	
Digital input Voltage	H level	VIN	2.4	-	5	V	
	L level	VIL	-0.3	-	0.5	V	
Digital output Voltage	H level	VOH	2.4	-	5	V	
	L level	VOL	0	-	0.5	V	

B) Driving for backlight

Ta= 25 ℃

Parameter	Symbol	Min.	Typ.	Max.	Unit	Remark
Lamp voltage	V_L		400		Vrms	I_L= 6 mA
Lamp current	I_L		6		mA	
Lamp frequency	P_L		60		KHz	Note 7-1
Kick-off voltage	Vs			750	Vrms	
Kick-off voltage(0℃)	Vs			950	Vrms	

Note 7-1 : The wave form of lamp driving voltage should be as closed to a perfect SIN wave as possible.

7-2) Power Consumption

Ta= 25 ℃

Parameter	Symbol	Conditions	TYP.	MAX	Unit	Remark
Supply current for Gate Driver (Hi level)	I_{GH}	$V_{GH} = +17V$	0.15	0.2	mA	
Supply current for Gate Driver (Low level)	I_{GL}	$V_{GL} = -12V$	20	30	mA	
Supply current for Source Driver	I_{SH}	$V_{SH} = +5V$	20	30	mA	
Supply current for controller	I_{DD}	$V_{DD} = +3.3V$	20	30	mA	
LCD Panel Power Consumption			0.41		W	Note 7-2
Backlight Lamp Power Consumption			4.8		W	Note 7-3

Note 7-2：The power consumption for backlight is not included.
Note 7-3：Backlight lamp power consumption is calculated by $I_L \times V_L$.

7-3) Input / Output signal timing chart
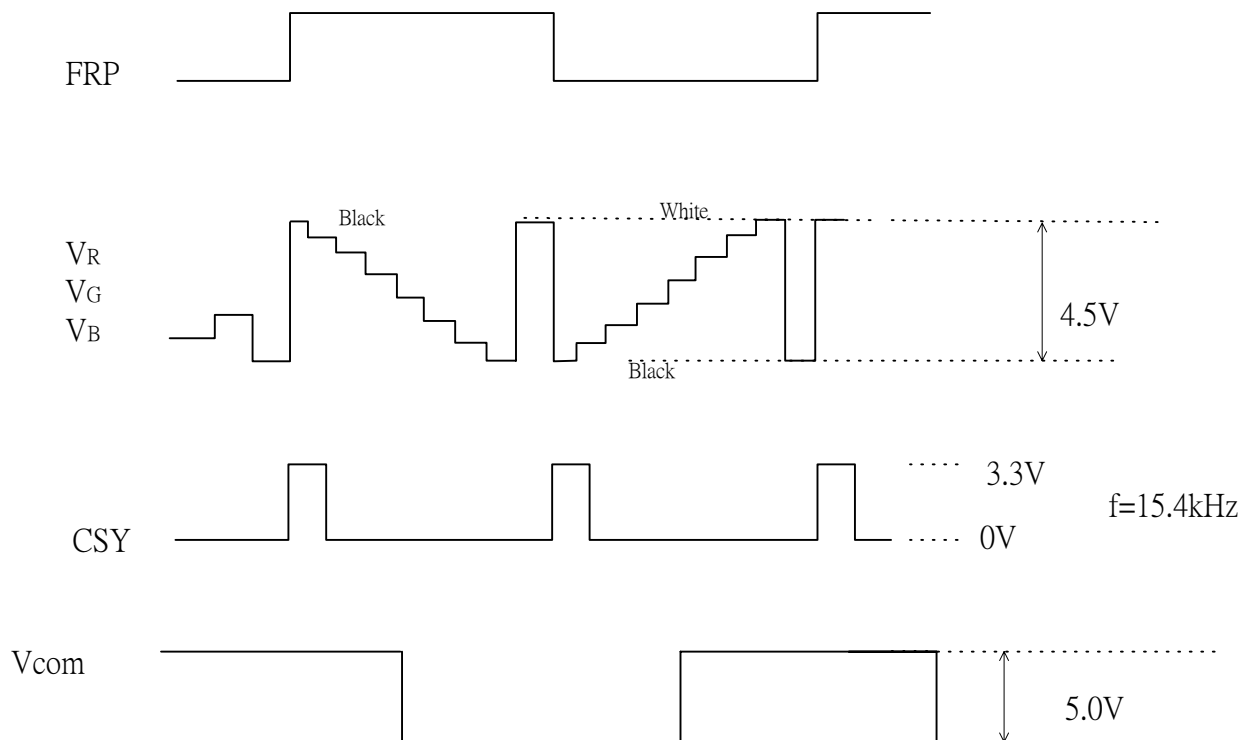
Parameter		Symbol	MIN.	TYP.	MAX.	Unit	Remarks
Horizontal Sync. Output Pulse	Width	T_{HO}	4.2	4.7	5.2	μs	
	Phase Difference	T_{HP}	0	2		μs	
	Rising Time	T_{HR}	-	-	0.5	μs	
	Falling Time	T_{HF}	-	-	0.5	μs	
Vertical Sync. Output Pulse	Width	T_{VO}	-	4H	-	μs	H=1/15.4KHZ
	Phase Difference	T_{VPO}	-	1H	-	μs	odd field
	Phase Difference	T_{VPE}	-	1.5H	-	μs	even field
	Rising Time	T_{VR}	-	-	2	μs	
	Frequency	f_{FRP}	7.67	7.87	8.07	KH_Z	
Polarity	Delay time	T_{FD}	-	-	4	μs	
Alternating Signal	Falling Time	T_{VF}	-	-	2	μs	

7-4) Display Time Range

  A)   When sync. signal of NTSC system is applied.

    a)   Horizontally

       11.35 ~ 63.4 μs.

    b)   Vertical

       19 ~ 253 H
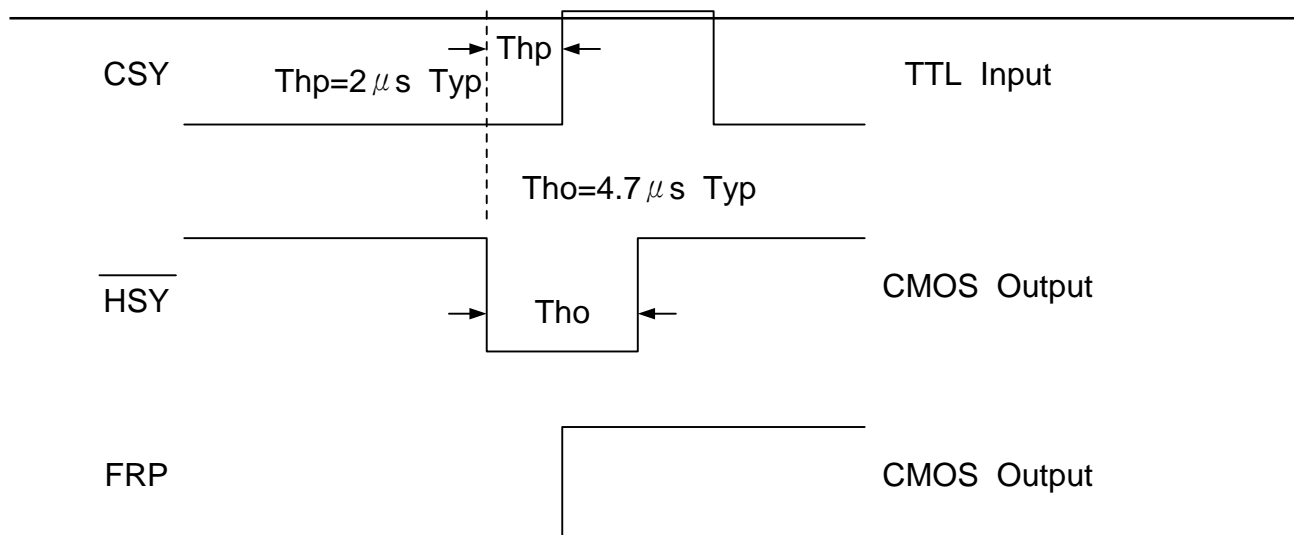
 B) When sync. signal of PAL system is applied.
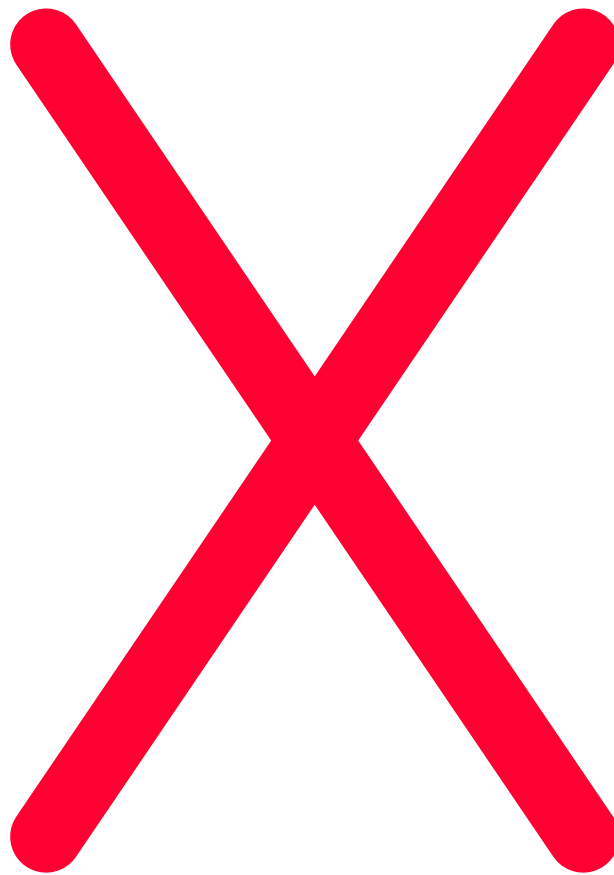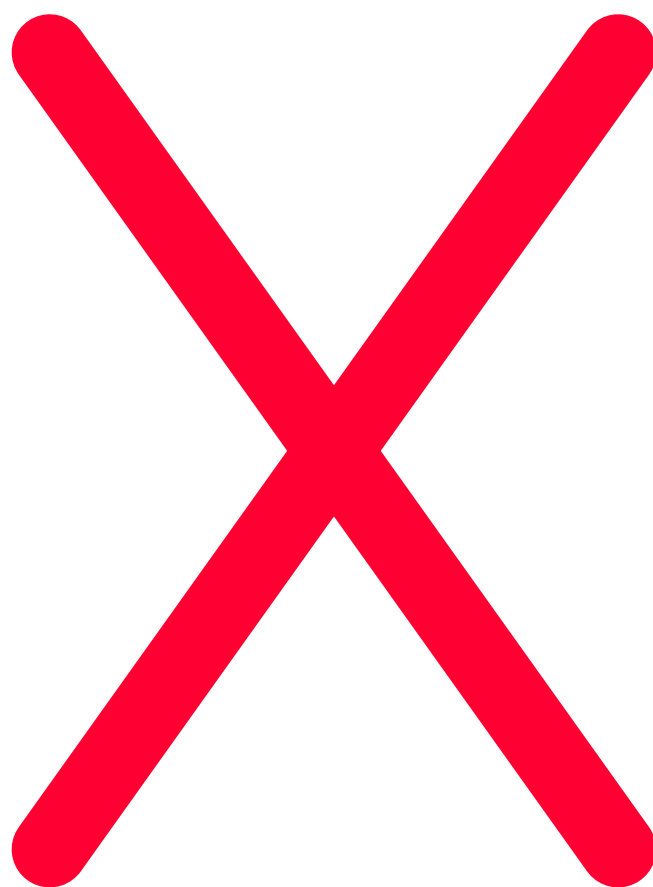
    a)   Horizontally

       11.54 ~ 64 μs   .

    b)   Vertical

         26   ~ 298 H

PRIME VIEW

CSY	TTL Input

Thp=2μs Typ $\rightarrow$ Thp $\leftarrow$

Tho=4.7μs Typ

$\overline{\text{HSY}}$ — Tho — CMOS Output
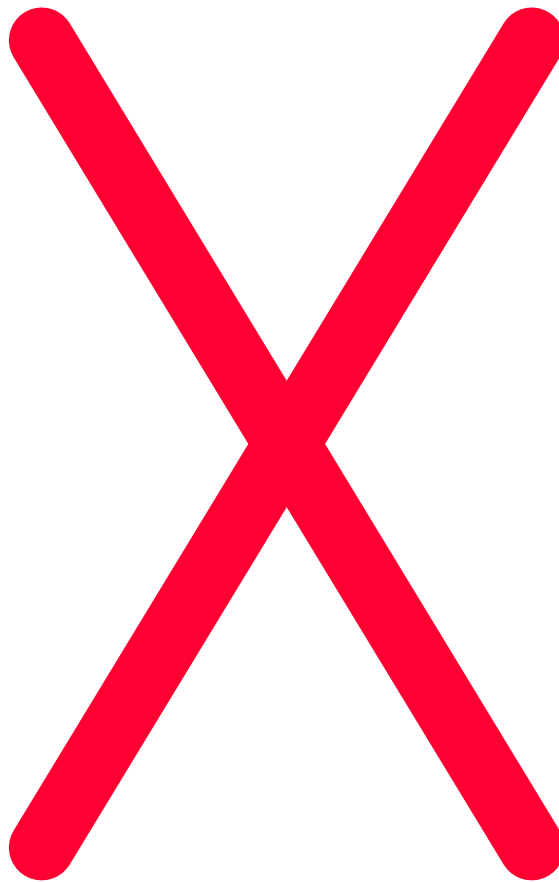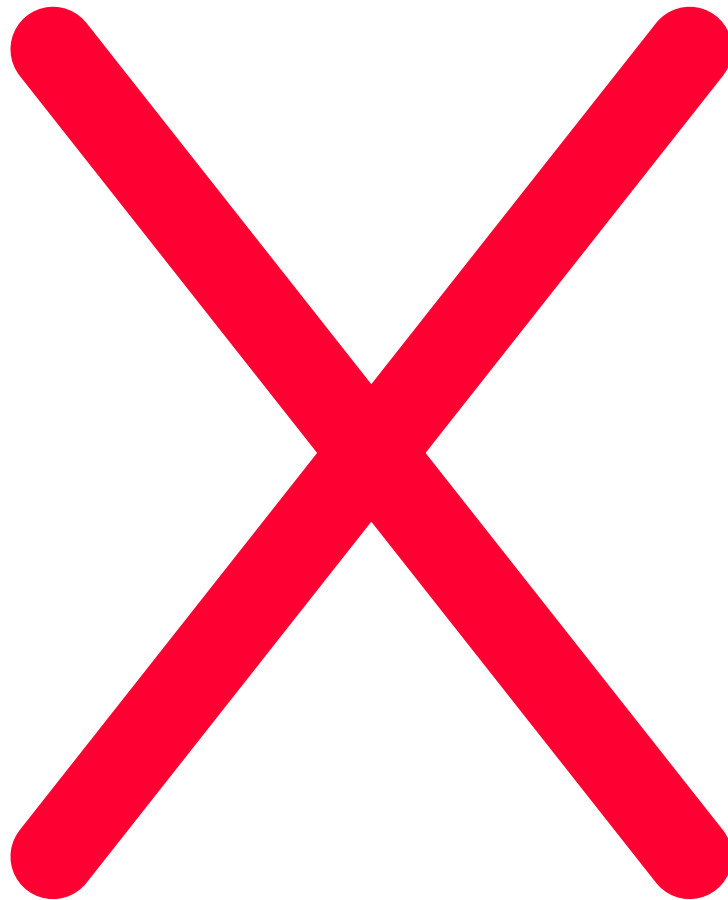
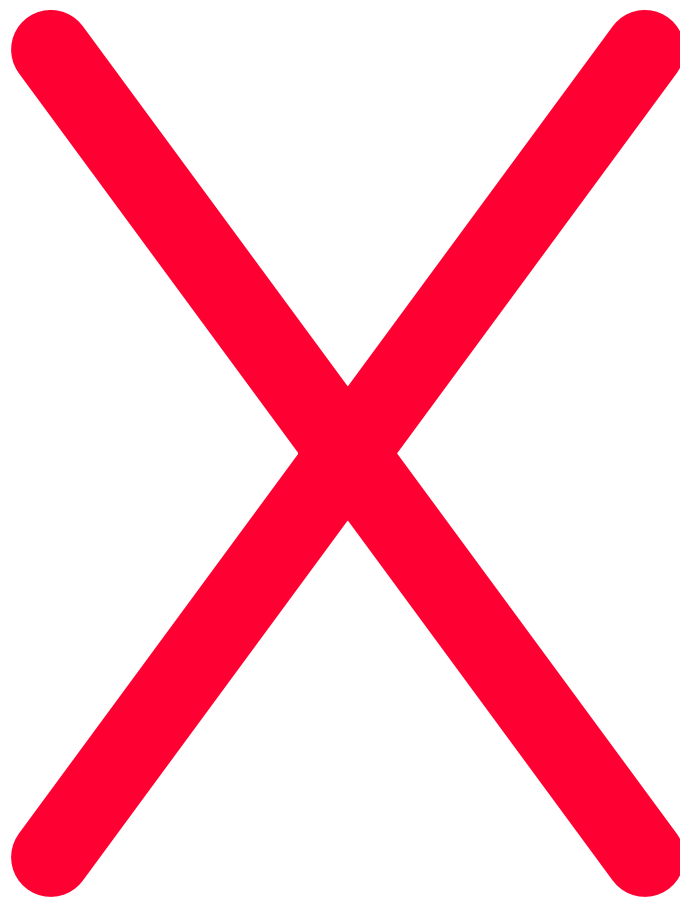FRP — CMOS Output

PRIME VIEW

C) NTSC System

C) NTSC System

D) PAL System

E) Display Timing

8.Optical Characteristics

8-1) Specification:

Ta = 25℃

Parameter		Symbol	Condition	MIN.	TYP.	MAX.	Unit	Remarks
Viewing Angle	Horizontal	$\theta 21$, $\theta 22$	CR≧10	45	55		deg	Note 8-1
	Vertical	$\theta 12$		10	15		deg	Note 8-1
		$\theta 11$		30	35		deg	Note 8-1
Contrast Ratio		CR		80	150			Note 8-2
Response time	Rise	Tr	$\theta =0°$			30	ms	Note 8-4
	Fall	Tf				50	ms	
Brightness				250	300		cd/㎡	Note 8-3
White Chromaticity		x			TBD			Note 8-3
		y			TBD			
Lamp Life Time +25℃				TBD			hr	

Note 8-1: The definitions of viewing angles
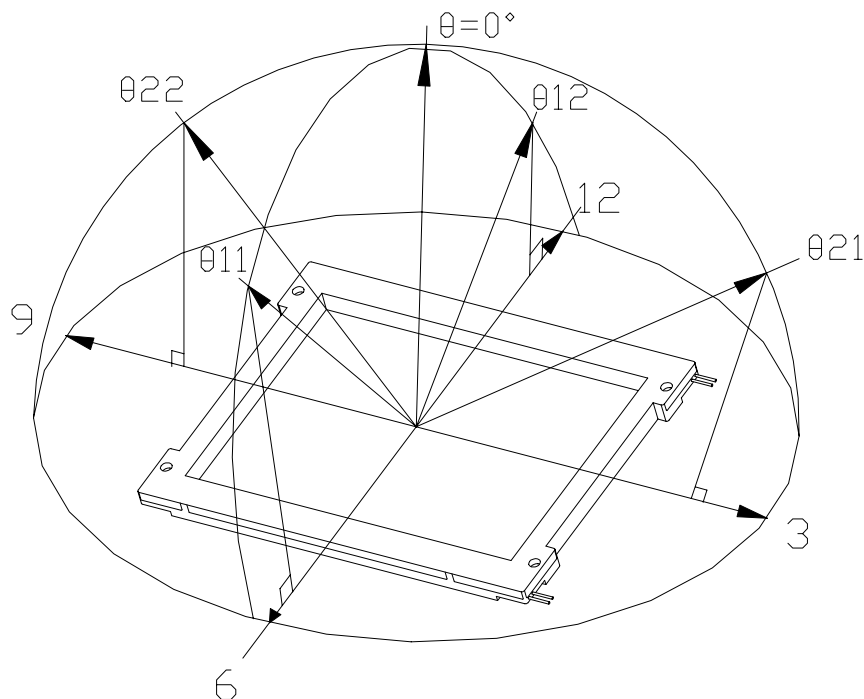
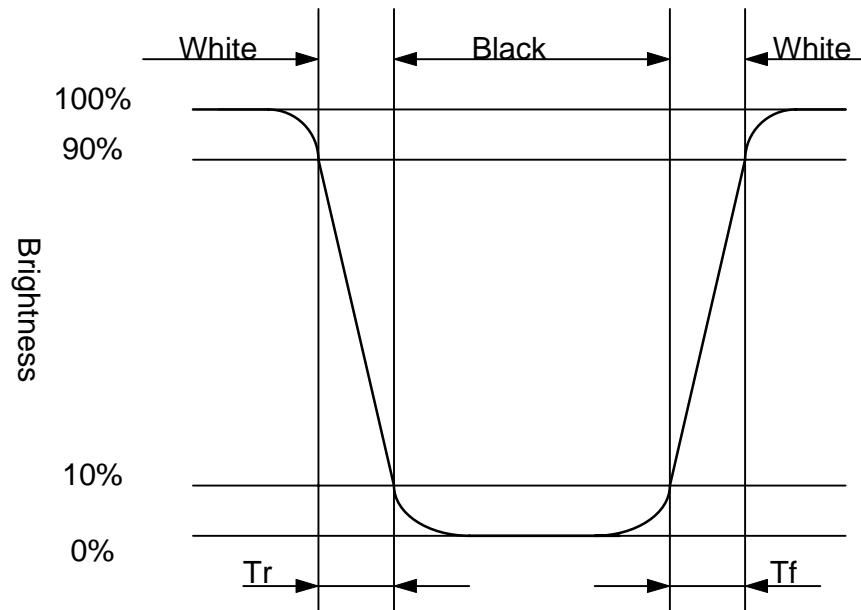Note 8-2：CR $= \dfrac{\text{Luminance when Testing point is White}}{\text{Luminance when Testing point is Black}}$

(Testing configuration see 8-2)

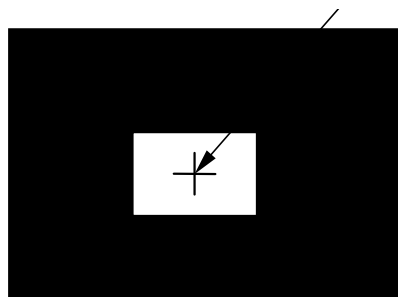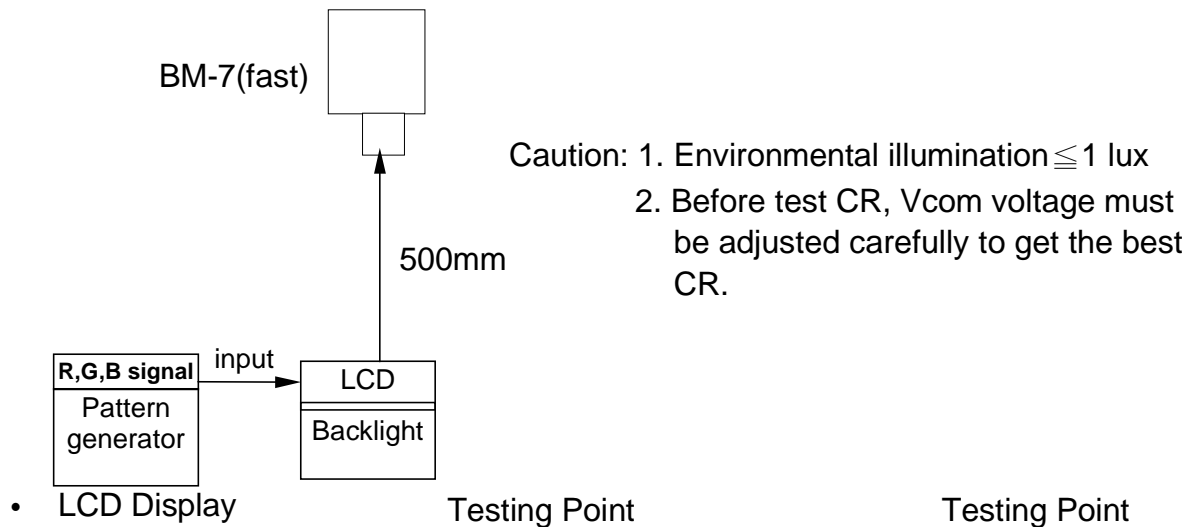Contrast Ratio is measured in optimum common electrode voltage.

Note 8-3：Topcon BM-7(fast) luminance meter 2° field of view is used in the testing (after 20~30 minutes operation).
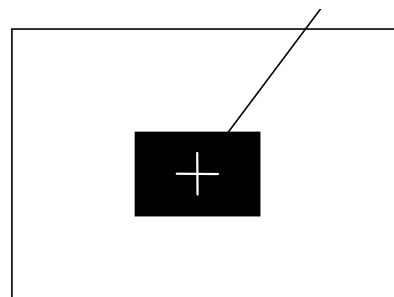
Lamp Current 6mA

Note 8-4: The definition of response time:
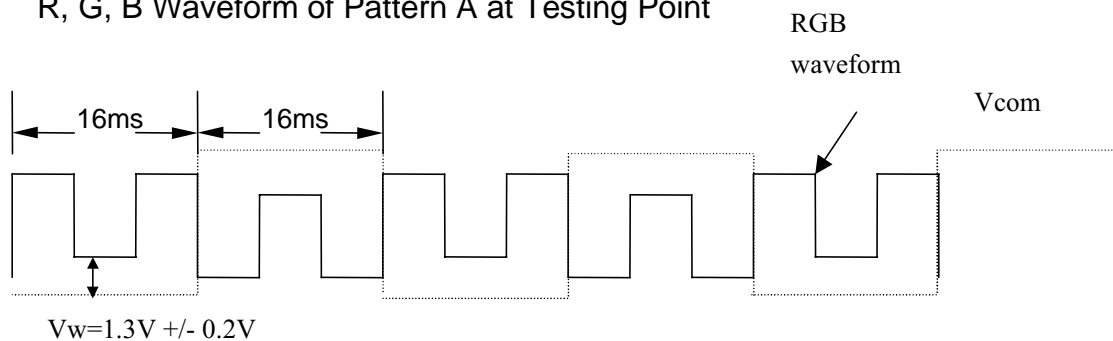
8-2) Testing configuration

BM-7(fast)

500mm

Caution: 1. Environmental illumination ≦ 1 lux
2. Before test CR, Vcom voltage must be adjusted carefully to get the best CR.

| R,G,B signal |
| Pattern generator |

input

| LCD |
| Backlight |

• LCD Display

Testing Point

Testing Point

Pattern A

Pattern B

• R, G, B Waveform of Pattern A at Testing Point

RGB waveform

Vcom

16ms   16ms

Vw=1.3V +/- 0.2V

• R, G, B Waveform of Pattern B at Testing Point

RGB waveform   Vcom

16ms   16ms

Vb=4.5V +/- 0.2V
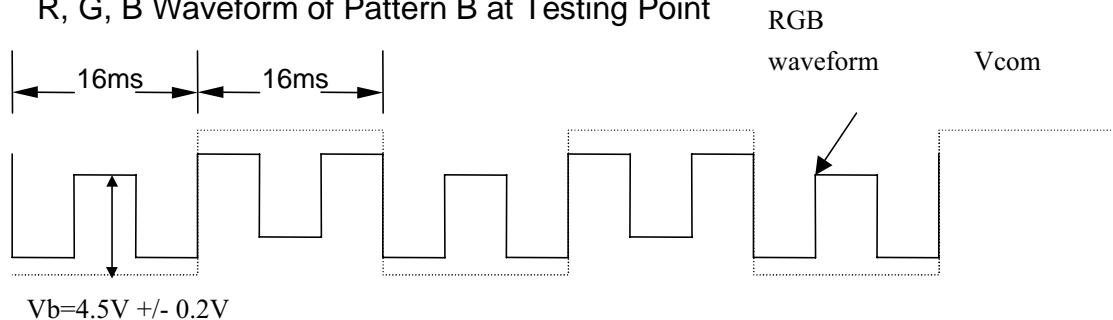
9. Reliability Test

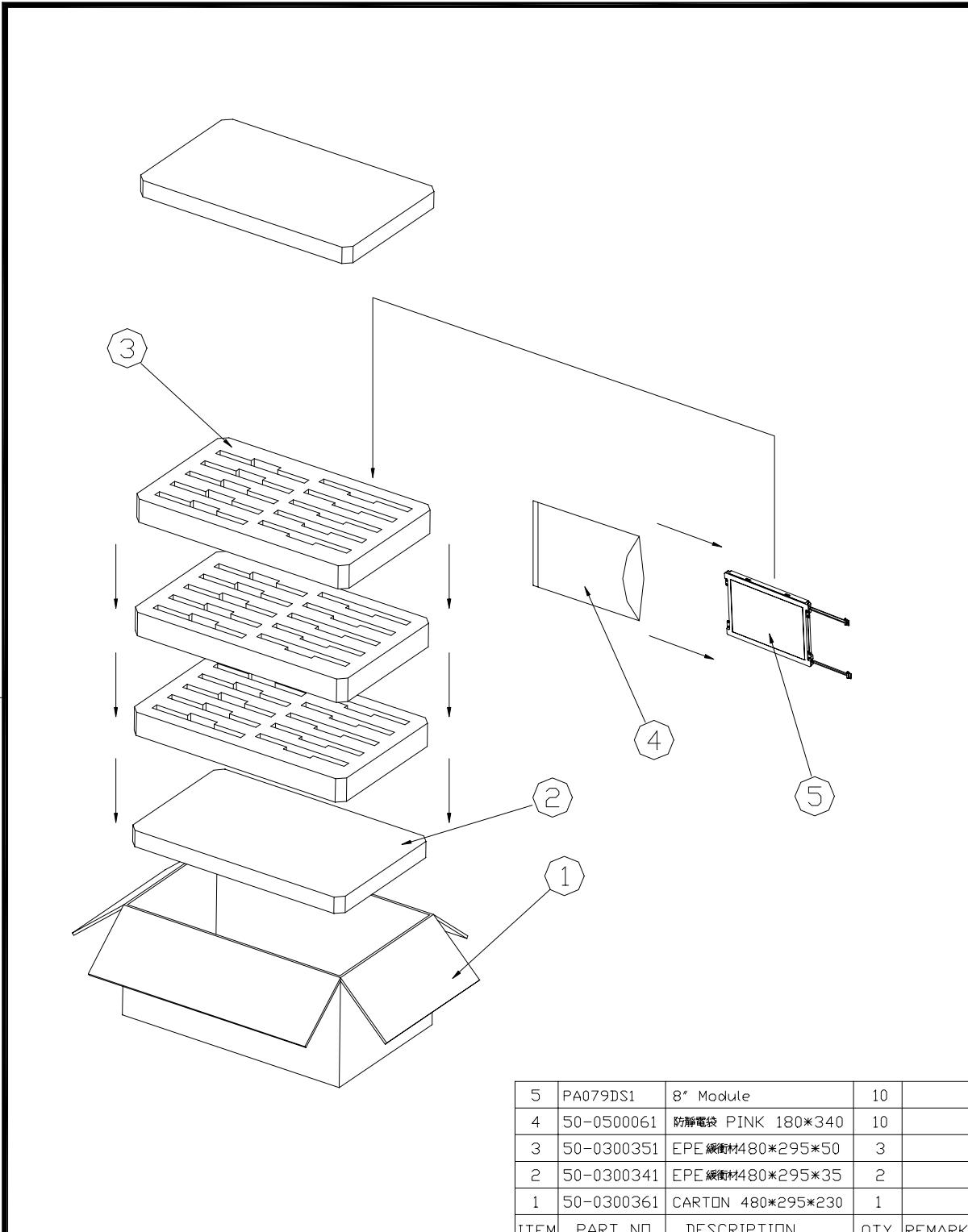| No	Test Item	Test Condition
1	High Temperature Storage Test	Ta = +80 ℃, 240 hrs
2	Low Temperature Storage Test	Ta = -30℃, 240 hrs
3	High Temperature Operation Test	Ta = +70 ℃, 240 hrs
4	Low Temperature Operation Test	Ta = -20 ℃, 240 hrs
5	High Temperature & High Humidity Operation Test	Ta = +60℃, 95%RH, 240 hrs
6	Thermal Cycling Test (non-operating)	-25℃ →+25℃→ +70℃, 200 Cycles 30 min 5min 30 min
7	Vibration Test (non-operating)	Frequency：10 ~ 55 H$_z$ Amplitude：1.0 mm Sweep time: 11 mins Test Period: 6 Cycles for each direction of X, Y, Z
8	Shock Test (non-operating)	100G, 6ms Direction: ± X, ± Y, ± Z Cycle: 3 times
9	Electrostatic Discharge Test	150pF, 330Ω Air: ±15KV; Contact: ±8KV 10 times/point, 9 points/panel face

Ta: ambient temperature

[Criteria]
Under the display quality test conditions with normal operation state, there should be no change which may affect practical display function.

10. Block Diagram

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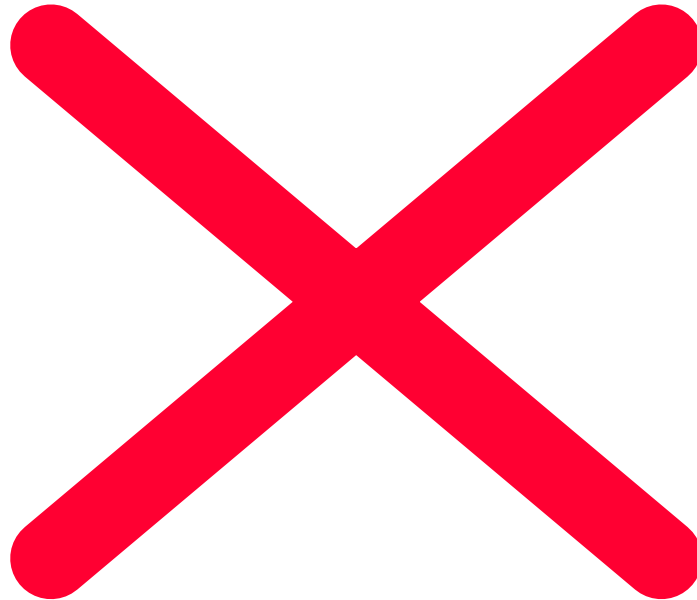
11. Packing

5	PA079DS1	8" Module	10	
4	50-0500061	防静電袋 PINK 180*340	10	
3	50-0300351	EPE緩衝材480*295*50	3	
2	50-0300341	EPE緩衝材480*295*35	2	
1	50-0300361	CARTON 480*295*230	1	
ITEM	PART NO.	DESCRIPTION	QTY	REMARK

MTL.SPEC.	UNSPECIFIED TOL'S ANGLE ROUGHNESS	REMARK	元太科技工業股份有限公司 Prime View International Co.,ltd.
APPROVE		SCALE	UNIT	SHEET 1 OF 1	DWG.TITLE
CHECK				7.9" PACKING
DESIGN	MJ.Chuang 00'07.13	MTL.NO.		DWG.NO.	REV. A4 SIZE

PRIME VIEW

PA079DS1T1

Revision History

Rev.	Issued Date	Revised Contents
0	FEB. 02,2000	NEW

PRIME VIEW

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Rev.	Issued Date	Revised Contents
0	FEB. 02,2000	NEW

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