

**Display Elektronik GmbH**

**DATA SHEET**

**LCD MODULE**

**DEM 800480Q3 VMX-PW-N**

**5“ IPS**

*Product Specification*

*Version: 2*

**21.09.2023**

**GENERAL SPECIFICATION**

**MODULE NO. :**

**DEM 800480Q3 VMX-PW-N**

**CUSTOMER**

VERSION NO.	CHANGE DESCRIPTION	DATE
0	ORIGINAL VERSION	13.06.2019
1	CHANGE BACKLIGHT VOLTAGE	19.10.2022
2	Correct the Pin Description	21.09.2023

PREPARED BY: MH

DATE: 21.09.2023

APPROVED BY: MH

DATE: 21.09.2023

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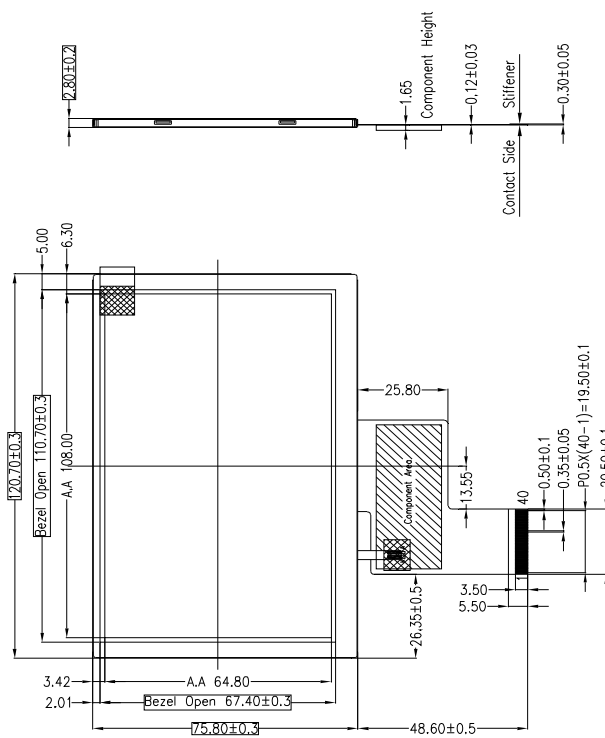
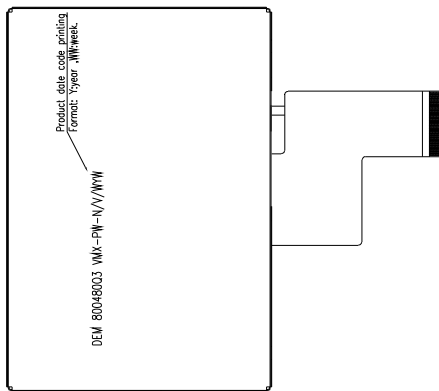
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**1. GENERAL SPECIFICATIONS**

<b>ITEM</b>	<b>STANDARD VALUE</b>	<b>UNIT</b>
LCD TYPE	TFT	-
MODULE SIZE	120.70 x 75.80 * 2.80	mm
ACTIVE AREA	108.00 * 64.80	mm
PIXEL PITCH (W*H)	0.135 x 0.135	-
NUMBER OF PIXELS	800 x RGB x 480	-
DIVER IC	ST7262	-
INTERFACE TYPE	RGB	-
RECOMMEND VIEWING DIRECTION	ALL	O'CLOCK
GRAY SCALE INVERSION DIRECTION	-	O'CLOCK
COLORS	16.7 Million	-
BACKLIGHT TYPE	18 WHITE LED	-
TOUCH PANEL TYPE	WITHOUT	-

2. EXTERNAL DIMENSIONS

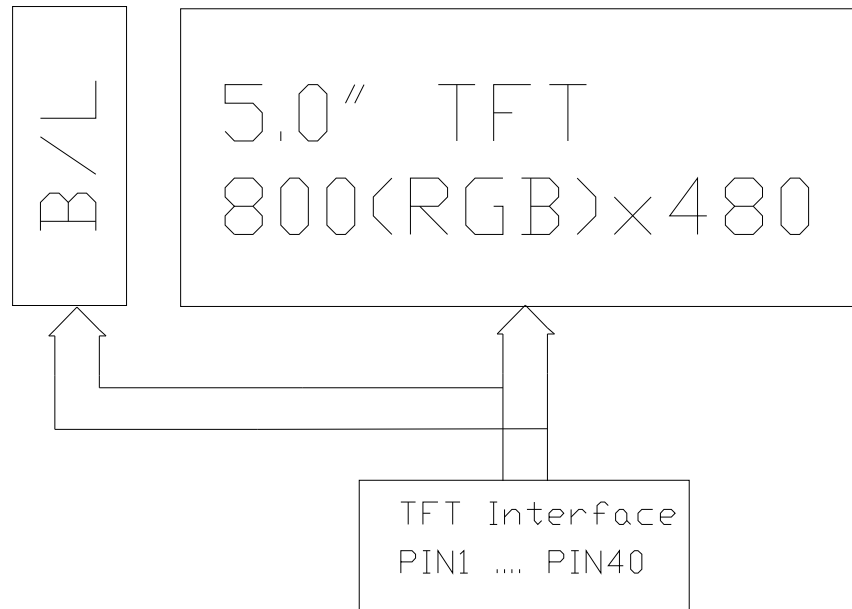
1	VLED-	21	B0
2	VLED+	22	B1
3	GND	23	B2
4	VDD	24	B3
5	R0	25	B4
6	R1	26	B5
7	R2	27	B6
8	R3	28	B7
9	R4	29	GND
10	R5	30	CLK
11	R6	31	DISP
12	R7	32	NC
13	G0	33	NC
14	G1	34	DE
15	G2	35	NC
16	G3	36	GND
17	G4	37	NC
18	G5	38	NC
19	G6	39	NC
20	G7	40	NC



LED CIRCUIT DIAGRAM: 6\*3 Dice  
60mA @ 18.3V  
Brightness 500cd/m<sup>2</sup>(TYP)

- Remark:
- 1.Unmarked tolerance is ±0.3
  - 2.All materials comply with RoHS
  3. [ ] ...:critical dimension.
  - 4.LED Lifetime:50000h.
  - 5.Operating Temperature: -30~+85°C

**3. BLOCK DIAGRAM**



**4. PIN ASSIGNMENT**

<b>PIN NO.</b>	<b>SYMBOL</b>	<b>DESCRIPTION</b>
1	VLED-	Cathode of LED Backlight
2	VLED+	Anode of LED Backlight
3	GND	Power Ground
4	VDD	Power Voltage
5	R0	Red Data
6	R1	Red Data
7	R2	Red Data
8	R3	Red Data
9	R4	Red Data
10	R5	Red Data
11	R6	Red Data
12	R7	Red Data
13	G0	Green Data
14	G1	Green Data
15	G2	Green Data
16	G3	Green Data
17	G4	Green Data
18	G5	Green Data
19	G6	Green Data
20	G7	Green Data
21	B0	Blue Data
22	B1	Blue Data
23	B2	Blue Data
24	B3	Blue Data
25	B4	Blue Data
26	B5	Blue Data
27	B6	Blue Data
28	B7	Blue Data
29	GND	Power Ground
30	CLK	Sample Clock
31	DISP	Display On/Off
32	NC	No Connection
33	NC	No Connection

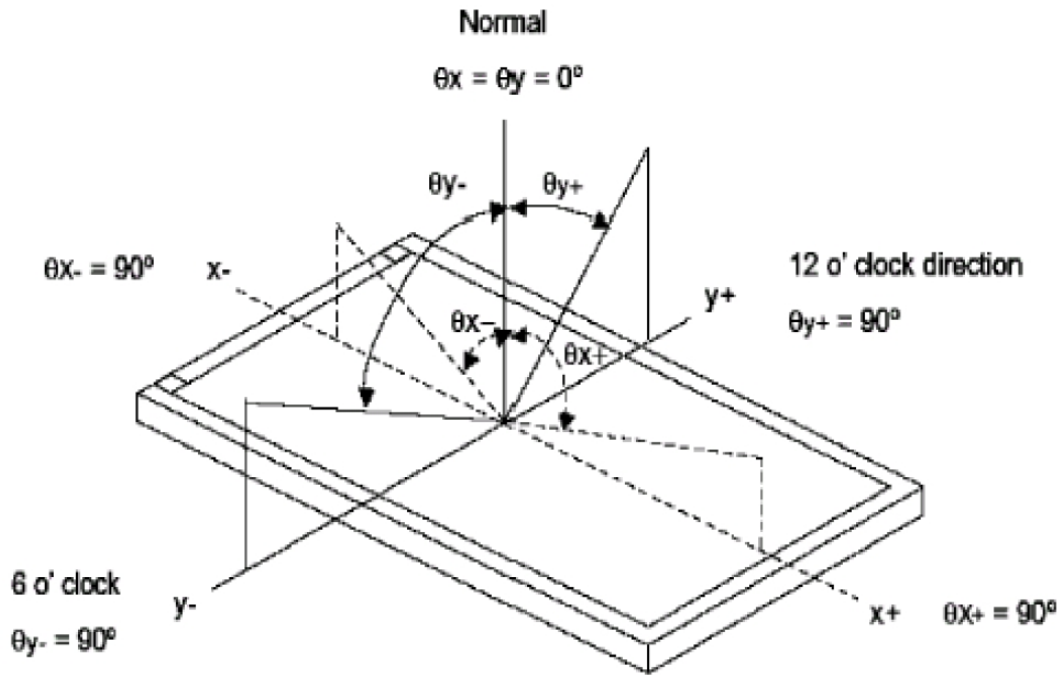
34	DE	Data Input Enable
35	NC	No Connection
36	GND	Power Ground
37	NC	No Connection
38	NC	No Connection
39	NC	No Connection
40	NC	No Connection



**5. OPTICAL CHARACTERISTICS**

ITEM	SYMBOL	CONDITIONS	SPECIFICATIONS			UNIT	NOTE	
			MIN	TYP.	MAX			
Luminance	L		-	500	-	Cd/m <sup>2</sup>	-	
Contrast Ratio	CR	$\theta = 0^\circ$	800	1000	-	-	-	
Response Time	Ton+ Toff	25°C	-	30	40	ms	-	
CIE COLOUR COORDINATE	RED	XR	VIEWING NORMAL ANGLE	-	0.629	-	-	-
		YR		-	0.326	-	-	-
	GREEN	XG		-	0.337	-	-	-
		YG		-	0.546	-	-	-
	BLUE	XB		-	0.136	-	-	-
		YB		-	0.143	-	-	-
	WHITE	XW		-	0.320	-	-	-
		YW		-	0.345	-	-	-
VIEWING ANGLE	Hor.	$\theta_{x+}$	CR $\geq$ 10	70	80	-	Degree	-
		$\theta_{x-}$		70	80	-		-
	Ver.	$\theta_{y+}$		70	80	-		-
		$\theta_{y-}$		70	80	-		-

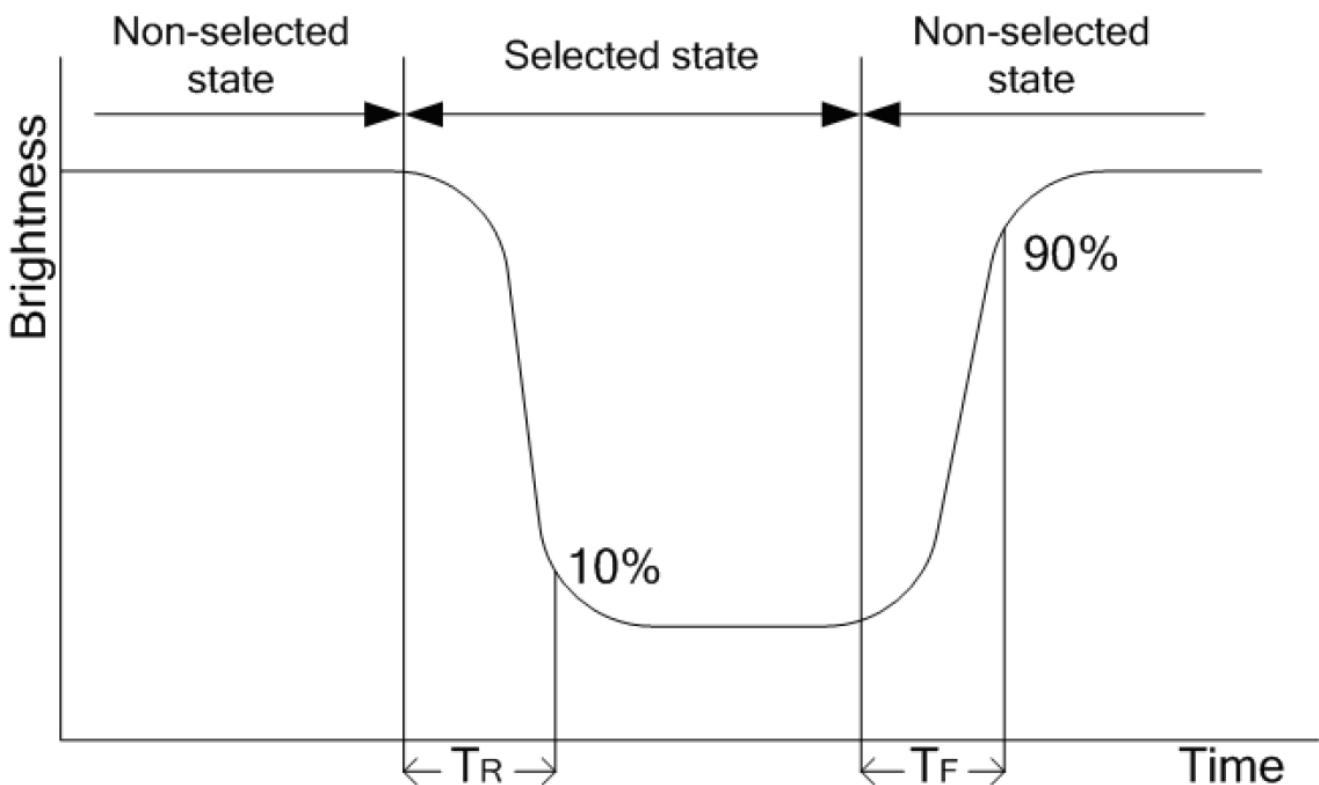
Note 1 : Definition of Viewing Angle  $\theta_x$  and  $\theta_y$  :



Note 2: Definition of contrast ratio CR:

$$CR = \frac{\text{Brightness of non-selected dots (white)}}{\text{Brightness of selected dots (black)}}$$

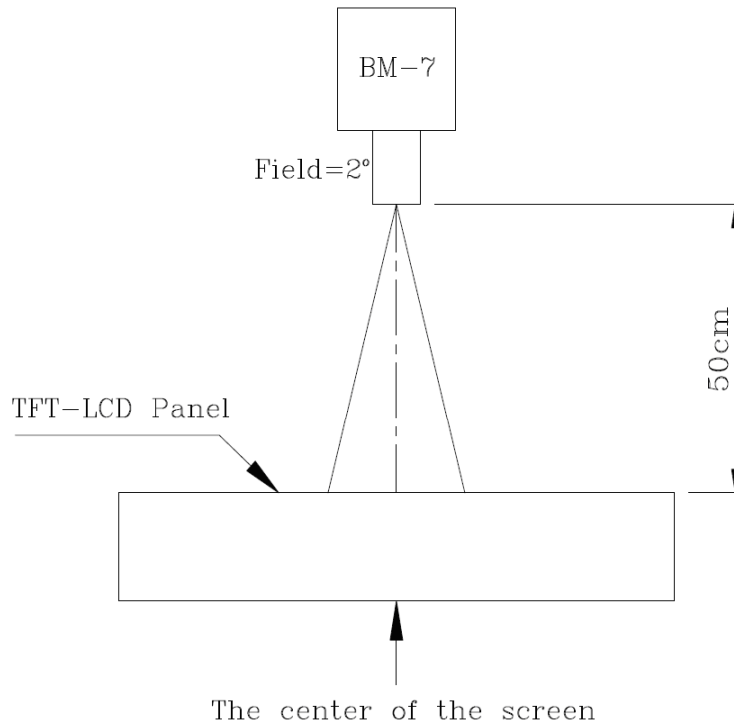
Note 3: Definition of response time ( $T_R$ ,  $T_F$ )



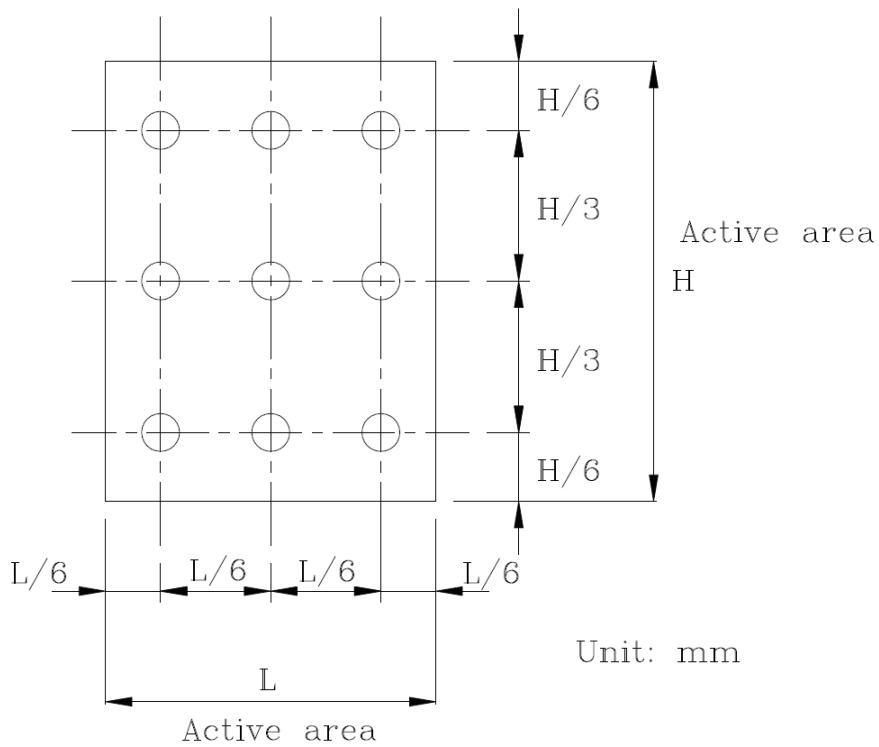
**Note 4: Definition of Luminance**

**①The Brightness Test Equipment Setup**

Field=2° (As measuring “black” image, field=2° is the best testing condition)



**②The Brightness Test Point Setup**



**6. ABSOLUTE MAXIMUM RATINGS**

<b>PARAMETER</b>	<b>SYMBOL</b>	<b>MIN</b>	<b>MAX</b>	<b>UNIT</b>
Power Supply Voltage	VDD	-0.3	4	V
Operating Temperature	Top	-30	+85	°C
Storage Temperature	Tst	-30	+85	°C

**7. ELECTRICAL CHARACTERISTICS****7.1 ELECTRICAL CHARACTERISTICS**

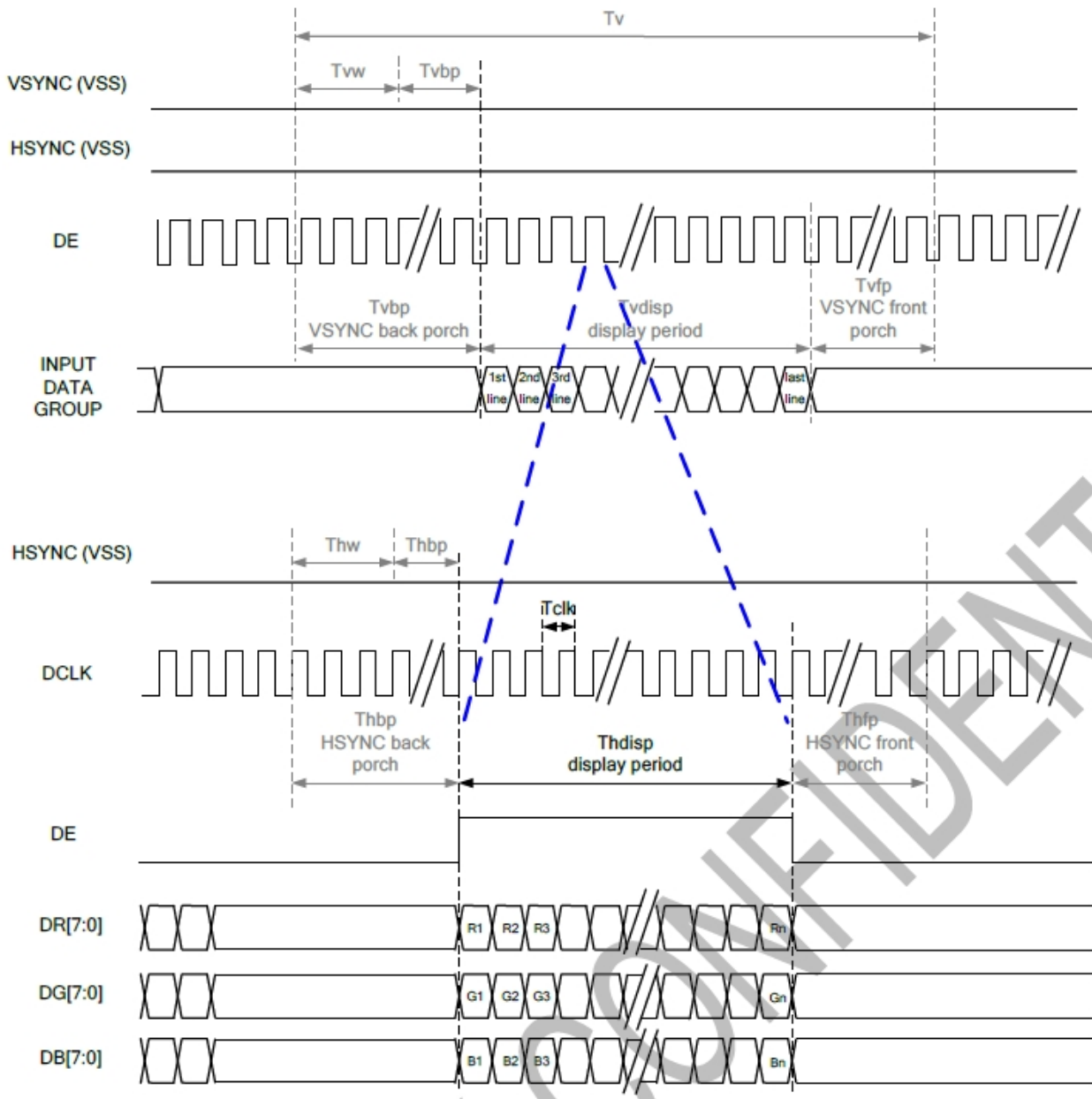
ITEM	SYMBOL	MIN	TYP.	MAX	UNIT
Supply Voltage for Analog	VDD	3.1	3.3	3.5	V
Current for Driver	IDD	-	TBD	-	mA
Input Voltage	Vil	GND	-	0.3VDD	V
	Vih	0.7VDD	-	VDD	V

**7.2 BLACKLIGHT DRIVING CONDITIONS**

ITEM	SYMBOL	MIN	TYP.	MAX	UNIT
Voltage for LED Backlight	VL	17.4	18.3	19.2	V
Current for LED Backlight	IL	-	60	-	mA
LED Lifetime	-	-	50000	-	Hr

7.3 TIMING CHARACTERISTICS

7.3.1 DE MODE



**7.3.2 PARALLEL 24-BIT RGB INPUT TIMING TABLE**

Parallel 24-bit RGB Input Timing (PVDD=PVDD1=VDD=VDDI= 3.3V, AGND= 0V, TA=25°C)

Parallel 24-bit RGB Interface Timing Table							
Item	Symbol	Min.	Typ.	Max.	Unit	Remark	
DCLK Frequency	Fclk	23	25	27	MHz		
HSYNC	Period Time	Th	808	816	896	DCLK	
	Display Period	Thdisp	800			DCLK	
	Back Porch	Thbp	4	8	48	DCLK	
	Front Porch	Thfp	4	8	48	DCLK	
	Pulse Width	Thw	2	4	8	DCLK	
VSYNC	Period Time	Tv	488	496	504	HSYNC	
	Display Period	Tvdisp	480			HSYNC	
	Back Porch	Tvbp	4	8	12	HSYNC	
	Front Porch	Tvfp	4	8	12	HSYNC	
	Pulse Width	Tvw	2	4	8	HSYNC	

**8. RELIABILITY TEST**

<b>NO.</b>	<b>TEST ITEM</b>	<b>CONDITIONS</b>	
1	HIGH TEMPERATURE STORAGE	TA=85°C	240H
2	LOW TEMPERATURE STORAGE	TA=-30°C	240H
3	HIGH TEMPERATURE OPERATION	TA=85°C	240H
4	LOW TEMPERATURE OPERATION	TA=-30°C	240H
5	HIGH TEMPERATURE AND HIGH HUMIDITY OPERATION	+60°C, 90%RH	240H



## **9. LCD MODULES HANDLING PRECAUTIONS**

- The display panel is made of glass. Do not subject it to a mechanical shock by dropping it from a high place, etc.
- If the display panel is damaged and the liquid crystal substance inside it leaks out, do not get any in your mouth. If
- The substance come into contact with your skin or clothes promptly wash it off using soap and water.
- Do not apply excessive force to the display surface or the adjoining areas since this may cause the color tone to vary.
- The polarizer covering the display surface of the LCD module is soft and easily scratched. Handle this polarize carefully.
- To prevent destruction of the elements by static electricity, be careful to maintain an optimum work environment.
  - Be sure to ground the body when handling the LCD module.
  - Tools required for assembly, such as soldering irons, must be properly grounded.
  - To reduce the amount of static electricity generated, do not conduct assembly and other work under dry conditions.
  - The LCD module is coated with a film to protect the display surface. Exercise care when peeling off this protective film since static electricity may be generated.
- Storage precautions  
When storing the LCD modules, avoid exposure to direct sunlight or to the light of fluorescent lamps. Keep the modules in bags designed to prevent static electricity charging under low temperature / normal humidity conditions (avoid high temperature / high humidity and low temperatures below 0°C).Whenever possible, the LCD modules should be stored in the same conditions in which they were shipped from our company.

## **10. OTHERS**

- Liquid crystals solidify at low temperature (below the storage temperature range) leading to defective orientation of liquid crystal or the generation of air bubbles (black or white). Air bubbles may also be generated if the module is subjected to a strong shock at a low temperature.
- If the LCD modules have been operating for a long time showing the same display patterns may remain on the screen as ghost images and a slight contrast irregularity may also appear. Abnormal operating status can be resumed to be normal condition by suspending use for some time. It should be noted that this phenomena does not adversely affect performance reliability.
- To minimize the performance degradation of the LCD modules resulting from caused by static electricity, etc. exercise care to avoid holding the following sections when handling the modules:
  - Exposed area of the printed circuit board
  - Terminal electrode sections.