


JANProduct Specification

	Model: GWTXA4VNAB1E0	Rev. No.	Issued Date.	Page.
		A	FEB. 12, 10	1 / 27

Thin-Film-Transistor LCD Module
Model: GWTXA4VNAB1E0

Acceptance

Solomon Goldentek Display Corp.
NO. 18 Ta-Yeh St., Ta-Fa Industrial Park, Ta-Liao
Hsiang, Kaohsiung Hsien 831, TAIWAN , R.O.C.
FAX: 886-7-7886800

Approved and Checked by

Approved by	Checked by		Made by
<i>Eric Lai</i> FEB/12/10		<i>Eric Lai</i> FEB/12/10	<i>Kobe Su</i> FEB/12/10

JAN Product Specification



Model: GWTXA4VNAB1E0

Rev. No.

Issued Date.

Page.

A

FEB. 12, 10

2 / 27

www.DataSheet4U.com


Revise Records

Rev.	Date	Contents	Written	Approved
A	2010/02/12	Preliminary Specification	Kobe_Su	Eric Lai

Special Notes

Note1.	
Note2.	
Note3.	
Note4.	
Note5.	


JAN Product Specification

	Model: GWTXA4VNAB1E0	Rev. No.	Issued Date.	Page.
		A	FEB. 12, 10	3 / 27

Contents

1.	General Description and Features	4
1.1	Features	4
1.2	LCD Module	4
2.	Mechanical Information	4
3.	Electrical Specifications	5
3.1	Absolute Max. Ratings	5
3.2	Electrical Characteristics	6
3.3	Back-Light Unit.....	9
4.	Optical Characteristics	10
4.1	Optical characteristic of the LCD.....	10
5.	I/O Terminal	14
6.	Block Diagram.....	16
7.	INTERFACE TIMING	20
7.1	INPUT SIGNAL TIMING SPECIFICATIONS.....	20
7.2	Power ON/OFF Sequence	22
8.	TEST	23
9.	Appearance.....	24
9.1	Inspection	24
10.	Warranty	25
11.	Dimensional Outlines.....	26

JAN Product Specification

	Model: GWTXA4VNAB1E0	Rev. No.	Issued Date.	Page.
		A	FEB. 12, 10	4 / 27

www.DataSheet4U.com

1. General Description and Features

GWTXA4VNAB1E0 is a 10.4" TFT Liquid Crystal Display module with 2 CCFL backlight unit and 30 pin and 1ch LVDS interface. This product supports 1024 x 768 XGA format can display true 16.2M colors(6 bits colors with FRC). The inverter module for backlight is not built in. The following table described the features of GWTXA4VNAB1E0.

1.1 Features

- Excellent brightness (400 nits).
- Ultra high contrast ratio (1200:1).
- Fast response time (Ton+Toff average 40 ms).
- High color saturation NTSC 57% .
- XGA (1024 x 768 pixels) resolution.
- DE (Data Enable) only mode.
- LVDS (Low Voltage Differential Signaling) interface.
- Ultra wide viewing angle : 176(H)/176(V)(CR>10) Super MVA technology.
- 180 degree rotation display option.
- Color reproduction (Nature color).

1.2 LCD Module


Item	Specification	Unit
Screen Size	10.4 inches	Diagonal
Display Resolution	1024 (H) x 768 (V)	Pixel
Active Area	210.4 (H) x 157.8 (V)	mm
Outline Dimension	228.4 (H) x 175.4 (V) x 5.9 (T)	mm
Display Mode	Normally white mode/ Transmissive/ Wide view	--
Surface Treatment	Anti-glare , Hard-coating (3H)	--
Pixel Arrangement	Vertical Stripe	--
Pixel Pitch	0.0685 x 0.2055	mm
Display Color	16.2 M	color
Surface Treatment	Anti-Glare coating (Haze 25%) Hard coating (3H)	--

2. Mechanical Information

Item	Min.	Typ.	Max.	Unit	Note	
Module Size	Horizontal (H)	225	225.5	226	mm	(1)
	Vertical (V)	175.8	176.3	176.8	mm	
	Thickness (T)	9.67	10.17	10.67	mm	
Weight	-	480	-	g	--	

Note (1) Please refer to the attached drawings for more information of front and back outline dimensions.

JAN Product Specification

	Model: GWTXA4VNAB1E0	Rev. No.	Issued Date.	Page.
		A	FEB. 12, 10	5 / 27

3. Electrical Specifications

3.1 Absolute Max. Ratings

3.1.1 Absolute Ratings of Environment

If the operating condition exceeds the following absolute maximum ratings, the TFT LCD module may be damaged permanently.

(Ta=25±2°C, V_{SS}=GND=0)


Item	Symbol	Min.	Max.	Unit	Note
Storage temperature	T _{STG}	-20	80	°C	(1)
Operating temperature	T _{OPR}	-20	70	°C	(1,2,3)

Note (1) 95 % RH Max. (40 °C ≥ Ta). Maximum wet-bulb temperature at 39 °C or less. (Ta > 40 °C) No condensation.

Note (2) In case of below 0°, the response time of liquid crystal (LC) becomes slower and the color of panel becomes darker than normal one. Level of retardation depends on temperature, because of LC's character

Note (3) Only operation is guaranteed at operating temperature. Contrast, response time, another display quality are evaluated at +25°C.

JAN Product Specification

	Model: GWTXA4VNAB1E0	Rev. No.	Issued Date.	Page.
		A	FEB. 12, 10	6 / 27

3.1.2 Electrical Absolute Maximum Ratings

($V_{SS}=GND=0$)

Parameter	Symbol	Min.	Max.	Unit	Remark
Power Supply Voltage	V_{CC}	-0.3	4.0	V	--
Input Signal Voltage	V_{in}	-0.3	3.6	V	--

3.2 Electrical Characteristics

3.2.1 DC Electrical Characteristics of the TFT LCD

Item	Symbol	Min.	Typ.	Max.	Unit	Note
Power Supply Voltage	V_{CC}	3.0	3.3	3.6	V	(1)
Power Supply Ripple Voltage	V_{RP}	-	-	100	mV	
Rush Current	I_{RUSH}	-	-	1.8	A	(2)
Power Supply Current	White	-	1.1	1.4	A	(3)
	Black	-	0.8	-	A	
	Vertical Stripe	-	1.0	-	A	
LVDS Interface	Differential Input High Threshold Voltage	V_{LVTH}	-	-	+100	mV
	Differential Input Low Threshold Voltage	V_{LVTL}	-100	-	-	mV
	Common Input Voltage	V_{LVC}	1.125	1.25	1.375	V
	Terminating Resistor	R_T	-	100	-	ohm
CMOS interface	Input High Threshold Voltage	V_{IH}	2.7	-	3.3	V
	Input Low Threshold Voltage	V_{IL}	0	-	0.7	V

Note (1) The assembly should be always operated within above ranges.

Note (2) Measurement Conditions:

JAN Product Specification



Model: GWTXA4VNAB1E0

Rev. No.

Issued Date.

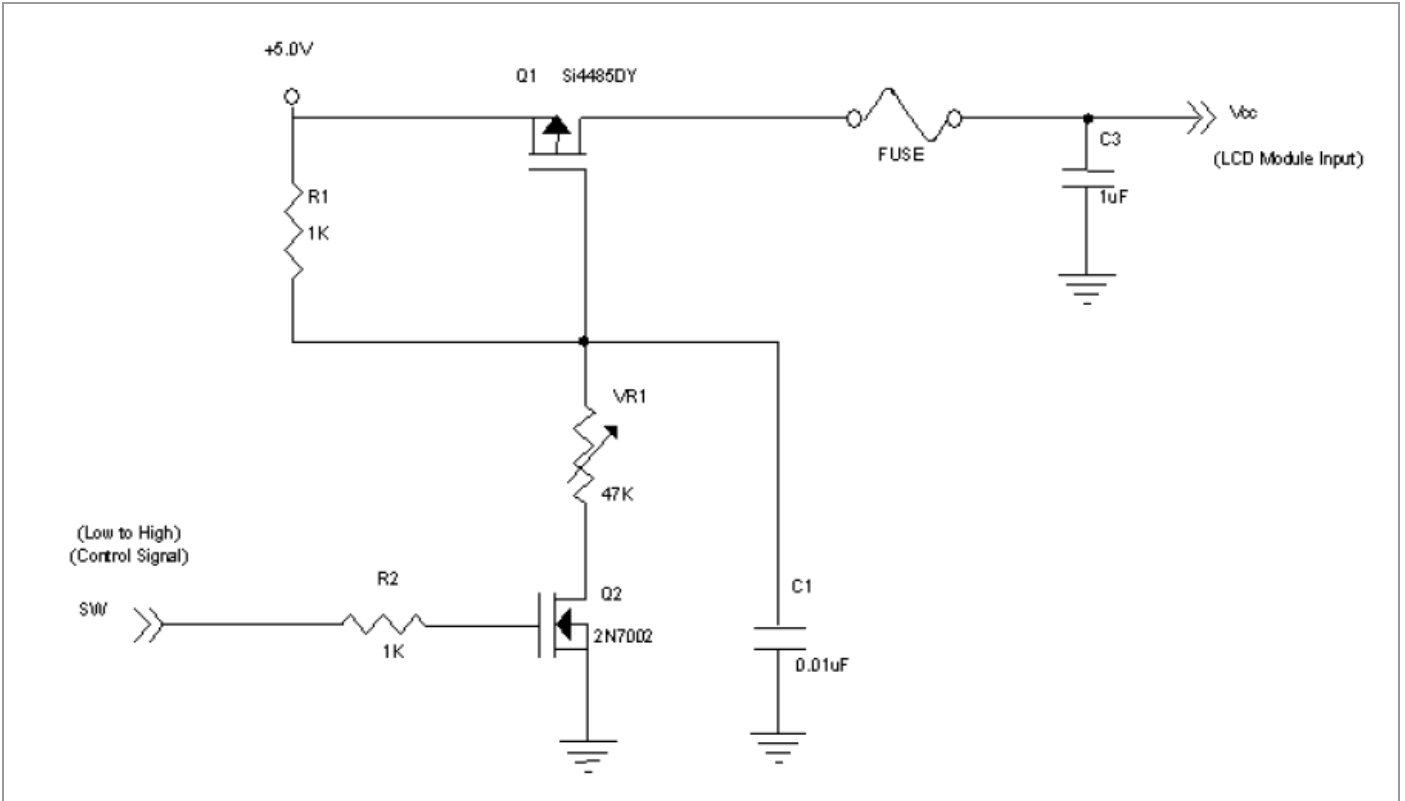
Page.

A

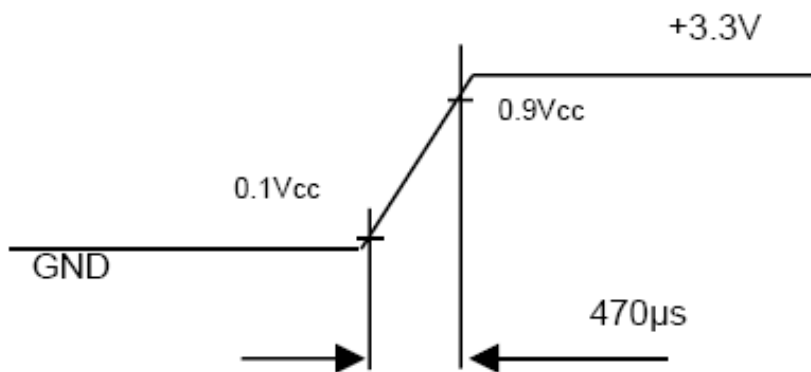
FEB. 12, 10

7 / 27

www.DataSheet4U.com




Vcc rising time is 470us



SOLOMON GOLDENTEK DISPLAY CORP. SGD®

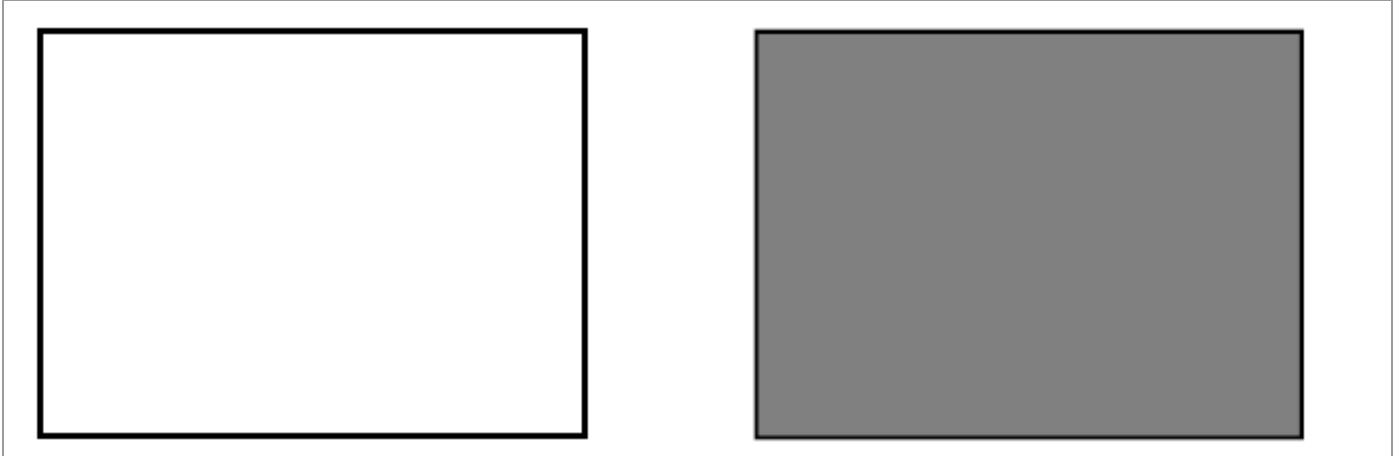
JAN Product Specification

	Model: GWTXA4VNAB1E0	Rev. No.	Issued Date.	Page.
		A	FEB. 12, 10	8 / 27

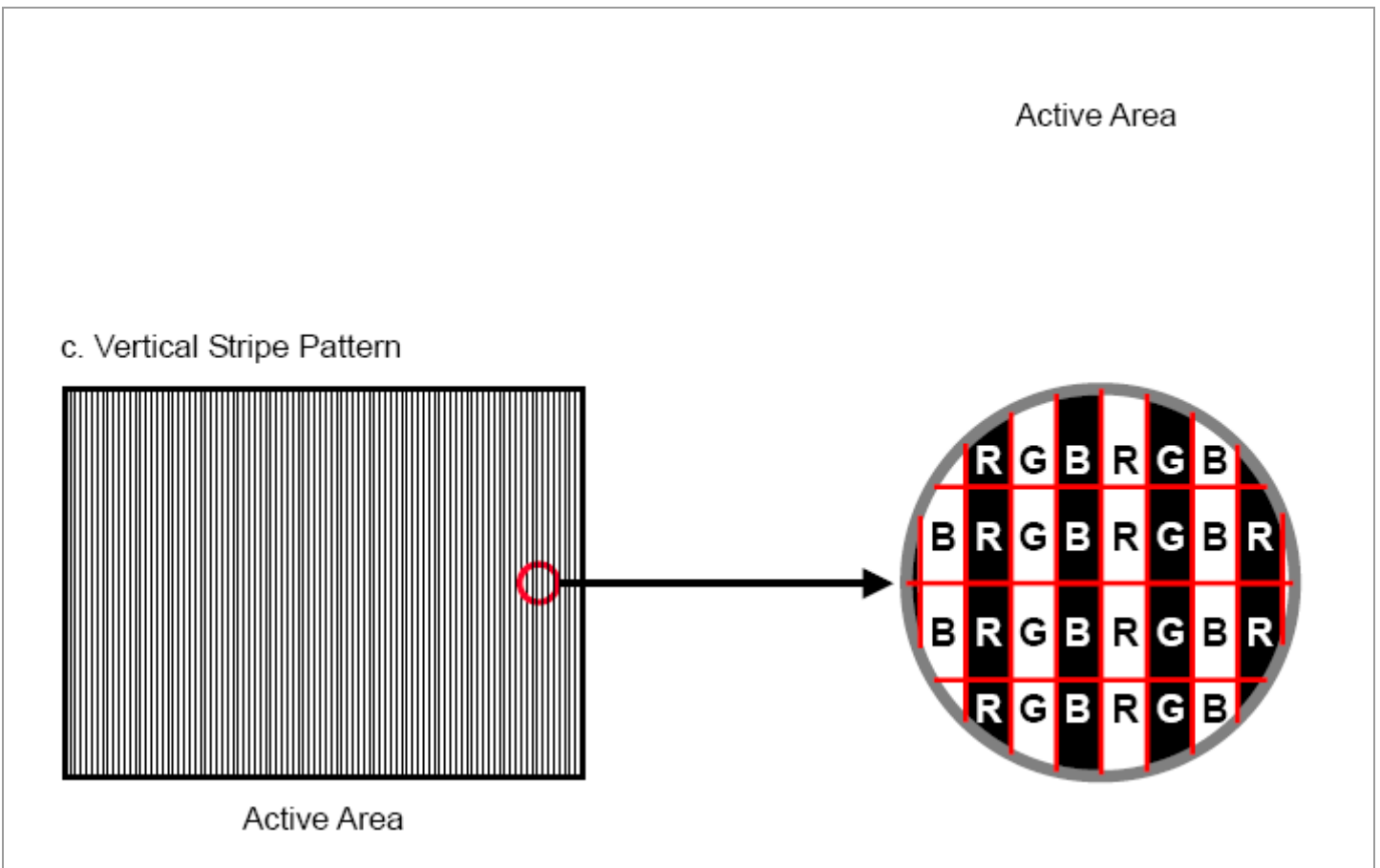
Note (3) The specified power supply current is under the condition as $V_{CC} = 3.3\text{ V}$, $T_a = 25 \pm 2^\circ\text{C}$, $f_v = 60\text{ Hz}$, whereas a power dissipation check pattern below is displayed.

a. White Pattern


b. Black Pattern



c. Vertical Stripe Pattern



JAN Product Specification

	Model: GWTXA4VNAB1E0	Rev. No.	Issued Date.	Page.
		A	FEB. 12, 10	9 / 27

3.3 Back-Light Unit

CCFL (Cold Cathode Fluorescent Lamp) CHARACTERISTICS (Ta= 25±2°)

Characteristics	Symbol	Min.	Typ.	Max.	Unit	Note
Lamp Voltage						
Lamp Current						
Lamp Starting Voltage	I_L	-	120	-	mA	(1)
Operating Frequency	VL	-	19.2	-	V	
Lamp Life Time	W_{BL}	-	2.3	-	W	

Note (1) Lamp current is measured by utilizing AC current probe and its value is average by measuring master and slave board.

Note (2) The lamp starting voltage VS should be applied to the lamp for more than 1 second after startup. Otherwise the lamp may not be turned on.

Note (3) The lamp frequency may produce interference with horizontal synchronous frequency of the display input signals, and it may result in line flow on the display. In order to avoid interference, the lamp frequency should be detached from the horizontal synchronous frequency and its harmonics as far as possible.

Note (4) The life time of a lamp is defined as when the brightness is larger than 50% of its original value and the effective discharge length is longer than 80% of its original length (Effective discharge length is defined as an area that has equal to or more than 70% brightness compared to the brightness at the center point of lamp.) as the time in which it continues to operate under the condition at Ta = 25 ±2°C at IL =7.0mA.

JAN Product Specification



Model: GWTXA4VNAB1E0

Rev. No.

Issued Date.

Page.

A

FEB. 12, 10

10 / 27

4. Optical Characteristics

4.1 Optical characteristic of the LCD

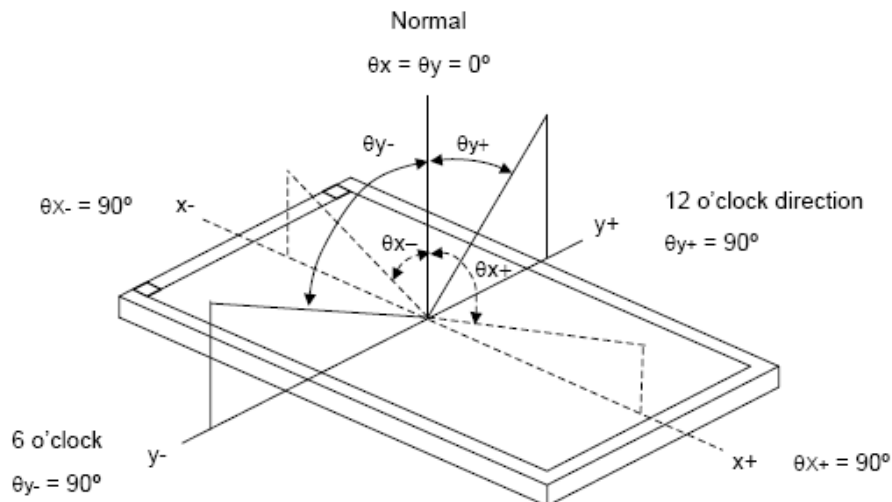
The following items are measured under stable conditions. The optical characteristics should be measured in a dark room or equivalent state.

Measuring equipment: BM-5A, BM-7A

Item		Symbol	Condition	Min.	Typ.	Max.	Unit	Note	
Contrast Ratio		CR	$\theta_x=0^\circ, \theta_y=0^\circ$ Viewing angle at normal direction	900	1200		-	(2)	
Response Time		T_R		-	30	35	ms	(3)	
		T_F		-	10	15	ms		
Center Luminance of White		L_C			350	400	-	cd/m ²	(4)
White Variation		δW			-	-	1.4	-	(7)
Cross Talk		CT			-	-	4	%	(5)
Color Chromaticity	Red	R_x		$\theta_x=0^\circ, \theta_y=0^\circ$ Viewing angle at normal direction	Typ. -0.03	0.629	Typ. +0.03	-	(6)
		R_y				0.348		-	
	Green	G_x				0.306		-	
		G_y				0.560		-	
	Blue	B_x	0.150			-			
		B_y	0.102			-			
	White	W_x	0.329			-			
		W_y	0.346			-			
Color Gamut		CG		55	57	-	%	NTSC	
Viewing Angle	Horizontal	θ_{x+}	CR \geq 10		80	88	-	Deg.	(1)
		θ_{x-}			80	88	-		
	Vertical	θ_{y+}			80	88	-		
		θ_{y-}			80	88	-		

Note (1) Definition of Viewing Angle (θ_x, θ_y):

Viewing angles are measured by BM5A



JAN Product Specification



Model: GWTXA4VNAB1E0

Rev. No.

Issued Date.

Page.

A

FEB. 12, 10

11 / 27

Note (2) Definition of Contrast Ratio (CR):

The contrast ratio can be calculated by the following expression.

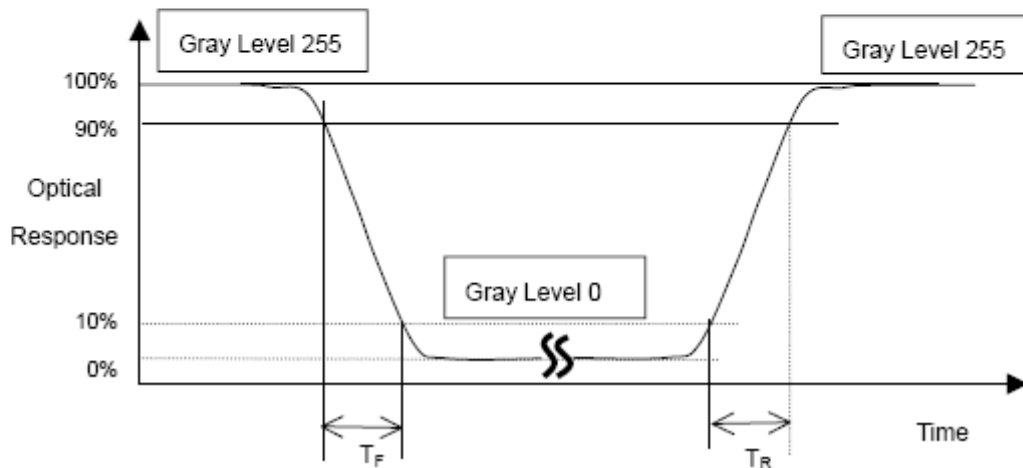
$$\text{Contrast Ratio (CR)} = L_{255} / L_0$$

L₂₅₅: Luminance of gray level 255

L₀: Luminance of gray level 0

CR = CR (5), where CR (X) is corresponding to the Contrast Ratio of the point X at the figure in Note (7).

Note (3) Definition of Response Time (T_R, T_F):



Note (4) Definition of Luminance of White (L_C):

Measure the luminance of gray level 255 at center point and 5 points

L_C = L (5), where L (X) is corresponding to the luminance of the point X at the figure in Note (7).

Note (5) Definition of Cross Talk (CT):

$$CT = |Y_B - Y_A| / Y_A \times 100 (\%)$$

Where:

Y_A = Luminance of measured location without gray level 0 pattern (cd/m²)

Y_B = Luminance of measured location with gray level 0 pattern (cd/m²)

JAN Product Specification



Model: GWTXA4VNAB1E0

Rev. No.

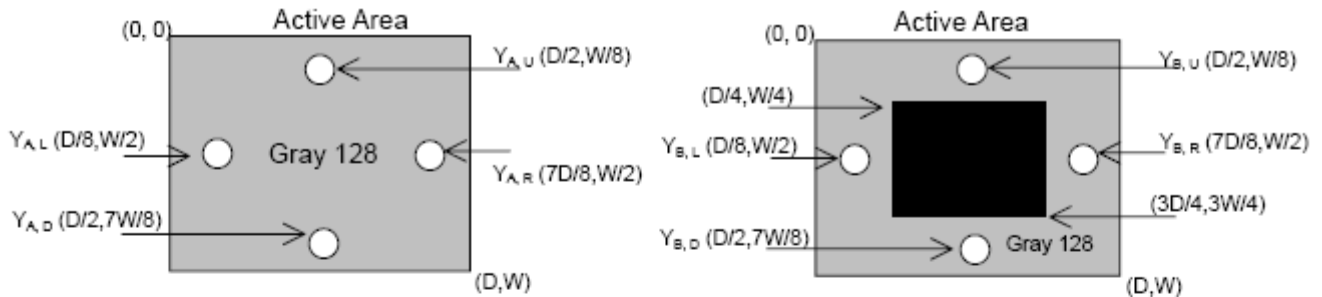
Issued Date.

Page.

A

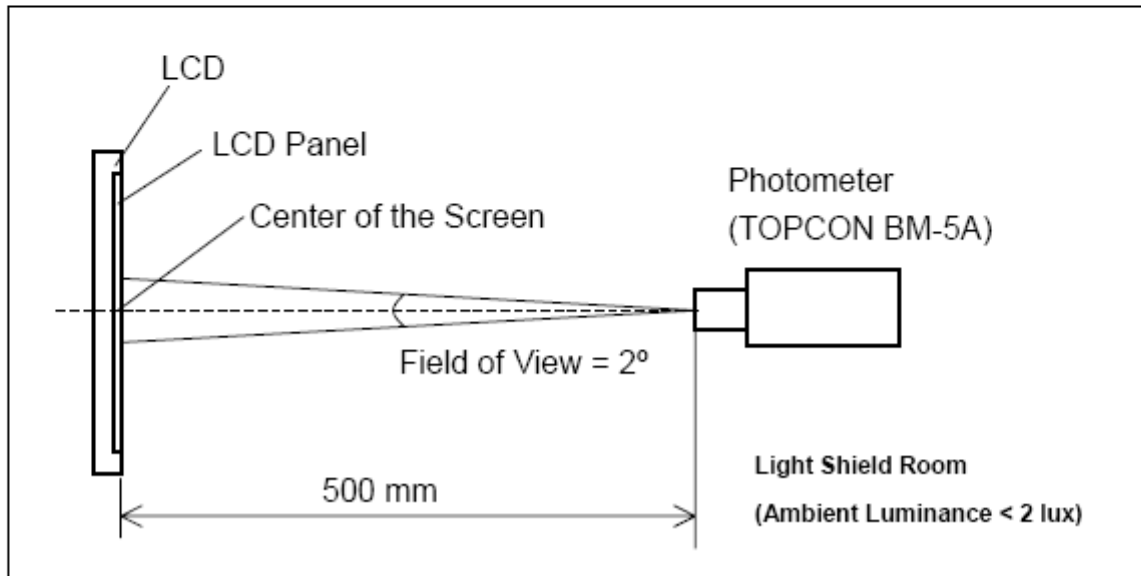
FEB. 12, 10

12 / 27




Note (6) Measurement Setup:

The LCD assembly should be stabilized at given temperature for 30 minutes to avoid abrupt temperature change during measuring. In order to stabilize the luminance, the measurement should be executed after lighting Backlight for 30 minutes in a windless room.



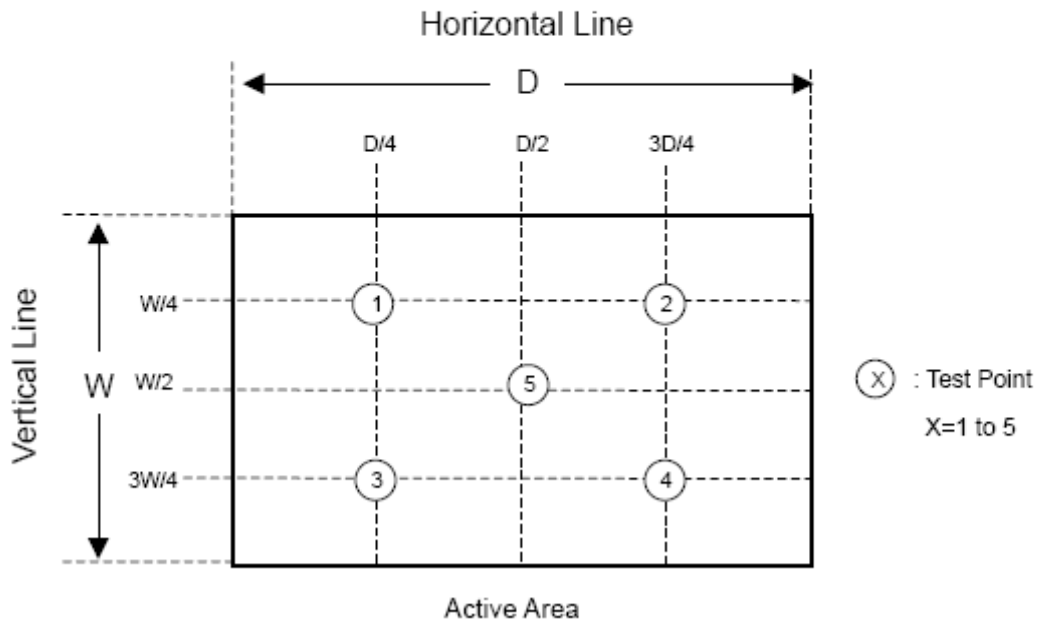
JAN Product Specification

	Model: GWTXA4VNAB1E0	Rev. No.	Issued Date.	Page.
		A	FEB. 12, 10	13 / 27


Note (7) Definition of White Variation (δW):

Measure the luminance of gray level 255 at 5 points

$$\delta W = \text{Maximum [L (1), L (2), L (3), L (4), L (5)]} / \text{Minimum [L (1), L (2), L (3), L (4), L (5)]}$$



JAN Product Specification

	Model: GWTXA4VNAB1E0	Rev. No.	Issued Date.	Page.
		A	FEB. 12, 10	14 / 27

5. I/O Terminal


5.1 CN1 Connector Pin Assignment

Pin No.	Symbol	Function	Remark
1	NC	No Connection	
2	GND	Ground	
3	RX3+	Positive transmission data of pixel 3	
4	RX3-	Negative transmission data of pixel 3	
5	GND	Ground	
6	RXCLK+	Positive of clock	
7	RXCLK-	Negative of clock	
8	GND	Ground	
9	RX2+	Positive transmission data of pixel 2	
10	RX2-	Negative transmission data of pixel 2	
11	GND	Ground	
12	RX1+	Positive transmission data of pixel 1	
13	RX1-	Negative transmission data of pixel 1	
14	GND	Ground	
15	RX0+	Positive transmission data of pixel 0	
16	RX0-	Negative transmission data of pixel 0	
17	GND	Ground	
18	STV	Vertical Start Pulse Output	
19	GND	Ground	
20	NC	No Connection	
21	NC	No Connection	
22	NC	No Connection	
23	NC	No Connection	
24	RPF	Reverse Panel Function (Display Rotation)	
25	GND	Ground	
26	GND	Ground	
27	GND	Ground	
28	VCC	Power supply: +3.3V	
29	VCC	Power supply: +3.3V	
30	VCC	Power supply: +3.3V	

Note (1) Connector Part NO: JAE, FI-XB30SRL-HF11 or compatible

Note (2) Reserved for internal use. Please leave it floating.

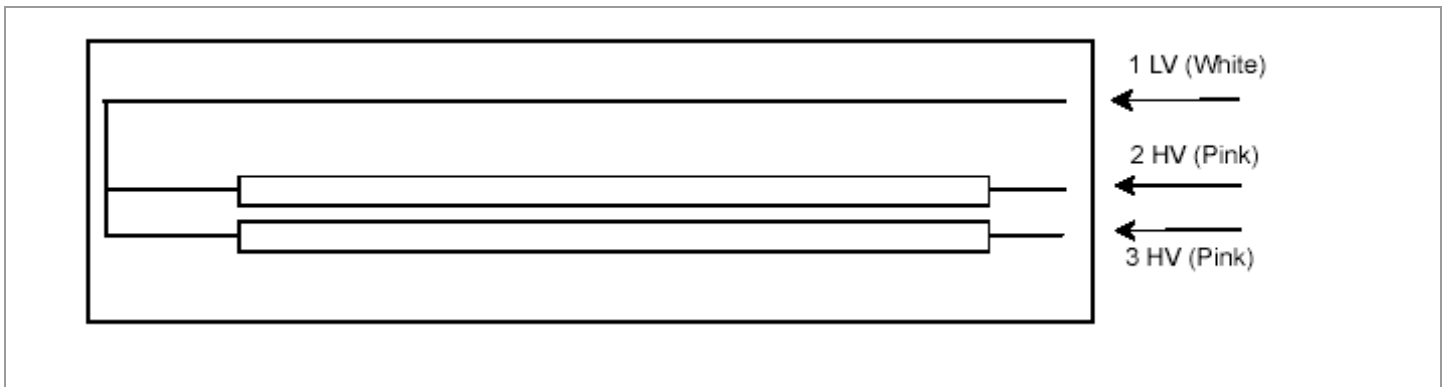
JAN Product Specification

	Model: GWTXA4VNAB1E0	Rev. No.	Issued Date.	Page.
		A	FEB. 12, 10	15 / 27

5.2 LED connector

Pin No.	Symbol	Description	Remark
1	LV	Ground	White
2	HV1	High Voltage	Pink
3	HV2	High Voltage	Pink

Note (1) Connector Part No: BHR-03 VS-1 (JST Mfg. Co.,Ltd)



JAN Product Specification



Model: GWTXA4VNAB1E0

Rev. No.

Issued Date.

Page.

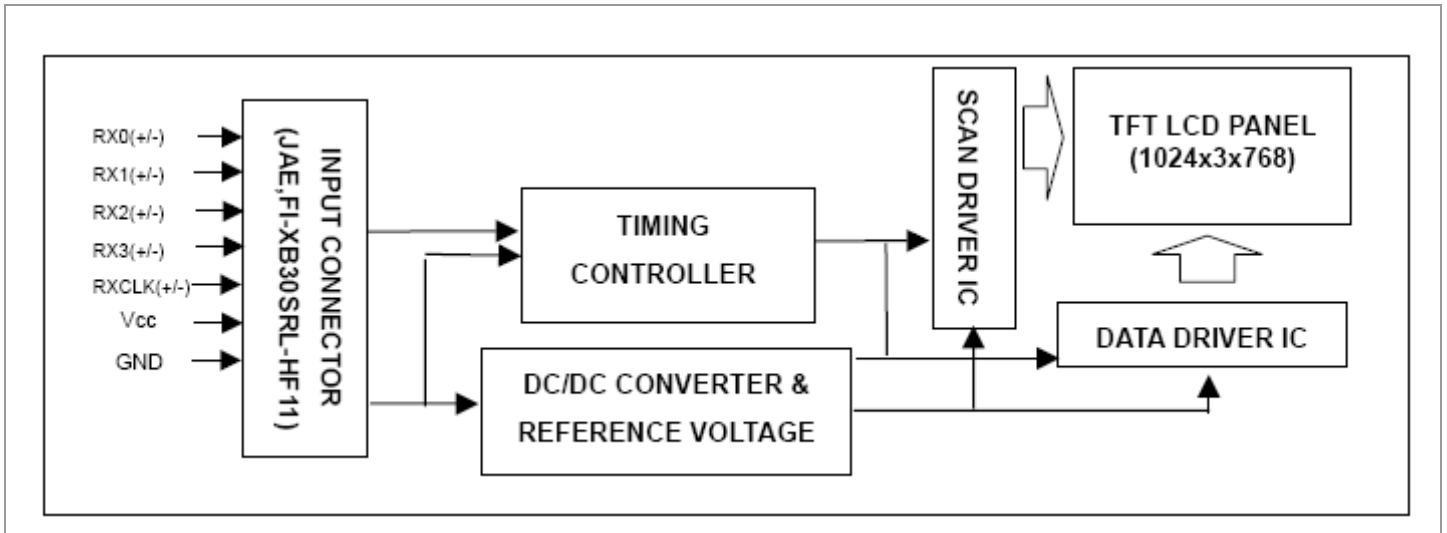
A

FEB. 12, 10

16 / 27

6. Block Diagram

6.1 TFT LCD Module



JAN Product Specification



Model: GWTXA4VNAB1E0

Rev. No.

Issued Date.

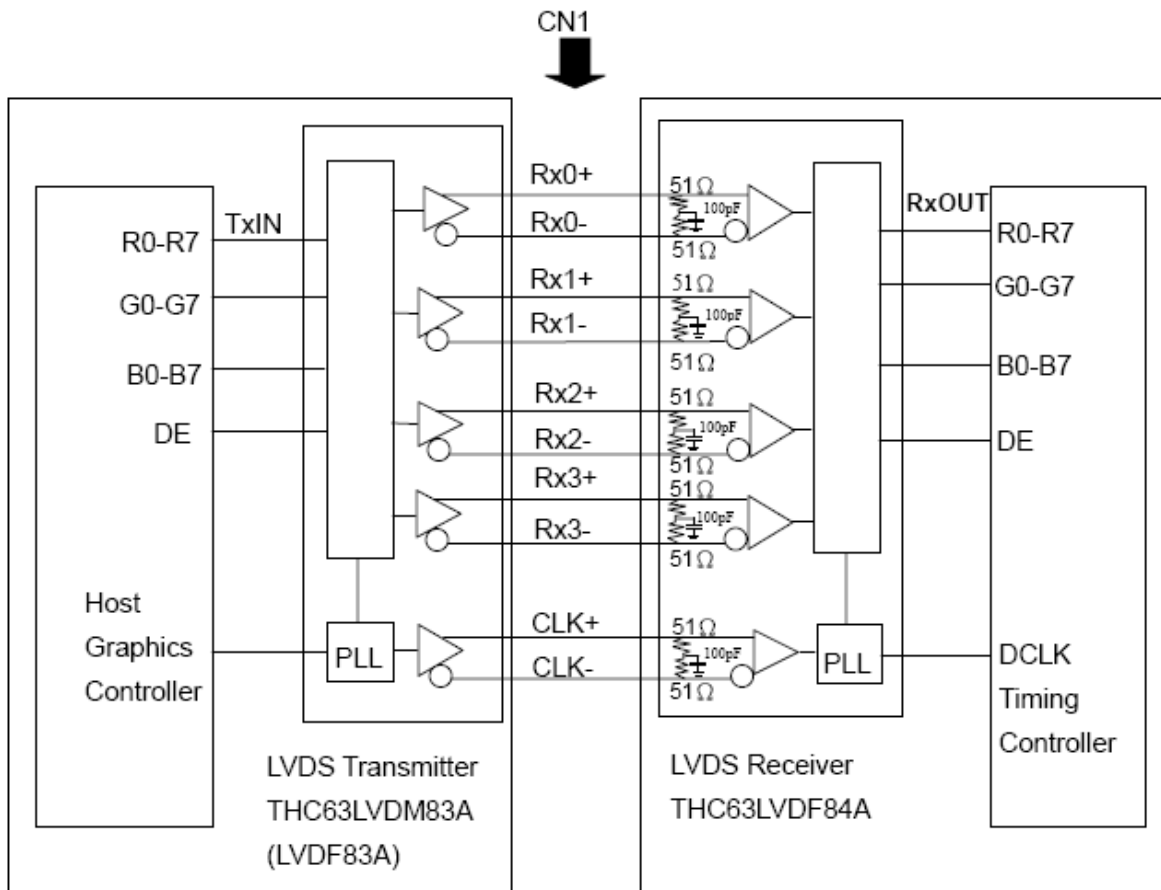
Page.

A

FEB. 12, 10

17 / 27

6.2 Block Diagram of interace



- R0~R7 : Pixel R Data ,
- G0~G7 : Pixel G Data ,
- B0~B7 : Pixel B Data ,
- DE : Data enable signal

Note (1) The system must have the transmitter to drive the assembly.

Note (2) LVDS cable impedance shall be 50 ohms per signal line or about 100 ohms per twist-pair line when it is used differentially.

JAN Product Specification



Model: GWTXA4VNAB1E0

Rev. No.

Issued Date.

Page.

A

FEB. 12, 10

18 / 27

6.3 LVDS INTERFACE

	SIGNAL	TRANSMITTER THC63LVDM83A		INTERFACE CONNECTOR		RECEIVER THC63LVDF84A		TFT CONTROL INPUT
		PIN	INPUT	Host	TFT-LCD	PIN	OUTPUT	
24 bit	R0	51	TxIN0			27	Rx OUT0	R0
	R1	52	TxIN1			29	Rx OUT1	R1
	R2	54	TxIN2	TA OUT0+	Rx 0+	30	Rx OUT2	R2
	R3	55	TxIN3			32	Rx OUT3	R3
	R4	56	TxIN4			33	Rx OUT4	R4
	R5	3	TxIN6	TA OUT0-	Rx 0-	35	Rx OUT6	R5
	G0	4	TxIN7			37	Rx OUT7	G0
	G1	6	TxIN8			38	Rx OUT8	G1
	G2	7	TxIN9			39	Rx OUT9	G2
	G3	11	TxIN12	TA OUT1+	Rx 1+	43	Rx OUT12	G3
	G4	12	TxIN13			45	Rx OUT13	G4
	G5	14	TxIN14			46	Rx OUT14	G5
	B0	15	TxIN15	TA OUT1-	Rx 1-	47	Rx OUT15	B0
	B1	19	TxIN18			51	Rx OUT18	B1
	B2	20	TxIN19			53	Rx OUT19	B2
	B3	22	TxIN20			54	Rx OUT20	B3
	B4	23	TxIN21	TA OUT2+	Rx 2+	55	Rx OUT21	B4
	B5	24	TxIN22			1	Rx OUT22	B5
	DE	30	TxIN26			6	Rx OUT26	DE
	R6	50	TxIN27	TA OUT2-	Rx 2-	7	Rx OUT27	R6
	R7	2	TxIN5			34	Rx OUT5	R7
	G6	8	TxIN10			41	Rx OUT10	G6
	G7	10	TxIN11			42	Rx OUT11	G7
	B6	16	TxIN16	TA OUT3+	Rx 3+	49	Rx OUT16	B6
	B7	18	TxIN17			50	Rx OUT17	B7
	RSVD 1	25	TxIN23			2	Rx OUT23	NC
	RSVD 2	27	TxIN24	TA OUT3-	Rx 3-	3	Rx OUT24	NC
	RSVD 3	28	TxIN25			5	Rx OUT25	NC
	DCLK	31	TxCLK IN	TxCLK OUT+ TxCLK OUT-	RxCLK IN+ RxCLK IN-	26	RxCLK OUT	DCLK

R0~R7: Pixel R Data (7; MSB, 0; LSB)


G0~G7: Pixel G Data (7; MSB, 0; LSB)

B0~B7: Pixel B Data (7; MSB, 0; LSB)

DE: Data enable signal

Notes (1) RSVD(reserved)pins on the transmitter shall be "H" or "L".

JAN Product Specification

	Model: GWTXA4VNAB1E0	Rev. No.	Issued Date.	Page.
		A	FEB. 12, 10	19 / 27

6.4 Basic Display Color and Gray Scale

	Color & Gray Scale	Data Signal																							
		R7	R6	R5	R4	R3	R2	R1	R0	G7	G6	G5	G4	G3	G2	G1	G0	B7	B6	B5	B4	B3	B2	B1	B0
Basic Color	Black	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	Red(0)	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	Green(0)	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	
	Blue(0)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	
	Cyan	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
	Magenta	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	
	Yellow	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	
	White	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
Red	Black	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
	Red(1)	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
	Red(2)	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:		
	Red(31)	0	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:		
	Red(62)	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
	Red(63)	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
Green	Black	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
	Green(1)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0		
	Green(2)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0		
	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:		
	Green(31)	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	0	0	0	0	0	0		
	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:		
	Green(62)	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	0	0	0	0	0	0	0		
	Green(63)	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	0	0	0	0	0	0		
Blue	Black	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
	Blue(1)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1		
	Blue(2)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1		
	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:		
	Blue(31)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1		
	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:		
	Blue(62)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1	0		
	Blue(63)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1		

Each basic color can be displayed in 64 gray scales from 6 bit data signals. With the combination of total 18 bit data signals, the 262,144-color display can be achieved on the screen.

JAN Product Specification



Model: GWTXA4VNAB1E0

Rev. No.

Issued Date.

Page.

A

FEB. 12, 10

20 / 27

7. INTERFACE TIMING

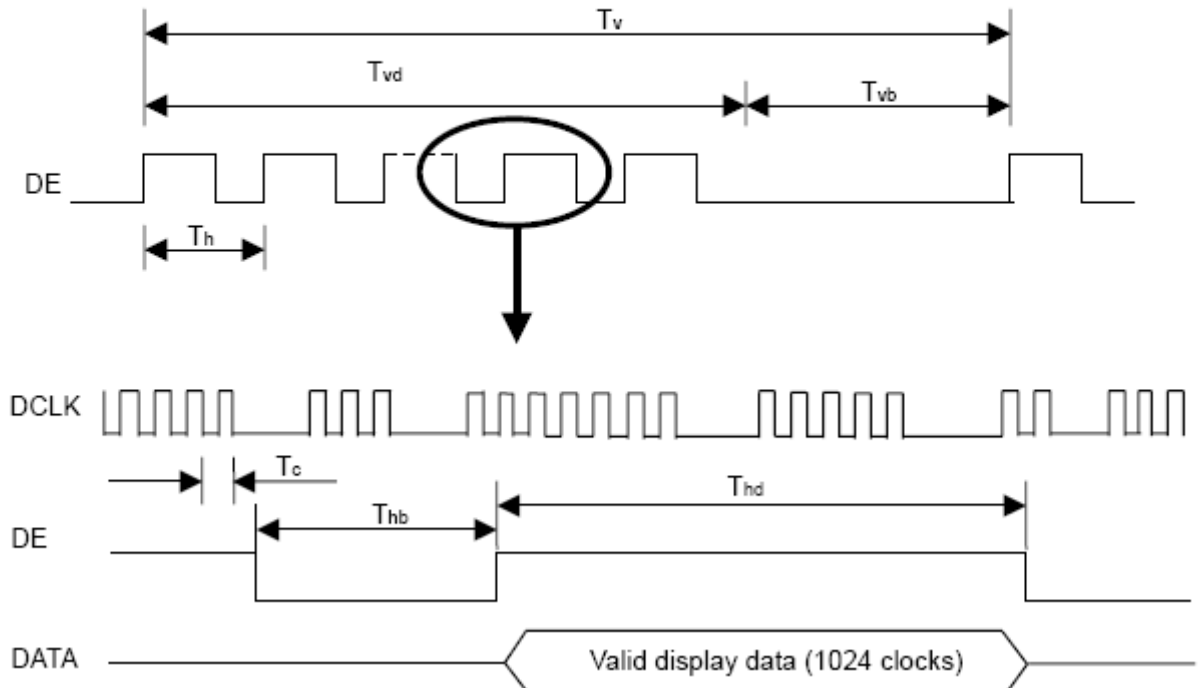
7.1 INPUT SIGNAL TIMING SPECIFICATIONS

The input signal timing specifications are shown as the following table and timing diagram.

Signal	Item	Symbol	Min.	Typ.	Max.	Unit	Note
LVDS Receiver Clock	Frequency	1/Tc	55	65	75	MHZ	
	Input cycle to cycle jitter	Trcl	-	-	200	ps	
LVDS Receiver Data	Setup Time	Tlvsu	600	-	-	ps	
	Hold Time	Tlvhd	600	-	-	ps	
Vertical Active Display Term	Frame Rate	Fv	50	60	70	Hz	
	Total	Tv	770	806	950	Th	Tv=Tvd+Tvb
	Display	Tvd	768	768	768	Th	-
	Blank	Tvb	2	38	182	Th	-
Horizontal Active Display Term	Total	Th	1100	1344	1800	Tc	Th=Thd+Thb
	Display	Thd	1024	1024	1024	Tc	-
	Blank	Thb	76	320	776	Tc	-

Note (1) Since this assembly is operated in DE only mode, Hsync and Vsync input signals should be set to low logic level. Otherwise, this assembly would operate abnormally.

INPUT SIGNAL TIMING DIAGRAM



JAN Product Specification



Model: GWTXA4VNAB1E0

Rev. No.

Issued Date.

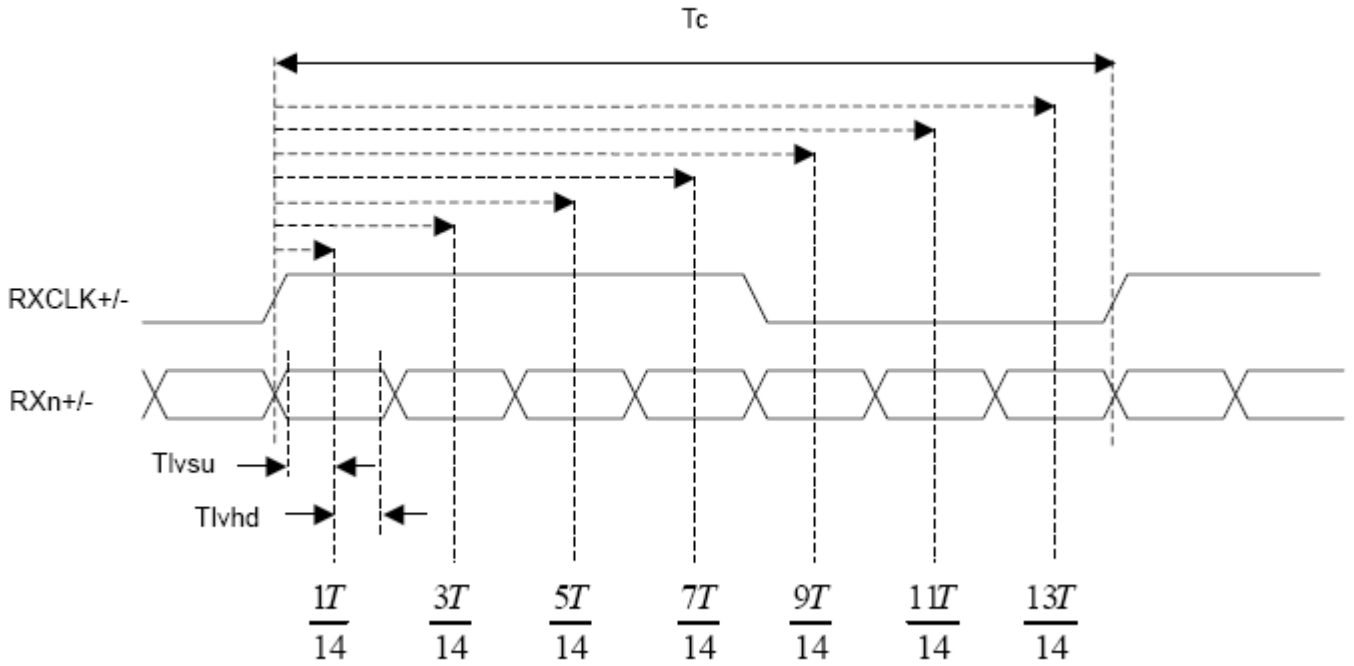
Page.

A

FEB. 12, 10

21 / 27

LVDS RECEIVER INTERFACE TIMING DIAGRAM



JAN Product Specification



Model: GWTXA4VNAB1E0

Rev. No.

Issued Date.

Page.

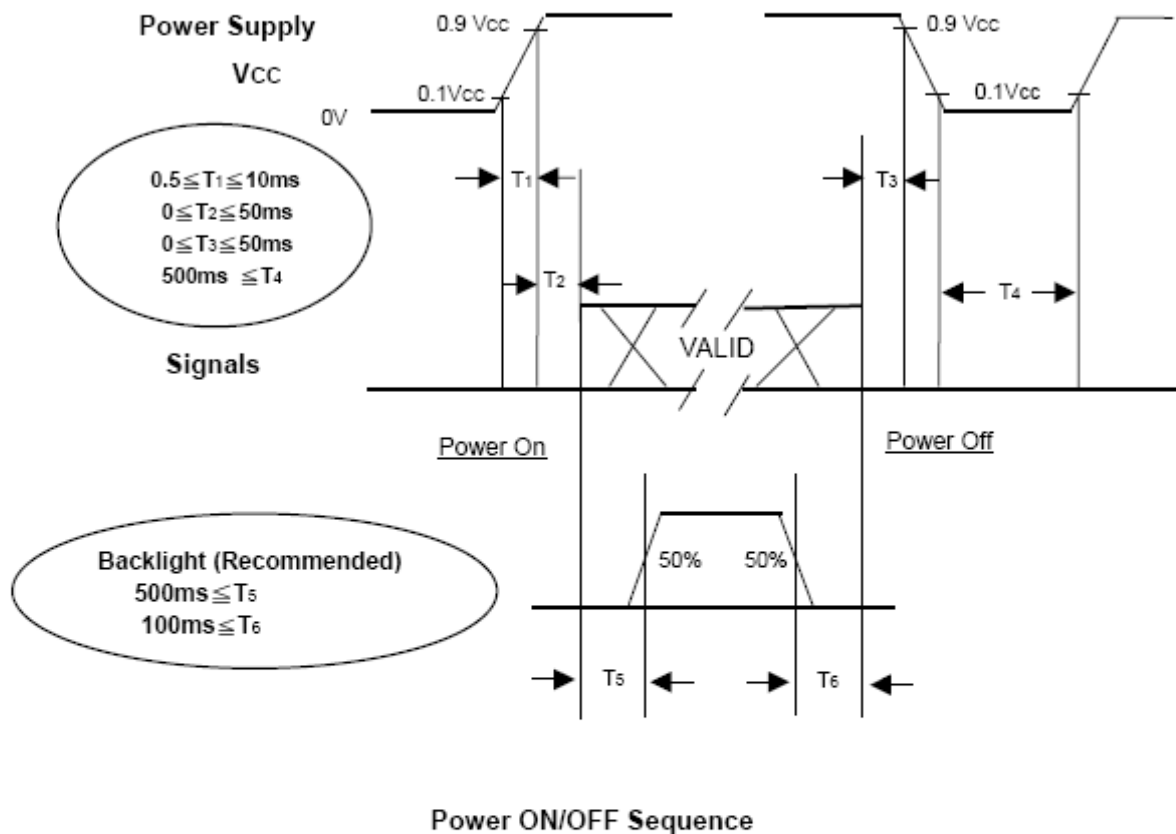
A

FEB. 12, 10

22 / 27

7.2 Power ON/OFF Sequence

To prevent a latch-up or DC operation of LCD assembly, the power on/off sequence should be as the diagram below.



Note (1) The supply voltage of the external system for the assembly input should follow the definition of Vcc.


Note (2) Apply the lamp voltage within the LCD operation range. When the backlight turns on before the LCD operation or the LCD turns off before the backlight turns off, the display may momentarily become abnormal screen.

Note (3) In case of Vcc is in off level, please keep the level of input signals on the low or keep a high impedance.

Note (4) T4 should be measured after the assembly has been fully discharged between power off and on period.

Note (5) Interface signal shall not be kept at high impedance when the power is on.

JAN Product Specification

	Model: GWTXA4VNAB1E0	Rev. No.	Issued Date.	Page.
		A	FEB. 12, 10	23 / 27

8. TEST

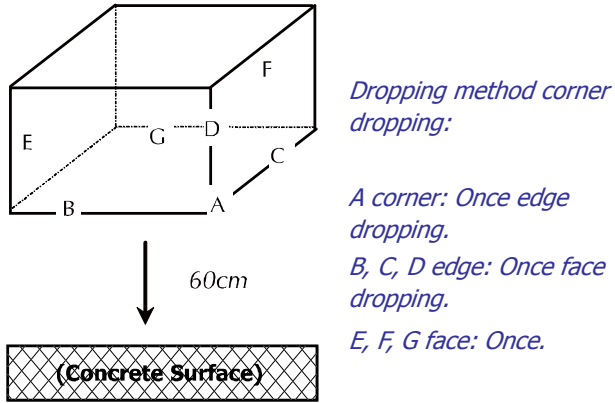
No change on display and in operation under the following test condition.

Condition: Unless otherwise specified, tests will be conducted under the following condition.

Temperature: 20±5°C.


Humidity: 65±5%RH.

Tests will be not conducted under functioning state.

No.	Parameter	Condition	Notes
1	High Temperature Operating	70°C±2°C, 240hrs (Operation state).	
2	Low Temperature Operating	-20°C±2°C, 240hrs (Operation state).	1
3	High Temperature Storage	80°C±2°C, 240hrs.	2
4	Low Temperature Storage	-20°C±2°C, 120hrs.	1,2
5	Damp Proof Test	60°C±2°C, 90~95%, 240hrs.	1,2
6	Vibration Test	Total fixed amplitude: 1.5mm. Vibration Frequency: 10~55Hz. One cycle 60 seconds to 3 direction of X, Y, Z each 15 minutes.	3
7	Shock Test	To be measured after dropping from 60cm high on the concrete surface in packing state.  <p style="margin-left: 20px;"><i>Dropping method corner dropping:</i></p> <p style="margin-left: 20px;"><i>A corner: Once edge dropping.</i></p> <p style="margin-left: 20px;"><i>B, C, D edge: Once face dropping.</i></p> <p style="margin-left: 20px;"><i>E, F, G face: Once.</i></p>	

- Notes:
1. No dew condensation to be observed.
 2. The function test shall be conducted after 4 hours storage at the normal temperature and humidity after removed from the test chamber.
 3. Vibration test will be conducted to the product itself without putting I in a container.

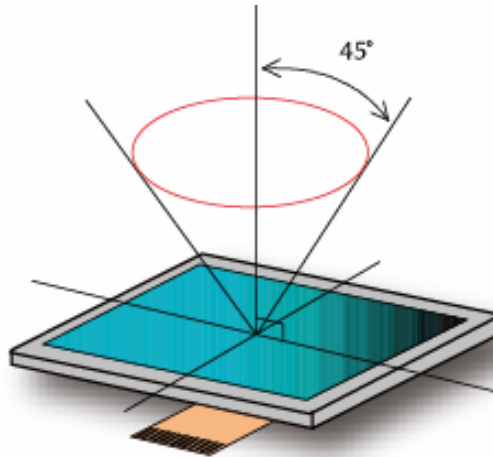
JAN Product Specification

	Model: GWTXA4VNAB1E0	Rev. No.	Issued Date.	Page.
		A	FEB. 12, 10	24 / 27

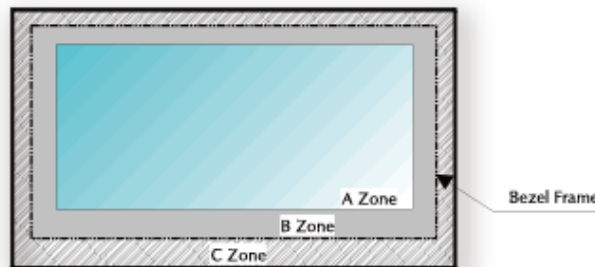
9. Appearance

9.1 Inspection

The distance between the eyes and the sample shall be more than 30cm. All directions for inspecting the sample should be within 45° against perpendicular line.



Definition of Applicable Zones



A Zone : Active display area, B Zone : Area from outside of "A Zone" to validity viewing area

C Zone : Rest parts, A Zone + B Zone = Validity viewing area

(a) Operating Inspection

The function and appearance shall be inspected in the condition of

- under 750 lx or over light Reflective Type.
- Using over Backlight unit Transflective Type, Transmissive Type

Condition of judgment

In case of no gradation display it judges by applied On/Off voltage or optimal contrast.

In case of gradation display it judges by contrast that the bad point is able to confirm best.

(b) Appearance Inspection


The appearance shall be inspected in the condition of

- under 500 lx or over light Reflective Type.
- Using over Backlight unit Transflective Type, Transmissive Type

(c) Inspection Environment

Inspection environment it carried out with 250 lx or less in principles.

JAN Product Specification

	Model: GWTXA4VNAB1E0	Rev. No.	Issued Date.	Page.
		A	FEB. 12, 10	25 / 27

10. Warranty

This product has been manufactured to your company's specifications as a part for use in your company's general electronic products. It is guaranteed to perform according to delivery specifications. For any other use apart from general electronic equipment, we cannot take responsibility if the product is used in medical devices, nuclear power control equipment, aerospace equipment, fire and security systems, or any other applications in which there is a direct risk to human life and where extremely high levels of reliability are required. If the product is to be used in any of the above applications, we will need to enter into a separate product liability agreement.

- 1 We cannot accept responsibility for any defect, which may arise from additional manufacturing of the product (including disassembly and reassembly), after product delivery.
- 2 We cannot accept responsibility for any defect, which may arise after the application of strong external force to the product.
- 3 We cannot accept responsibility for any defect, which may arise due to the application of static electricity after the product has passed your company's acceptance inspection procedures.
- 4 We cannot accept responsibility for industrial property, which may arise through the use of your product, with exception to those issues relating directly to the structure or method of manufacturing of our product. SGD-origin longer than one year from SGD production.

JAN Product Specification



Model: GWTXA4VNAB1E0

Rev. No.

Issued Date.

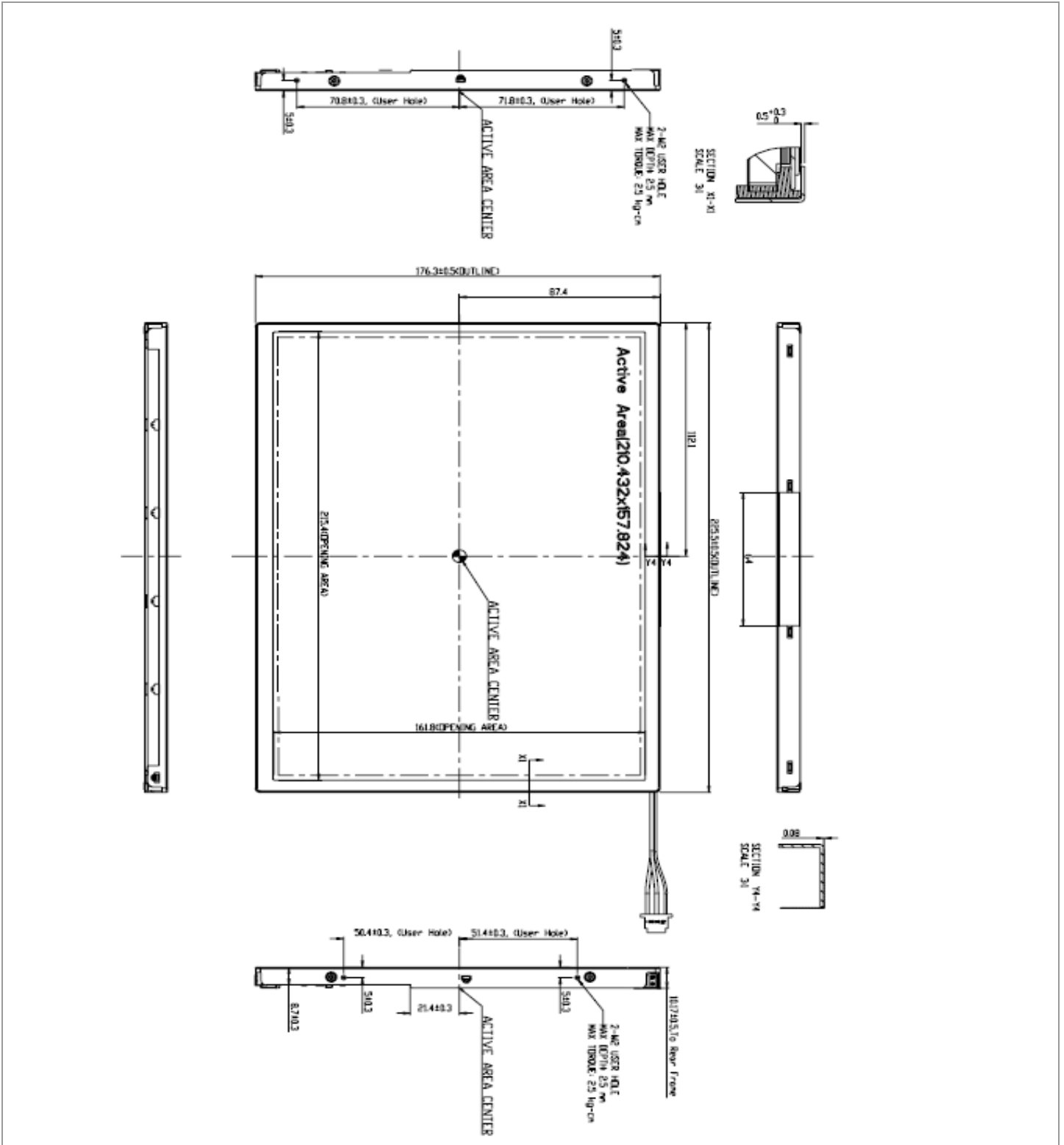
Page.

A

FEB. 12, 10

26 / 27

11. Dimensional Outlines



JAN Product Specification



Model: GWTXA4VNAB1E0

Rev. No.

Issued Date.

Page.

A

FEB. 12, 10

27 / 27

www.DataSheet4U.com

