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TO : Acer

DATE : Oct. 13, 2009.

SAMSUNG TFT-LCD**MODEL NO. : LTN140AT01-G03**

NOTE : Extension code [-G]
→ LTN140AT01-G03
Surface type [**Glare**]

Any modification of Spec is not allowed without SEC's permissionAPPROVED BY : 

PREPARED BY :

Mia So**Application Engineer part 1, Device Solution (LCD)****SAMSUNG ELECTRONICS CO., LTD.****wise
view™****Samsung Secret**

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REVISION HISTORY

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Date	Revision No.	Page	Summary
June. 4, 2009	P00	All	The Preliminary specification of LTN140AT01-G03 was issued first.
June. 16, 2009	A00	All	The Approval specification of LTN140AT01-G03 was issued first.
June. 26, 2009	A01	All	Outline drawing was updated.
July. 10. 2009	A02	P23 ~25	Packing was updated. Form material was changed and one sack quantity was changed to 30pcs Marking items are updated.
Sep.03.2009	A03	P12	PWM Min value was removed.
Oct.13.2009	A04	P20	Power Sequence was updated.

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GENERAL DESCRIPTION

DESCRIPTION

LTN140AT01-G03 is a color active matrix TFT (Thin Film Transistor) liquid crystal display (LCD) that uses amorphous silicon TFT as switching devices. This model is composed of a TFT LCD panel, a driver circuit and a backlight system. The resolution of a 14.0" contains 1366 x 768 pixels and can display up to 262,144 colors. 6 O'clock direction is the Optimum viewing angle.

FEATURES

- High contrast ratio, high aperture structure
- 1366 x 768 pixels resolution
- Fast Response Time
- Low power consumption
- LED BLU Structure
- DE (Data enable) only mode.
- 3.3V LVDS Interface
- On board EDID chip
- RoHS Compliance

APPLICATIONS

- Notebook PC
- If the usage of this product is not for PC application, but for others, please contact SEC

GENERAL INFORMATION

Item	Specification	Unit	Note
Display area	309.399(H) X 173.952(V) (14.0"diagonal)	mm	
Driver element	a-si TFT active matrix		
Display colors	262,144		
Number of pixel	1366 x 768	pixel	16 : 9
Pixel arrangement	RGB vertical stripe		
Pixel pitch	0.2265(H) x 0.2265(V)	mm	
Display Mode	Normally white		
Glass Thickness	0.5T		
Surface treatment	Haze 0, Hard-Coating 3H		

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Mechanical Information

Item		Min.	Typ.	Max.	Unit	Note
Module size	Horizontal (H)	323.0	323.5	324.0	mm	
	Vertical (V)	191.5	192.0	192.5	mm	
	Depth (D)	-	4.9	5.2	mm	(1)
Weight		-	345	360	g	

Note (1) Measurement condition of outline dimension

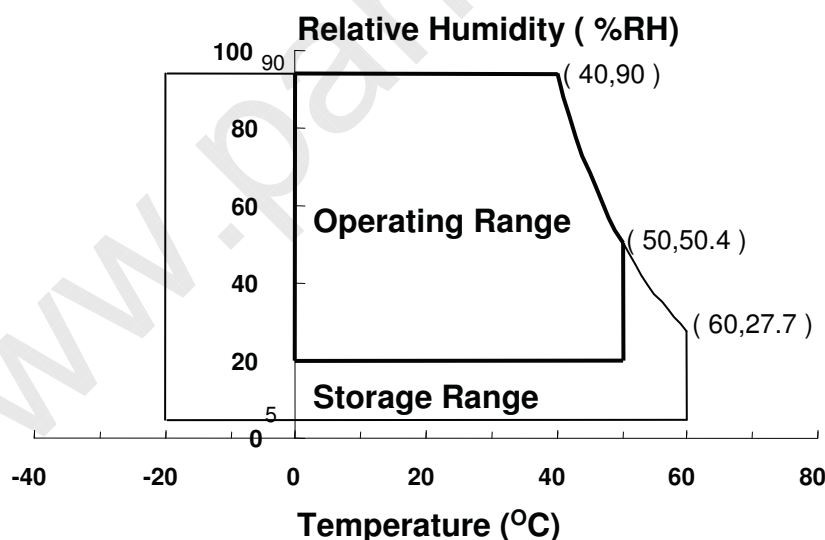
- Equipment : Vernier Calipers
- Push Force : 500g · f (minimum)

1. ABSOLUTE MAXIMUM RATINGS

1.1 ENVIRONMENTAL ABSOLUTE RATINGS

Item	Symbol	Min.	Max.	Unit	Note
Storage temperate	TSTG	-20	60	°C	(1)
Operating temperate (Temperature of glass surface)	TOPR	0	50	°C	(1)
Shock (non-operating)	Snop	-	240	G	(2),(4)
Vibration (non-operating)	Vnop	-	2.41	G	(3),(4)

Note (1) Temperature and relative humidity range are shown in the figure below.

95 % RH Max. ($40^{\circ}\text{C} \geq T_a$)Maximum wet - bulb temperature at 39°C or less. ($T_a > 40^{\circ}\text{C}$) No condensation(2) 2ms, half sine wave, one time for $\pm X, \pm Y, \pm Z$.

(3) 5 - 500 Hz, random vibration, 30min for X, Y, Z.

(4) At testing Vibration and Shock, the fixture in holding the Module to be tested have to be hard and rigid enough so that the Module would not be twisted or bent by the fixture.

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1.2 ELECTRICAL ABSOLUTE RATINGS

(1) TFT LCD MODULE

 $V_{DD} = 3.3V$, $V_{SS} = GND = 0V$

Item	Symbol	Min.	Max.	Unit	Note
Power Supply Voltage	V_{DD}	$V_{DD} - 0.3$	$V_{DD} + 0.3$	V	(1)
Logic Input Voltage	V_{DD}	$V_{DD} - 0.3$	$V_{DD} + 0.3$	V	(1)

Note (1) Within T_a ($25 \pm 2^\circ C$)

(2) BACK-LIGHT UNIT

 $T_a = 25 \pm 2^\circ C$

Item	Symbol	Min.	Typ.	Max.	Unit	Note
LED Current	I_L	-	20	-	mA	(1)
LED Voltage	F_L	-	3.2	-	V	(1)

Note 1) Permanent damage to the device may occur if maximum values are exceeded
Functional operation should be restricted to the conditions described under normal operating conditions.

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2. OPTICAL CHARACTERISTICS

The following items are measured under stable conditions. The optical characteristics should be measured in a dark room or equivalent state with the methods shown in Note (5).
Measuring equipment : TOPCON BM-5A and PR-650

* Ta = 25 ± 2 °C, VDD=3.3V, fv= 60Hz, fDCLK = 72.33MHz, IL = 20 mA

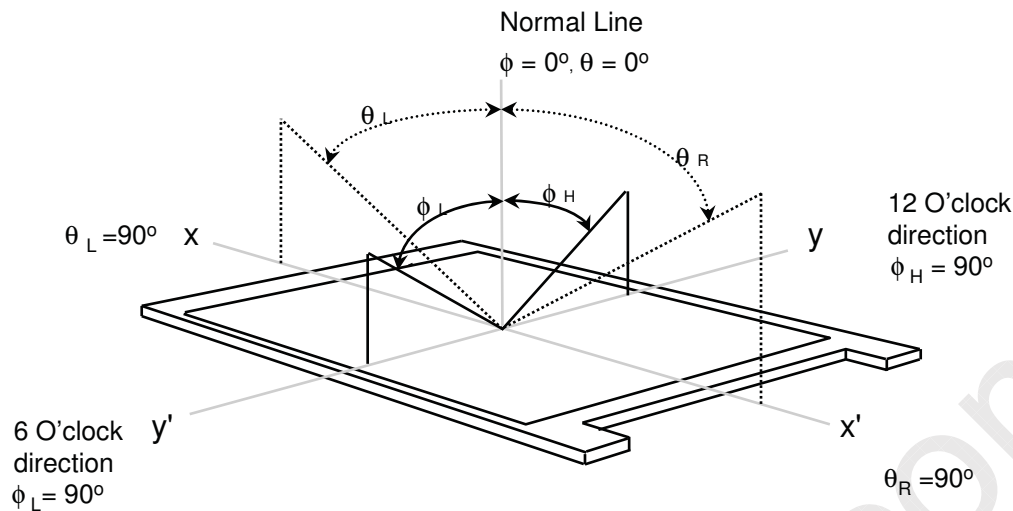
Item		Symbol	Condition	Min.	Typ.	Max	Unit	Note
Contrast Ratio (5 Points)		CR	Normal Viewing Angle $\phi = 0$ $\theta = 0$	400	500	-	-	(1), (2), (5)
Response Time at Ta (Rising + Falling)		T _{RT}		-	8	12	msec	(1), (3)
Average Luminance of White (5 Points)		Y _{L,AVE}		190	220	-	cd/m ²	(1), (4)
Color Chromaticity (CIE)	Red	R _X		0.540	0.570	0.600	-	(1), (5) PR-650
		R _Y		0.305	0.335	0.365		
	Green	G _X		0.310	0.340	0.370		
		G _Y		0.520	0.550	0.580		
	Blue	B _X		0.120	0.150	0.180		
		B _Y		0.070	0.100	0.130		
	White	W _X		0.283	0.313	0.343		
		W _Y	0.299	0.329	0.359			
Viewing Angle	Hor.	θ_L	CR ≥ 10	40	45	-	Degrees	(1), (5) BM-5A
		θ_H		40	45	-		
	Ver.	ϕ_H		10	15	-		
		ϕ_L		25	35	-		
Color Gamut		CG		42	45	-	%	
13 Points White Variation		δ_L		-	-	1.7	-	(6)

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Note 1) Definition of Viewing Angle : Viewing angle range($10 \leq C/R$)

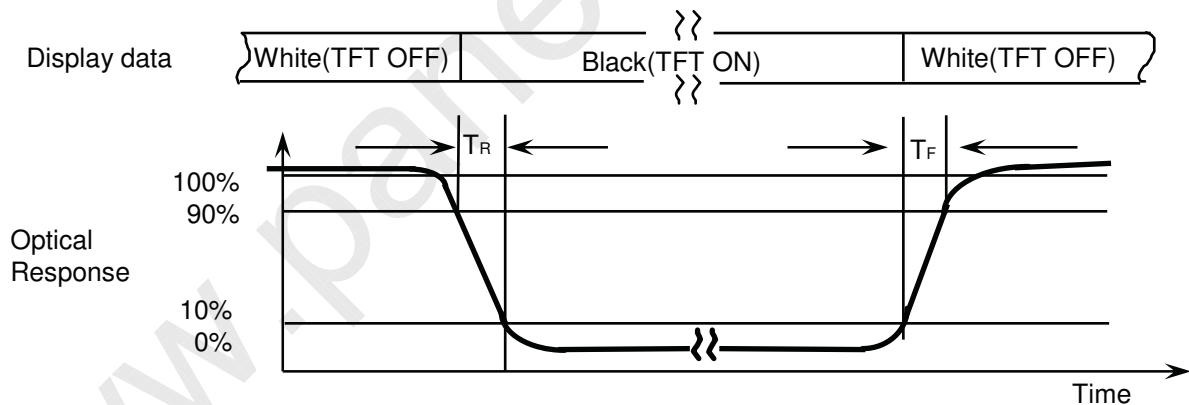


Note 2) Definition of Contrast Ratio (CR) : Ratio of gray max (Gmax) ,gray min (Gmin) at 5 points(4, 5, 7, 9, 10)

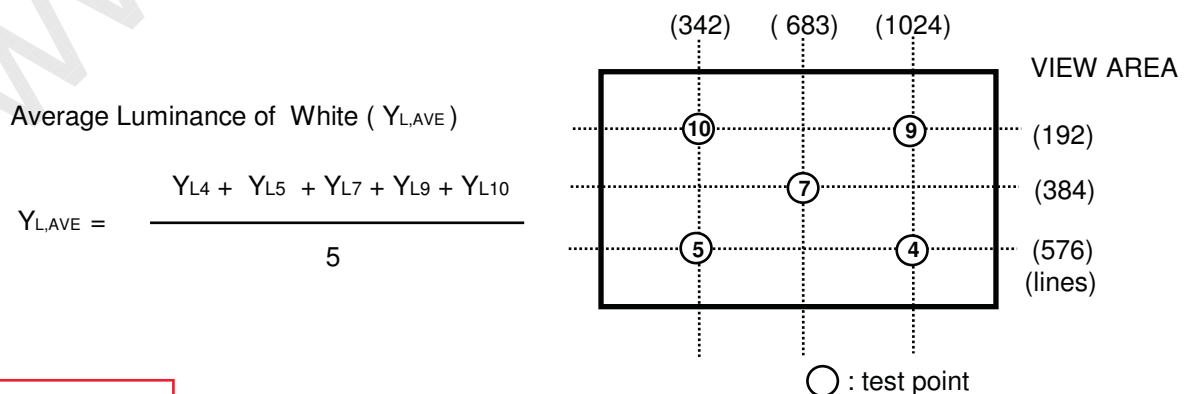
$$CR = \frac{CR(4) + CR(5) + CR(7) + CR(9) + CR(10)}{5}$$

Points : (4) , (5) , (7) , (9) , (10) at the figure of Note (6).

Note 3) Definition of Response time :



Note 4) Definition of Average Luminance of White : measure the luminance of white at 5 points.

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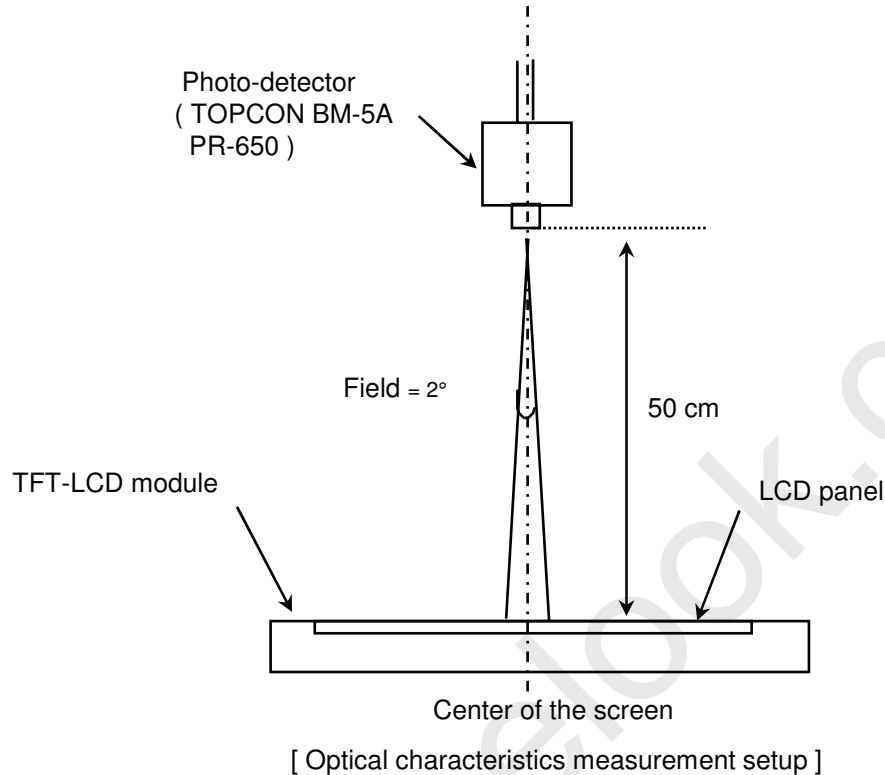
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Note 5) After stabilizing and leaving the panel alone at a given temperature for 30 min , the measurement should be executed. Measurement should be executed in a stable, windless, and dark room. 30 min after lighting the backlight. This should be measured in the center of screen.

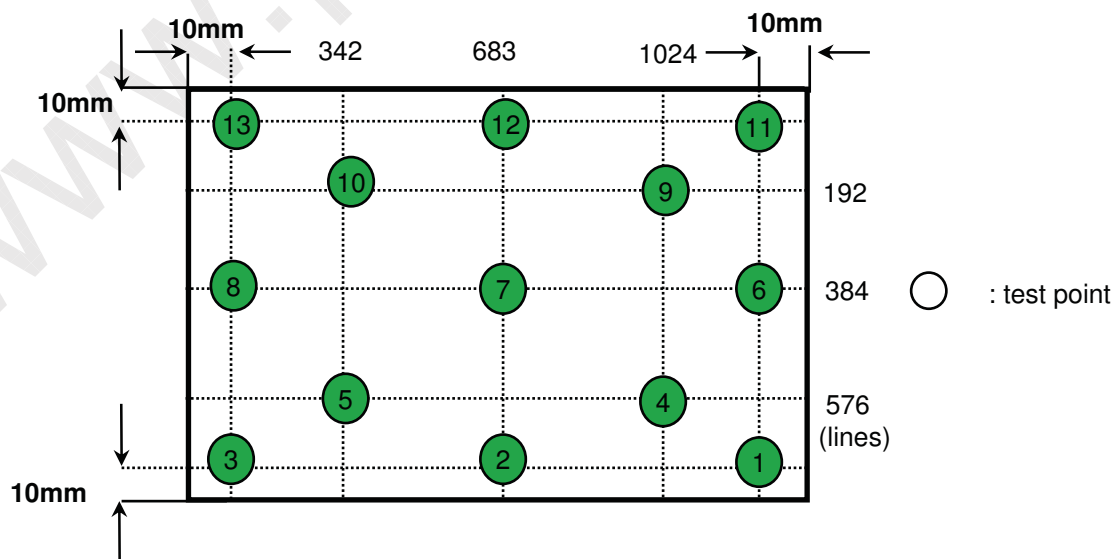
LED current : 20.0mA

Environment condition : $T_a = 25 \pm 2 \text{ }^{\circ}\text{C}$



Note 6) Definition of 13 points white variation (δL), [① ~ ⑬]

$$\delta L = \frac{\text{Maximum luminance of 13 points}}{\text{Minimum luminance of 13 points}}$$

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3. ELECTRICAL CHARACTERISTICS

3.1 TFT LCD MODULE

Ta= 25 ± 2°C

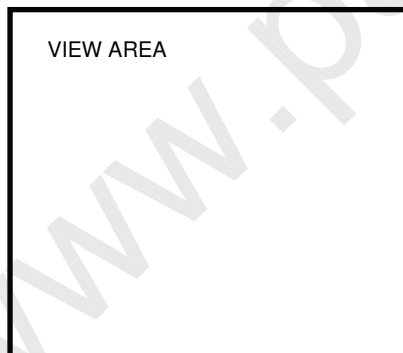
Item		Symbol	Min.	Typ.	Max.	Unit	Note
Voltage of Power Supply		V _{DD}	3.0	3.3	3.6	V	
Differential Input Voltage for LVDS Receiver Threshold	High	V _{IH}	-	-	+100	mV	V _{CM} = +1.2V
	Low	V _{IL}	-100	-	-	mV	
Vsync Frequency		f _v	50	60	-	Hz	
Hsync Frequency		f _H	-	47.4	-	KHz	Vsync=60Hz
Main Frequency		f _{DCLK}	60.28	72.33	84.39	MHz	
Rush Current		I _{RUSH}	-	-	1.5	A	(4)
Current of Power Supply	White	I _{DD}	-	300	-	mA	(2),(3)*a
	Mosaic		-	350	-	mA	(2),(3)*b
	V. Stripe		-	450	485	mA	(2),(3)*c

Note (1) Display data pins and timing signal pins should be connected.(GND = 0V)

(2) f_v = 60Hz, f_{DCLK} = 72.33MHZ, V_{DD} = 3.3V , DC Current.

(3) Power dissipation pattern

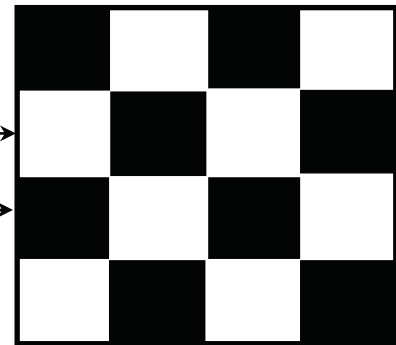
*a) White Pattern



*b) Mosaic Pattern

Display Brightest Gray Level →

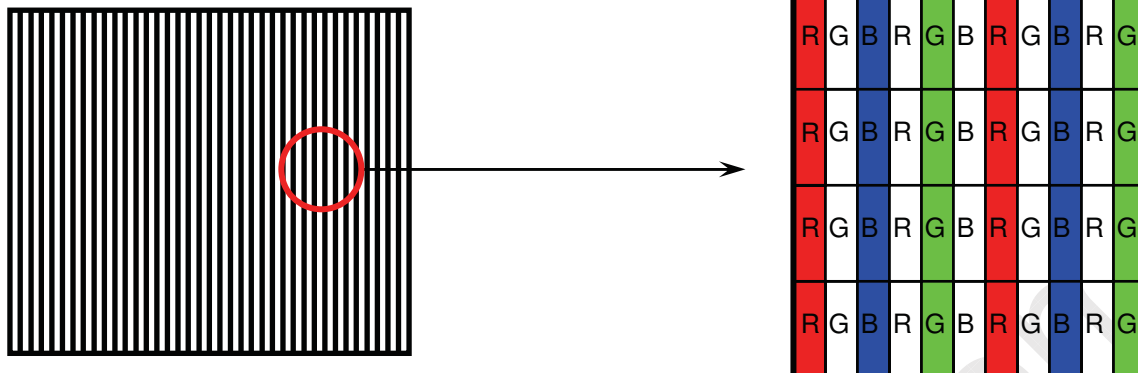
Display Darkest Gray Level →



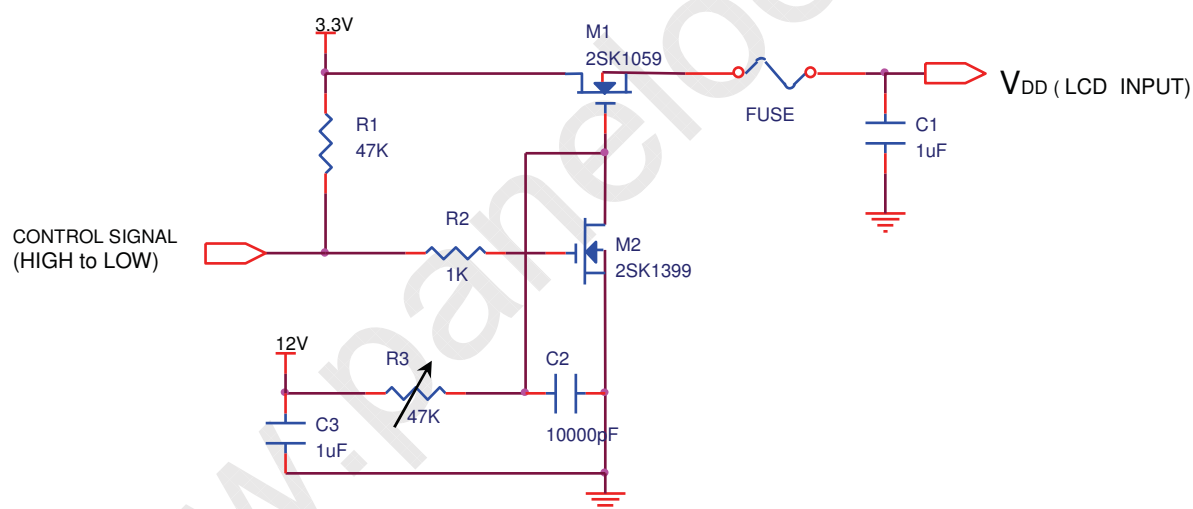
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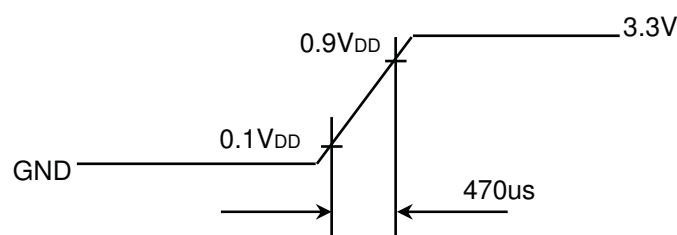
*c) 1dot Vertical stripe pattern



4) Rush current measurement condition



V_{DD} rising time is 470us



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3.2 BACK-LIGHT UNIT

Ta= 25 ± 2 °C

Item	Symbol	Min.	Typ.	Max.	Unit	Note
LED Forward Current	IF	-	20.0	-	mA	
LED Forward Voltage	VF	-	3.2	-	V	
LED Array Voltage	VP	-	22.4	-	V	Vf X 7 LEDs
Power Consumption	P	-	3.2	-	W	If X Vf X 42 LEDs

3.3 LED Driver

- LED Driver Manufacturer : Ricktek

Ta= 25 ± 2 °C

Item	Symbol	Min.	Typ.	Max.	Unit	Note
Input Voltage	V _{in}	7	12	20	V	
Input Current	I	-	230	-	mA	
Input Power	P _{in}	-	2.8	-	W	
Operating Frequency	F _o	675	750	825	KHz	-
Burst Ratio	D	10	-	100	%	
External PWM Dimming Control Frequency (BLIM)	F _{BLIM}	-	1	20	kHz	V _{in} =8~21V, BLIM=PWM 0V~3.3V
Efficiency	η	80	-	-	%	BLIM=100%

Note (1) Test Equipment : Fluke 45

(2) SEC guarantee PWM frequency from 0.2kHz to 10KHz

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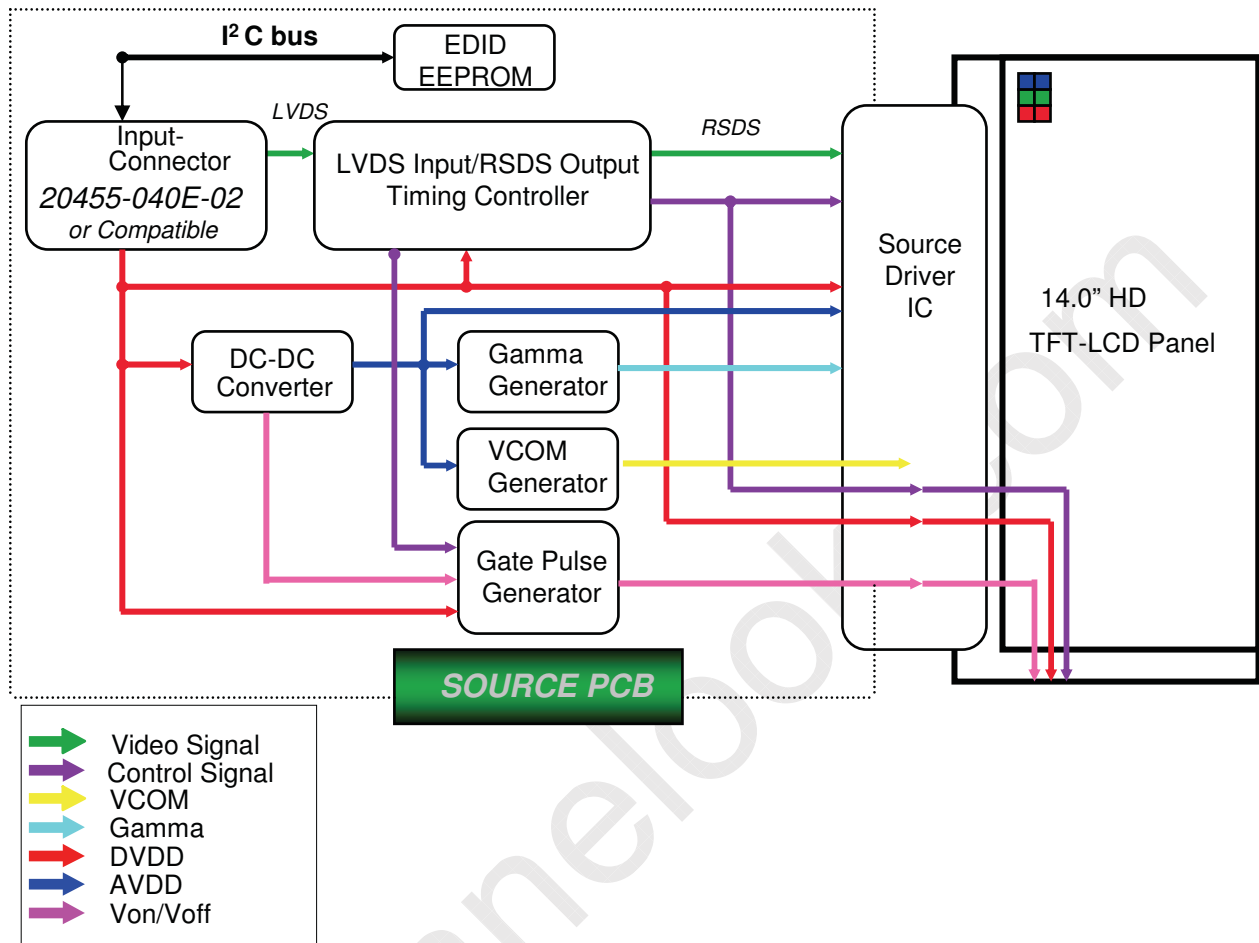
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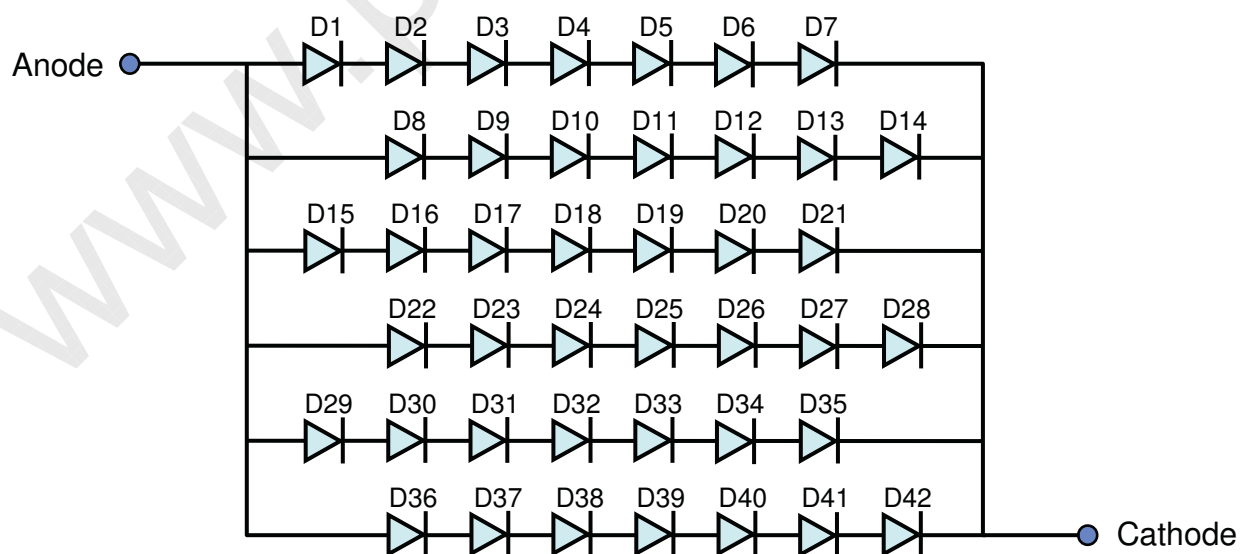
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4. BLOCK DIAGRAM

4.1 TFT LCD Module



4.2 LED placement structure



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5. INPUT TERMINAL PIN ASSIGNMENT

5.1. Input Signal & Power (LVDS, Connector : I-PEX 20455-040 or equivalent)

Pin	Symbol	Function
1	NC	no connect
2~3	VDD	Logic power 3.3V (Panel logic, BL logic)
4	VEDID	EDID 3.3V power
5	NC	no connect
6	CLK	EDID clock
7	DATA	EDID data
8	RIN0-	- LVDS differential data input (R0-R5, G0)
9	RIN0+	+ LVDS differential data input (R0-R5, G0)
10	GND	Ground
11	RIN1-	- LVDS differential data input (G1-G5, B0-B1)
12	RIN1+	+ LVDS differential data input (G1-G5, B0-B1)
13	GND	Ground
14	RIN2-	- LVDS differential data input (B2-B5,HS,VS, DE)
15	RIN2+	+ LVDS differential data input (B2-B5,HS,VS, DE)
16	GND	Ground
17	CLK-	- LVDS differential clock input
18	CLK+	+ LVDS differential clock input
19	GND	Ground
20 ~ 21	NC	no connect
22	GND	Ground
23 ~ 24	NC	no connect
25	GND	Ground
26 ~ 27	NC	no connect
28	GND	Ground
29 ~ 30	NC	no connect
31 ~ 33	VLED_GND	LED Ground
34	NC	no connect
35	S_PWMIN	System PWM Signal Input
36	BL_ON	LED enable pin (+3V input, +5V tolerance)
37	NC	no connect
38~40	VLED	LED Power Supply 7V-20V

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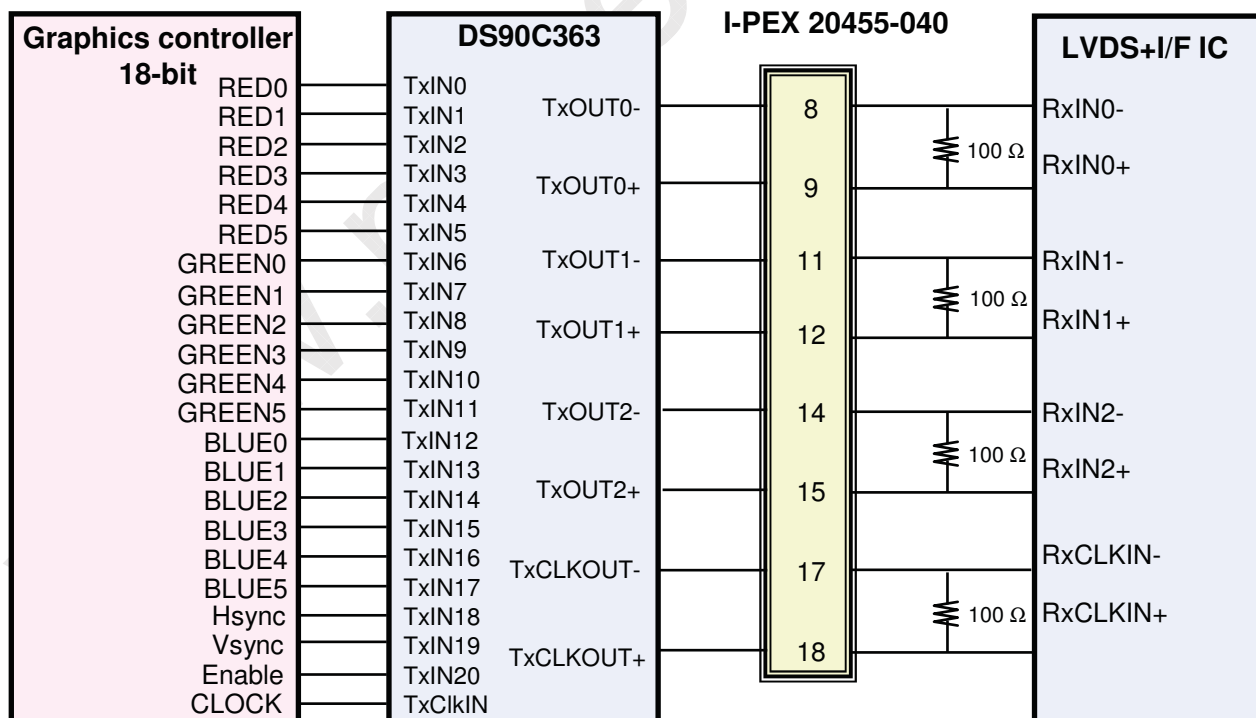
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5.2 LVDS Interface : Transmitter DS90C363 or Compatible

Pin No.	Name	RGB Signal	Pin No.	Name	RGB Signal
44	TxIN0	R0	12	TxIN11	G5
45	TxIN1	R1	13	TxIN12	B0
47	TxIN2	R2	15	TxIN13	B1
48	TxIN3	R3	16	TxIN14	B2
1	TxIN4	R4	18	TxIN15	B3
3	TxIN5	R5	19	TxIN16	B4
4	TxIN6	G0	20	TxIN17	B5
6	TxIN7	G1	22	TxIN18	Hsync
7	TxIN8	G2	23	TxIN19	Vsync
9	TxIN9	G3	25	TxIN20	DE
10	TxIN10	G4	26	TxCLKIN	Clock

LVDS INTERFACE

Note : The LCD Module uses a 100ohm resistor between positive and negative lines of each receiver input.

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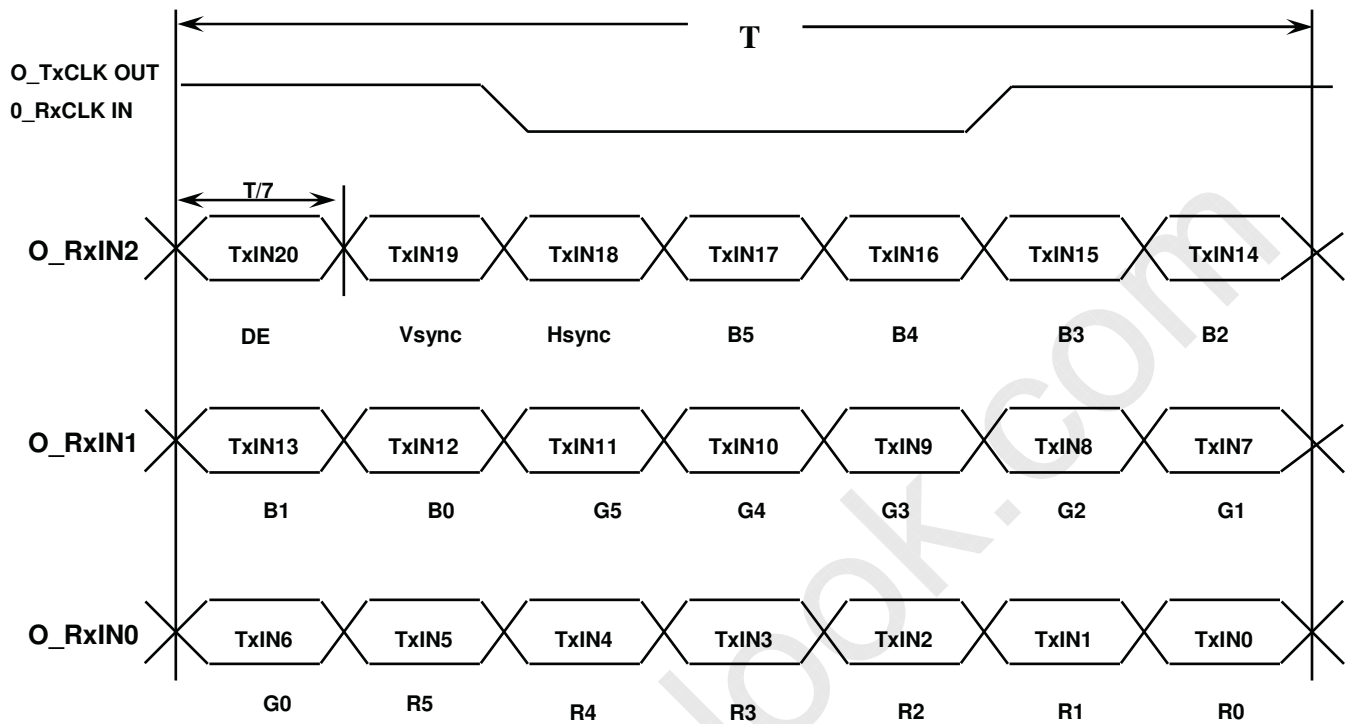
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5.3 Timing Diagrams of LVDS For Transmission

LVDS Receiver : Integrated T-CON



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5.4 Input Signals, Basic Display Colors and Gray Scale of Each Color

Color	Display	Data Signal																	Gray Scale Level	
		Red						Green						Blue						
		R0	R1	R2	R3	R4	R5	G0	G1	G2	G3	G4	G5	B0	B1	B2	B3	45		B5
Basic Colors	Black	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-
	Blue	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1	-
	Green	0	0	0	0	0	0	1	1	1	1	1	1	0	0	0	0	0	0	-
	Cyan	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1	1	1	1	-
	Red	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	-
	Magenta	1	1	1	1	1	1	0	0	0	0	0	0	1	1	1	1	1	1	-
	Yellow	1	1	1	1	1	1	1	1	1	1	1	1	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	-
Gray Scale Of Red	Black	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	R0
	Dark	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	R1
	↑	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	R2
	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	R3~R60
	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	
	↓	1	0	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	R61
	Light	0	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	R62
	Red	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	R63
Gray Scale Of Green	Black	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	G0
	Dark	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	G1
	↑	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	G2
	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	G3~G60
	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	
	↓	0	0	0	0	0	0	1	0	1	1	1	1	0	0	0	0	0	0	G61
	Light	0	0	0	0	0	0	0	1	1	1	1	1	0	0	0	0	0	0	G62
	Green	0	0	0	0	0	0	1	1	1	1	1	1	0	0	0	0	0	0	G63
Gray Scale Of Blue	Black	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	B0
	Dark	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	B1
	↑	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	B2
	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	B3~B60
	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	
	↓	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1	1	1	B61
	Light	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1	B62
	Blue	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1	B63

Note 1) Definition of gray :

Rn: Red gray, Gn: Green gray, Bn: Blue gray (n=gray level)

Note 2) Input signal: 0 =Low level voltage, 1=High level voltage

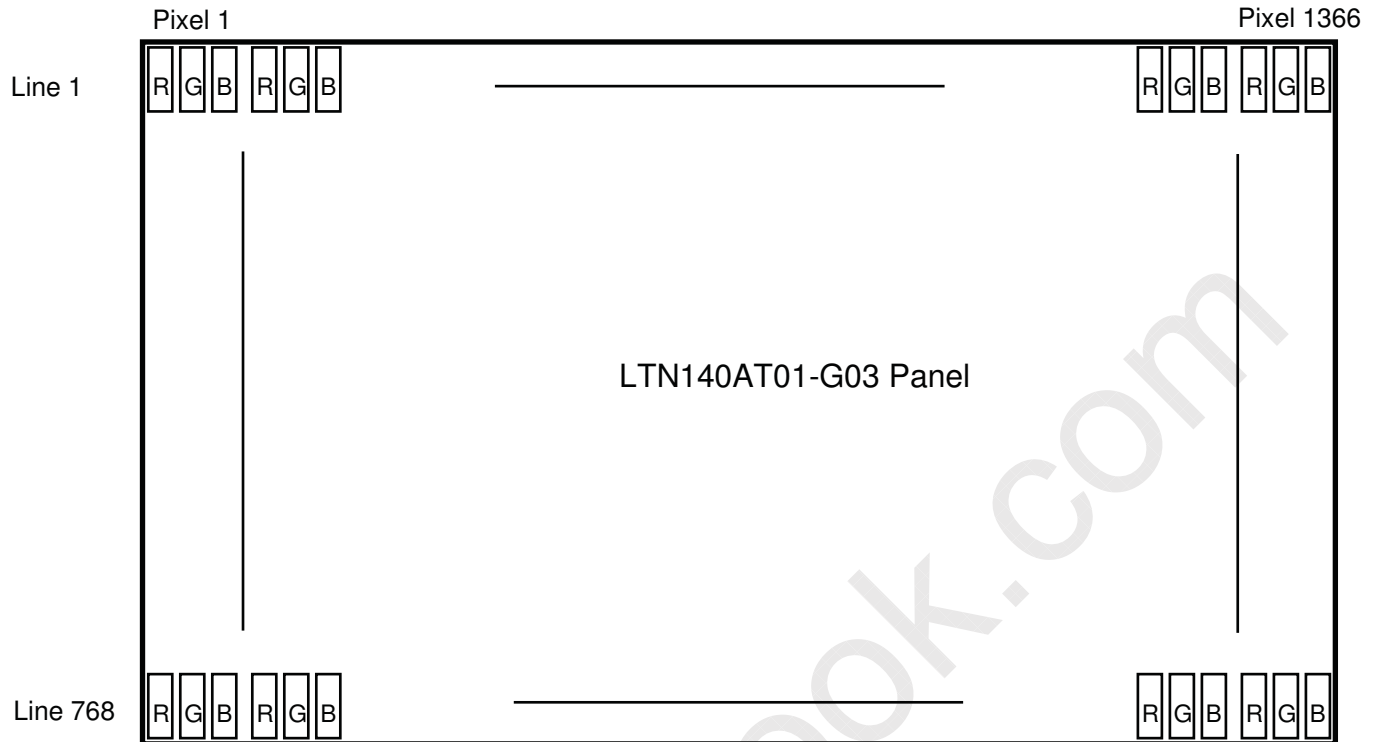
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5.5 Pixel Format in the display

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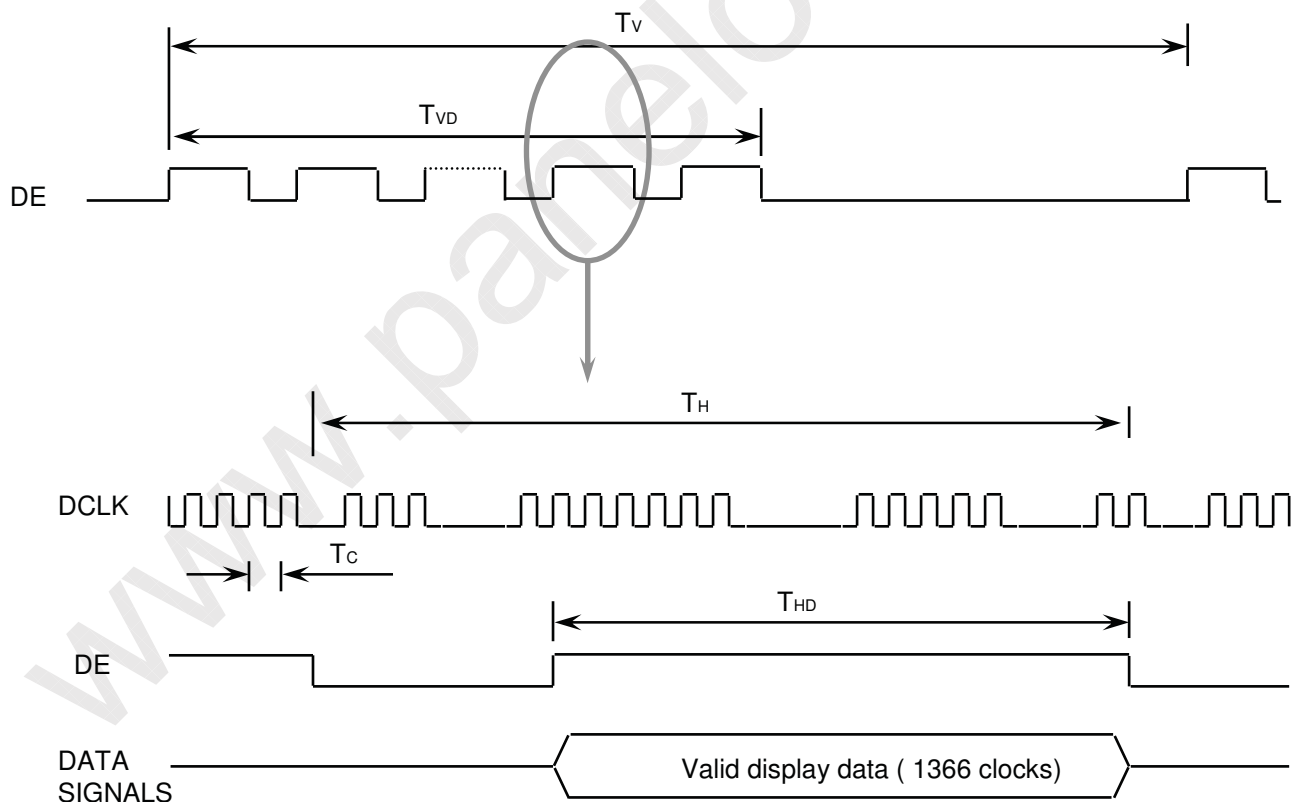
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6. INTERFACE TIMING

6.1 Timing Parameters

Signal	Item	Symbol	Min.	Typ.	Max.	Unit	Note
Frame Frequency	Cycle	TV	780	790	980	Lines	-
Vertical Active Display Term	Display Period	TVD	-	768	-	Lines	-
One Line Scanning Time	Cycle	TH	1440	1526	1800	Clocks	-
Horizontal Active Display Term	Display Period	THD	-	1366	-	Clocks	-

6.2 Timing diagrams of interface signal



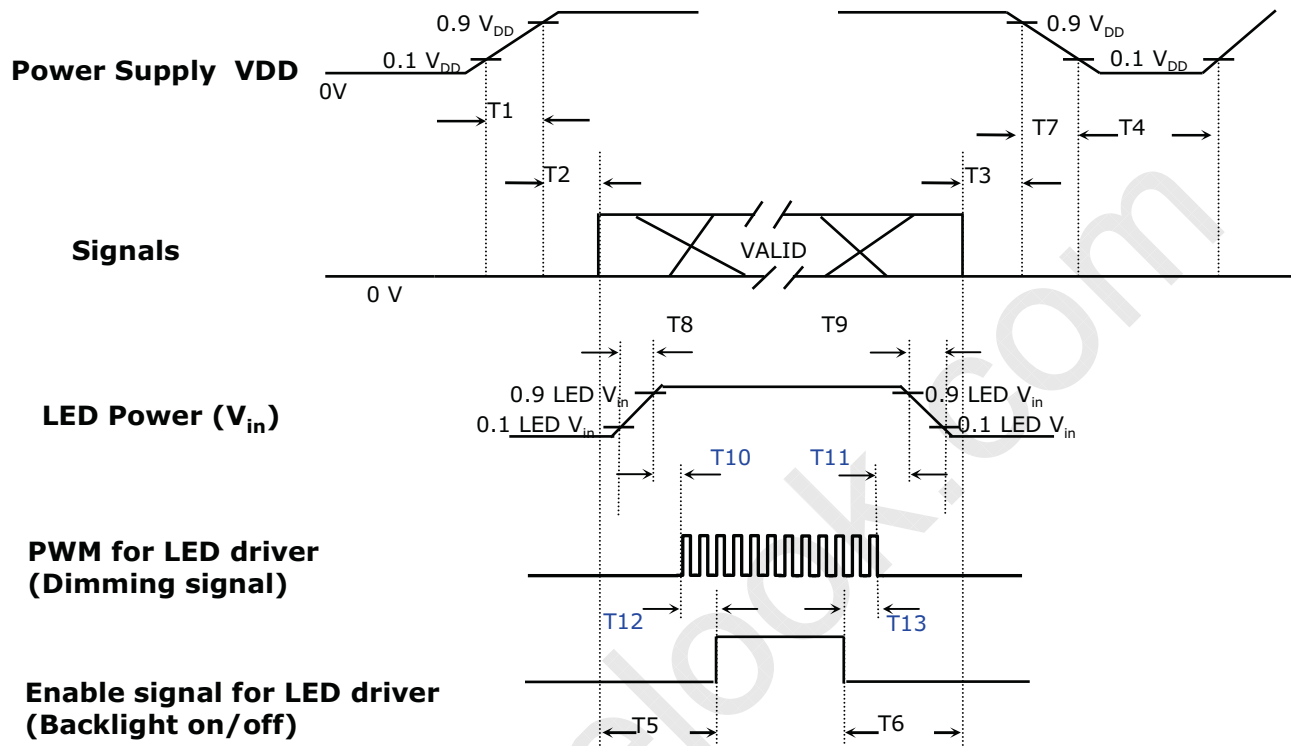
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6.3 Power ON/OFF Sequence

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



Power ON/OFF Sequence

Timing (ms)	Remarks
$0.5 < T1 \leq 10$	V _{DD} rising time from 10% to 90%
$0 < T2 \leq 50$	Delay from V _{DD} to valid data at power ON
$0 < T3 \leq 50$	Delay from valid data OFF to V _{DD} OFF at power Off
$500 \leq T4$	V _{DD} OFF time for Windows restart
$200 \leq T5$	Delay from valid data to B/L enable at power ON
$200 \leq T6$	Delay from valid data off to B/L disable at power Off
$0 < T7 \leq 10$	V _{DD} falling time from 90% to 10%
$0.5 < T8 \leq 10$	LED V _{in} rising time from 10% to 90%
$0.5 < T9 \leq 10$	LED V _{in} falling time from 90% to 10%
$0 \leq T10$	Delay from LED driver Vin rising time 90% to PWM ON
$0 \leq T11$	Delay from PWM Off to LED driver Vin falling time 10%, Must Keep rule
$0 \leq T12$	Delay from PWM ON to B/L Enable ON, Must Keep rule
$0 \leq T13$	Delay from B/L Enable Off to PWM Off

Power Sequence & Timing Parameters

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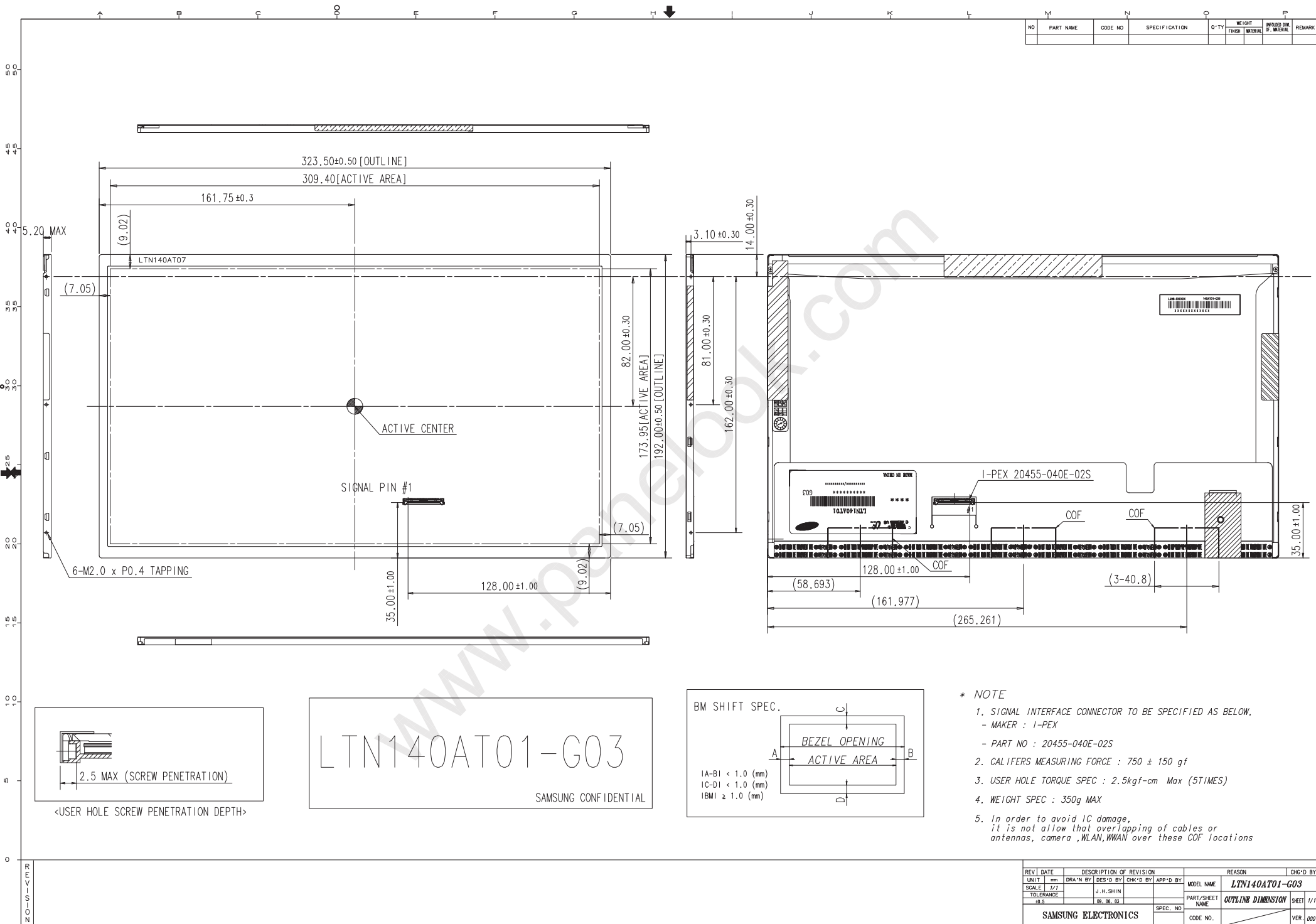
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7. MECHANICAL OUTLINE DIMENSION

[Refer to the next page]

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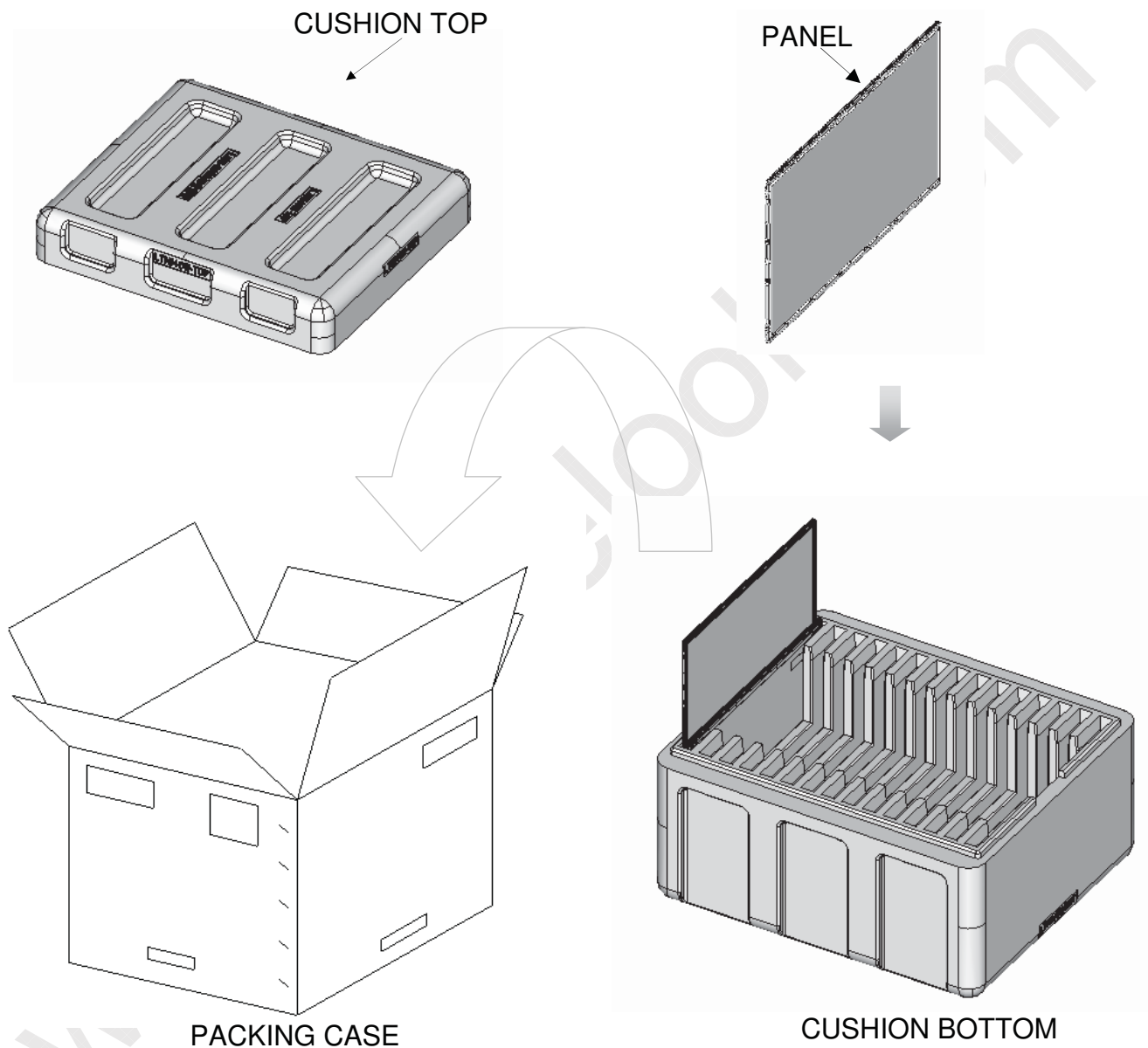
8. PACKING

1. CARTON(Internal Package)

(1) Packing Form

Corrugated Cardboard box and EPS form as shock absorber

(2) Packing Method



Note 1) Total Weight : Approximately (13.2) kg

2) Acceptance number of piling : 30 sets

3) Carton size : 495(W) x 423(D) x 310 (H)

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(3)Packing Material

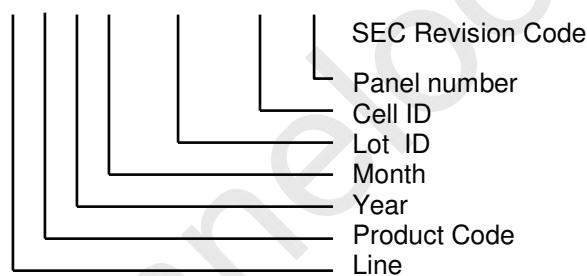
No	Part name	Quantity
1	Static electric protective sack	30 pcs
2	Packing case (Inner box) included shock absorber	1 set
3	Pictorial marking	2 pcs
4	Carton	1 set

9. MARKINGS & OTHERS

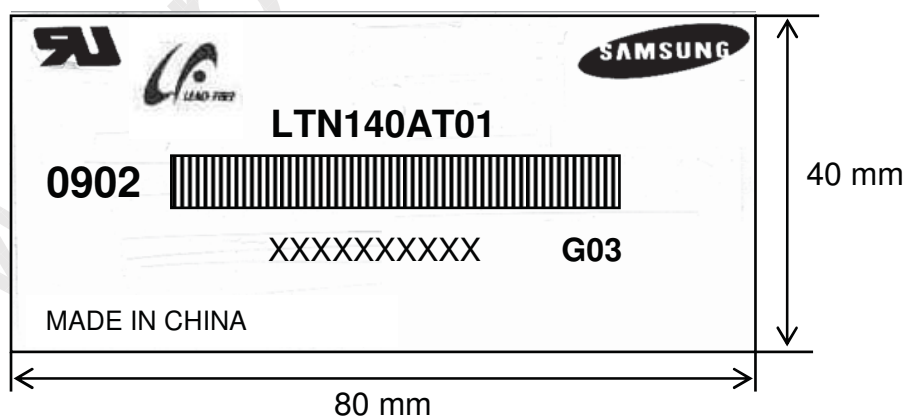
A nameplate bearing followed by is affixed to a shipped product at the specified location on each product.

(1)Parts number : LTN140AT01

(2)Revision code : 3 letters

(3)Lot number : X X X X XXX XX X **G03**

(5) Nameplate Indication



Parts name : LTN140AT01
Lot number : XXXXXXXXXX
Inspected work week : 0902(2009 year, 2nd week)

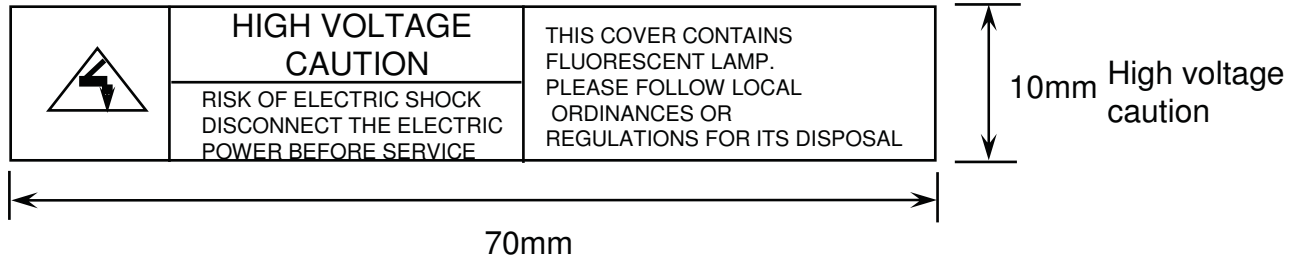
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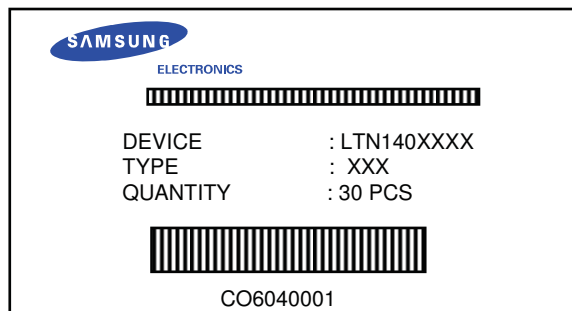
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(5) High voltage caution label



(6) Packing small box attach



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10. GENERAL PRECAUTIONS

1. Handling

- (a) When the module is assembled, It should be attached to the system firmly using every mounting holes. Be careful not to twist and bend the modules.
- (b) Refrain from strong mechanical shock and / or any force to the module. In addition to damage, this may cause improper operation or damage to the module and CCFT back-light.
- (c) Note that polarizers are very fragile and could be easily damaged. Do not press or scratch the surface harder than a HB pencil lead.
- (d) Wipe off water droplets or oil immediately. If you leave the droplets for a long time, Staining and discoloration may occur.
- (e) If the surface of the polarizer is dirty, clean it using some absorbent cotton or soft cloth.
- (f) The desirable cleaners are water, IPA (Isoprophyl Alcohol) or Hexane.
Do not use Ketone type materials(ex. Acetone), Ethyl alcohol, Toluene, Ethyl acid or Methyl chloride. It might permanent damage to the polarizer due to chemical reaction.
- (g) If the liquid crystal material leaks from the panel, it should be kept away from the eyes or mouth . In case of contact with hands, legs or clothes, it must be washed away thoroughly with soap.
- (h) Protect the module from static , it may cause damage to the C-MOS Gate Array IC.
- (i) Use fingerstalls with soft gloves in order to keep display clean during the incoming inspection and assembly process.
- (j) Do not disassemble the module.
- (k) Do not pull or fold the lamp wire.
- (l) Do not adjust the variable resistor which is located on the back side.
- (m) Protection film for polarizer on the module shall be slowly peeled off just before use so that the electrostatic charge can be minimized.
- (n) Pins of I/F connector shall not be touched directly with bare hands.

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2. STORAGE

- (a) Do not leave the module in high temperature, and high humidity for a long time.
It is highly recommended to store the module with temperature from 0 to 35 °C and relative humidity of less than 70%.
- (b) Do not store the TFT-LCD module in direct sunlight.
- (c) The module shall be stored in a dark place. It is prohibited to apply sunlight or fluorescent light during the store.

3. OPERATION

- (a) Do not connect,disconnect the module in the " Power On" condition.
- (b) Power supply should always be turned on/off by following item 6.3
" Power on/off sequence ".
- (c) Module has high frequency circuits. Sufficient suppression to the electromagnetic interference shall be done by system manufacturers. Grounding and shielding methods may be important to minimize the interference.
- (d) The cable between the back-light connector and its inverter power supply shall be a minimized length and be connected directly . The longer cable between the back-light and the inverter may cause lower luminance of lamp(CCFT) and may require higher startup voltage (Vs).
- (e) The standard limited warranty is only applicable when the module is used for general notebook applications. If used for purposes other than as specified, SEC is not to be held reliable for the defective operations. It is strongly recommended to contact SEC to find out fitness for a particular purpose.

4. OTHERS

- (a) Ultra-violet ray filter is necessary for outdoor operation.
- (b) Avoid condensation of water. It may result in improper operation or disconnection of electrode.
- (c) Do not exceed the absolute maximum rating value. (the supply voltage variation, input voltage variation, variation in part contents and environmental temperature, so on)
Otherwise the module may be damaged.
- (d) If the module displays the same pattern continuously for a long period of time,it can be the situation when the image "sticks" to the screen.
- (e) This module has its circuitry PCB's on the rear side and should be handled carefully in order not to be stressed.

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11. EDID

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Address (HEX)	FUNCTION	Value HEX	BIN	DEC	ASCII or Data	Notes
00	Header	00	00000000	0		EDID Header
01		FF	11111111	255		
02		FF	11111111	255		
03		FF	11111111	255		
04		FF	11111111	255		
05		FF	11111111	255		
06		FF	11111111	255		
07		00	00000000	0		
08	ID Manufacturer Name	4C	01001100	76	S	3 character ID
					E	
09		A3	10100011	163	C	"SEC"
0A	ID Product Code	50	01010000	80	[P]	
0B		30	00110000	48	[0]	
0C	32-bit serial no.	00	00000000	0		
0D		00	00000000	0		
0E		00	00000000	0		
0F		00	00000000	0		
10	Week of manufacture	00	00000000	0		
11	Year of manufacture	13	00010011	19	2009	2009
12	EDID Structure Ver.	01	00000001	1	1	EDID Ver. 1.0
13	EDID revision #	03	00000011	3	0	EDID Rev. 0
14	Video input definition	80	10000000	128		
15	Max H image size	20	00100000	32	32	32 cm(approx)
16	Max V image size	13	00010011	19	19	19 cm(approx)
17	Display Gamma	78	01111000	120	2.2	Gamma 2.2
18	Feature support	0A	00001010	10		
19	Red/green low bits	09	00001001	9		00001001
1A	Blue/white low bits	E5	11100101	229		11100101
1B	Red x/ high bits	97	10010111	151	0.590	Red x 0.590= 10010111
1C	Red y	57	01010111	87	0.340	Red y 0.340= 01010111
1D	Green x	54	01010100	84	0.330	Green x 0.330= 01010100
1E	Green y	8A	10001010	138	0.540	Green y 0.540= 10001010
1F	Blue x	27	00100111	39	0.155	Blue x 0.155= 00100111
20	Blue y	22	00100010	34	0.135	Blue y 0.135= 00100010
21	White x	50	01010000	80	0.313	White x 0.313= 01010000
22	White y	54	01010100	84	0.329	White y 0.329= 01010100
23	Established timing 1	00	00000000	0		
24	Established timing 2	00	00000000	0		
25	Established timing 3	00	00000000	0		

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26	Standard timing #1	01	00000001	1		not used
27		01	00000001	1		
28	Standard timing #2	01	00000001	1		not used
29		01	00000001	1		
2A	Standard timing #3	01	00000001	1		not used
2B		01	00000001	1		
2C	Standard timing #4	01	00000001	1		not used
2D		01	00000001	1		
2E	Standard timing #5	01	00000001	1		not used
2F		01	00000001	1		
30	Standard timing #6	01	00000001	1		not used
31		01	00000001	1		
32	Standard timing #7	01	00000001	1		not used
33		01	00000001	1		
34	Standard timing #8	01	00000001	1		not used
35		01	00000001	1		
36	Detailed timing/monitor descriptor #1	41	01000001	65	72.33	Main clock= 72.33 MHz
37		1C	00011100	28		
38		56	01010110	86	1366	Hor active=1366 pixels
39		A0	10100000	160	160	Hor blanking=160 pixels
3A		50	01010000	80		4bit : 4bit
3B		00	00000000	0	768	Vertical active=768 lines
3C		16	00010110	22	22	Vertical blanking=22 lines
3D		30	00110000	48		4bit : 4bit
3E		30	00110000	48	48	
3F		20	00100000	32	32	H sync. Width=32 pixels
40		25	00100101	37	2 5	V sync. Offset=2 lines V sync. Width=5 lines
41		00	00000000	0		2bit : 2bit : 2bit : 2bit
42		35	00110101	53	309	H image size= 353 mm(approx)
43		AE	10101110	174	174	V image size = 198 mm(approx)
44		10	00010000	16		
45		00	00000000	0		No Horizontal Border
46		00	00000000	0		No Vertical Border
47		19	00011001	25		
48	Detailed timing/monitor descriptor #2	00	00000000	0		Manufacturer Specified (Timing)
49		00	00000000	0		
4A		00	00000000	0		
4B		0F	00001111	15		
4C		00	00000000	0		
4D		00	00000000	0		Value=HSPWmin / 2
4E		00	00000000	0		Value=HSPWmax / 2
4F		00	00000000	0		Value=Thbpmin / 2
50		00	00000000	0		Value=Thbpmax / 2
51		00	00000000	0		Value=VSPWmin / 2
52		00	00000000	0		Value=VSPWmax / 2
53		00	00000000	0		Value=TVbpmin / 2
54		00	00000000	0		Value=TVbpmax / 2
55		1E	00011110	30		Thpmin=value*2 + HA pixelClks
56		B4	10110100	180		Thpmax=value*2 + HA pixelClks
57		02	00000010	2		Tvpmin=value*2 + VA lines
58		74	01110100	116		Tvpmax=value*2 + VA lines
59		00	00000000	0		Module revision

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5A	Detailed timing/monitor descriptor #3	00	00000000	0		ASCII Data String Tag
5B		00	00000000	0		
5C		00	00000000	0		
5D		FE	11111110	254		
5E		00	00000000	0		
5F		53	01010011	83	[S]	
60		41	01000001	65	[A]	
61		4D	01001101	77	[M]	
62		53	01010011	83	[S]	
63		55	01010101	85	[U]	
64		4E	01001110	78	[N]	
65		47	01000111	71	[G]	
66		0A	00001010	10	[^]	
67		20	00100000	32	[]	
68		20	00100000	32	[]	
69		20	00100000	32	[]	
6A		20	00100000	32	[]	
6B		20	00100000	32	[]	
6C	Detailed timing/monitor descriptor #4	00	00000000	0		Monitor Name Tag (ASCII)
6D		00	00000000	0		
6E		00	00000000	0		
6F		FE	11111110	254		
70		00	00000000	0		
71		31	00110001	49	[1]	
72		34	00110100	52	[4]	
73		30	00110000	48	[0]	
74		41	01000001	65	[A]	
75		54	01010100	84	[T]	
76		30	00110000	48	[0]	
77		31	00110001	49	[1]	
78		2D	00101101	45	[=]	
79		47	01000111	71	[G]	
7A		30	00110000	48	[0]	
7B		33	00110011	51	[3]	
7C		0A	00001010	10	[^]	
7D		20	00100000	32	[]	
7E	Extension Flag	00	00000000	0		
7F	Checksum	83	10000011	131		

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