




Product Specification

AU OPTRONICS CORPORATION

(V) Preliminary Specifications

() Final Specifications

Module	11.6"(11.57") HD Color TFT-LCD with LED Backlight design
Model Name	B116XW01 V0 (H/W:0A)
Note ()	<i>LED Backlight with driving circuit design</i>

Customer	Date
Checked & Approved by	Date
_____	_____
Note: This Specification is subject to change without notice.	

Approved by	Date
<u>xxxxxxx</u>	<u>MM/DD/YYYY</u>
Prepared by	
<u>Winni Chen</u>	<u>03/16/2009</u>
NBBU Marketing Division / AU Optronics corporation	

Contents

1. Handling Precautions	4
2. General Description	5
2.1 General Specification	5
2.2 Optical Characteristics	6
3. Functional Block Diagram	11
4. Absolute Maximum Ratings.....	12
4.1 Absolute Ratings of TFT LCD Module	12
4.2 Absolute Ratings of Environment	12
5. Electrical characteristics	13
5.1 TFT LCD Module.....	13
5.2 Backlight Unit	15
6. Signal Characteristic	16
6.1 Pixel Format Image	16
6.2 The input data format	17
6.3 Integration Interface and Pin Assignment.....	18
6.4 Interface Timing	22
7. Connector Description.....	25
7.1 TFT LCD Module.....	25
8. LED Driving Specification	26
8.1 Connector Description.....	26
8.2 Pin Assignment.....	26
9. Vibration and Shock Test	27
9.1 Vibration Test	27
9.2 Shock Test Spec:.....	27
10. Reliability.....	28
11. Mechanical Characteristics.....	29
11.1 LCM Outline Dimension	29
11.2 Screw Hole Depth and Center Position	錯誤! 尚未定義書籤。
12. Shipping and Package	31
12.1 Shipping Label Format	31
12.2 Carton package	32
12.3 Shipping package of palletizing sequence.....	33
13. Appendix: EDID description	34



Product Specification

AU OPTRONICS CORPORATION

Record of Revision

Version and Date	Page	Old description				New Description				Remark
0.1 2009/01/07	All	First Edition for Customer								
0.2 2009/02/13	13	VDD Power:1.6W (max)				VDD Power:0.8W (max)				modified
	29, 30	LCM Outline Dimension: Y diemension is 173mm version.				LCM Outline Dimension: Y dimension shorter.				modified
	20 30	LVDS Connector Postion:90.38				LVDS Connector Postion:99.2				modified
0.3 2009/03/05	5	Physical Size				Physical Size				modified
			Min.	Typ.	Max.		Min.	Typ.	Max.	
		Length	274.5	275.0	275.5	Length	277.5	278	278.5	
		Width	171.0	172.0	173.0	Width	166	167	168	
	19	LED enable pin(+3V Input)				LED enable pin(+3.3±0.3V Input)				modified
	13	IDD Current Specification				IDD Current Specification				typo
		Symble	Typ		Max	Symble	Typ		Max	
		IDD	350		450	IDD	242		267	
0.4 2009/03/16	6	Response Time				Response Time				Updated
		Rising: TBD(typ), TBD(max)				Rising: 6ms(typ), 8ms(max)				
		Falling: TBD(typ), TBD(max)				Falling: 2ms(typ), 4ms(max)				
	15	LED Power Consumption				LED Power Consumption				Updated
			Typ	Max	Unit		Typ	Max	Unit	
		LED Power consumption	TBD	TBD	Watt	LED Power consumption	3.01	3.06	Watt	
	22	Timing Charateristics: TBD				Timing Charateristics: Updated				Updated
	31	Shipping Label Format: TBD				Shipping Label Format: Added				Updated
	32	Carton package:TBD				Carton package:Added				Updated
	33	Shipping package of palletizing sequence:TBD				Shipping package of palletizing sequence: Added				Updated
	6	Color / Chromaticity Coodinates: TBD				Color / Chromaticity Coodinates: Added				Updated

1. Handling Precautions

- 1) Since front polarizer is easily damaged, pay attention not to scratch it.
- 2) Be sure to turn off power supply when inserting or disconnecting from input connector.
- 3) Wipe off water drop immediately. Long contact with water may cause discoloration or spots.
- 4) When the panel surface is soiled, wipe it with absorbent cotton or other soft cloth.
- 5) Since the panel is made of glass, it may break or crack if dropped or bumped on hard surface.
- 6) Since CMOS LSI is used in this module, take care of static electricity and insure human earth when handling.
- 7) Do not open nor modify the Module Assembly.
- 8) Do not press the reflector sheet at the back of the module to any directions.
- 9) At the insertion or removal of the Signal Interface Connector, be sure not to rotate nor tilt the Interface Connector of the TFT Module.
- 11) After installation of the TFT Module into an enclosure (Notebook PC Bezel, for example), do not twist nor bend the TFT Module even momentarily. At designing the enclosure, it should be taken into consideration that no bending/twisting forces are applied to the TFT Module from outside. Otherwise the TFT Module may be damaged.
- 12) Small amount of materials having no flammability grade is used in the LCD module. The LCD module should be supplied by power complied with requirements of Limited Power Source (IEC60950 or UL1950), or be applied exemption.
- 13) Disconnecting power supply before handling LCD modules, it can prevent electric shock, DO NOT TOUCH the electrode parts, cables, connectors and LED circuit part of TFT module that a LED light bar build in as a light source of back light unit. It can prevent electrostatic breakdown.

2. General Description

B116XW01 V0 is a Color Active Matrix Liquid Crystal Display composed of a TFT LCD panel, a driver circuit, and LED backlight system. The screen format is intended to support the HD (1366(H) x 768(V)) screen and 262k colors (RGB 6-bits data driver) with LED backlight driving circuit. All input signals are LVDS interface compatible.

B116XW01 V0 is designed for a display unit of notebook style personal computer and industrial machine.

2.1 General Specification

The following items are characteristics summary on the table at 25 °C condition:

Items	Unit	Specifications			
Screen Diagonal	[mm]	11.6W" (11.57"W)			
Active Area	[mm]	256.125 X 144.0			
Pixels H x V		1366x3(RGB) x 768			
Pixel Pitch	[mm]	0.1875 x 0.1875			
Pixel Format		R.G.B. Vertical Stripe			
Display Mode		Normally White			
White Luminance (I_{LED}=20mA) (Note: I _{LED} is LED current)	[cd/m ²]	200 typ. (5 points average) 170 min. (5 points average)			
Luminance Uniformity		1.25 max. (5 points)			
Contrast Ratio		500:1 typ			
Response Time	[ms]	8 typ / 12 Max			
Nominal Input Voltage VDD	[Volt]	+3.3 typ.			
Power Consumption	[Watt]	3.86 max. (Include Logic and Blu power)			
Weight	[Grams]	235g max.			
Physical Size without inverter, with bracket.	[mm]		Min.	Typ.	Max.
		Length	277.5	278	278.5
		Width	166	167	168
		Thickness	-	-	3.6
Electrical Interface		1 channel LVDS			
Glass Thickness	[mm]	0.5			
Surface Treatment		Glare, Hardness 3H, Reflection <4%			
Support Color		262K colors (RGB 6-bit)			



Product Specification

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Temperature Range		
Operating	[°C]	0 to +50
Storage (Non-Operating)	[°C]	-20 to +60
RoHS Compliance		RoHS Compliance

2.2 Optical Characteristics

The optical characteristics are measured under stable conditions at 25°C (Room Temperature) :

Item		Symbol	Conditions	Min.	Typ.	Max.	Unit	Note
White Luminance I _{LED} =20mA			5 points average	170	200	-	cd/m ²	1, 4, 5.
Viewing Angle		θ_R	Horizontal (Right) CR = 10 (Left)	40	45	-	degree	4, 9
		θ_L		40	45	-		
		ϕ_H	Vertical (Upper) CR = 10 (Lower)	10	15	-		
		ϕ_L		30	35	-		
Luminance Uniformity		δ_{5P}	5 Points	-	-	1.25		1, 3, 4
Luminance Uniformity		δ_{13P}	13 Points	-	-	1.60		2, 3, 4
Contrast Ratio		CR		400	500	-		4, 6
Cross talk		%				4		4, 7
Response Time		T _r	Rising	-	6	8	msec	4, 8
		T _f	Falling	-	2	4		
		T _{RT}	Rising + Falling	-	8	12		
Color / Chromaticity Coordinates	Red	R _x	CIE 1931	0.554	0.584	0.614		4
		R _y		0.303	0.333	0.363		
	Green	G _x		0.308	0.338	0.368		
		G _y		0.541	0.571	0.601		
	Blue	B _x		0.128	0.158	0.188		
		B _y		0.103	0.133	0.163		
	White	W _x		0.283	0.313	0.343		
		W _y		0.299	0.329	0.359		
		NTSC		%	-	45		

Note 1: 5 points position (Ref: Active area)



Note 2: 13 points position (Ref: Active area)



Note 3: The luminance uniformity of 5 or 13 points is defined by dividing the maximum luminance values by the minimum test point luminance

$$\delta_{W5} = \frac{\text{Maximum Brightness of five points}}{\text{Minimum Brightness of five points}}$$

$$\delta_{W13} = \frac{\text{Maximum Brightness of thirteen points}}{\text{Minimum Brightness of thirteen points}}$$

Note 4: Measurement method

The LCD module 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 stable, windless and dark room, and it should be measured in the center of screen.



Note 5 : Definition of Average Luminance of White (Y_L):

Measure the luminance of gray level 63 at 5 points , $Y_L = [L(1) + L(2) + L(3) + L(4) + L(5)] / 5$

$L(x)$ is corresponding to the luminance of the point X at Figure in Note (1).

Note 6 : Definition of contrast ratio:

Contrast ratio is calculated with the following formula.

$$\text{Contrast ratio (CR)} = \frac{\text{Brightness on the "White" state}}{\text{Brightness on the "Black" state}}$$

Note 7 : 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)



Note 8: Definition of response time:

The output signals of BM-7 or equivalent are measured when the input signals are changed from "Black" to "White" (falling time) and from "White" to "Black" (rising time), respectively. The response time interval between the 10% and 90% of amplitudes. Refer to figure as below.



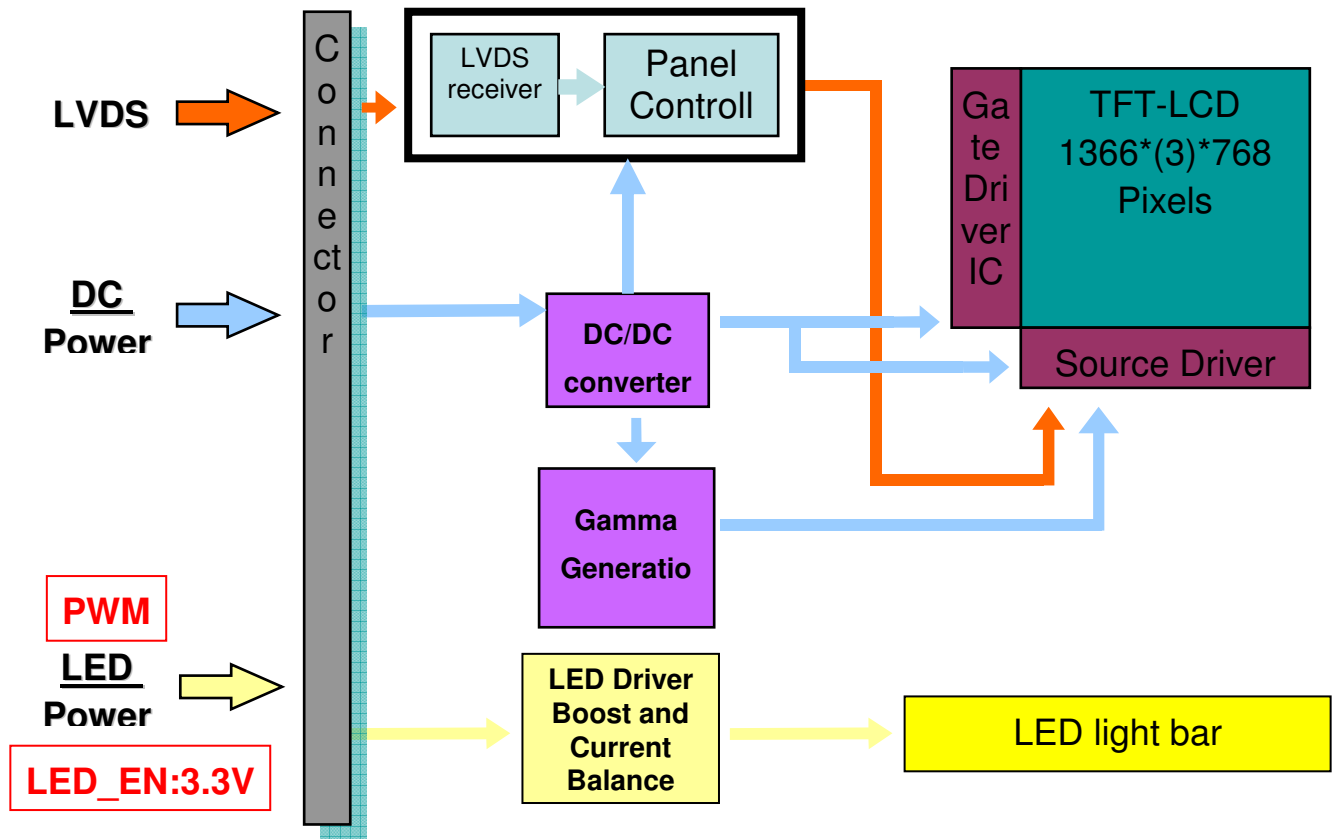
Note 9. Definition of viewing angle

Viewing angle is the measurement of contrast ratio ≥ 10 , at the screen center, over a 180° horizontal and 180° vertical range (off-normal viewing angles). The 180° viewing angle range is broken down as follows; 90° (θ) horizontal left and right and 90° (ϕ) vertical, high (up) and low (down). The measurement direction is typically perpendicular to the display surface with the screen rotated about its center to develop the desired measurement viewing angle.



3. Functional Block Diagram

The following diagram shows the functional block of the 11.6 inches wide Color TFT/LCD 40 Pin (One CH/connector Module)



4. Absolute Maximum Ratings

An absolute maximum rating of the module is as following:

4.1 Absolute Ratings of TFT LCD Module

Item	Symbol	Min	Max	Unit	Conditions
Logic/LCD Drive Voltage	Vin	-0.3	+4.0	[Volt]	Note 1,2

4.2 Absolute Ratings of Environment

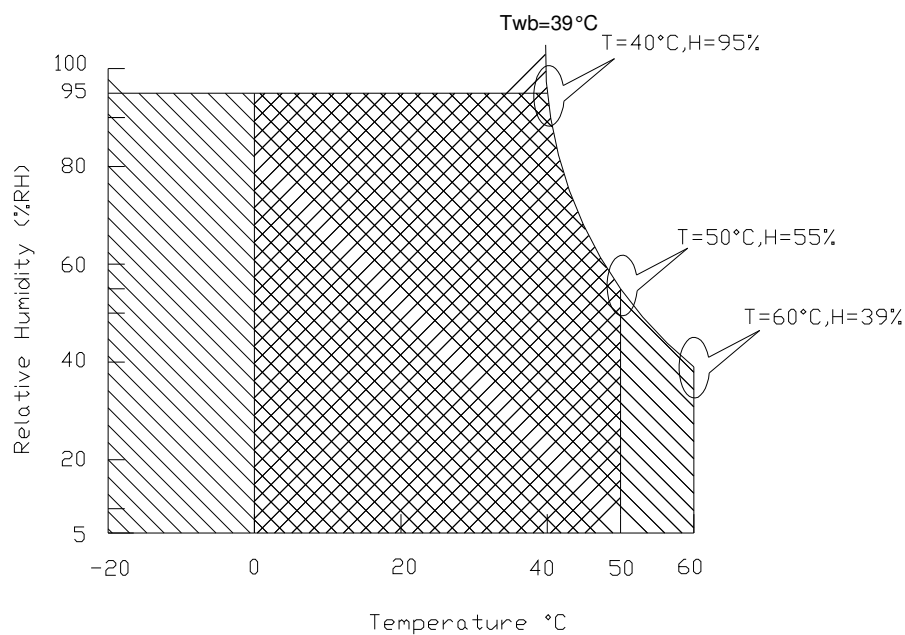
Item	Symbol	Min	Max	Unit	Conditions
Operating Temperature	TOP	0	+50	[°C]	Note 4
Operation Humidity	HOP	5	95	[%RH]	Note 4
Storage Temperature	TST	-20	+60	[°C]	Note 4
Storage Humidity	HST	5	95	[%RH]	Note 4

Note 1: At Ta (25°C)

Note 2: Permanent damage to the device may occur if exceed maximum values

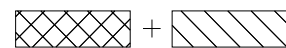
Note 3: LED specification refer to section 5.2

Note 4: For quality performance, please refer to AUO IIS (Incoming Inspection Standard).



Operating Range 

Storage Range



5. Electrical characteristics

5.1 TFT LCD Module

5.1.1 Power Specification

Input power specifications are as follows;

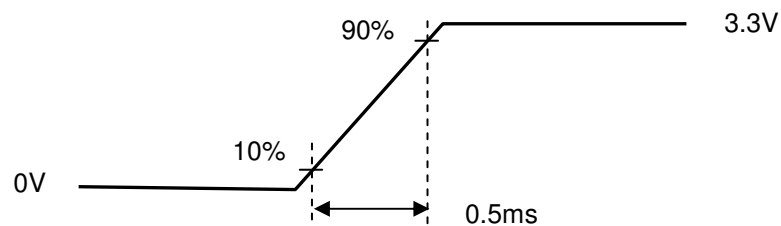
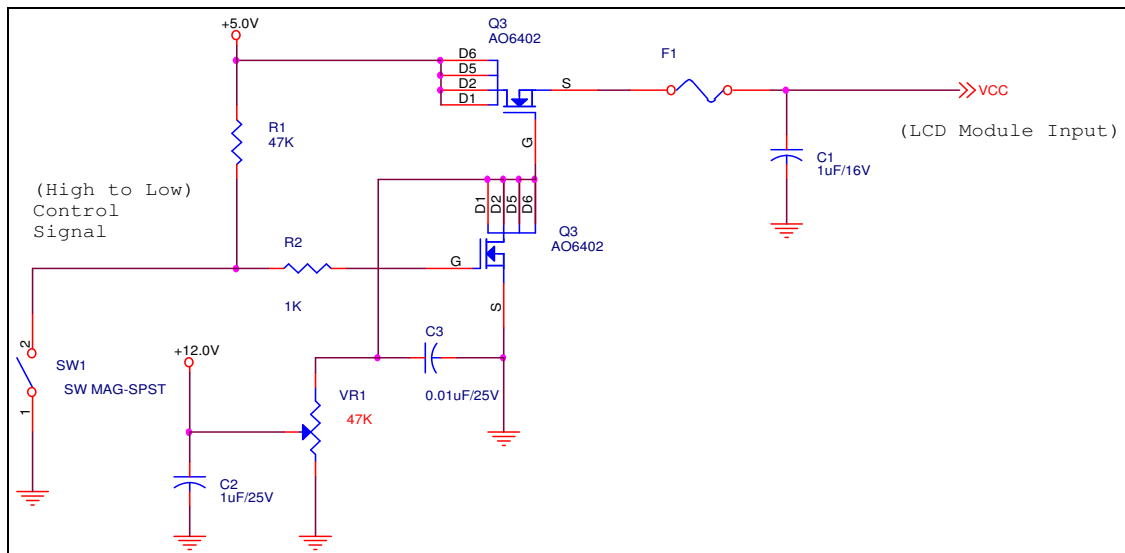
The power specification are measured under 25°C and frame frequency under 60Hz

Symble	Parameter	Min	Typ	Max	Units	Note
VDD	Logic/LCD Drive Voltage	3.0	3.3	3.6	[Volt]	
PDD	VDD Power	-	-	0.8	[Watt]	Note 1/2
IDD	IDD Current	-	350	450	[mA]	Note 1/2
IRush	Inrush Current	-	-	2000	[mA]	Note 3
VDDrp	Allowable Logic/LCD Drive Ripple Voltage	-	-	100	[mV] p-p	

Note 1 : Maximum Measurement Condition : Black Pattern

Note 2 : Typical Measurement Condition: Mosaic Pattern

Note 3 : Measure Condition



Vin rising time

It is recommended to refer the specifications of THC63LVDF84A (Thine Electronics Inc.) in detail.

Parameter	Condition	Min	Max	Unit
Vth	Differential Input High Threshold (Vcm=+1.2V)	-	100	[mV]
Vtl	Differential Input Low Threshold (Vcm=+1.2V)	-100	-	[mV]
Vcm	Differential Input Common Mode Voltage	1.125	1.375	[V]

The diagram shows a differential signal path. Two solid black lines represent the signal traces, which cross each other in the center. A horizontal dotted line runs through the center of the crossing. A vertical double-headed arrow labeled V_{cm} indicates the common-mode voltage between the crossing point and a solid horizontal line at the bottom labeled V_{SS} . On the left, a blue arrow labeled V_t points upwards from a solid line to a dotted line, and a red arrow points downwards from the solid line to the V_{SS} line.

5.2 Backlight Unit

LED Parameter guideline for LED driving selection (Ref. Remark 1)

Parameter	Symbol	Min	Typ	Max	Units	Condition
LED Forward Voltage	V_F	3.0	3.2	3.4	[Volt]	(Ta=25°C)
LED Forward Current	I_F		20		[mA]	(Ta=25°C)
LED Power consumption	P_{LED}		3.01	3.06	[Watt]	(Ta=25°C) Note 1
LED Life-Time	N/A	10,000	-	-	Hour	(Ta=25°C) $I_F=20\text{ mA}$ Note 2
Output PWM frequency	F_{PWM}	100	200	20K	Hz	
Duty ratio	--	5	--	100	%	

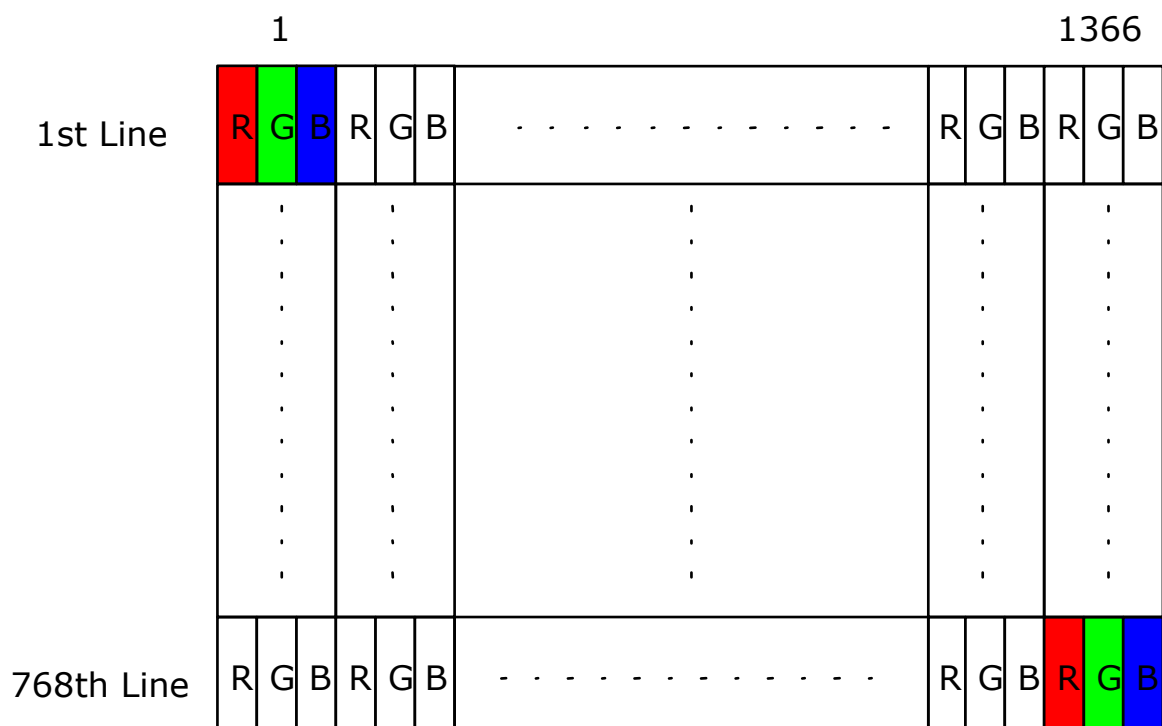
Note 1: Calculator value for reference $P_{LED} = V_F \text{ (Normal Distribution)} * I_F \text{ (Normal Distribution)} / \text{Efficiency}$

Note 2: The LED life-time define as the estimated time to 50% degradation of initial luminous.

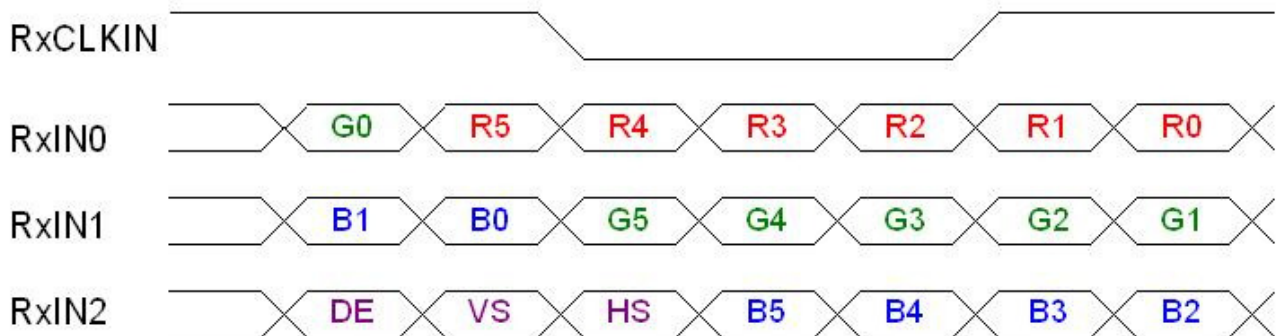
6. Signal Characteristic

6.1 Pixel Format Image

Following figure shows the relationship of the input signals and LCD pixel format.



6.2 The input data format



Signal Name	Description	
R5 R4 R3 R2 R1 R0	Red Data 5 (MSB) Red Data 4 Red Data 3 Red Data 2 Red Data 1 Red Data 0 (LSB)	Red-pixel Data Each red pixel's brightness data consists of these 6 bits pixel data.
G5 G4 G3 G2 G1 G0	Green Data 5 (MSB) Green Data 4 Green Data 3 Green Data 2 Green Data 1 Green Data 0 (LSB)	Green-pixel Data Each green pixel's brightness data consists of these 6 bits pixel data.
B5 B4 B3 B2 B1 B0	Blue Data 5 (MSB) Blue Data 4 Blue Data 3 Blue Data 2 Blue Data 1 Blue Data 0 (LSB)	Blue-pixel Data Each blue pixel's brightness data consists of these 6 bits pixel data.
RxCLKIN	Data Clock	The signal is used to strobe the pixel data and DE signals. All pixel data shall be valid at the falling edge when the DE signal is high.
DE	Display Timing	This signal is strobed at the falling edge of RxCLKIN. When the signal is high, the pixel data shall be valid to be displayed.
VS	Vertical Sync	The signal is synchronized to RxCLKIN .
HS	Horizontal Sync	The signal is synchronized to RxCLKIN .

Note: Output signals from any system shall be low or High-impedance state when VDD is off.

6.3 Integration Interface and Pin Assignment

LVDS is a differential signal technology for LCD interface and high speed data transfer device.

PIN#	Signal Name	Description
1	NC	No Connection (Reserve)
2	AVDD	PowerSupply,3.3V(typical)
3	AVDD	PowerSupply,3.3V(typical)
4	DVDD	DDC 3.3Vpower
5	NC	No Connection (Reserve)
6	SCL	DDCClock
7	SDA	DDCData
8	Rin0-	-LVDSdifferential data input(R0-R5,G0)
9	Rin0+	+LVDSdifferential data input(R0-R5,G0)
10	GND	Ground
11	Rin1-	-LVDSdifferential data input(G1-G5,B0-B1)
12	Rin1+	+LVDSdifferential data input(G1-G5,B0-B1)
13	GND	Ground
14	Rin2-	-LVDSdifferential data input(B2-B5,HS,VS,DE)
15	Rin2+	+LVDSdifferential data input(B2-B5,HS,VS,DE)
16	GND	Ground
17	ClkIN-	-LVDSdifferential clock input
18	ClkIN+	+LVDSdifferential clock input
19	GND	Ground–Shield
20	NC	No Connection (Reserve)
21	NC	No Connection (Reserve)
22	GND	Ground–Shield
23	NC	No Connection (Reserve)
24	NC	No Connection (Reserve)
25	GND	Ground–Shield
26	NC	No Connection (Reserve)
27	NC	No Connection (Reserve)
28	GND	Ground–Shield
29	NC	No Connection (Reserve)
30	NC	No Connection (Reserve)
31	VLED_GND	LED Ground
32	VLED_GND	LED Ground
33	VLED_GND	LED Ground
34	NC	No Connection (Reserve)

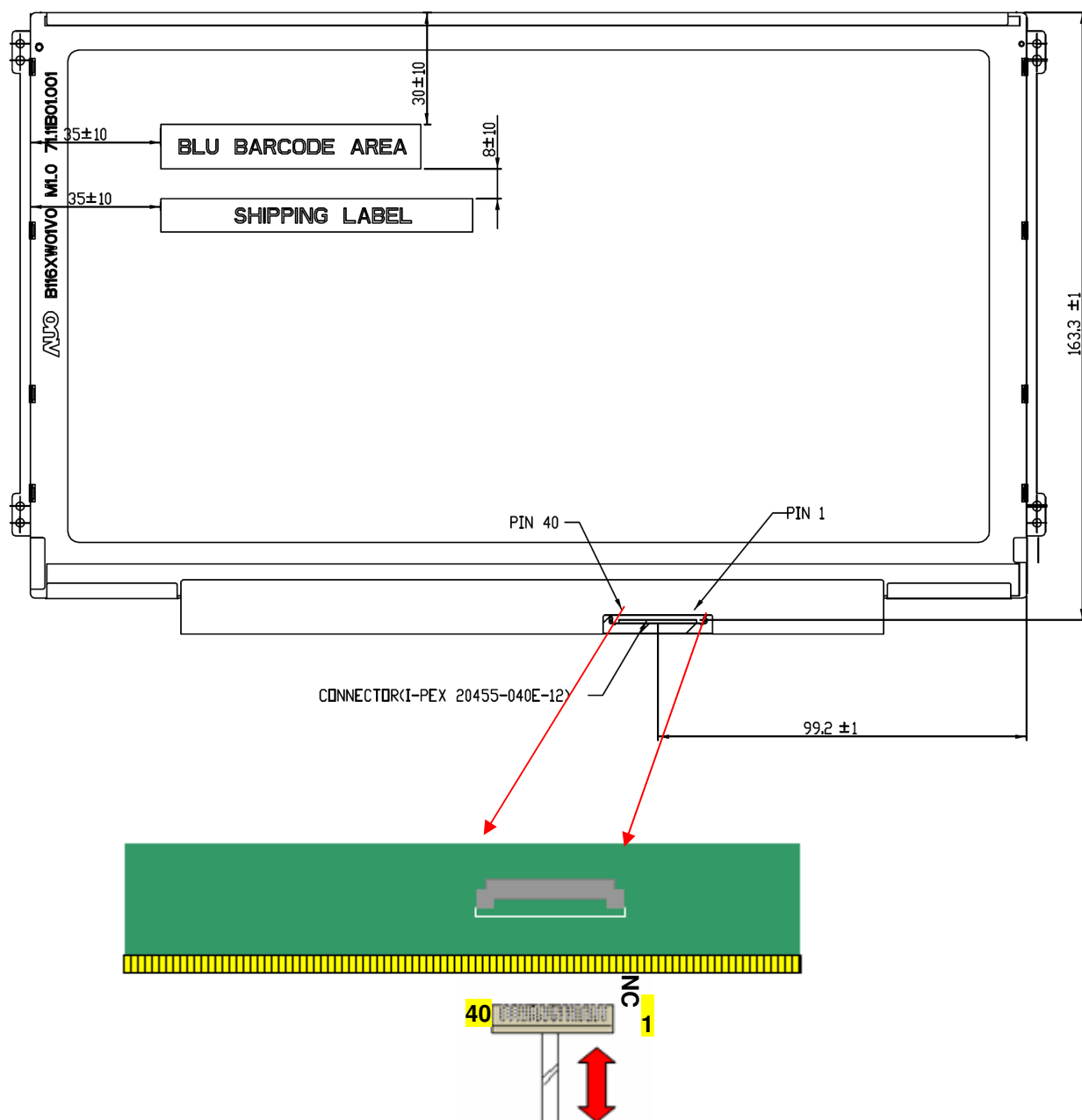


Product Specification

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35	PWM	System PWM Signal Input
36	LED_EN	LED enable pin(+3.3±0.3V Input)
37	NC	No Connection (Reserve)
38	VLED	LED Power Supply 6V-21V
39	VLED	LED Power Supply 6V-21V
40	VLED	LED Power Supply 6V-21V

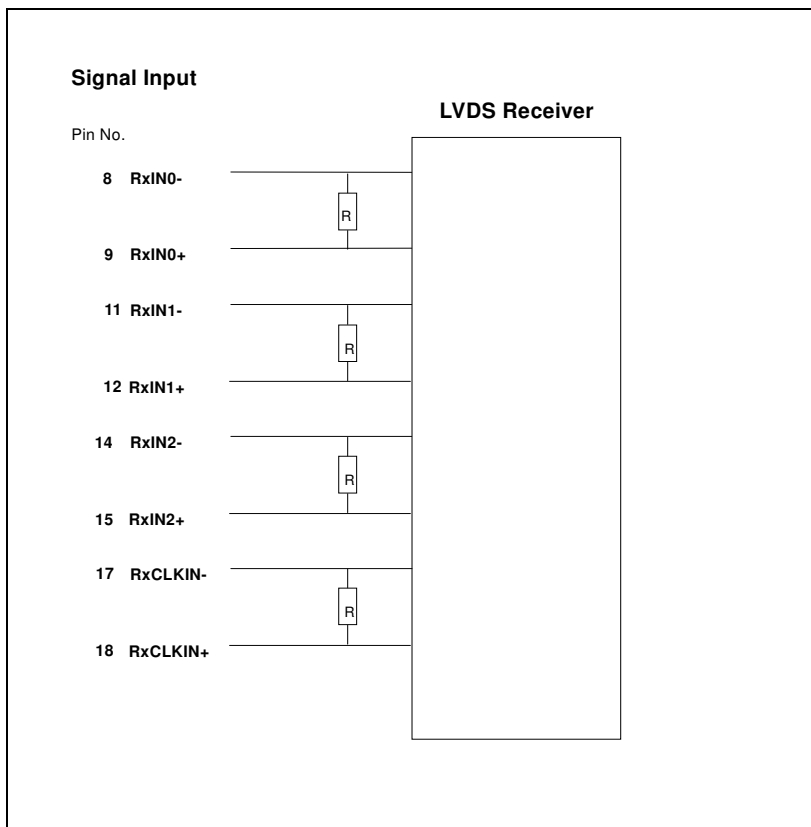
Note1: Start from right side



Note2: Input signals shall be low or High-impedance state when VDD is off.

internal circuit of LVDS inputs are as following.

The module uses a 100ohm resistor between positive and negative data lines of each receiver input



6.4 Interface Timing

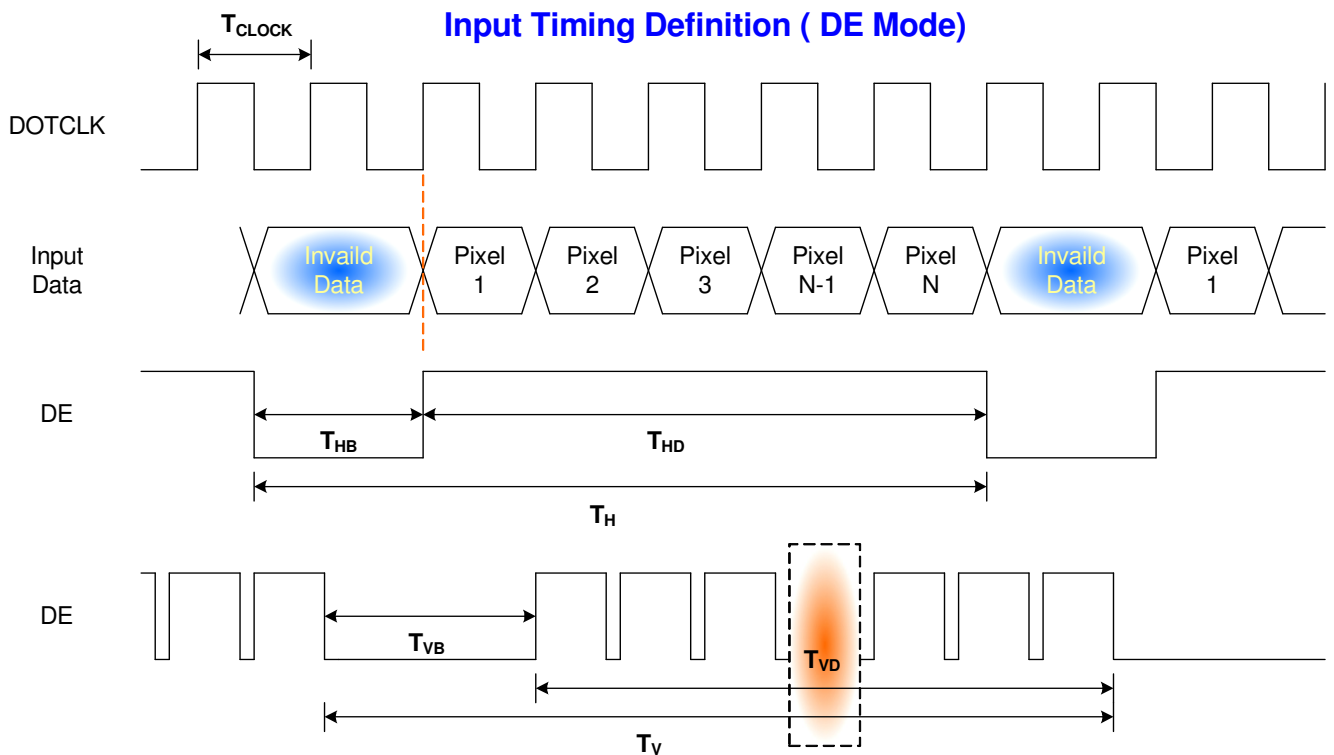
6.4.1 Timing Characteristics

Basically, interface timings should match the 1366x768 /60Hz manufacturing guide line timing.

Parameter		Symbol	Min.	Typ.	Max.	Unit
Frame Rate		-	50	60	-	Hz
Clock frequency		$1/T_{\text{Clock}}$	-	72	-	MHz
Vertical Section	Period	780	803	-	1023	T_{Line}
	Active		768	-	768	
	Blanking	12	35	-	255	
Horizontal Section	Period	1426	1494	-	2047	T_{Clock}
	Active	-	1366	-	1366	
	Blanking	60	128	-	681	

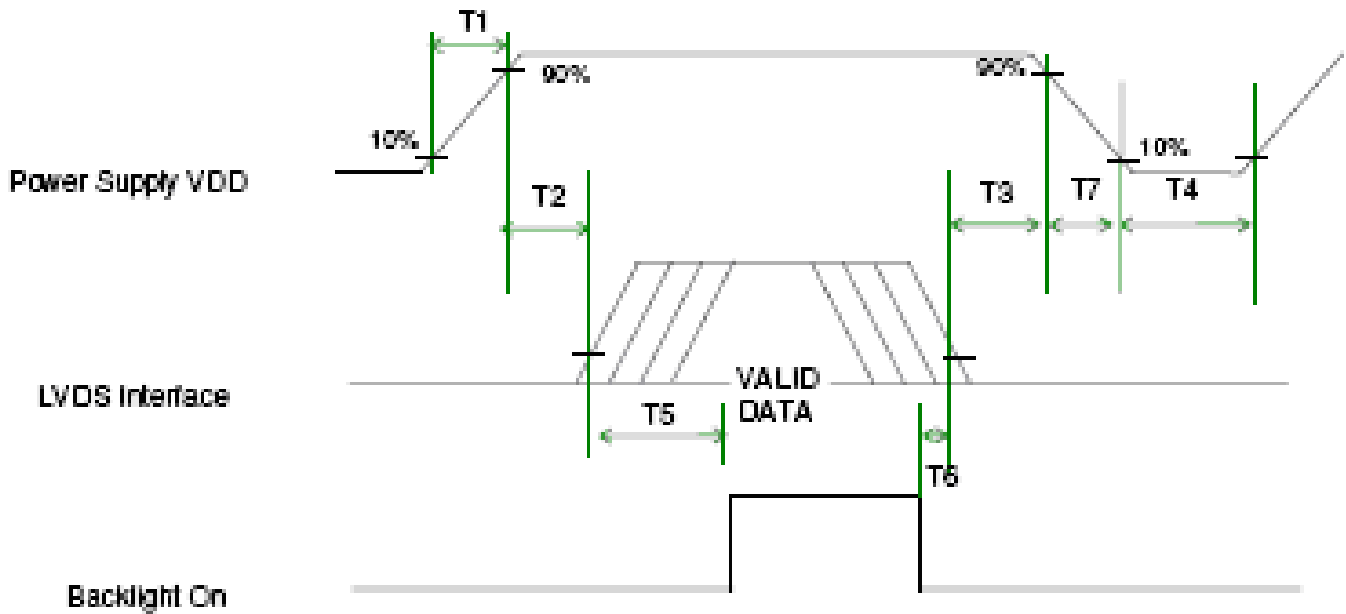
Note : DE mode only

6.4.2 Timing diagram



6.5 Power ON/OFF Sequence

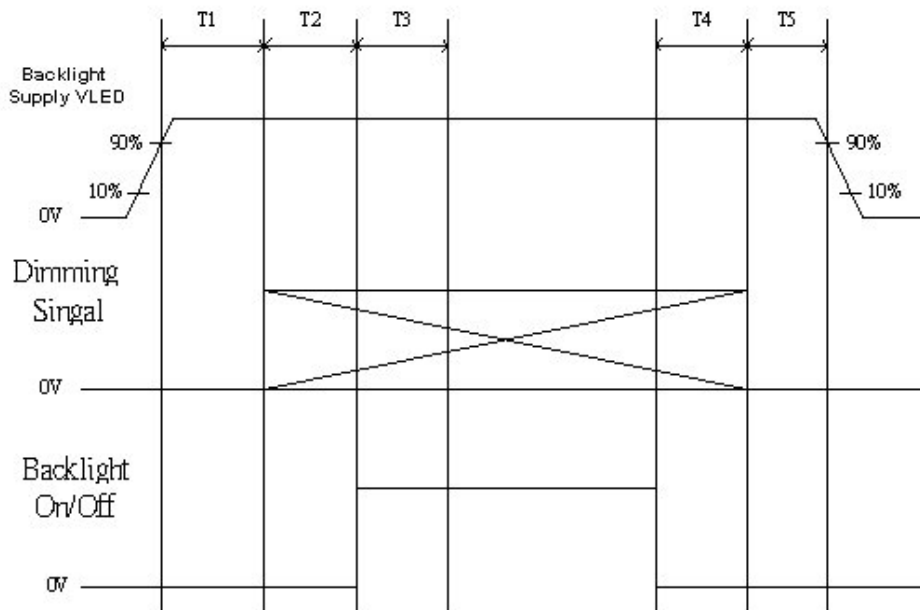
VDD power on/off sequence is as follows. Interface signals are also shown in the chart. Signals from any system shall be Hi-Z state or low level when VDD is off



Power Sequence Timing

Parameter	Value			Units
	Min.	Typ.	Max.	
T1	0.5	-	10	ms
T2	0	-	50	
T3	0	-	50	
T4	400	-	-	
T5	200	-	-	
T6	200	-	-	
T7	0	-	10	

LED on/off sequence is as follows. Interface signals are also shown in the chart.



Symbol	Values			Unit
	Min	Typ	Max	
T1	10	---	---	ms
T2	10	---	---	
T3	50	---	---	
T4	0	---	---	
T5	10	---	---	

Note: The duty of LED dimming signal should be more than 5% in T2 and T3.



7. Connector Description

Physical interface is described as for the connector on module.

These connectors are capable of accommodating the following signals and will be following components.

7.1 TFT LCD Module

Connector Name / Designation	For Signal Connector
Manufacturer	IPEX or compatible
Type / Part Number	IPEX 20455-040E-12A or compatible
Mating Housing/Part Number	IPEX 20453-040E-01 or compatible



8. LED Driving Specification

8.1 Connector Description

It is a integrative interface and comibe into LVDS connector. The type and mating refer to section 7.

8.2 Pin Assignment

Ref. to 6.3



9. Vibration and Shock Test

9.1 Vibration Test

Test Spec:

- Test method: Non-Operation
- Acceleration: 1.5 G
- Frequency: 10 - 500Hz Random
- Sweep: 30 Minutes each Axis (X, Y, Z)

9.2 Shock Test Spec:

Test Spec:

- Test method: Non-Operation
- Acceleration: 220 G , Half sine wave
- Active time: 2 ms
- Pulse: X,Y,Z .one time for each side

10. Reliability

Items	Required Condition	Note
Temperature Humidity Bias	Ta= 40°C, 90%RH, 300h	
High Temperature Operation	Ta= 50°C, Dry, 300h	
Low Temperature Operation	Ta= 0°C, 300h	
High Temperature Storage	Ta= 60°C, 35%RH, 300h	
Low Temperature Storage	Ta= -20°C, 50%RH, 250h	
Thermal Shock Test	Ta=-20°C to 60°C, Duration at 30 min, 100 cycles	
ESD	Contact : ±8 KV Air : ±15 KV	Note 1

Note1: According to EN 61000-4-2 , ESD class B: Some performance degradation allowed. No data lost
. Self-recoverable. No hardware failures.

Remark: MTBF (Excluding the LED): 30,000 hours with a confidence level 90%

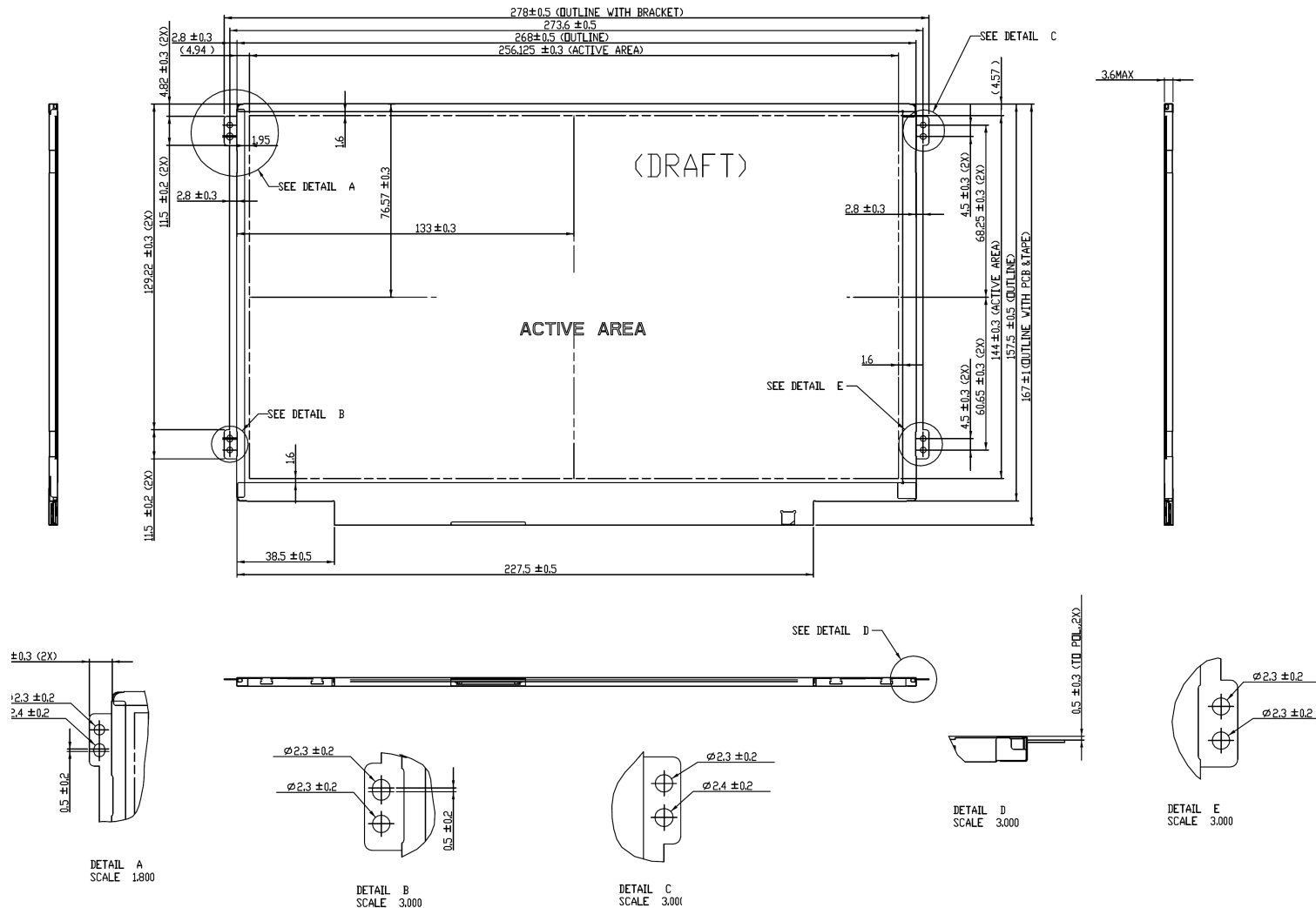


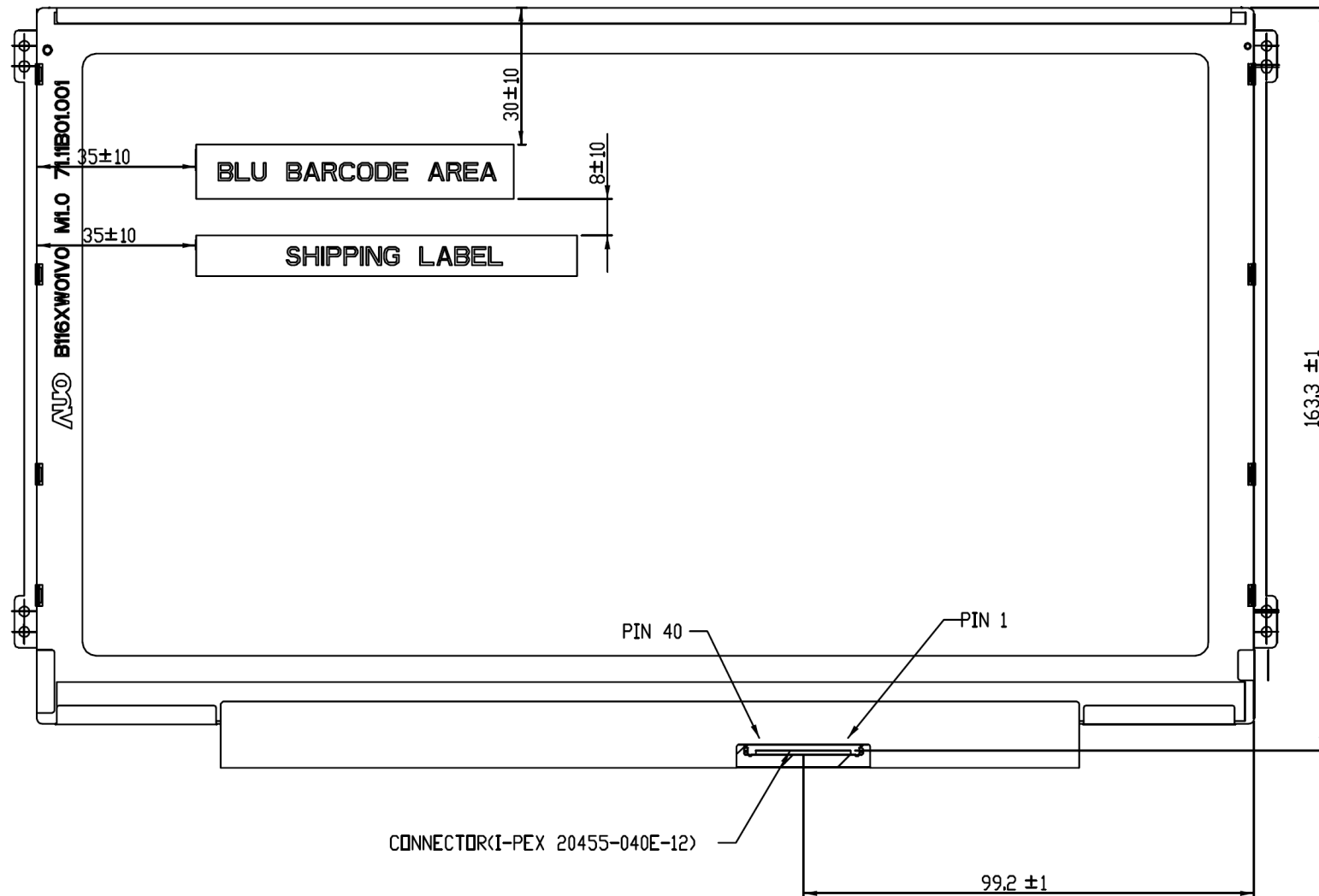
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11. Mechanical Characteristics

11.1 LCM Outline Dimension





Note: Prevention IC damage, IC positions not allowed any overlap over these areas.



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12. Shipping and Package

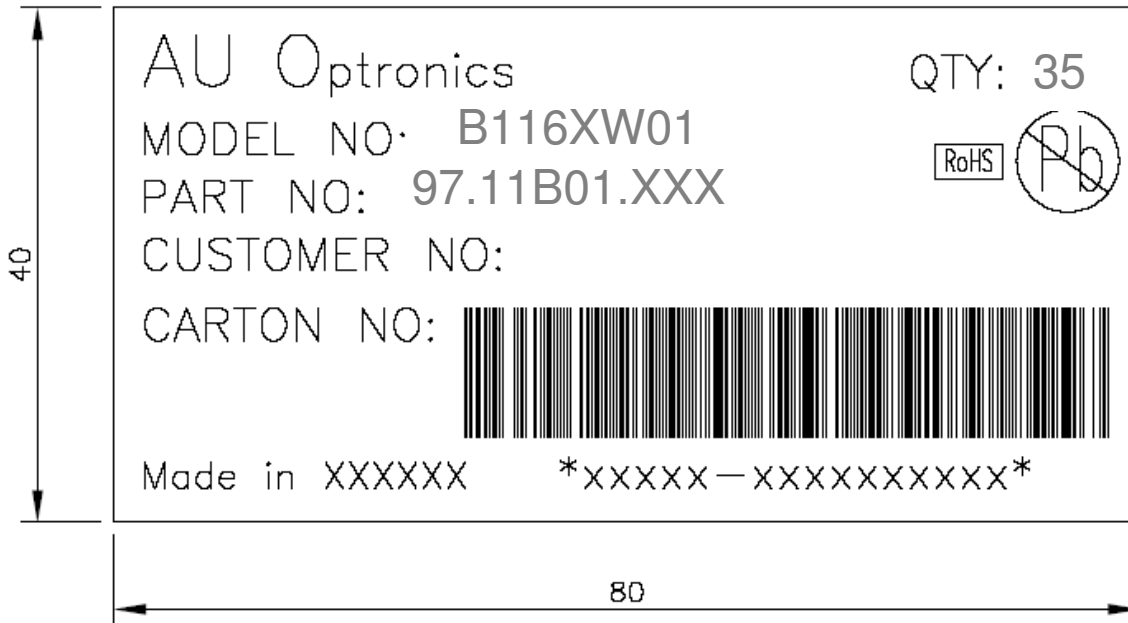
12.1 Shipping Label Format

Size :90 mm(length) x35mm(width)



12.2 Carton package

Carton Label: 80mm * 40mm



The outside dimension of carton is 469(L)mm* 378(W)mm* 266(H)mm, carton and cushion weight are 2590g

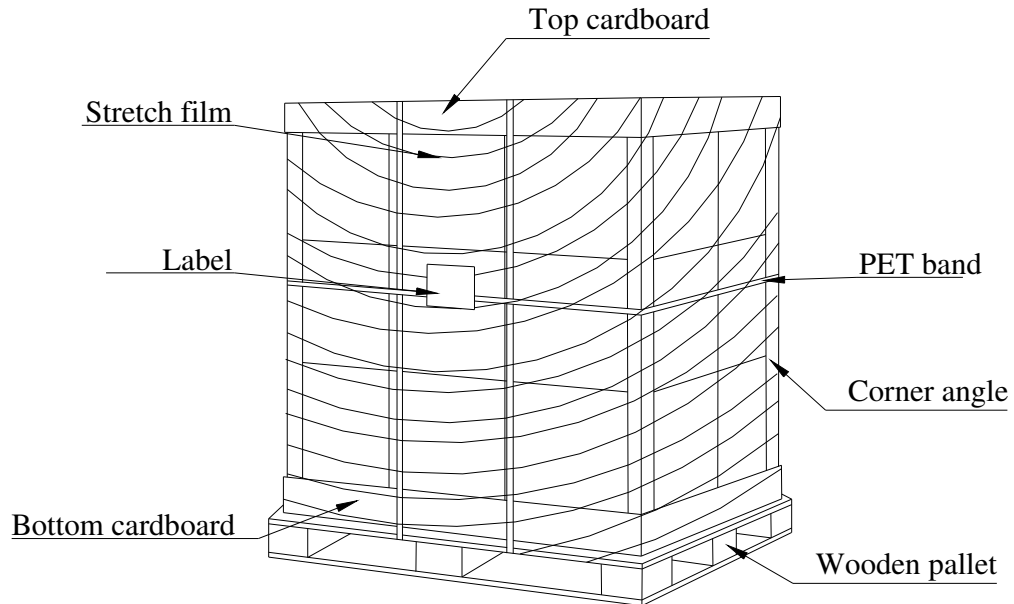


12.3 Shipping package of palletizing sequence

The outside dimension of Pallet is 114(L)mm* 98(W)mm* 13.8(H)mm

By air : 6 *5 layers, one pallet put 30 boxes, total 1050 pcs module.

By sea : 6 *7 layers, one pallet put 42 boxes, total 1470 pcs module.





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13. Appendix: EDID description

Address	FUNCTION	Value	Value	Value	Note
HEX		HEX	BIN	DEC	
00	Header	00	00000000	0	
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	EISA Manuf. Code LSB	06	00000110	6	
09	Compressed ASCII	AF	10101111	175	
0A	Product Code	5C	01011100	92	
0B	hex, LSB first	10	00010000	16	
0C	32-bit ser #	00	00000000	0	
0D		00	00000000	0	
0E		00	00000000	0	
0F		00	00000000	0	
10	Week of manufacture	01	00000001	1	
11	Year of manufacture	12	00010010	18	
12	EDID Structure Ver.	01	00000001	1	
13	EDID revision #	03	00000011	3	
14	Video input def. <small>(digital I/P, non-TMDS, CRGB)</small>	80	10000000	128	
15	Max H image size <small>(rounded to cm)</small>	1A	00011010	26	
16	Max V image size <small>(rounded to cm)</small>	0E	00001110	14	
17	Display Gamma <small>(=(gamma*100)-100)</small>	78	01111000	120	
18	Feature support <small>(no DPMS, Active OFF, RGB, tmg Blk#1)</small>	0A	00001010	10	
19	Red/green low bits (Lower 2:2:2:2 bits)	99	10011001	153	
1A	Blue/white low bits (Lower 2:2:2:2 bits)	85	10000101	133	
1B	Red x (Upper 8 bits)	95	10010101	149	
1C	Red y/ highER 8 bits	55	01010101	85	
1D	Green x	56	01010110	86	
1E	Green y	92	10010010	146	
1F	Blue x	28	00101000	40	
20	Blue y	22	00100010	34	
21	White x	50	01010000	80	
22	White y	54	01010100	84	
23	Established timing 1	00	00000000	0	
24	Established timing 2	00	00000000	0	
25	Established timing 3	00	00000000	0	
26	Standard timing #1	01	00000001	1	



Product Specification

AU OPTRONICS CORPORATION

27		01	00000001	1	
28	Standard timing #2	01	00000001	1	
29		01	00000001	1	
2A	Standard timing #3	01	00000001	1	
2B		01	00000001	1	
2C	Standard timing #4	01	00000001	1	
2D		01	00000001	1	
2E	Standard timing #5	01	00000001	1	
2F		01	00000001	1	
30	Standard timing #6	01	00000001	1	
31		01	00000001	1	
32	Standard timing #7	01	00000001	1	
33		01	00000001	1	
34	Standard timing #8	01	00000001	1	
35		01	00000001	1	
36	Pixel Clock/10000 LSB	20	00100000	32	
37	Pixel Clock/10000 USB	1C	00011100	28	
38	Horz active Lower 8bits	56	01010110	86	
39	Horz blanking Lower 8bits	80	10000000	128	
3A	HorzAct:HorzBlnk Upper 4:4 bits	50	01010000	80	
3B	Vertical Active Lower 8bits	00	00000000	0	
3C	Vertical Blanking Lower 8bits	23	00100011	35	
3D	Vert Act : Vertical Blanking (upper 4:4 bit)	30	00110000	48	
3E	HorzSync. Offset	30	00110000	48	
3F	HorzSync.Width	20	00100000	32	
40	VertSync.Offset : VertSync.Width	36	00110110	54	
41	Horz&Vert Sync Offset/Width Upper 2bits	00	00000000	0	
42	Horizontal Image Size Lower 8bits	00	00000000	0	
43	Vertical Image Size Lower 8bits	90	10010000	144	
44	Horizontal & Vertical Image Size (upper 4:4 bits)	10	00010000	16	
45	Horizontal Border <i>(zero for internal LCD)</i>	00	00000000	0	
46	Vertical Border <i>(zero for internal LCD)</i>	00	00000000	0	
47	Signal <i>(non-intr, norm, no stero, sep sync, neg pol)</i>	18	00011000	24	
48	Detailed timing/monitor	00	00000000	0	
49	descriptor #2	00	00000000	0	
4A		00	00000000	0	
4B		0F	00001111	15	
4C		00	00000000	0	
4D		00	00000000	0	
4E		00	00000000	0	
4F		00	00000000	0	
50		00	00000000	0	



Product Specification

AU OPTRONICS CORPORATION

51		00	00000000	0	
52		00	00000000	0	
53		00	00000000	0	
54		00	00000000	0	
55		00	00000000	0	
56		00	00000000	0	
57		00	00000000	0	
58		00	00000000	0	
59		20	00100000	32	
5A	Detailed timing/monitor	00	00000000	0	
5B	descriptor #3	00	00000000	0	
5C		00	00000000	0	
5D		FE	11111110	254	
5E		00	00000000	0	
5F	Manufacture	41	01000001	65	A
60	Manufacture	55	01010101	85	U
61	Manufacture	4F	01001111	79	O
62		0A	00001010	10	
63		20	00100000	32	
64		20	00100000	32	
65		20	00100000	32	
66		20	00100000	32	
67		20	00100000	32	
68		20	00100000	32	
69		20	00100000	32	
6A		20	00100000	32	
6B		20	00100000	32	
6C	Detailed timing/monitor	00	00000000	0	
6D	descriptor #4	00	00000000	0	
6E		00	00000000	0	
6F		FE	11111110	254	
70		00	00000000	0	
71	Manufacture P/N	42	01000010	66	B
72	Manufacture P/N	31	00110001	49	1
73	Manufacture P/N	31	00110001	49	1
74	Manufacture P/N	36	00110110	54	6
75	Manufacture P/N	58	01011000	88	X
76	Manufacture P/N	57	01010111	87	W
77	Manufacture P/N	30	00110000	48	0
78	Manufacture P/N	31	00110001	49	1
79	Manufacture P/N	20	00100000	32	
7A	Manufacture P/N	56	01010110	86	V
7B	Manufacture P/N	30	00110000	48	0



Product Specification

AU OPTRONICS CORPORATION

7C		20	00100000	32	
7D		0A	00001010	10	
7E	Extension Flag	00	00000000	0	
7F	Checksum	CF	11001111	207	
SUM				5888	
SUM to HEX				1700	