() Preliminary Specification
(V) Final Specification

Module	35" Color TFT-LCD
Model Name	M350DVR01.0

Customer	Date

Approved by

Approved by	Date
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Prepared by	Date
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Note: This Specification is subject to change
without notice.

AU Optronics corporation

Contents

Record of Revision

Version	Date	Page	Old description	New Description	Remark
0.1	2014/11/7		Preliminary Spec		
0.2	2014/11/12	30		Update 2D Drawing	
0.3	2014/11/19	16~24 35~36		Update Signal Characteristics Update Packing Specification	
		30	834.40x371.85x18.0	Update Outline Dimension 834.40 x 373.85 x 18.00 (D) Typ. Update 2D Drawing	
0.4	2014/12/9	5		To define the weight of panel	
0.5	2015/1/21	5 15 22 24 33~34 P5,7,29, 30		Modify the LCD PDD as 6.36W Modify the operating condtion Modify the input timing specification Modify the 2D Drawing Modify the LED Forward Current as 110mA	
0.6	2015/3/18	5,7,10,37		1. Modify CR from 3000 to 2000 2. Define response time spec GTG 20ms 3. Define the response time mesurement as GTG	
1.0	2015/3/26	7,9,15,20,23,25,34		1. Define min.CR ratio 2. Define viewing angle measurement 3. Define VRXINP/N input each bit Period 4. Modify 2D Drawing on page 34 5. Modify Power sequence 6. modify power sequence & timing spec (page 25, 20,23) 7. update CNT figure(page 15)	
1.1	2015/4/8	7		To define the sRGB coverage ratio Modify the Uniformity spec (typ.70%, min65%)	

1 Handling Precautions

1) Since polarizer is easily damaged, do not touch or press the surface of polorizer with hand.

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 or modify the Module Assembly.

8) Do not press the reflector sheet at the back of the module to any directions.

9) In case a TFT-LCD Module has to be put back into the packing container slot after once it was taken out from the container, do not press the center of the LED lightbar edge. Otherwise the TFT-LCD Module may be damaged.

10) Insert or pull out the interface connector, be sure not to rotate nor tilt it of the TFT-LCD Module.

11) Do not twist nor bend the TFT -LCD Module even momentary. It should be taken into consideration that no bending/twisting forces are applied to the TFT-LCD Module from outside. Otherwise the TFT-LCD Module may be damaged.

12) Please avoid touching COF position while you are doing mechanical design.

13) When storing modules as spares for a long time, the following precaution is necessary: Store them in a dark place. Do not expose the module to sunlight or fluorescent light. Keep the temperature between 5   and 35   at normal humidity.

14) Do not apply the same pattern for a long time, it will enhance relevant defect.

2 General Description

This specification applies to the 35 inch wide Color a-Si TFT-LCD Module M350DVR01.0. The display supports the Wide Full HD - 2560(H) x 1080(V) screen format and 16.7M colors (RGB 8-bits). The input interface is V by 1 and this module doesn't contain an driver board for backlight.

2.1 Display Characteristics

The following items are characteristics summary on the table under 25   condition:

ITEMS	Unit	SPECIFICATIONS
Screen Diagonal	[mm]	889.81 (35.03")
Active Area	[mm]	819.84 (H) x 345.87 (V)
Pixels H x V	-	2560(x3) x 1080
Pixel Pitch	[um]	320.25 (per one triad) ×320.25
Pixel Arrangement	-	R.G.B. Vertical Stripe
Display Mode	-	VA Mode, Normally Black
White Luminance (Center)	[cd/m^2]	300 (Typ.)
Contrast Ratio	-	2000 (Typ.)
Response Time	[msec]	20 (Typical,G/G)
Power Consumption (LCD Module + Backligh unit)	[Watt]	40.16 (Typ.) LCD module : PDD (Typ.)=6.36 @ White pattern,Fv=144Hz Backlight unit : P$_{BLU}$ (Typ.) =33.8 @Is=110mA
Weight	[Grams]	6780
Outline Dimension	[mm]	834.40 x 373.85 x 18.00 (Thickness) Typ.
Electrical Interface	-	V by 1
Support Color	-	16.7M colors (RGB 8-bits)
Surface Treatment	-	Anti-Glare, 3H

Temperature Range
  Operating
  Storage (Shipping)
	
	[^{o}C]
	[^{o}C]
		
		0 to +50
		-20 to +60

RoHS Compliance	-	RoHS Compliance
TCO Compliance	-	TCO 6.0 Compliance

2.2 Absolute Maximum Rating of Environment

Permanent damage may occur if exceeding the following maximum rating.

Symbol	Description	Min.	Max.	Unit	Remark
TOP	Operating Temperature	0	+50	[°C]	*Note 2-1*
TGS	Glass surface temperature (operation)	0	+65	[°C]	*Note 2-1* *Function judged only*
HOP	Operation Humidity	5	90	[%RH]	*Note 2-1*
TST	Storage Temperature	-20	+60	[°C]	
HST	Storage Humidity	5	90	[%RH]	

Note 2-1: Temperature and relative humidity range are shown as the below figure.

    1. 90% RH Max (Ta ≤ 39)

    2. Max wet-bulb temperature at 39 or less. (Ta ≥ 39)

    3. No condensation
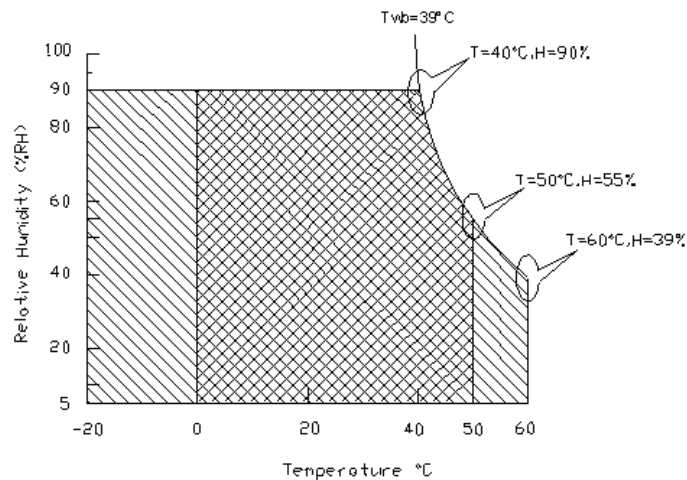
Operating Range   [XXXXX]   Storage Range   [XXXXX] + [\\\\]

2.3 Optical Characteristics

The optical characteristics are measured on the following test condition.

Test Condition:
1. Equipment setup: Please refer to *Note 2-2*.
2. Panel Lighting time: 30 minutes
3. VDD=12.0V, Fv=144Hz,**Is=110mA**,Ta=25

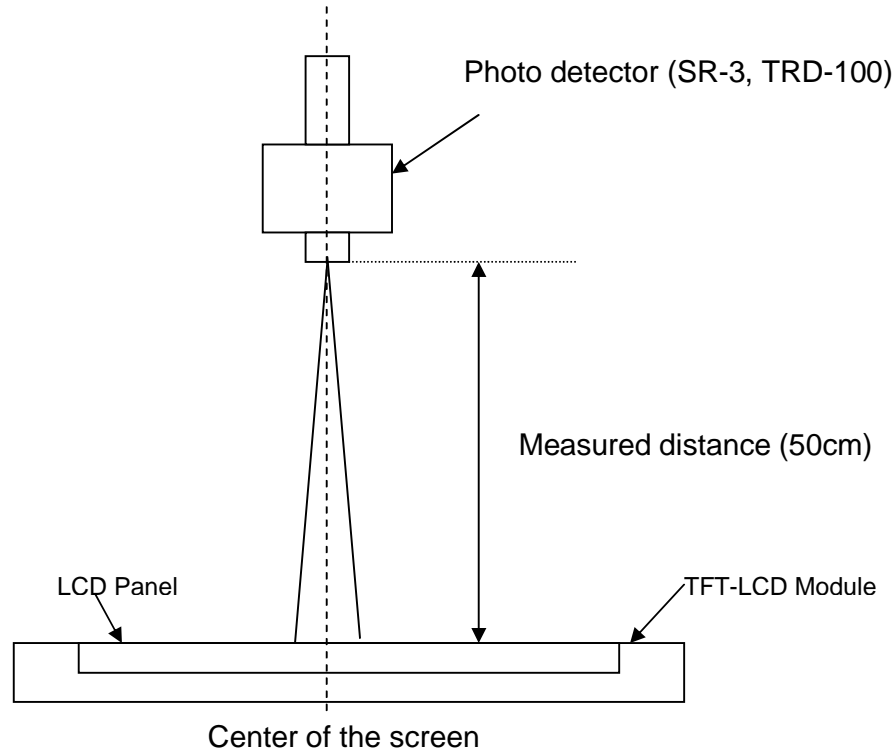| Symbol	Description		Min.	Typ.	Max.	Unit	Remark
L_w	White Luminance (Center of screen)		240	300	-	[cd/m2]	*Note 2-2* *By SR-3*
L_{uni}	Luminance Uniformity (9 points)		65	70	-	[%]	*Note 2-3* *By SR-3*
CR	Contrast Ratio (Center of screen)		1200	2000	-	-	*Note 2-4* *By SR-3*
θ_R	Horizontal Viewing Angle (CR=10)	Right	75	89	-	[degree]	*Note 2-5* *By EZ Contras*
θ_L		Left	75	89	-		
Φ_H	Vertical Viewing Angle (CR=10)	Up	75	89	-		
Φ_L		Down	75	89	-		
T_{GTG}	Response Time	Gray to Gray	-	20	-	[msec]	*Note 2-6* *By TRD-100*
R_x	Color Coordinates (CIE 1931)	Red x	0.635	0.665	0.695	-	*By SR-3*
R_y		Red y	0.292	0.322	0.352		
G_x		Green x	0.267	0.297	0.327		
G_y		Green y	0.609	0.639	0.669		
B_x		Blue x	0.121	0.151	0.181		
B_y		Blue y	0.032	0.062	0.092		
W_x		White x	0.283	0.313	0.343		
W_y		White y	0.299	0.329	0.359		
sRGB coverage ratio			-	**100**	-	[%]	*By SR-3*
CT	Crosstalk		-	-	1.5	[%]	*Note 2-7* *By SR-3*
F_{dB}	Flicker (Center of screen)		-	-	-20	[dB]	*Note 2-8* *By SR-3*

Note 2-2: Equipment setup :

Photo detector (SR-3, TRD-100)

Measured distance (50cm)

LCD Panel

TFT-LCD Module

Center of the screen

Note 2-3: Luminance Uniformity Measurement

Definition:

$$\text{Luminance Uniformity} = \frac{\text{Minimum Luminance of 9 Points (P1} \sim \text{P9)}}{\text{Maximum Luminance of 9 Points (P1} \sim \text{P9)}}$$

a.Test pattern: White Pattern
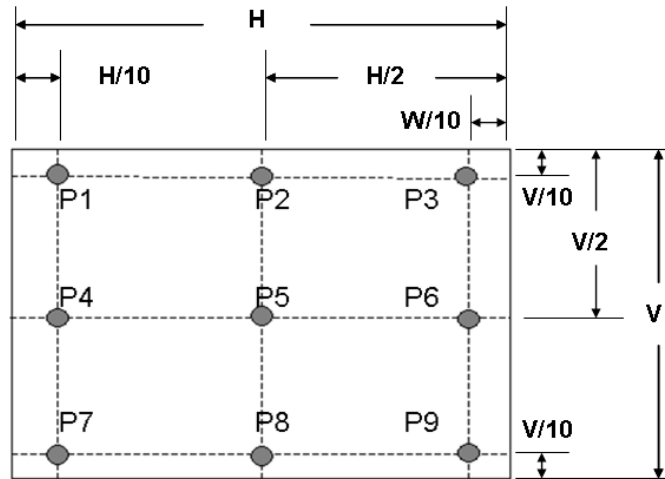
Note 2-4: Contrast Ratio Measurement

Definition:

$$\text{Contrast Ratio} = \frac{\text{Luminance of White pattern}}{\text{Luminance of Black pattern}}$$

a. Measured position: Center of screen (P5) & perpendicular to the screen ($\theta=\Phi=0°$)

Note 2-5: Viewing angle measurement

Definition: The angle at which the contrast ratio is greater than 10 & 5 .

a. Measured method:

EZ Contrast

Note 2-6: Response time measurement

The output signals of photo detector are measured when the input signals are changed from "Gray level A" to "Gray level B" (falling time, TF), and from "Gray level B" to "Gray level A" (rising time, TR), respectively. The response time is interval between the 10% and 90% of optical response.

The gray to gray response time is defined as the following table.

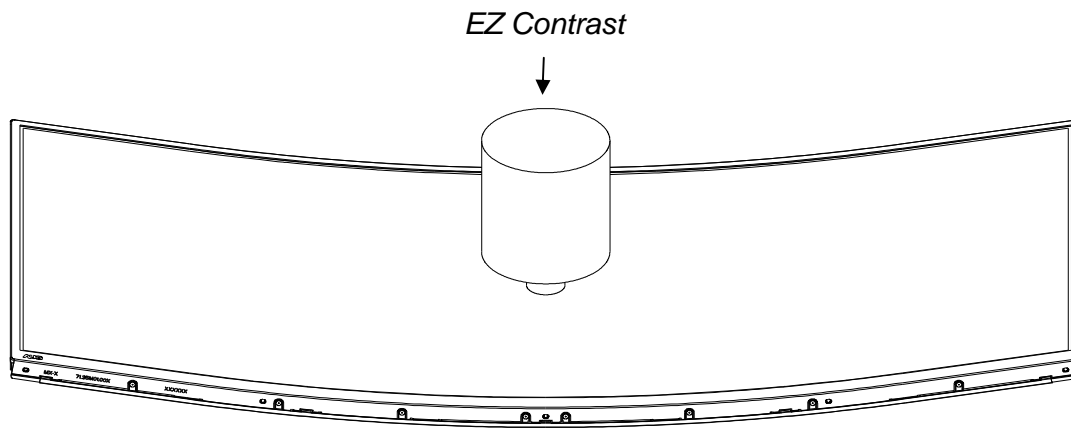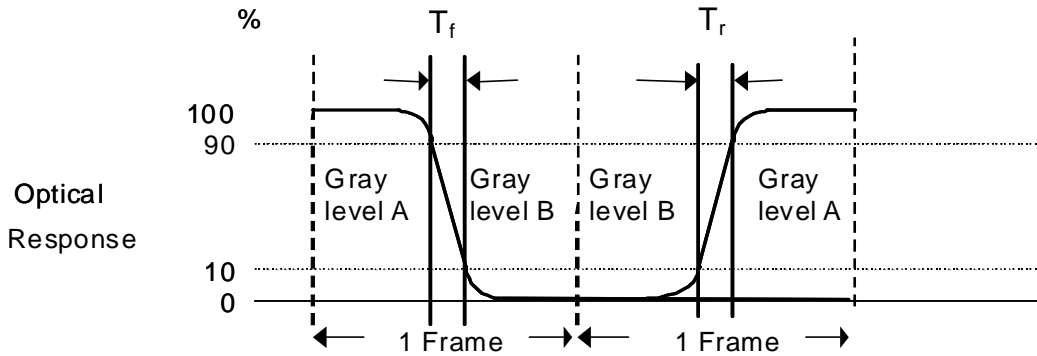| Gray Level to Gray Level		Target gray level				
		L0	L63	L127	L191	L255
Start gray level	L0					
	L63					
	L127					
	L191					
	L255					

■ T_{GTG_typ} is the total average time at rising time and falling time of gray to gray.

Note 2-7: Crosstalk measurement

Definition:

CT = Max. (CT_H, CT_V);

Where

a.Maximum Horizontal Crosstalk :

CT_H = Max. (| $Y_{BL} - Y_{AL}$ | / Y_{AL} × 100 %, | $Y_{BR} - Y_{AR}$ | / Y_{AR} × 100 %);

Maximum Vertical Crosstalk:

CT_V = Max. (| $Y_{BU} - Y_{AU}$ | / Y_{AU} × 100 %, | $Y_{BD} - Y_{AD}$ | / Y_{AD} × 100 %);

b. Y_{AU}, Y_{AD}, Y_{AL}, Y_{AR} = Luminance of measured location without Black pattern

Y_{BU}, Y_{BD}, Y_{BL}, Y_{BR} = Luminance of measured location with Black pattern
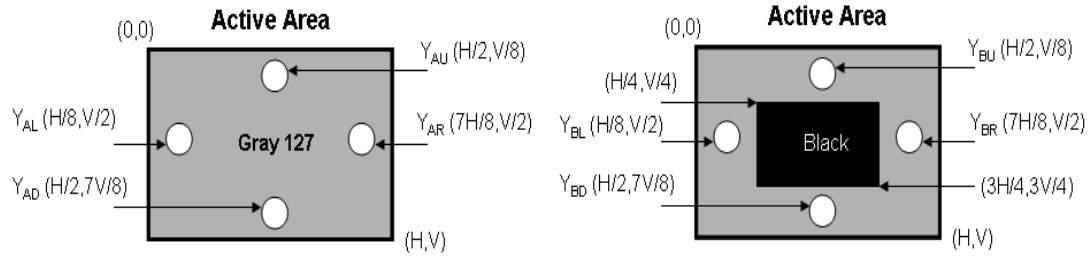
Note 2-8: Flicker measurement

   a. Test pattern: It is listed as following.
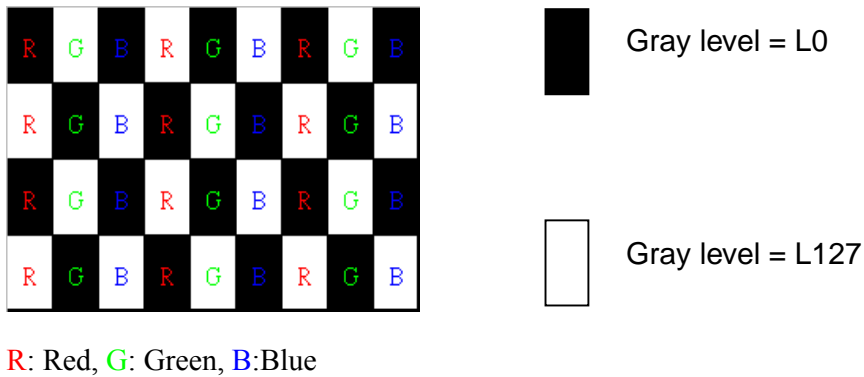
Gray level = L0

Gray level = L127

   R: Red, G: Green, B:Blue

   b. Measured position: Center of screen (P5) & perpendicular to the screen ($\theta=\Phi=0°$)

3 TFT-LCD Module

3.1 Block Diagram

The following shows the block diagram of the 35 inch Color TFT-LCD Module.
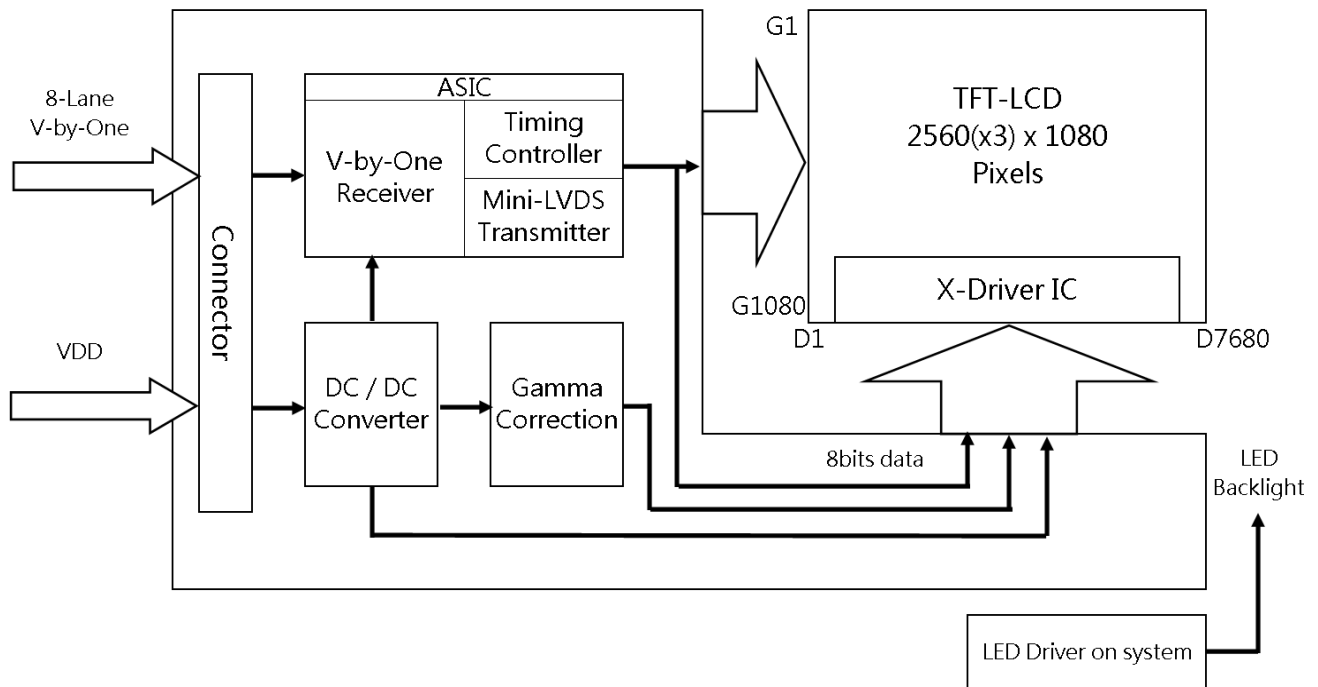
3.2 Interface Connection

3.2.1 Connector Type

TFT-LCD Connector	Manufacturer	JAE	P-TWO
	Part Number	FI-RE51S-HF	187059-5122
Mating Connector	Manufacturer	JAE or compatible	
	Part Number	FI-RE51CL	

3.2.2 Connector Pin Assignment

PIN #	Symbol	Description	Remark
1	VDD	Power +12V	
2	VDD	Power +12V	
3	VDD	Power +12V	
4	VDD	Power +12V	
5	VDD	Power +12V	
6	N.C.	No connection (for AUO test only. Do not connect)	
7	N.C.	No connection (for AUO test only. Do not connect)	
8	N.C.	No connection (for AUO test only. Do not connect)	
9	N.C.	No connection (for AUO test only. Do not connect)	
10	N.C.	No connection (for AUO test only. Do not connect)	
11	N.C.	No connection (for AUO test only. Do not connect)	
12	N.C.	No connection (for AUO test only. Do not connect)	
13	N.C.	No connection (for AUO test only. Do not connect)	
14	N.C.	No connection (for AUO test only. Do not connect)	
15	GND	Ground	
16	HTPDN	Vx1 HTPDN	
17	LOCKN	Vx1 LOCK	
18	GND	Ground	
19	RX0N	Negative Vx1 lane 0	
20	RX0P	Positive Vx1 lane 0	
21	GND	Ground	
22	GND	Ground	
23	RX1N	Negative Vx1 lane 1	
24	Rx1P	Positive Vx1 lane 1	
25	GND	Ground	
26	GND	Ground	

27	RX2N	Negative Vx1 lane 2	
28	RX2P	Positive Vx1 lane2	
29	GND	Ground	
30	GND	Ground	
31	RX3N	Negative Vx1 lane 3	
32	RX3P	Positive Vx1 lane 3	
33	GND	Ground	
34	GND	Ground	
35	RX4N	Negative Vx1 lane 4	
36	RX4P	Positive Vx1 lane 4	
37	GND	Ground	
38	GND	Ground	
39	RX5N	Negative Vx1 lane 5	
40	RX5P	Positive Vx1 lane 5	
41	GND	Ground	
42	GND	Ground	
43	RX6N	Negative Vx1 lane 6	
44	RX6P	Positive Vx1 lane 6	
45	GND	Ground	
46	GND	Ground	
47	RX7N	Negative Vx1 lane 7	
48	RX7P	Positive Vx1 lane 7	
49	GND	Ground	
50	GND	Ground	
51	GND	Ground	
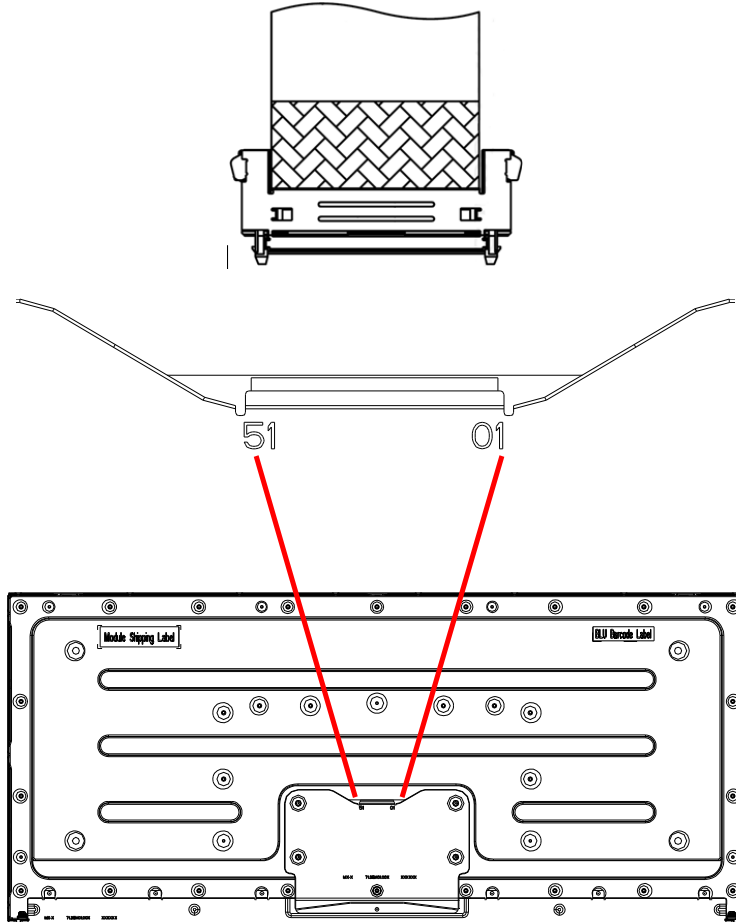
3.3 Electrical Characteristics

3.3.1 Absolute Maximum Rating

Permanent damage may occur if exceeding the following maximum rating.

Symbol	Description	Min	Max	Unit	Remark
VDD	Power Supply Input Voltage	GND-0.3	14.0	[Volt]	Ta=25

3.3.2 Recommended Operating Condition

Symbol	Description	Min	Typ	Max	Unit	Remark
VDD	Power supply Input voltage	10.8	12.0	13.2	[Volt]	
IDD	Power supply Input Current (RMS)	-	0.53	0.64	[A]	VDD= 12.0V, White pattern, Fv=144Hz
PDD	VDD Power Consumption	-	6.36	7.68	[Watt]	VDD= 12.0V , White pattern, Fv=144Hz
IRush	Inrush Current	-	-	3.0	[A]	*Note 3-1*
VDDrp	Allowable VDD Ripple Voltage	-	-	VDD*5%	[mV]	VDD= 12.0V, White pattern, Fv=144Hz

Note 3-1: Inrush Current measurement:

Test circuit:
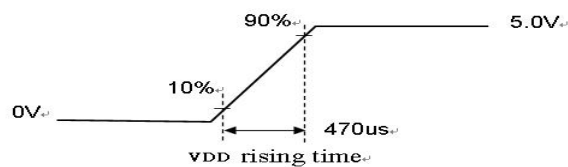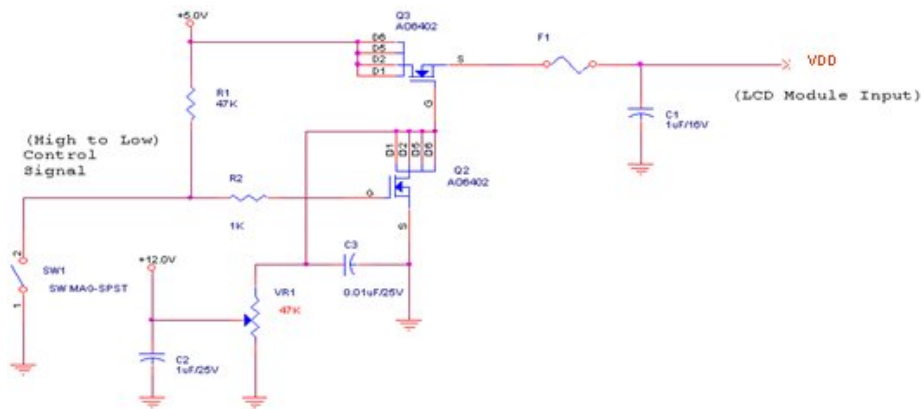
The duration of VDD rising time: 470us.

3.4 Signal Characteristics

3.4.1 LCD Pixel Format
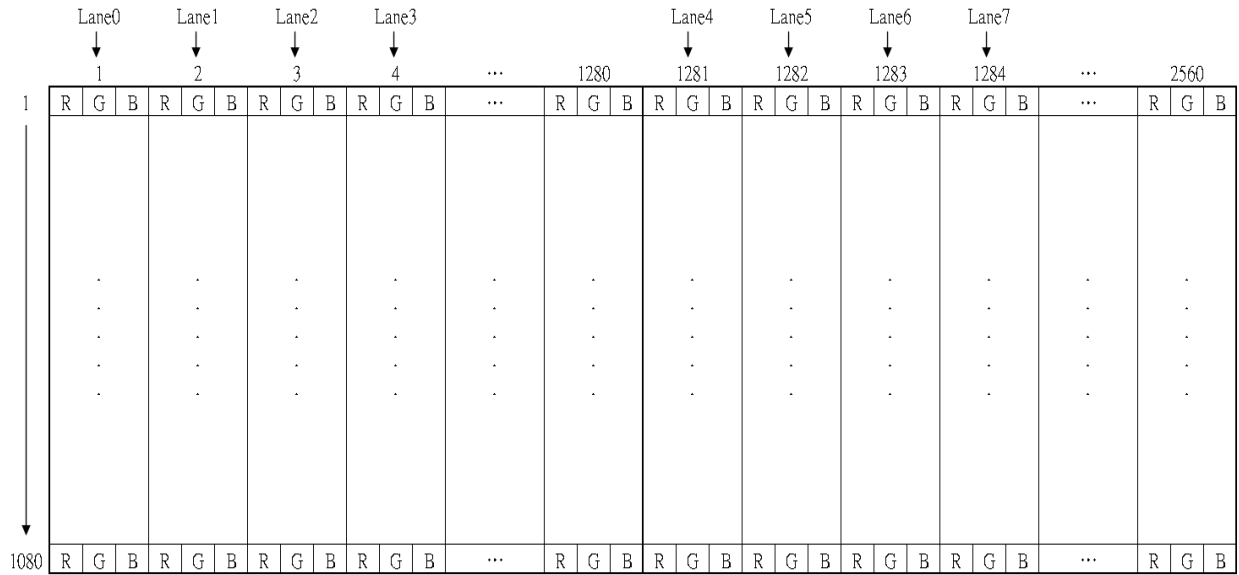
Note 3-2: The module use 8 Lanes V-By-One interface.

Lane0   1+4n pixel

Lane1   2+4n pixel

Lane2   3+4n pixel

Lane3   4+4n pixel

Lane4   1281+4n pixel

Lane5   1282+4n pixel

Lane6   1283+4n pixel

Lane7   1284+4n pixel

n=0~319

3.4.2 V by 1 Data Format

Mode	Packer input & Unpacker output		24bpp RGB
3byte mode	Byte0	D[0]	R[0]
		D[1]	R[1]
		D[2]	R[2]
		D[3]	R[3]
		D[4]	R[4]
		D[5]	R[5]
		D[6]	R[6]
		D[7]	R[7]
	Byte1	D[8]	G[0]
		D[9]	G[1]
		D[10]	G[2]
		D[11]	G[3]
		D[12]	G[4]
		D[13]	G[5]
		D[14]	G[6]
		D[15]	G[7]
	Byte2	D[16]	B[0]
		D[17]	B[1]
		D[18]	B[2]
		D[19]	B[3]
		D[20]	B[4]
		D[21]	B[5]
		D[22]	B[6]
		D[23]	B[7]

3.4.3 Color versus Input Data

The following table is for color versus input data (8bit). The higher the gray level, the brighter the color.

| Color	Gray Level	Color Input Data																							Remark
		RED data (MSB:R7, LSB:R0)								GREEN data (MSB:G7, LSB:G0)								BLUE data (MSB:B7, LSB:B0)								
		R7	R6	R5	R4	R3	R2	R1	R0	G7	G6	G5	G4	G3	G2	G1	G0	B7	B6	B5	B4	B3	B2	B1	B0	
Black	-	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	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	1	
Gray 127	-	0	1	1	1	1	1	1	1	0	1	1	1	1	1	1	1	0	1	1	1	1	1	1	1	
Red	L0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	Black
	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	
	L255	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Green	L0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	Black
	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	
	L255	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	
Blue	L0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	Black
	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	
	L255	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	

3.4.4 V-by-One Specification

| Item		Symbol	Min.	Typ.	Max	Unit	Note
V-by-one Interface	VRXINP/N input each bit Period	T_{RRIP} (UI)	393	--	833	ps	8bit 1
	Receiver Clock : Spread Spectrum Modulation range	Fclk_ss	Fclk -0.5%	--	Fclk +0.5%	MHz	2
	Receiver Clock : Spread Spectrum Modulation frequency	Fss		30		KHz	2
	CDR training pattern time	T_{LOCK}	--	500	--	us	1
	Latency from LOCKN 'HIGH' to clock training pattern	L1	0	--	--	us	1
	Latency from LOCKN 'LOW' to normal 8b10b data	L2	--	--	70	us	1
	CML Differential Input High Threshold	V_{RTH}	--	--	+50	mV_{DC}	
	CML Differential Input Low Threshold	V_{RTL}	-50	--	--	mV_{DC}	
	CML Common mode Bias Voltage	V_{RCT}	0		1.2	mV_{DC}	
	Intra-pair skew	T_{INTRA}	--	--	0.3	UI	3
	Inter-pair skew	T_{INTER}	--	--	5	UI	4
	Eye diagram at receiver	A_X	--	0.25	--	UI	5
		A_Y	--	0	--	mV	
		B_X	--	0.3	--	UI	
		B_Y	--	50	--	mV	
		C_X	--	0.7	--	UI	
		C_Y	--	50	--	mV	
		D_X	--	0.75	--	UI	
		D_Y	--	0	--	mV	
		E_X	--	0.7	--	UI	
		E_Y	--	-50	--	mV	
		F_X	--	0.3	--	UI	
		F_Y	--	-50	--	mV	

1. V-by-One Signal diagram
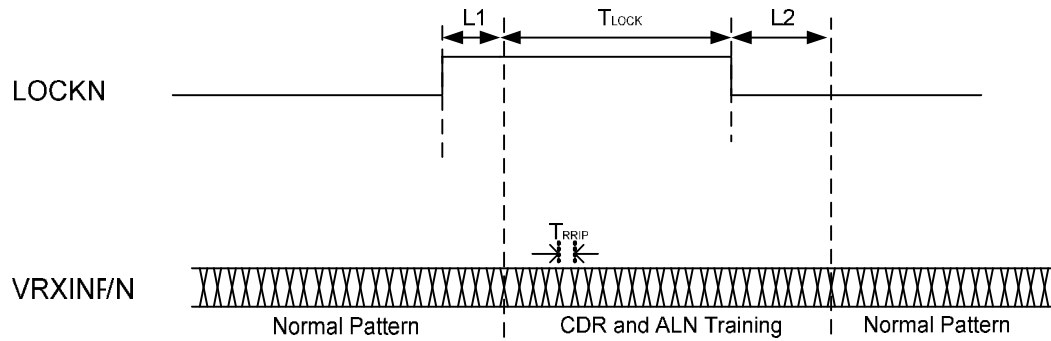
2. Receiver Clock SSCG (Spread spectrum clock generator) is defined as below figures.
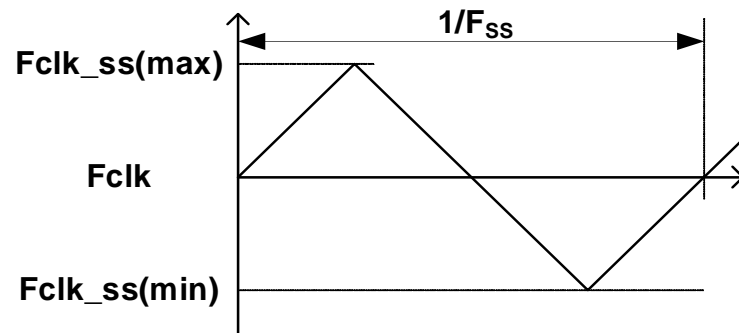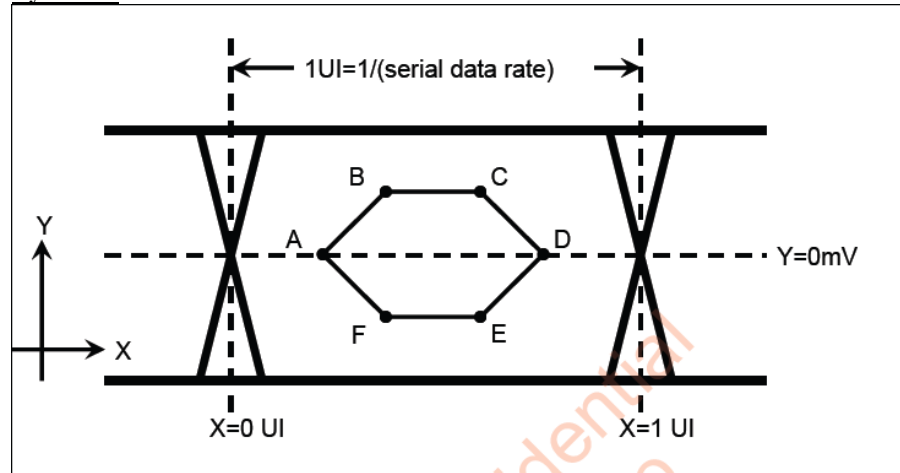

3. V-by-One Intra-pair Skew
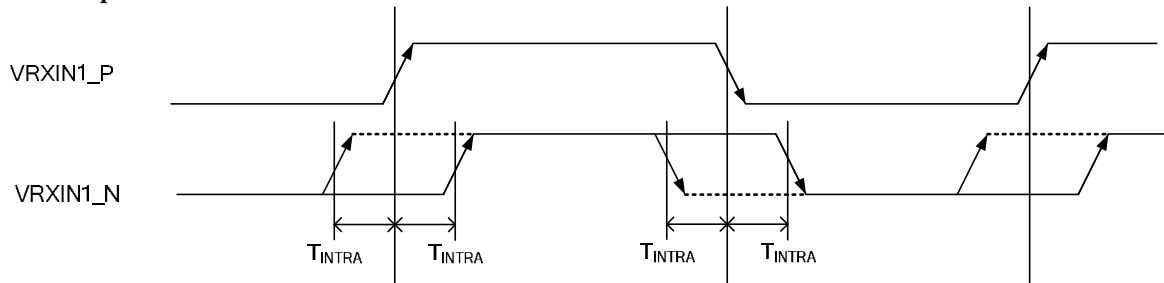
4. **V-by-One Inter-pair Skew**
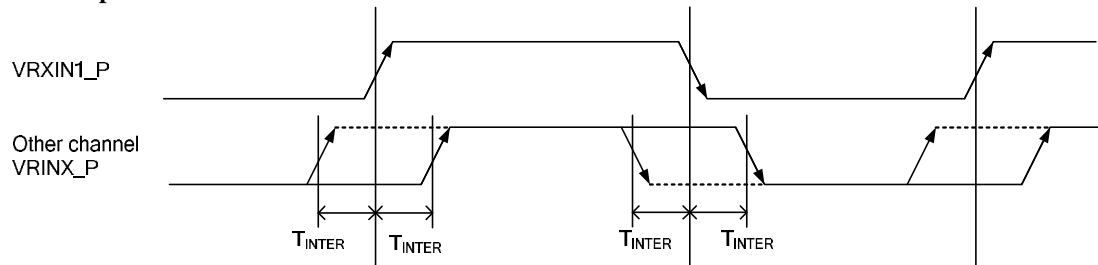
5. Eye diagram at receiver

<u>Eye Mask</u>

<u>Example of Eye diagram</u>

3.4.5 Input Timing Specification

It only support DE mode, and the input timing are shown as the following table.

Symbol	Description		Min.	Typ.	Max.	Unit	Remark
Tv	Vertical Section	Period	1100	1130	5463	Th	
Tdisp (v)		Active	1080	1080	1080	Th	
Tblk (v)		Blanking	20	50	4383	Th	
Fv		Frequency	30	120	145	Hz	*Note 3-3*
Th	Horizontal Section	Period	359	360	1023	Tclk	
Tdisp (h)		Active	320	320	320	Tclk	
Tblk (h)		Blanking	39	40	703	Tclk	
Fh		Frequency	111.4	135.6	236.7	KHz	*Note 3-4*
Tclk	Clock	Period	11.8	20.5	25.0	ns	1/Fclk
Fclk		Frequency	40	48.8	85	MHz	*Note 3-5*

Note 3-3 : The optimal Vertical Frequency is 119~145 Hz for best picture quality

Note 3-4 : The equation is listed as following. Please don't exceed the above recommended value.

   Fh (Min.) = Fclk (Min.) / Th (Min.);

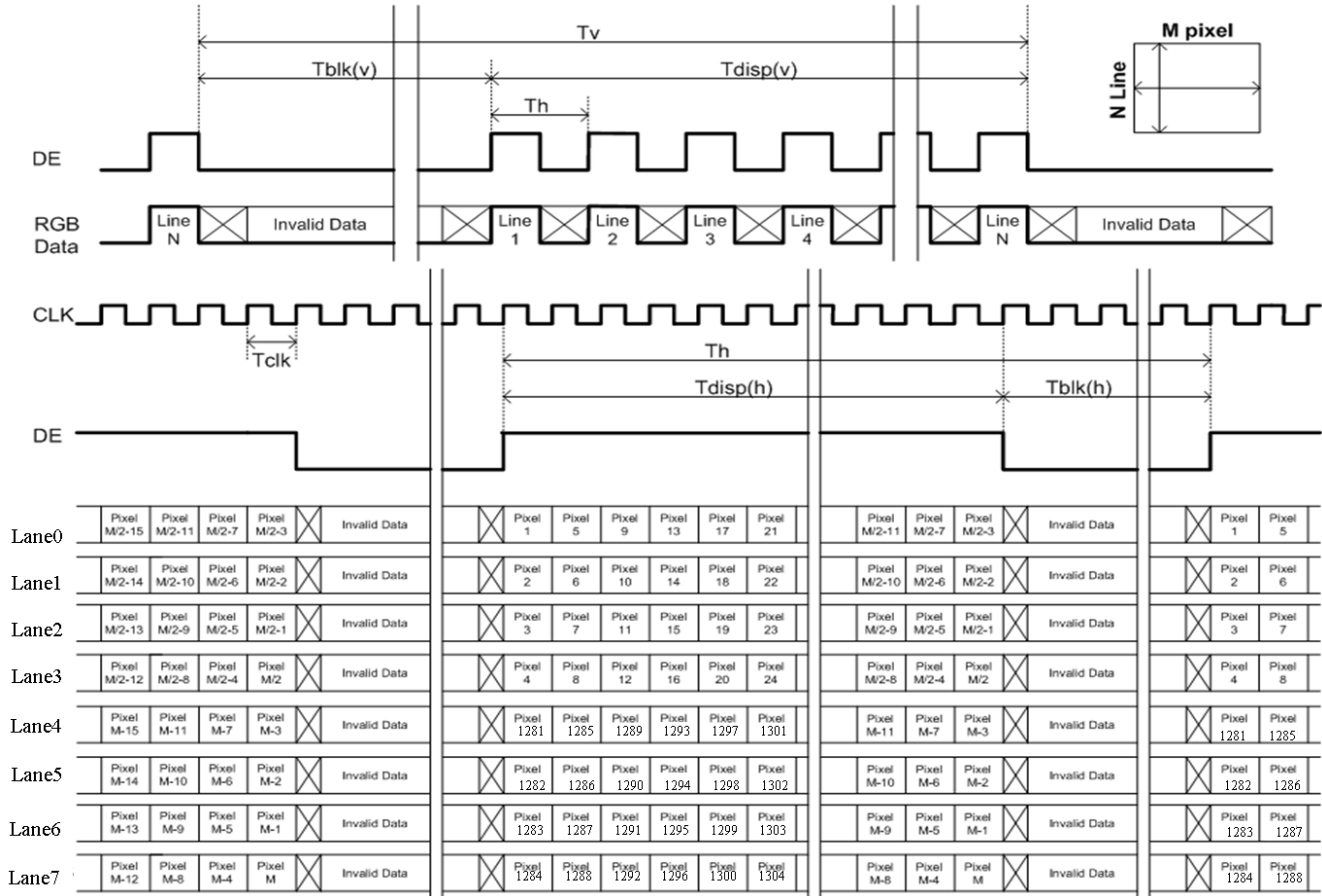   Fh (Typ.) = Fclk (Typ.) / Th (Typ.);

   Fh (Max.)= Fclk (Max.) / Th (Min.);

Note 3-5 : The equation is listed as following. Please don't exceed the above recommended value.
   Fclk (Typ.) = Fv (Typ.) x Th (Typ.) x Tv (Typ.);
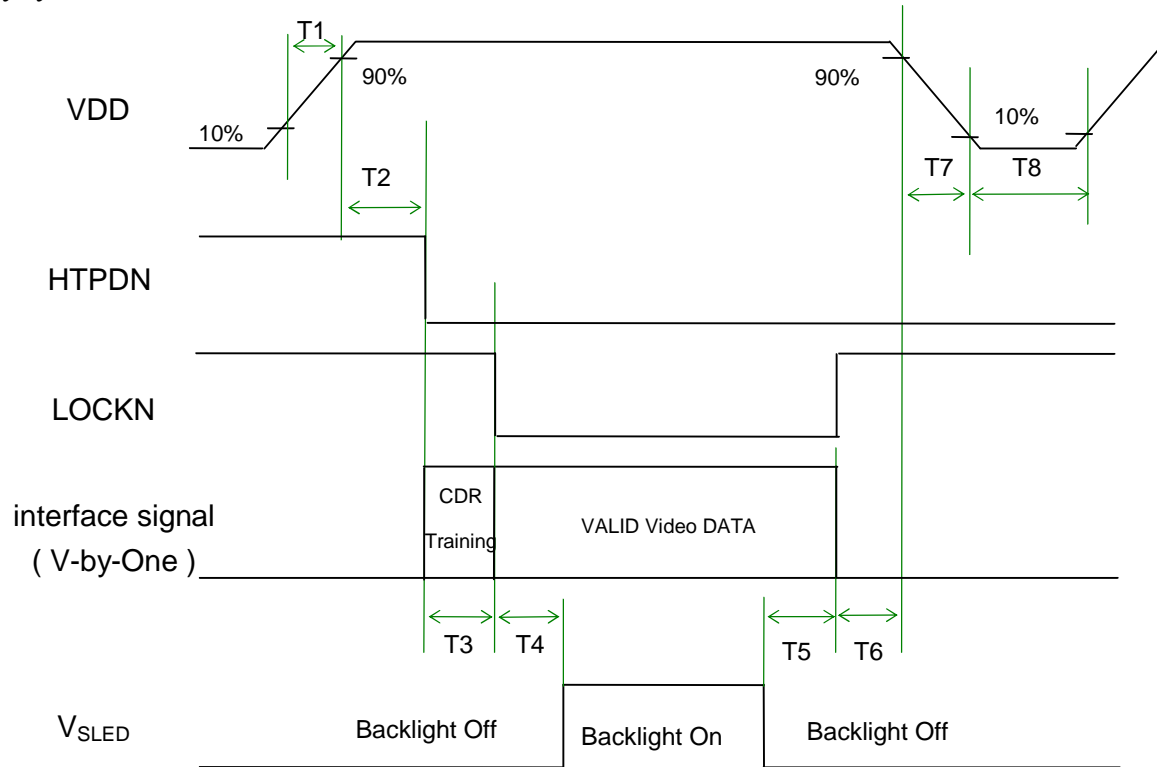   Fclk (Min.) < Fv x Th x Tv < Fclk (Max.)

3.4.6 Input Timing Diagram

(Lane0~7 V-by-One data:1, 2, 3, 4, 1281, 1282, 1283, 1284)

3.5 Power ON/OFF Sequence

VDD power,V-by-One signal and backlight on/off sequence are as following. V-by-One signals from any system shall be Hi-Z state when VDD is off.

Power Sequence Timing

Symbol	Value			Unit	Remark
	Min.	**Typ.**	**Max.**		
T1	0.5	-	10	[ms]	
T2	-	130	-	[ms]	
T3	-	2	-	[ms]	*Note 3-6*
T4	600	-	-	[ms]	
T5	100			[ms]	
T6	0	-	50	[ms]	*Note 3-7* *Note 3-8*
T7	0	-	200	[ms]	*Note 3-7* *Note 3-9*
T8	1000	-	-	[ms]	

Note 3-6 : During T3 period , V-by-One CDR training time by customer's system.
Note 3-7 : During T6 and T7 period , please keep the level of input V-by-One signals with Hi-Z state.
Note 3-8 : Recommend setting T6 = 0ms to avoid electronic noise when VDD is off.
Note 3-9 : Voltage of VDD must decay smoothly after power-off.(customer syster decide this value)

4 Backlight Unit

4.1 Block Diagram

The following shows the block diagram of the 35.0 inch Backlight Unit. And it includes 2 pcs LED light bar in Backlight Unit. Each LED light bar includes 48 pcs LED package. (4 strings and 12 pcs LED of one string).
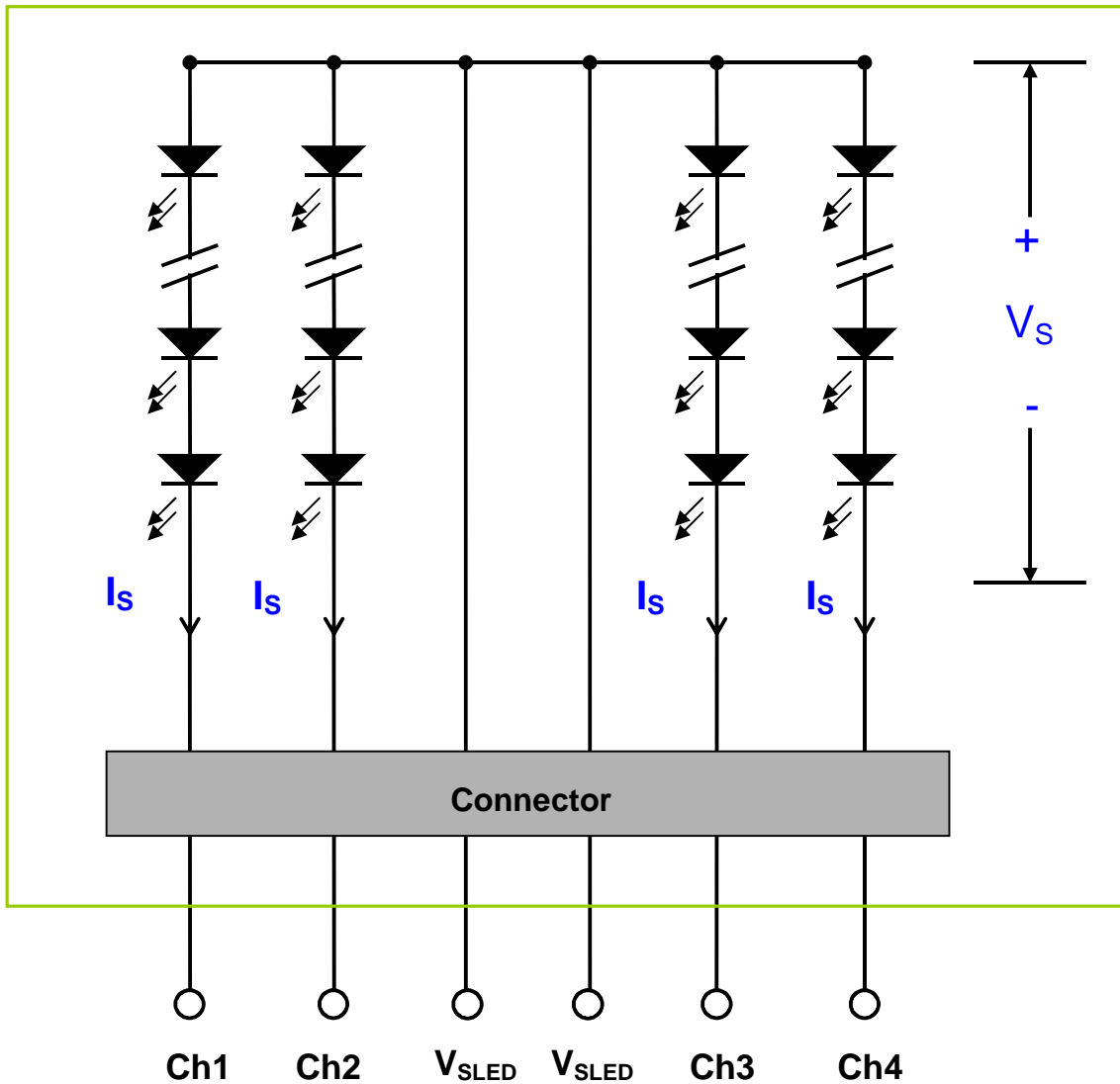
4.2 Interface Connection

4.2.1 Connector Type

Backlight Connector	Manufacturer	ENTERY
	Part Number	3707K-S06N-07L
Mating Connector	Manufacturer	ENTERY
	Part Number	H112K-P06N-00B (Non-Locking type) H112K-P06N-11B(White) (Locking type) H112K-P06N-13B(Black) (Locking type)

Backlight Connector dimension:

$$H \times V \times D = 13.9 \times 3.00 \times 4.25, Pitch = 1.0 (unit = mm)$$

PIN 1   1.00   0.20
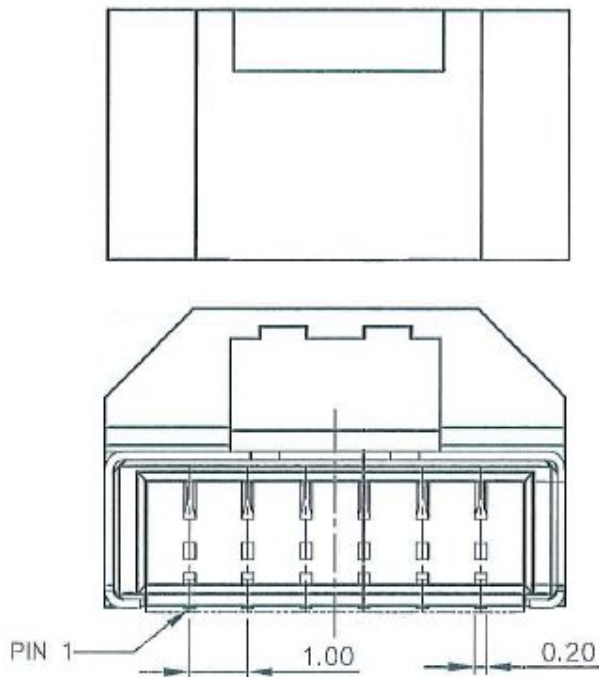
Mating Connector dimension:
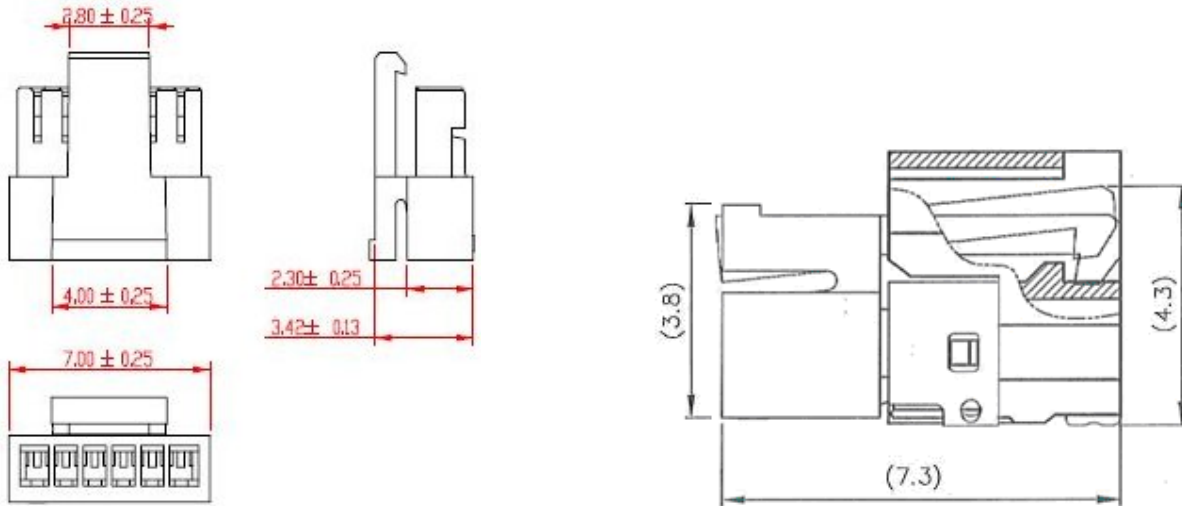
4.2.2 Connector Pin Assignment

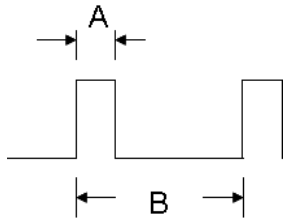| Pin#	Symbol	Description	Remark
1	Ch1	LED Current Feedback Terminal (Channel 1)	
2	Ch2	LED Current Feedback Terminal (Channel 2)	
3	V_{SLED}	LED Power Supply Voltage Input Terminal	
4	V_{SLED}	LED Power Supply Voltage Input Terminal	
5	Ch3	LED Current Feedback Terminal (Channel 3)	
6	Ch4	LED Current Feedback Terminal (Channel 4)	

4.3 Electrical Characteristics

4.3.1 Absolute Maximum Rating

Permanent damage may occur if exceeding the following maximum rating.

(Ta=25　)

Symbol	Description	Min	Max	Unit	Remark
Is	LED String Current	0	150	[mA]	100% duty ratio
			300	[mA]	*Duty ratio　10%* *Pulse time=10 ms*

Duty ratio= (A / B) X 100% ;　 (A: Pulse time, B: Period)

4.3.2 Recommended Operating Condition

(Ta=25　)

Symbol	Description	Min.	Typ.	Max.	Unit	Remark
Is	LED String Current	-	110	121	[mA]	100% duty ratio of LED chip
Vs	LED String Voltage	33.6	38.4	43.2	[Volt]	Is=110mA @ 100% duty ratio; *Note 4-1, Note 4-5*
ΔVs	Maximum Vs Voltage Deviation of light bar	-	-	2.4	[Volt]	Is=110mA @ 100% duty ratio; *Note 4-2*
P$_{BLU}$	LED Light Bar Power Consumption	-	33.8	38.0	[Watt]	*Note 4-3*
LT$_{LED}$	LED Life Time	30,000	-	-	[Hour]	*Note 4-4*
OVP	Over Voltage Protection in system board	110% Vsmax	-	-	[Volt]	*Note 4-5*

Note 4-1: Vs (Typ.) = V_F (Typ.) X LED No. (**one string**);

a. V_F: LED chip forward voltage, V_F (Min.)=**2.8V**, V_F(Typ.)=**3.2V**, V_F(Max.)=**3.6V**

b. The same euqation to calculate Vs(Min.) & Vs (Max.) for respective V_F (Min.) & V_F(Max.);

LED chip

Note 4-2: ΔVs (Max.) = ΔV_F X LED No. (one string);

a. ΔV_F: LED chip forward voltage deviation; (**0.2 V** , each Bin of LED V_F)

Note 4-3: P_{BLU} (Typ.) = Vs (Typ.) X Is (Typ.) X **8**; (**8** is total String No. of LED Light bar)

P_{BLU} (Max.) = Vs (Max.) X Is (Typ.) X **8** ;

Note 4-4: Definition of life time:

a. Brightness of LED becomes to 50% of its original value

b. Test condition: **Is = 110mA** and 25 (Room Temperature)

Note 4-5: Recommendation for LED driver power design:

Due to there are electrical property deviation in LED & monitor set system component after long time operation. AUO strongly recommend the design value of LED driver board OVP (over voltage protection) should be 10% higher than max. value of LED string voltage (Vs) at least.

Note 4-6: AUO strongly recommend "Analog Dimming" method for backlight brightness control for Wavy Noise Free. Otherwise, recommend that Dimming Control Signal (PWM Signal) should be synchronized with Frame Frequency.

5 Reliability Test

AUO reliability test items are listed as following table. (*Bare Panel only*)

Items	Condition	Remark
Temperature Humidity Bias (THB)	Ta= 50 , 80%RH, 300hours	
High Temperature Operation (HTO)	Ta= 50 , 50%RH, 300hours	
Low Temperature Operation (LTO)	Ta= 0 , 300hours	
High Temperature Storage (HTS)	Ta= 60 , 300hours	
Low Temperature Storage (LTS)	Ta= -20 , 300hours	
Vibration Test (Non-operation)	Acceleration: 1.5 Grms Wave: Random Frequency: 10 - 200 Hz Sweep: 30 Minutes each Axis (X, Y, Z)	
Shock Test (Non-operation)	Acceleration: 50 G Wave: Half-sine Active Time: 20 ms Direction: ±X, ±Y, ±Z (one time for each Axis)	
Thermal Shock Test (TST)	-20 /30min, 60 /30min, 100 cycles	*Note 5-1*
On/Off Test	On/10sec, Off/10sec, 30,000 cycles	
ESD (Electro Static Discharge)	Contact Discharge: ± 15KV, 150pF(330Ω) 1sec, 8 points, 25 times/ point.	*Note 5-2*
	Air Discharge: ± 15KV, 150pF(330Ω) 1sec 8 points, 25 times/ point.	
Altitude Test	Operation:18,000 ft Non-Operation:40,000 ft	

Note 5-1: a. A cycle of rapid temperature change consists of varying the temperature from -20   to 60   , and back again. Power is not applied during the test.

        b. After finish temperature cycling, the unit is placed in normal room ambient for at least 4 hours before power on.

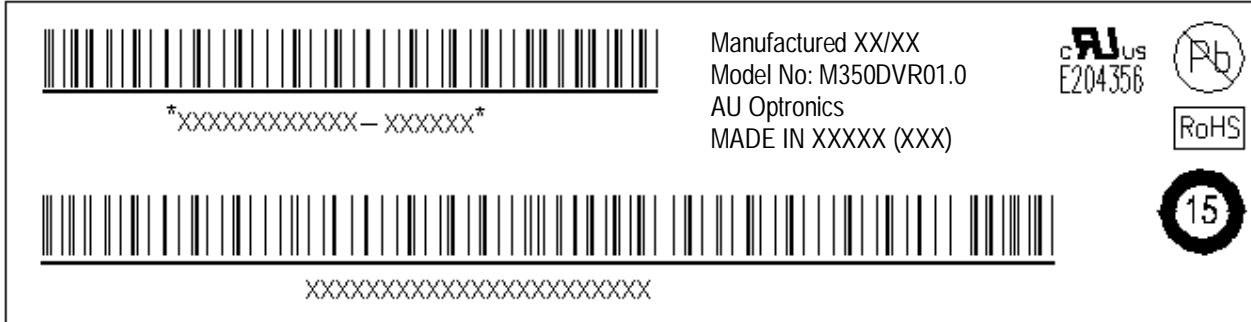*Note 5-2*: EN61000-4-2, ESD class B: Certain performance degradation allowed

                             No data lost

                             Self-recoverable

                             No hardware failures.

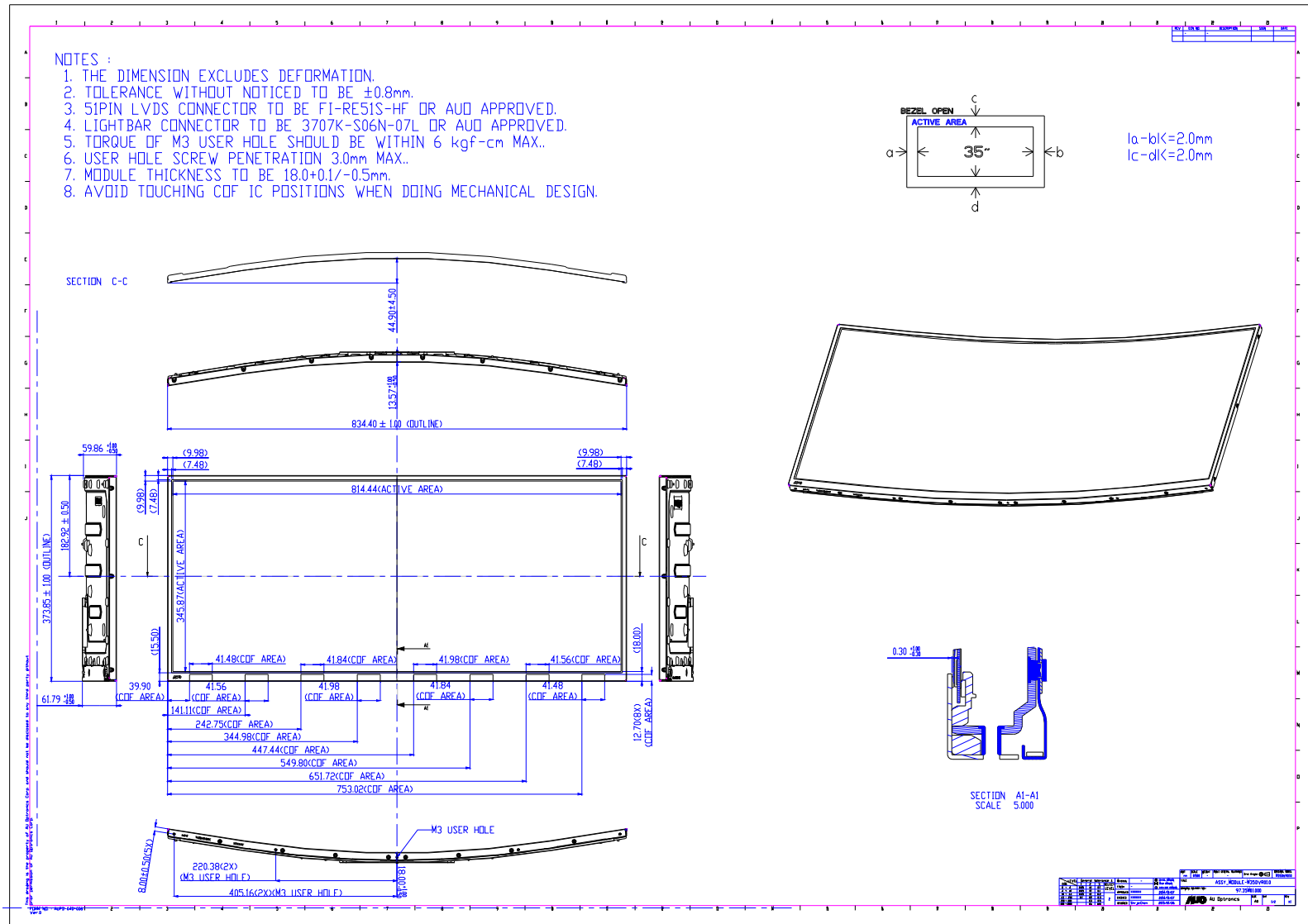## 6 Shipping Label

The label is on the panel as shown below:

```
┌─────────────────────────────────────────────────────────────────────┐
│  ║║║║║║║║║║║║║║║║║║║║║║║║║║         Manufactured XX/XX      c℞us   (Pb) │
│                                    Model No: M350DVR01.0   E204356    │
│    *XXXXXXXXXXXX— XXXXXX*           AU Optronics                      │
│                                    MADE IN XXXXX (XXX)     ┌────┐     │
│                                                            │RoHS│     │
│  ║║║║║║║║║║║║║║║║║║║║║║║║║║║║                                └────┘     │
│                                                            ⬤15        │
│       XXXXXXXXXXXXXXXXXXXXXXXXX                                        │
└─────────────────────────────────────────────────────────────────────┘
```

Note 6-1: For Pb Free products, AUO will add ⬤ for identification.

Note 6-2: For RoHS compatible products, AUO will add [RoHS] for identification.

Note 6-3: For China RoHS compatible products, AUO will add ⬤ for identification.

Note 6-4: The Green Mark will be presented only when the green documents have been ready by AUO

Internal Green Team.

7 Mechanical Characteristics

SECTION 01-01

SECTION 02-02

M3 USER HOLE(22X)

Ø11.26(28X)

Ø3.00(6X)
USER PIN

40.50(10X)
36.50(2X)
24.50(4X)
10.50(4X)
5.50(4X)
2.50(4X)
2.50(2X)
3.00(6X)

15.16(11X)
M3 USER HOLE(8X)
Ø3.00(3X)
USER PIN
3.00(3X)
5.50
2.00(2X)
6.50(2X)
8.50(6X)

402.00(2X)
402.00(2X)
301.50(2X)
370.00(2X)
201.00(2X)
130.00(2X)
100.50(2X)

01
01
02
02

Module Shipping Label
BLU Barcode Label

173.20(6X)
132.70(2X)
75.00(2X)
58.30
47.50(2X)

167.22(4X)
27.50(2X)
60.22(2X)
167.22(9X)
46.79(2X)

115.80(2X)
55.30(4X)
97.50(2X)
153.75(9X)

51.30

MX-X   7138M01.00X   XXXXXX

ASSY_MODULE-M350xMXX.0
97.35M01.000
AU Optronics

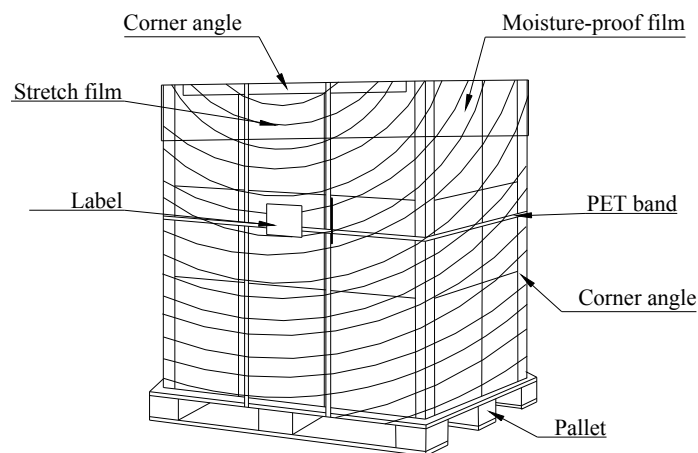**Avoid touching COF position when doing mechanical design.**

8 Packing Specification

8.1 Packing Flow

M350 Packaging & Handling
(Expandable Polyethylene Cushion + Carton)
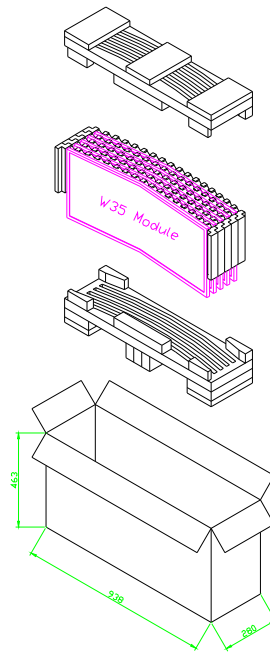
Full Packaging of Pallet

8.2 Pallet and shipment information

Item	Specification			Remark
	Q'ty	**Dimension**	**Weight(kg)**	
Panel	1	834.4(H)mm × 373.85(V)mm × 18(D)mm	6.78	
Cushion	1	-	1.007	
Box	1	934(L)mm x 455(W)mm x 270(H)mm	1.694	without Panel & cushion
Packing Box	4 pcs/Box	934(L)mm x 455(W)mm x 270(H)mm	30.6	with panel & cushion
Pallet	1	1150(L)mm x 980(W)mm x 132(H)mm	15.00	
Pallet after Packing	12 boxes/pallet	1150(L)mm x 980(W)mm x 1482(H)mm	259.8	