

TFT-Display Datenblatt

Modell OT043AWUDDN-00

Kurzdaten

Hersteller	ONation
Diagonale	4,3" / 10,9 cm
Format	wide
Auflösung	480 x 272
Backlight	LED / 420 cd/m ²
Interface	RGB
Touchscreen	nein
Temperatur	-20... +70°C (Betrieb)



ONation Corporation

CUSTOMER' S APPROVAL SPECIFICATIONS

MODEL:OT043AWUDDN-00
(Complied with RoHS)

CUSTOMER: _____

Version: 8.0

C O N T E N T S

ISSUE: MAR.04.2013

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CUSTOMER	ONATION		
APPROVAL	APPROVAL	CHECKER	PREPARE
	<i>ch lee</i>	<i>ch lee</i>	<i>Carl</i>

2. RECORD OF REVISION

REV	DATE	PAGE	SUMMARY
1.0	2009.7.30	--	Formal specification issued.
2.0	2009.11.11	2	Modify:4.Outline Dimensions
3.0	2010.04.12	All	Modify: Company Name
		1	3. MECHANICAL SPECIFICATIONS
		2	4. OUTLINE DIMENSIONS
		3	5. TFT LCD Module Interface Pin Description
		4	7. BLOCK DIAGRAM
		5	9.1 Recommended operating conditions for TFT driver 9.2 Recommended operating conditions for LED Backlight
		6	9.2.1 LED Operating Curve 10.1 OPTICAL CHARACTERISTICS OF LCD PANEL
		8	11. AC CHARACTERISTICS
		-	Polarizer 、 B/L 、 FPC change manufacturer
4.0	2010.05.12	3	5. TFT LCD Module Interface Pin Description
5.0	2011.11.15	13	Modify :14. PACKAGE INFORMATION
6.0	2012.05.10	All	Modify : SD0430T08-A→OT043AWUDDN-00
7.0	2012.12.14	4	Add 8.1 ELECTRICAL ABSOLUTE MAXIMUM RATINGS Forward Current ILED Max. : 30mA
		5	Modify Forward Current ILED Max.30mA->29mA
8.0	2013.03.04	1	LED Backlight Color :White - Samsung LED chip->White Dongbu LED chip

3. MECHANICAL SPECIFICATIONS

(1)	Number Of Dots (Dots)	480(R.G.B) X 272
(2)	Module Size(mm)	105.5(H) X 67.2(V) X 3.95(D)
(3)	Active Area(mm)	95.04(H) X 53.85(V)
(4)	Dot Pitch(mm)	0.066(H) X 0.198(V)
(5)	Pixel Pitch(mm)	0.198(H) X 0.198(V)
(6)	LCD / Polarizer Model	TFT , Transmissive / Normally white,Glare
(7)	LED Backlight Color	White - Dongbu LED chip
(8)	Viewing Direction	12 O'clock
(9)	Driver IC	HX8257-A
(10)	Module Weight(g)	44g

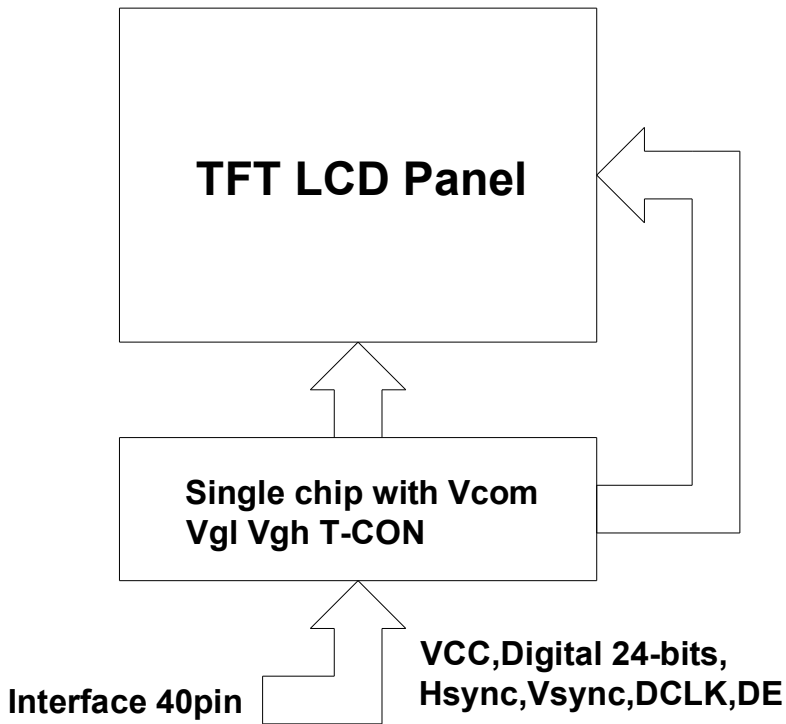
5. TFT LCD MODULE INTERFACE PIN DESCRIPTION

PIN No.	SIGNAL	FUNCTION
1	VSS	GND(0V)
2	VSS	
3	VCC	Power supply for logic circuit (+3.3V type)
4	VCC	
5	R0	RED DATA SIGNAL(LSB)
6	R1	RED DATA SIGNAL
7	R2	RED DATA SIGNAL
8	R3	RED DATA SIGNAL
9	R4	RED DATA SIGNAL
10	R5	RED DATA SIGNAL
11	R6	RED DATA SIGNAL
12	R7	RED DATA SIGNAL(MSB)
13	G0	GREEN DATA SIGNAL(LSB)
14	G1	GREEN DATA SIGNAL
15	G2	GREEN DATA SIGNAL
16	G3	GREEN DATA SIGNAL
17	G4	GREEN DATA SIGNAL
18	G5	GREEN DATA SIGNAL
19	G6	GREEN DATA SIGNAL
20	G7	GREEN DATA SIGNAL(MSB)
21	B0	BLUE DATA SIGNAL(LSB)
22	B1	BLUE DATA SIGNAL
23	B2	BLUE DATA SIGNAL
24	B3	BLUE DATA SIGNAL
25	B4	BLUE DATA SIGNAL
26	B5	BLUE DATA SIGNAL
27	B6	BLUE DATA SIGNAL
28	B7	BLUE DATA SIGNAL(MSB)
29	VSS	GND(0V)
30	CK	CLOCK SIGNAL TO SAMPLE EACH DATE
31	DISP	DISPLAY ON/OFF SIGNAL
32	HSYNC	HORIZONTAL SYNCHRONIZING SIGNAL
33	VSYNC	VERTICAL SYNCHRONIZING SIGNAL
34	NC	NC
35	NC	NC
36	NC	NC
37	NC	NC
38	NC	NC
39	NC	The layout of this pin is connected to VSS(do not use)
40	NC	The layout of this pin is connected to VSS(do not use)

6. LED BACKLIGHT INTERFACE PIN DESCRIPTION

PIN No.	SIGNAL	FUNCTION
1	K	LED Power source input terminal(cathode side)
2	NC	NC
3	NC	NC
4	A	LED Power source input terminal(anode side)

7. BLOCK DIAGRAM



8. ABSOLUTE MAXIMUM RATINGS

8.1 ELECTRICAL ABSOLUTE MAXIMUM RATINGS

ITEM	SYMBOL	MIN.	MAX.	UNIT	COMMENT
Input Voltage	V_I	0.3	$V_{CC}+0.3$	V	-
Supply Voltage For Logic	$V_{CC}-V_{SS}$	-0.3	6.0	V	-
Supply Voltage For Driver	$V_{DD}-V_{SS}$	-0.3	6.0	V	-
Forward Current	I_{LED}	-	30	mA	-

8.2 ENVIRONMENTAL ABSOLUTE MAXIMUM RATINGS

ITEM	OPERATING		STORAGE		COMMENT
	MIN.	MAX.	MIN.	MAX.	
Ambient Temperature($^{\circ}C$)	-20	70	-30	80	Note 1,2,3

Note 1 : The response time will become lower when operated at low temperature.

Note 2 : Background color changes slightly depending on ambient temperature.

Note 3 : Can operating display when $T_a > 70^{\circ}C \sim 85^{\circ}C$ 、 $T_a < -20^{\circ}C \sim -30^{\circ}C$, but display contrast ratio drop.

9.ELECTRICAL CHARACTERISTICS

9.1 Recommended operating conditions for TFT driver.

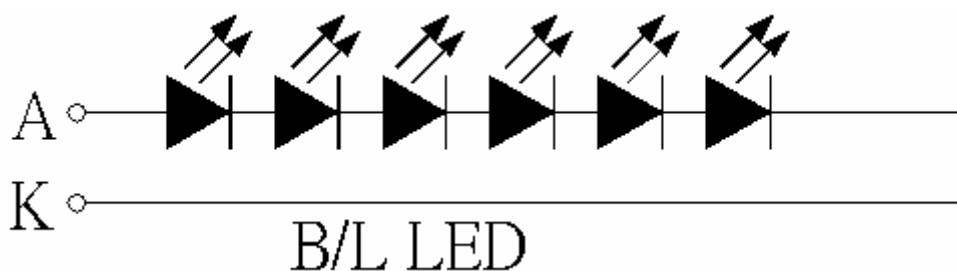
(Ta=25°C)

I T E M	SYMBOL	MIN.	TYP.	MAX.	UNIT
Power supply voltage	$V_{CC}-V_{SS}$	3.0	3.3	3.6	V
	I_{CC}	-	18	25	mA
Input High Voltage	V_{IH}	$0.7 \cdot V_{CC}$	-	V_{CC}	V
Input Low Voltage	V_{IL}	0	-	$0.3 \cdot V_{CC}$	V

9.2 Recommended operating conditions for LED Backlight

I T E M	SYMBOL	MIN.	TYP.	MAX.	UNIT
Forward Voltage	V_{LED}	---	19.2	---	V
Forward Current	I_{LED}	---	24	29	mA
Number of LED	---	---	6	---	PCS
Life time of LED Backlight	$I_{LED}=20 \text{ mA}$	20,000	---	---	Hrs

*LED is the Dongbu chip.

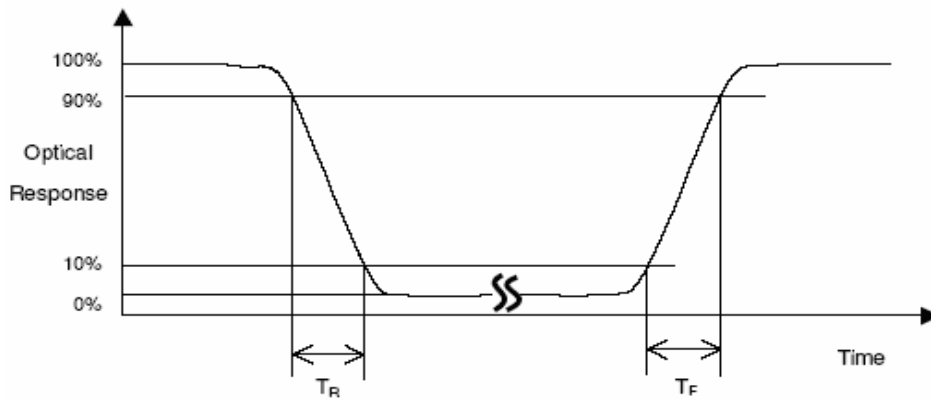


10.OPTICAL CHARACTERISTICS

10.1 OPTICAL CHARACTERISTICS OF LCD PANEL

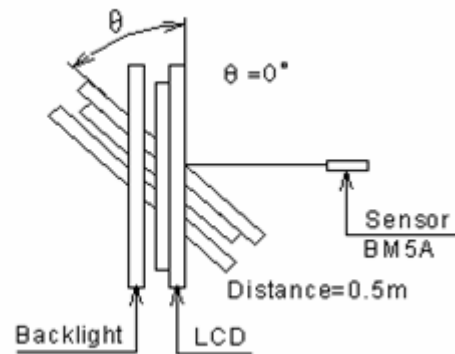
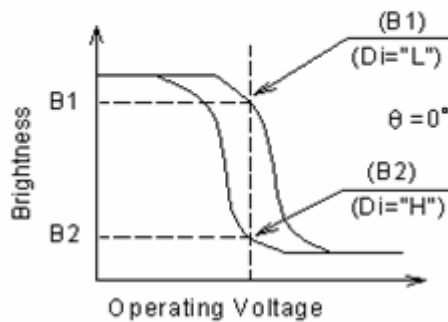
ITEM	SYMBOL	CONDITIONS	SPECIFICATIONS			UNIT
			MIN.	TYP.	MAX.	
Contrast Ratio	CR	Viewing normal angle $\theta_x = \theta_y = 0^\circ$	-	250	-	-
Response Time	T_R		-	5		ms
	T_F		-	15		ms
Chromaticity	White		x	0.276	0.306	0.336
		y	0.294	0.324	0.354	-
Viewing Angle	Hor.	θ_{X+}	-	60	-	deg
		θ_{X-}	-	60	-	
	Ver.	θ_{Y+}	-	50	-	
		θ_{Y-}	-	60	-	

Note (1) Definition of Response Time (T_R, T_F) :

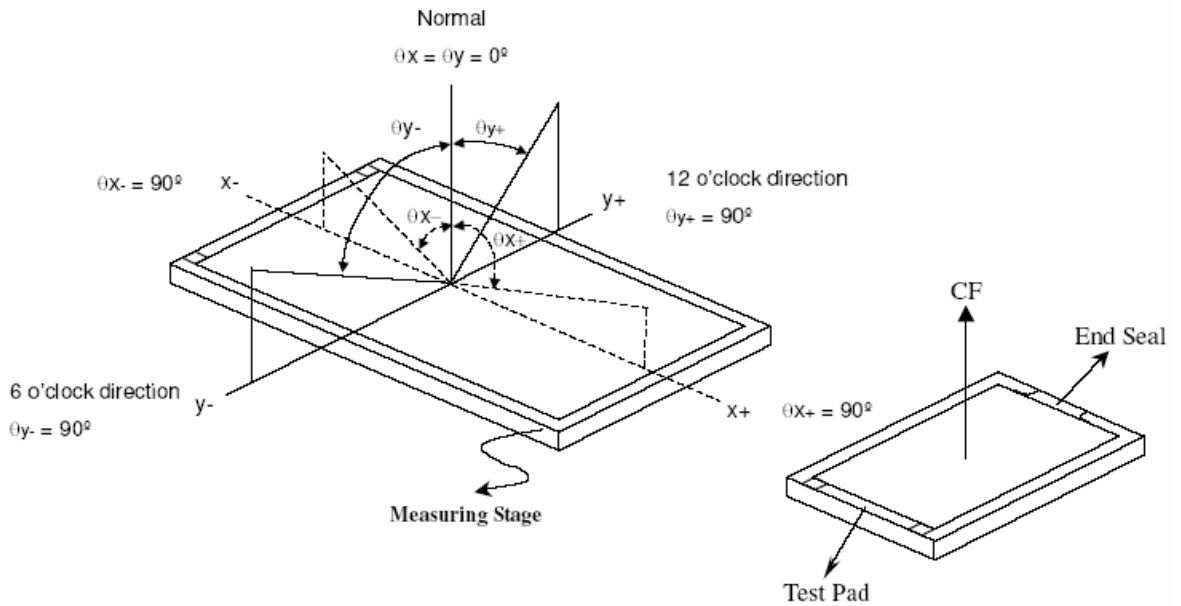


Note (2) Definition of Contrast Ratio “CR”:

$$CR = \frac{\text{Brightness on non-selected dot (B1)}}{\text{Brightness on selected dot (B2)}}$$



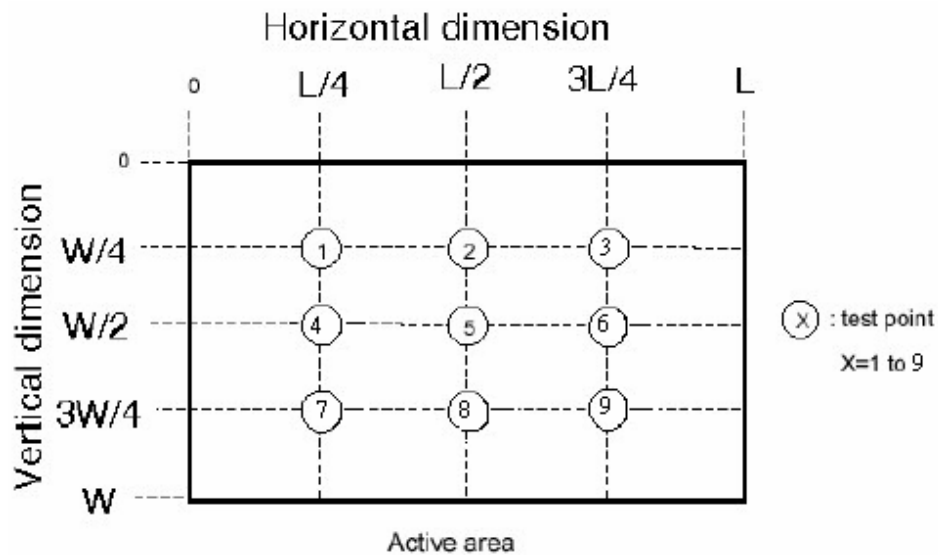
Note (3) Definition of Viewing Angle
6 O'clock Gray Scale Inversion Direction



10.2 Optical Characteristics of LED Backlight

ITEM	MIN.	TYP.	MAX.	UNIT	REMARK
Luminance for LCM	350	420	-	cd/m ²	Note 1,2 I _{LED} =24 mA
Luminance Uniformity	80	-	-	%	Note 1,3

Note (1) Measurement of the following 9 points on the display.



Note (2) The Brightness should be the average Brightness of point ① ~ ⑨ .

Note (3) Definition of the luminance uniformity .

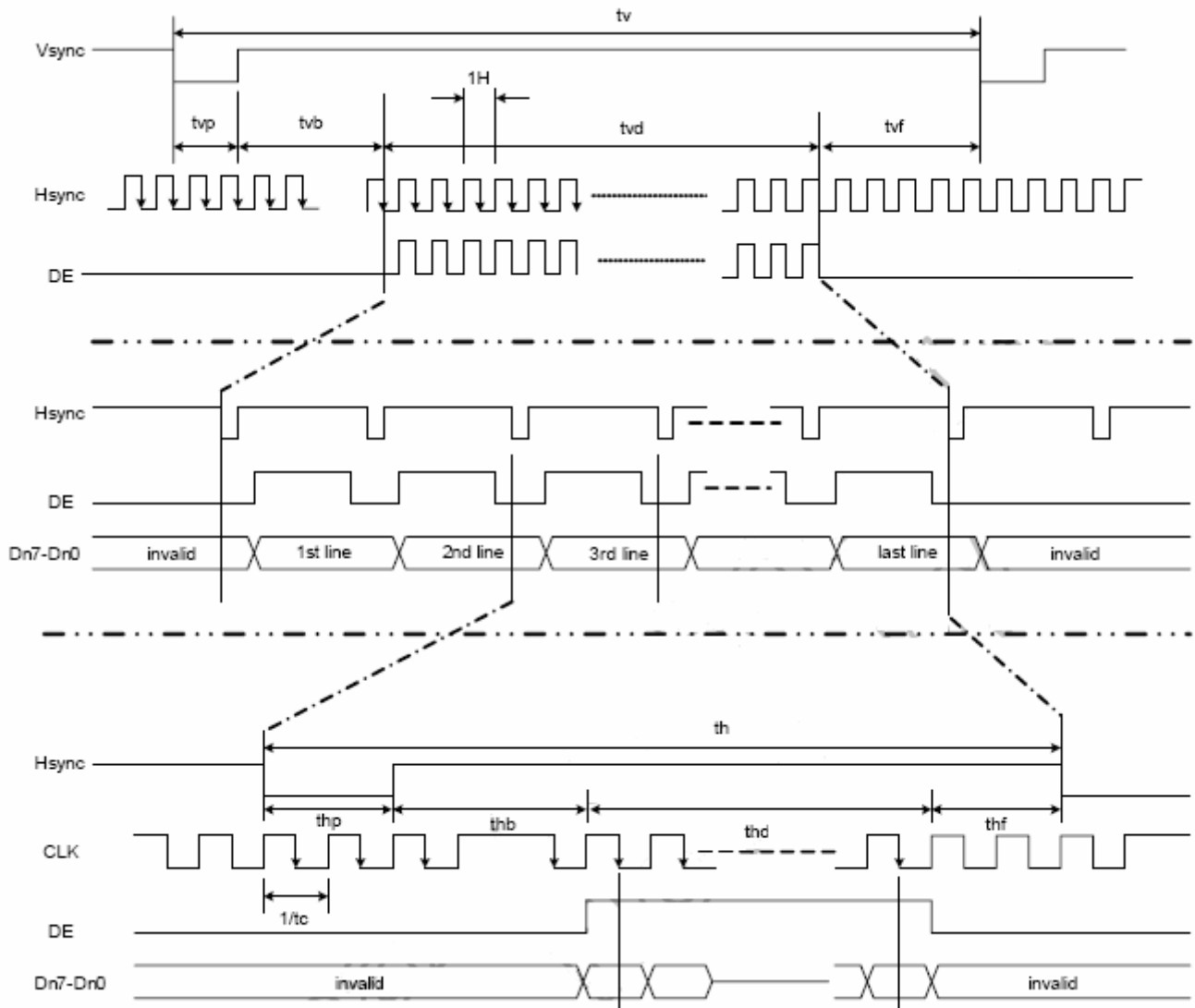
$$\left(1 - \frac{\text{MAX Luminance} - \text{Average Luminance}}{\text{Average Luminance}} \right) \times 100\% \geq 80\%$$

11. AC CHARACTERISTICS

11.1 Timing Requirement

Ta = 25°C

PARAMETER	SYMBOL	MIN.	TYP.	MAX.	UNIT
Clock cycle	felk	-	9	15	MHz
Hsync cycle	1/th	-	17.14	-	KHz
Vsync cycle	1/tv	-	59.94	-	Hz
Horizontal Signal					
Horizontal cycle	Th	525	525	605	CLK
Horizontal display period	Thd	480	480	480	CLK
Horizontal front porch	Thf	2	2	82	CLK
Horizontal pulse width	Thp	2	41	41	CLK
Horizontal back porch	Thb	2	2	41	CLK
Vertical Signal					
Vertical cycle	Tv	285	286	399	H
Vertical display period	Tvd	272	272	272	H
Vertical front porch	Tvf	1	2	227	H
Vertical pulse width	Tvp	1	10	11	H
Vertical back porch	Tvb	1	2	11	H



12. LCM INSPECTIONS

12.1 QUALITY LEVEL

INSPECTION PLAN:

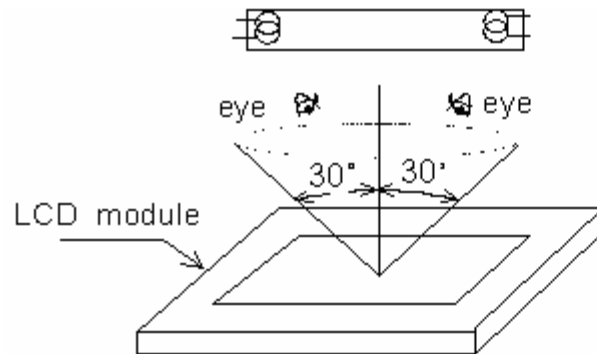
SAMPLING LEVEL : II, normal inspection, single sampling inspection

Defect level	INSPECTION		AQL
	AREA	ITEMS	
Critical defects	Display function	No display on	0,4
	Outline dimensions	Individual acceptance specifications	1,0
Other defects	Display zone (Effective Area)	bubbles, wrinkles, foreign materials, scratches, dark spots, black/white spots, Lines	1.5
	Out of Effective Area	cracks, scratches, stains	2.5
Total			2.5

12.2 ARANCE INSPECTION CONDITION

Visual inspection should be done under the following condition.

- (1) Visual inspection single 20W fluorescent lamp. And distance between LCM module and fluorescent lamp is 25~30cm
- (2) The distance between eyes of an inspector and the LCD module is 25cm.
- (3) The viewing zone is shown the figure. (Viewing angle $\leq 30^\circ$)

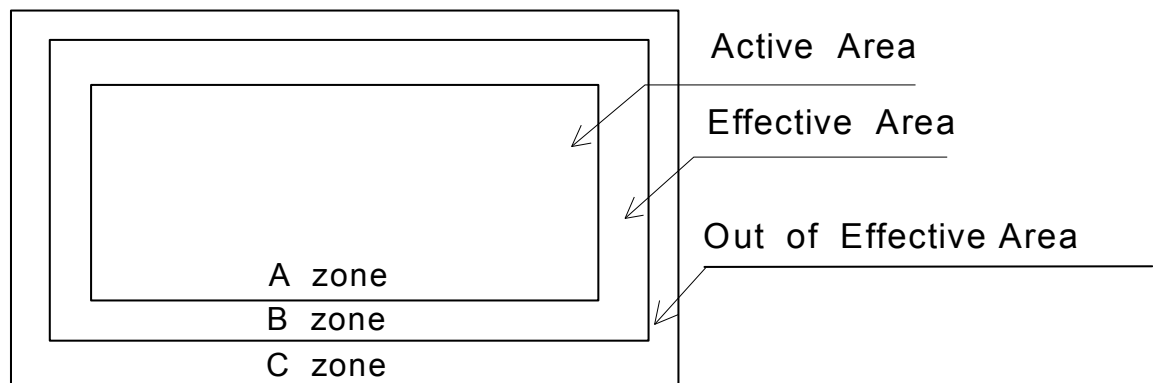


12.3 DEFINITION OF EACH ZONE

A zone : Active Area

B zone : Effective Area

C zone : Out of Effective Area



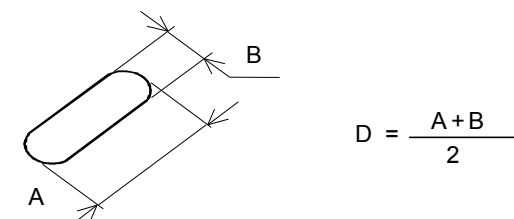
12.4 APPEARANCE SPECIFICATION

*) If a problem occurs in respect to any of these items , both parties(Customer and Shintex) will discuss in more detail.

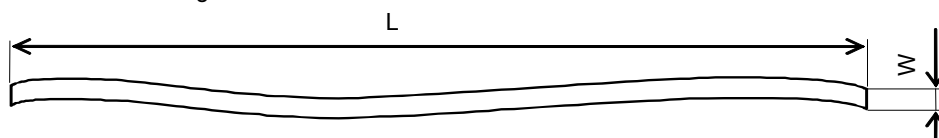
(1).LCD

No.	ITEM	CRITERIA		Zone	
1	Scratches	Distinguished one is not acceptable (To be judged by limit sample)		*	
2	Dent				
3	Wrinkles in polarizer				
4	Bubbles in polarizer	Average diameter D(mm)	Maximum number acceptable	B	
		$D \leq 0.3$	Ignore		
		$0.3 < D \leq 1.0$	3		
		$1.0 < D \leq 1.5$	1		
		$1.5 < D$	None		
5	Stains, Foreign materials, White/Black Spot	Clear		B	
		Length L(mm)	Maximum number acceptable		
		$D \leq 0.1$	Ignore		
		$0.1 < D \leq 0.2$	6		
		$0.2 < D \leq 0.3$	2		
		$0.3 < D$	0		
		Including pin holes and defective dots which must be within one pixel size.			
		Unclear		B	
		Average diameter D(mm)	Maximum number acceptable		
		$D \leq 0.2$	Ignore		
		$0.2 < D \leq 0.5$	6		
		$0.5 < D \leq 0.7$	2		
		$0.7 < D$	0		
6	Color uniformity	Those wiped out easily are acceptable		B+C	
7	Contrast Irregularity (Dark spots)	Average diameter D(mm)	Contrast	Maximum number acceptable	A
		$D < 0.1$	To be judged by limit sample	Ignore	
$0.1 \leq D < 0.3$	3				
8	Flicker	No flicker is observed			

Note 1 : Definition of average diameter D



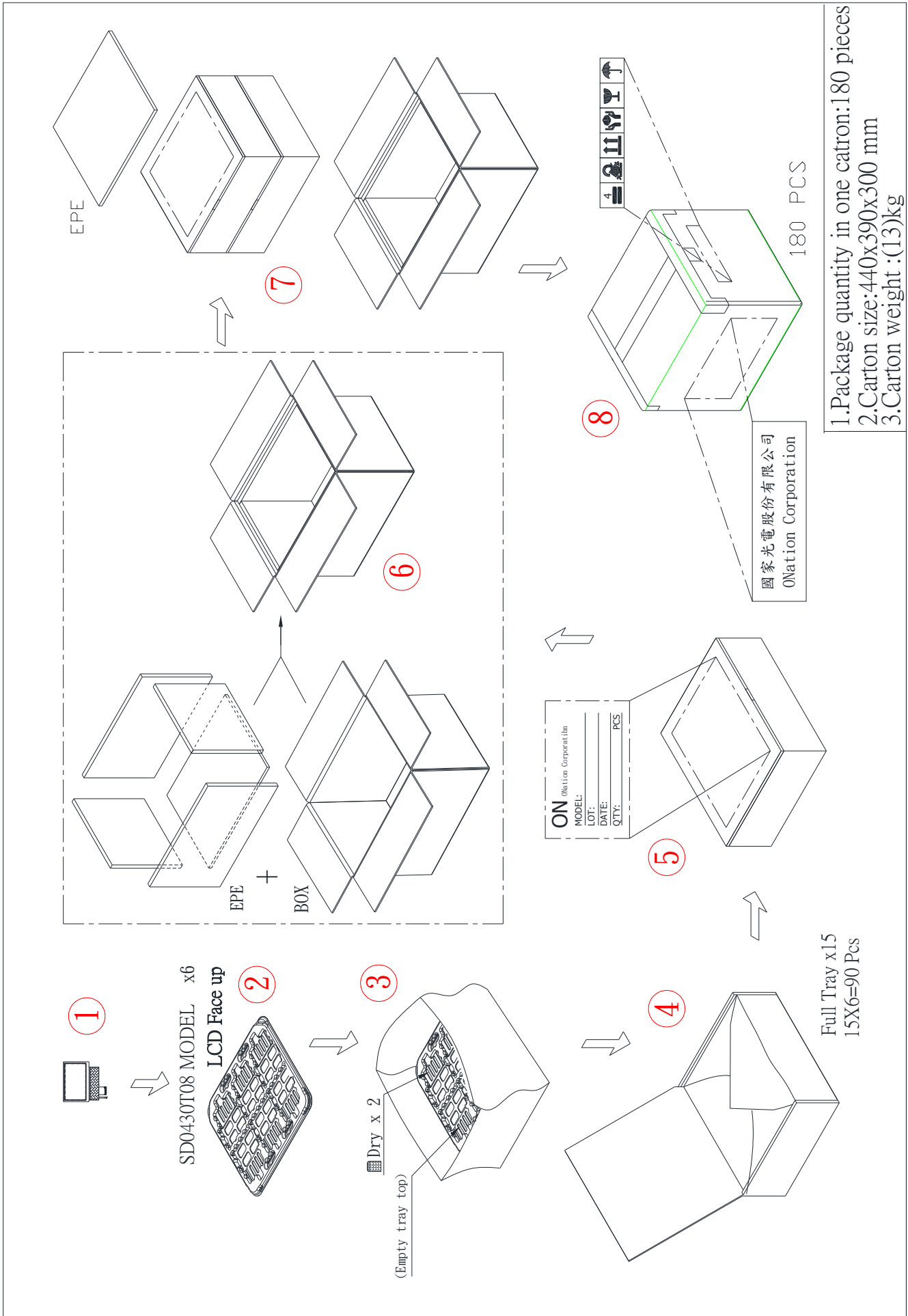
Note 2 : Definition of length L and width W



13. RELIABILITY TEST

ENVIRONMENTAL TEST				
NO.	ITEM	CONDITIONS	TIME PERIOD	REMARK
1	High Temperature Storage	80°C	240HRS	
2	Low Temperature Storage	-30°C	240HRS	
3	High Temperature Humidity Operation	40°C 90%RH	240HRS	
4	High Temperature Operation	70°C	240HRS	
5	Low Temperature Operation	-20°C	240HRS	
6	Temperature Cycle Storage	-30°C ← -25°C → 80°C (30min) (5min) (30min)	100 CYCLES	

14.PACKAGE INFORMATION



- 1.Package quantity in one carton:180 pieces
- 2.Carton size:440x390x300 mm
- 3.Carton weight :(13)kg