

# Product Specification

- ( ) Product Information
- ( ) Preliminary Specification
- (  ) Approval Specification

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CUSTOMER	R/A Customer
DATE OF ISSUE	2019/06/19

MODEL NO.	DV550FHB-R01-BL2.5K
EXTENSION CODE	-V(2)

<b>Customer Approval &amp; Feedback</b>

Approved by	2019/06/19
Prepared by	2019/06/19
<b>SINOTELECTRONICS INC.</b>	



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**TITLE:**

**DV550FHB-R01 Product Preliminary Specification**

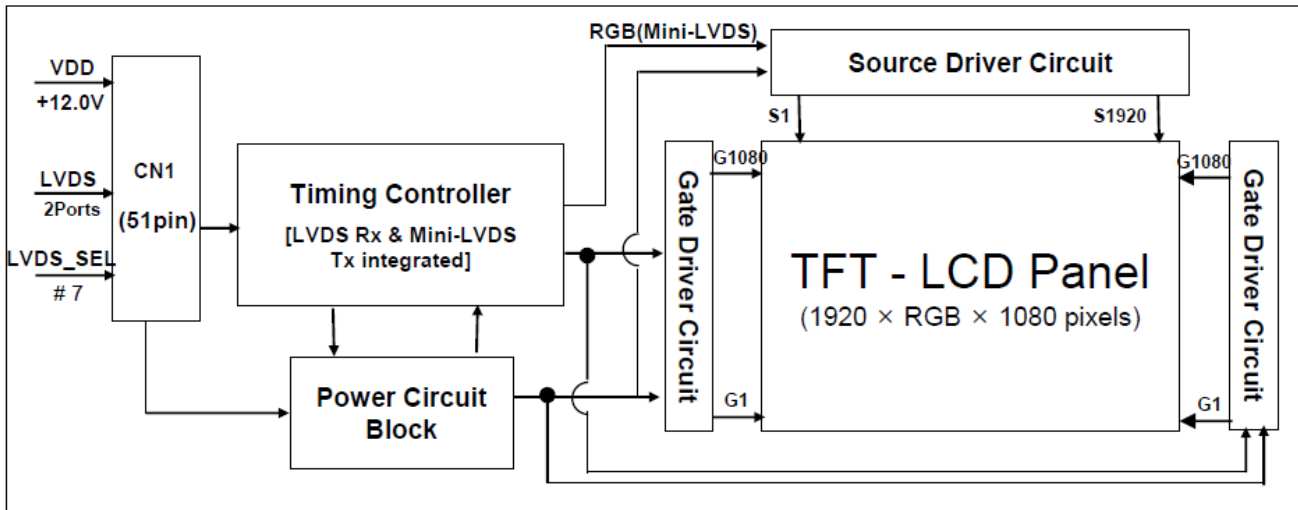
BEIJING BOE DISPLAY TECHNOLOGY

SPEC. NUMBER S8XX-XXXX	PRODUCT GROUP TFT LCD	REV. P2	ISSUE DATE 2016.01.08	PAGE 1 of 28
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## 1.0 GENERAL DESCRIPTION

### 1.1 Introduction

DV550FHB-R01 is a color active matrix TFT LCD open cell using amorphous silicon TFT's (Thin Film Transistors) as an active switching devices. This open cell has a 54.60 inch diagonally measured active area with FHD resolutions (1920 horizontal by 1080 vertical pixel array). Each pixel is divided into RED, GREEN, BLUE dots which are arranged in vertical stripe and this open cell can display 16.7M colors. The TFT-LCD panel used for this open cell is adapted for a low reflection and higher color type.



### 1.2 Features

- LVDS interface with 2 pixel / clock
- High-speed response
- Low color shift image quality
- 8-bit color depth, display 16.7M colors
- High luminance and contrast ratio, low reflection and wide viewing angle
- DE (Data Enable) only mode
- ADS technology is applied for high display quality
- RoHS compliant
- High TNI 105°C

## 1.3 Application

- Home Alone Multimedia TFT-LCD TV
- Display Terminals for Control System
- Ultra High Definition TV(FHD TV)
- AV application Products

## 1.4 General Specification

&lt; Table 1. General Specifications &gt;

Parameter	Specification	Unit	Remark
Active area	1209.6(H) × 680.4(V)	mm	Array
Number of pixels	1920(H) × 1080(V)	pixels	
Pixel pitch	210(H) × RGB × 630(V)	μm	Array
Pixel arrangement	Pixels RGB Vertical stripe		Array
Display colors	16.7M(8bits-true)	colors	
Display mode	Transmission mode, Normally Black		
Outline Dimension	1247.8(H)x716.8V) × 58.5(B)	mm	Mech.
Weight	15.28 (Typ.)	Kg	Mech.
Power Consumption	281.5W(Typ.), 2500nits	Watt	
Surface Treatment	Haze 25%,3H (Front Polarizer)		
Temperature	Operating	-30~80	°C High TNI 105°C
	Storage	-30~80	

## 2.0 ABSOLUTE MAXIMUM RATINGS

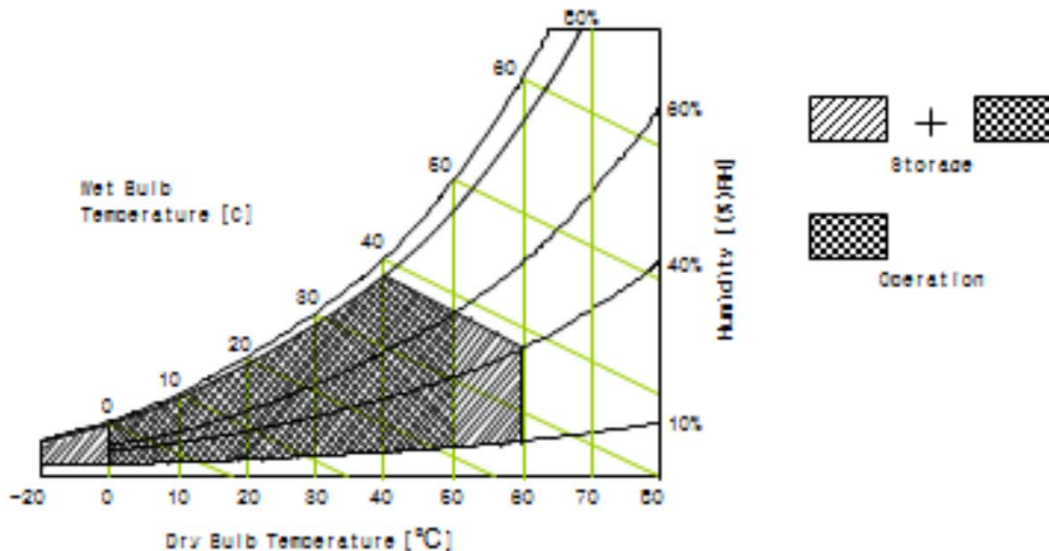
The followings are maximum values which, if exceed, may cause faulty operation or damage to the unit. The operational and non-operational maximum voltage and current values listed in Table 2.

< Table 2. LCD Module Electrical Specifications >

[VSS=GND=0V]

Parameter	Symbol	Min.	Max.	Unit	Remark
Power Supply Voltage	VDD	VSS-0.3	13.5	V	Ta = 25 °C
Operating Temperature	T <sub>OP</sub>	0	+50	°C	Note 1
	T <sub>SUR</sub>	0	+60	°C	
Storage Temperature	T <sub>ST</sub>	-20	+60	°C	
Operating Ambient Humidity	Hop	10	80	%RH	
Storage Humidity	Hst	10	80	%RH	

Note 1 : Temperature and relative humidity range are shown in the figure below.  
Wet bulb temperature should be 39 °C max. and no condensation of water.



### 3.0 ELECTRICAL SPECIFICATIONS

#### 3.1 TFT LCD Open Cell

< Table 3. Open Cell Electrical Specifications >

[Ta =25±2 °C]

Parameter		Symbol	Values			Unit	Remark
			Min	Typ	Max		
Power Supply Input Voltage		VDD	10.8	12	13.2	Vdc	
Power Supply Ripple Voltage		VRP			300	mV	
Power Supply Current		IDD	-	460	750	mA	Note 1
Power Consumption		PDD		5.5	8	Watt	
Rush current		IRUSH	-	4		A	Note 2
LVDS Interface	Differential Input High Threshold Voltage	VLVTH	+100		+300	mV	
	Differential Input Low Threshold Voltage	VLVTL	-300		-100	mV	
	Common Input Voltage	VLVC	1.0	1.2	1.4	V	
CMOS Interface	Input High Threshold Voltage	VIH	2.7	-	3.3	V	
	Input Low Threshold Voltage	VIL	0	-	0.6	V	

Note 1 : The supply voltage is measured and specified at the interface connector of LCM.

The current draw and power consumption specified is for VDD=12.0V,

Frame rate  $f_v=60\text{Hz}$  and Clock frequency = 75.4MHz.

Test Pattern of power supply current

a) Typ : Color Test (L0/L255)



b) Max : Horizontal 1 Line (L0/L255)



Note 2 : The duration of rush current is about 2ms and rising time of Power Input is 1ms(min)

### 3.2 LED Converter

< Table 4. LED Converter Electrical Specifications >

[Ta =25±2 °C]

parameter	Symbol	VALUES			Unit	Notes	
		MIN	TYP	MAX			
Power supply input voltage	VBL	22.6	24	26.4	VDC	1	
Power supply input current	IBL_A	-	11.5	-	A	VBR=3.3V	
Power consumption	PBL		276.0		W	VBR=3.3V	
Input signal for inverter control	On/ff	on	V on	2.5	-	5	V
		off	V off	0	-	0.5	V
	Brightness adjust	EXTVBR-B		35		100	% Automatic sensitization control

Note1 : The life time of LED, 30,000Hrs, is determined as the time at which luminance of the LED is 50% compared to that of initial value at the typical LED current on condition of continuous operating at 25 ± 2°C.

## 4.0 INTERFACE CONNECTION

### 4.1 Open Cell Input Signal & Power

-Connector : IS050-C51B-C39-S (UJU)

< Table 4. Open Cell Input Connector Pin Configuration >

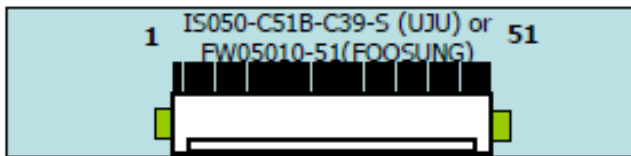
Pin No	Symbol	Description	Pin No	Symbol	Description
1	NC	No Connection	21	GND	Ground
2	SDA	I <sup>2</sup> C Data	22	CH1[3]-	First pixel negative LVDS differential data input. Pair3
3	SCL	I <sup>2</sup> C Clock	23	CH1[3]+	First pixel positive LVDS differential data input. Pair3
4	NC	Not Connected	24	CH1[4]-/NC	First pixel negative LVDS differential data input. Pair4
5	NC	Not Connected	25	CH1[4]+/NC	First pixel positive LVDS differential data input. Pair4
6	NC	Not Connected	26	NC	Not Connected
7	SELLVDS	High : JEIDA Low or Open: NS	27	NC	Not Connected
8	NC	Not Connected	28	CH2[0]-	Second pixel negative LVDS differential data input. Pair0
9	NC	Not Connected	29	CH2[0]+	Second pixel positive LVDS differential data input. Pair0
10	NC	Not Connected	30	CH2[1]-	Second pixel negative LVDS differential data input. Pair1
11	GND	Ground	31	CH2[1]+	Second pixel positive LVDS differential data input. Pair1
12	CH1[0]-	First pixel negative LVDS differential data input. Pair0	32	CH2[2]-	Second pixel negative LVDS differential data input. Pair2
13	CH1[0]+	First pixel positive LVDS differential data input. Pair0	33	CH2[2]+	Second pixel positive LVDS differential data input. Pair2
14	CH1[1]-	First pixel negative LVDS differential data input. Pair1	34	GND	Ground
15	CH1[1]+	First pixel positive LVDS differential data input. Pair1	35	CH2CLK-	First pixel negative LVDS clock
16	CH1[2]-	First pixel negative LVDS differential data input. Pair2	36	CH2CLK+	First pixel positive LVDS clock
17	CH1[2]+	First pixel positive LVDS differential data input. Pair2	37	GND	Ground
18	GND	Ground	38	CH2[3]-	Second pixel negative LVDS differential data input. Pair3
19	CH1CLK-	First pixel negative LVDS clock	39	CH2[3]+	Second pixel positive LVDS differential data input. Pair3
20	CH1CLK+	First pixel positive LVDS clock			



Pin No	Symbol	Description	Pin No	Symbol	Description
40	CH2[4]-/NC	Second pixel negative LVDS differential data input. Pair4	46	GND	Ground
41	CH2[4]+/NC	Second pixel positive LVDS differential data input. Pair4	47	NC	Not Connected
42	NC	Not Connected	48	VCC	Input Voltage
43	NC	Not Connected	49	VCC	Input Voltage
44	GND	Ground	50	VCC	Input Voltage
45	GND	Ground	51	VCC	Input Voltage

- Notes :
1. NC(Not Connected) : This pins are only used for BOE internal operations.
  2. Input Level of LVDS signal is based on the IEA 664 Standard.
  3. LVDS\_SEL : This pin is used for selecting LVDS signal data format.  
If this Pin : High (3.3V) or Open (NC) → Normal NS LVDS format  
Otherwise : Low (GND) → JEIDA LVDS format

### Rear view of LCM



### BIST Pattern



## 4.1 Module Input Signal & Power (2)

-LVDS Receiver : Timing Controller (LVDS Rx merged) / LVDS Data : Pixel Data  
< Table 5. Open Cell Input Connector Pin Configuration >

Channel No.	Data No.	8-bit LVDS Type	
		NS	JEIDA
0	Bit-0	R0	R2
	Bit-1	R1	R3
	Bit-2	R2	R4
	Bit-3	R3	R5
	Bit-4	R4	R6
	Bit-5	R5	R7
	Bit-6	G0	G2
1	Bit-0	G1	G3
	Bit-1	G2	G4
	Bit-2	G3	G5
	Bit-3	G4	G6
	Bit-4	G5	G7
	Bit-5	B0	B2
	Bit-6	B1	B3
2	Bit-0	B2	B4
	Bit-1	B3	B5
	Bit-2	B4	B6
	Bit-3	B5	B7
	Bit-4	HS	HS
	Bit-5	VS	VS
	Bit-6	DE	DE
3	Bit-0	R6	R0
	Bit-1	R7	R1
	Bit-2	G6	G0
	Bit-3	G7	G1
	Bit-4	B6	B0
	Bit-5	B7	B1
	Bit-6	-	

## 4.2 LED Converter Input Signal & Power

- Connector : CI0114M1HRL-NH (Cvilux) or equivalent

< Table 6. LED Converter Input Connector Pin Configuration >

Pin NO.	symbol	P001 Description	P002 Description	note
1	VCC	Power Supply Voltage	Light sensor negative pole -	
2	VCC	Power Supply Voltage	Light sensor positive pole +	
3	VCC	Power Supply Voltage		
4	VCC	Power Supply Voltage		
5	VCC	Power Supply Voltage		
6	GND	Power ground		
7	GND	Power ground		
8	GND	Power ground		
9	GND	Power ground		
10	GND	Power ground		
11	NC	Not connect		
12	ON/OFF	Output enable signal		
13	NC	Not connect		
14	NC	Not connect		

## 5.0 SIGNAL TIMING SPECIFICATION

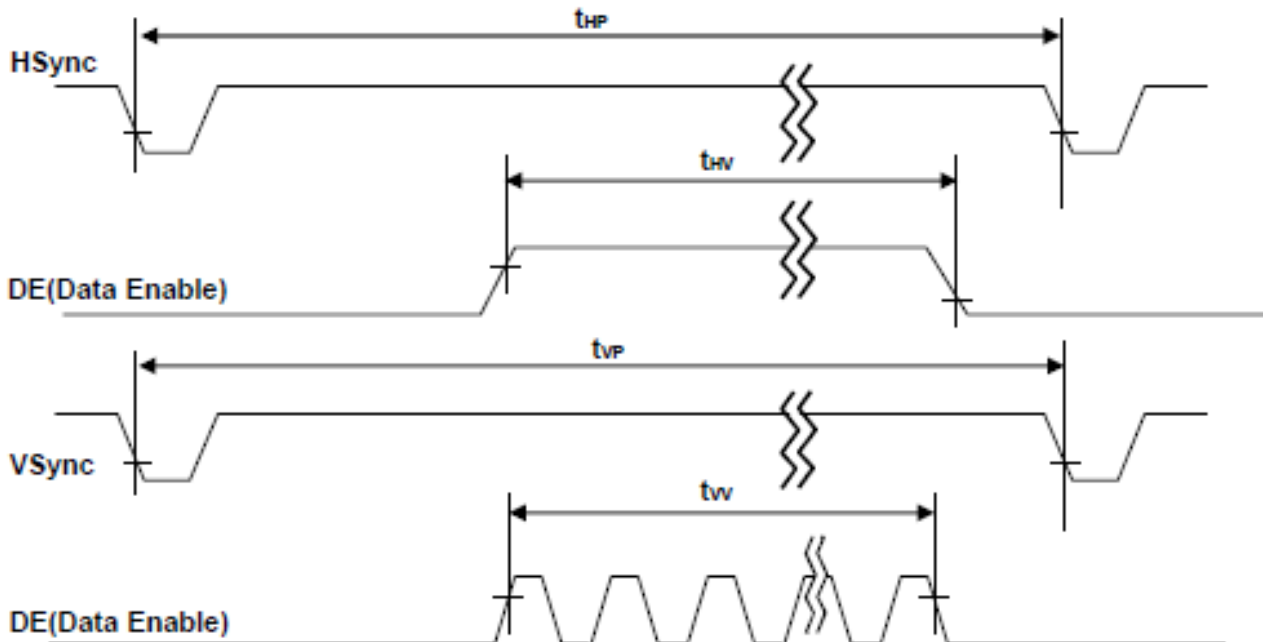
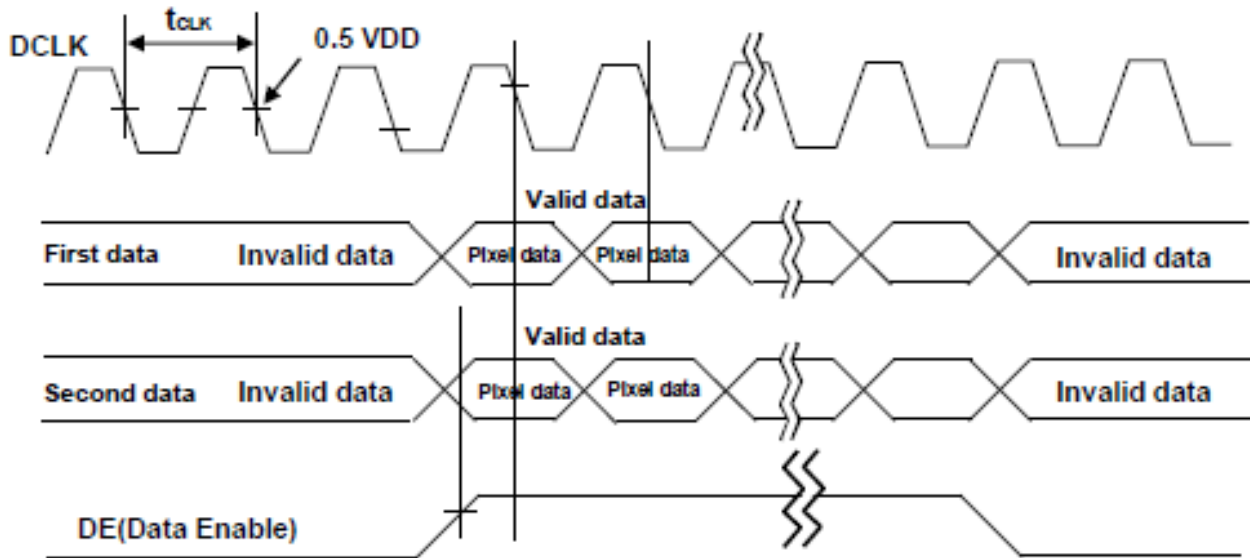
### 5.1 Timing Parameters (DE only mode)

< Table 7. Timing Table >

Item		Symbols	Min	Typ	Max	Unit	
Clock	Frequency	1/Tc	63	74.25	78	MHz	
	High Time	Tch	-	4/7Tc	-		
	Low Time	Tcl	-	4/7Tc	-		
Frame Period		Tv	1100 (1308)	1125 (1350)	1149 (1380)	lines	
			57 (47)	60 (50)	63 (53)	Hz	
Horizontal Active Display Term		Valid	t <sub>HV</sub>	-	960	-	t <sub>CLK</sub>
		Total	t <sub>HP</sub>	1060	1100	1200	t <sub>CLK</sub>
Vertical Active Display Term		Valid	t <sub>VV</sub>	-	1080	-	t <sub>HP</sub>
		Total	t <sub>VP</sub>	1100	1125	1149	t <sub>HP</sub>

Notes: This product is DE only mode. The input of Hsync & Vsync signal does not have an effect on normal operation.

## 5.2 Signal Timing Wave form

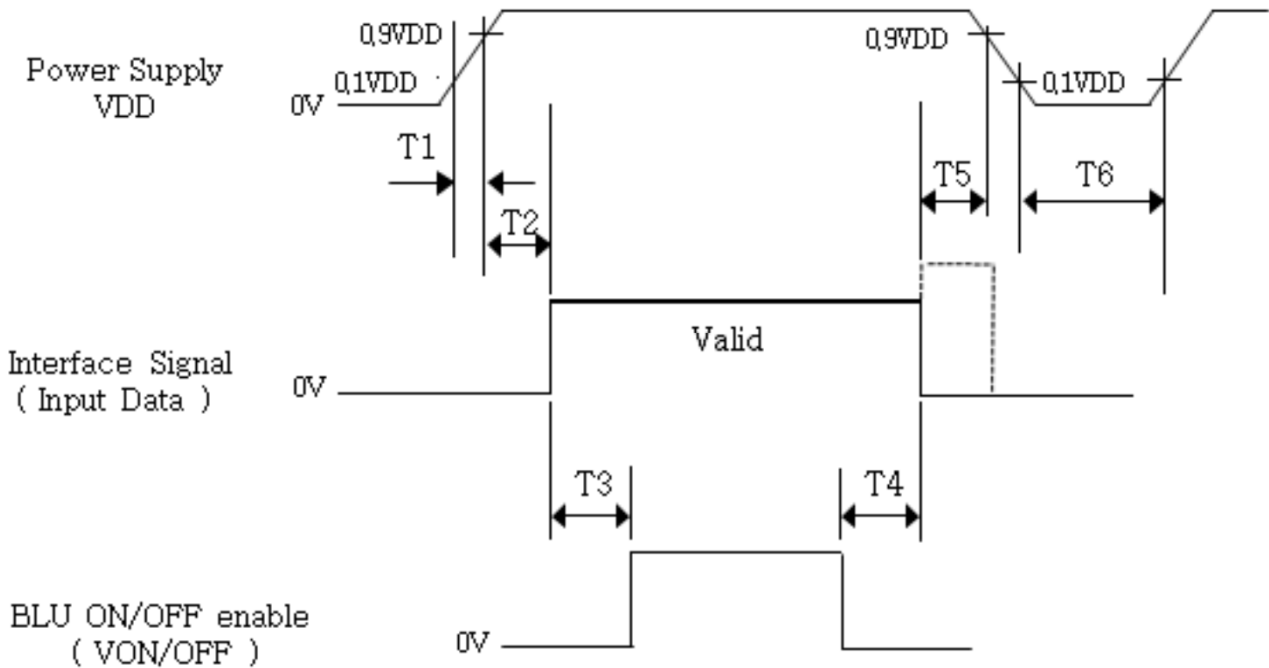


### 5.3 Input Signals, Basic Display Colors and Gray Scale of Colors

< Table 8. Input Signal and Display Color Table >

Color & Gray Scale		Input Data Signal																							
		Red Data								Green Data								Blue Data							
		R7	R6	R5	R4	R3	R2	R1	R0	G7	G6	G5	G4	G3	G2	G1	G0	B7	B6	B5	B4	B3	B2	B1	B0
Basic Colors	Black	0	0	0	0	0	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	0	0	0	0	1	1	1	1	1	1	1	1
	Green	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0
	Cyan	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	Red	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Magenta	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1
	Yellow	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	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 Scale of Red	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	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	Darker	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	△																								
	▽																								
	Brighter	1	1	1	1	1	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	▽	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	Red	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Gray Scale of Green	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	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	
	Darker	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	
	△																								
	▽																								
	Brighter	0	0	0	0	0	0	0	0	1	1	1	1	1	1	0	1	0	0	0	0	0	0	0	
	▽	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	
	Green	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0
Gray Scale of Blue	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	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	
	Darker	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	
	△																								
	▽																								
	Brighter	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1	0	
	▽	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1	0	
	Blue	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	
Gray Scale of White	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	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1	
	Darker	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1	
	△																								
	▽																								
	Brighter	1	1	1	1	1	1	0	1	1	1	1	1	1	0	1	1	1	1	1	1	1	0	1	
	▽	1	1	1	1	1	1	1	0	1	1	1	1	1	1	0	1	1	1	1	1	1	1	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	

## 5.4 Power Sequence



< Table 9. Sequence Table >

Parameter	Values			Units
	Min	Typ	Max	
T1	0.5	-	20	ms
T2	10	-	100	ms
T3	200	-	-	ms
T4	200	-	-	ms
T5	0	-	-	ms
T6	1	-	-	s

Notes: 1. Back Light must be turn on after power for logic and interface signal are valid.

2. Even though T1 is out of SPEC, it is still ok if the inrush current of VDD is below the limit.

## 6.0 OPTICAL SPECIFICATIONS

The test of optical specifications shall be measured in a dark room (ambient luminance 1 lx and temperature =  $25 \pm 2^\circ\text{C}$ ) with the equipment of Luminance meter system (Goniometer system and PR730) and test unit shall be located at an approximate distance 50cm from the LCD surface at a viewing angle of  $\theta$  and  $\Phi$  equal to 0. We refer to  $\theta=0$  ( $=\theta_3$ ) as the 3 o'clock direction (the "right"),  $\theta=90$  ( $=\theta_{12}$ ) as the 12 o'clock direction ("upward"),  $\theta=180$  ( $=\theta_9$ ) as the 9 o'clock direction ("left") and  $\theta=270$  ( $=\theta_6$ ) as the 6 o'clock direction ("bottom"). While scanning  $\theta$  and/or  $\Phi$ , the center of the measuring spot on the Display surface shall stay fixed. The measurement shall be executed after 30 minutes warm-up period. VDD shall be 12.0V +/-10% at 25 °C. Optimum viewing angle direction is 6 o'clock.

< Table 10. Optical Table >

[VDD = 12.0V, Frame rate = 120Hz, Ta =  $25 \pm 2^\circ\text{C}$ ]

Parameter		Symbol	Condition	Min	Typ	Max	Unit	Remark
Viewing Angle	Horizontal	$\theta_3$	CR > 10		89		Deg.	Note 1
		$\theta_9$			89		Deg.	
	Vertical	$\theta_{12}$			89		Deg.	
		$\theta_6$			89		Deg.	
Color Temperature				9000	10,000	11500	K	
Color Gamut				70	72	-	%	
Contrast ratio		CR	$\theta = 0^\circ$ (Center) Normal Viewing Angle	1000:1	1200:1	-		Note 2
Luminance of White		$Y_w$		2250	2500	-	cd/m <sup>2</sup>	Note 3
White luminance uniformity		$\Delta Y$		70	75		%	Note 4
Reproduction of color	White	$W_x$		TYP. - 0.03	TYP. + 0.03	0.280		
		$W_y$	0.290					
	Red	$R_x$	-					
		$R_y$	-					
	Green	$G_x$	-					
		$G_y$	-					
Blue	$B_x$	-						
	$B_y$	-						
Response Time	G to G	$T_g$	-	8	10	ms	Note 6	
Gamma Scale				2.0	2.2	2.4		



Note :

1. Viewing angle is the angle at which the contrast ratio is greater than 10. The viewing are determined for the horizontal or 3, 9 o'clock direction and the vertical or 6, 12 o'clock direction with respect to the optical axis which is normal to the LCD surface.
2. Contrast measurements shall be made at viewing angle of  $\theta = 0^\circ$  and at the center of the LCD surface. Luminance shall be measured with all pixels in the view field set first to white, then to the dark (black) state. (See Figure 1 shown in Appendix) Luminance Contrast Ratio (CR) is defined mathematically.

$$CR = \frac{\text{Luminance when displaying a white raster}}{\text{Luminance when displaying a black raster}}$$

3. Center Luminance of white is defined as the LCD surface. Luminance shall be measured with all pixels in the view field set first to white. This measurement shall be taken at the locations shown in Figure 2 for a total of the measurements per display.
4. The White luminance uniformity on LCD surface is then expressed as :  
 $\Delta Y = ( \text{Minimum Luminance of 9points} / \text{Maximum Luminance of 9points} ) * 100$   
 (See Figure 2 shown in Appendix).
5. The color chromaticity coordinates specified in Table 11. shall be calculated from the spectral data measured with all pixels first in red, green, blue and white. Measurements shall be made at the center of the panel.
6. Response time Tg is the average time required for display transition by switching the input signal as below table and is based on Frame rate fV =60Hz to optimize.  
 Each time in below table is defined as Figure 3 and shall be measured by switching the

Measured Response Time	Target																
	0	15	31	47	63	79	95	111	127	143	159	175	191	207	223	239	255
0																	
15																	
31																	
47																	
63																	
79																	
95																	
111																	
127																	
143																	
159																	
175																	
191																	
207																	
223																	
239																	
255																	

## 7.0 MECHANICAL CHARACTERISTICS

### 7.1 Dimensional Requirements

Figure 4 (located in Appendix) shows mechanical outlines for the model HV550QUS-300. Other parameters are shown in Table 12.

< Table 11. Dimensional Parameters >

Parameter	Specification	Unit
Dimensional outline	1247.8(H)x716.8V) × 58.5(B)	mm
Weight	15.28	Kg
Active area	1209.6(H) × 680.4(V)	mm
Pixel pitch	210(H) × RGB × 630(V)	μm
Number of pixels	1920(H) × 1080(V) (1 pixel = R + G + B dots)	pixels
Back-light	D-LED Backlight	

### 7.2 Mounting

See Figure 5. (Shown in Appendix)

### 7.3 Anti-Glare and Polarizer Hardness

The surface of the LCD has an Anti-glare coating to minimize reflection and a coating to Reduce scratching.

## 8.0 RELIABILITY TEST

The Reliability test items and its conditions are shown in below.

< Table 12. Reliability Test Parameters >

Type	Test Item		BOE DT		
			Test Condition	时间	
Optical Test	Chromaticity/Brightness/Uniformity				
Electrical Test	Power Consumption				
	Electric Static Discharge	ESD	Module	150pF 330Ω ±15KV(Air)/±8kV (Contact)	100point
Reliability Test	Operation Test	THO	Temperature & Humidity Operation	50 °C,80%	500 hr
		HTO	High Temperature Operation Test	60°C	240 hr
		LTO	Low Temperature Operation Test	-5°C	240 hr
		On/Off	On/Off Operation Test	1min(on) / 1min(off)	30000cycle
	Storage Test	HTS	High Temperature Storage Test	60°C	240hr
		LTS	Low Temperature Storage Test	-20°C	240hr
		TST	Thermal Shock Test-1	-20°C~60°C (Per 30min)	100cycle
	Mechanical	P-VIB&Drop	Packing VIB&Drop	VIB:1.05G ; 5~200Hz,+Z,1hr Drop : JIS0200Z	6hr
	Altitude		Altitude Test (低气压测试)	40000 ft, -10°C / 24 hr,25°C / 24 Hr,-10°C / 24 hr	72hr
	Acoustic Noise		Acoustic Noise (噪音测试)	Front/Left @ Center≤18dB, Rear/Inverter≤25dB	2cycle (90min/cycle)

<b>BOE</b>	PRODUCT GROUP	REV	ISSUE DATE
	TFT LCD	P2	2016.01.08

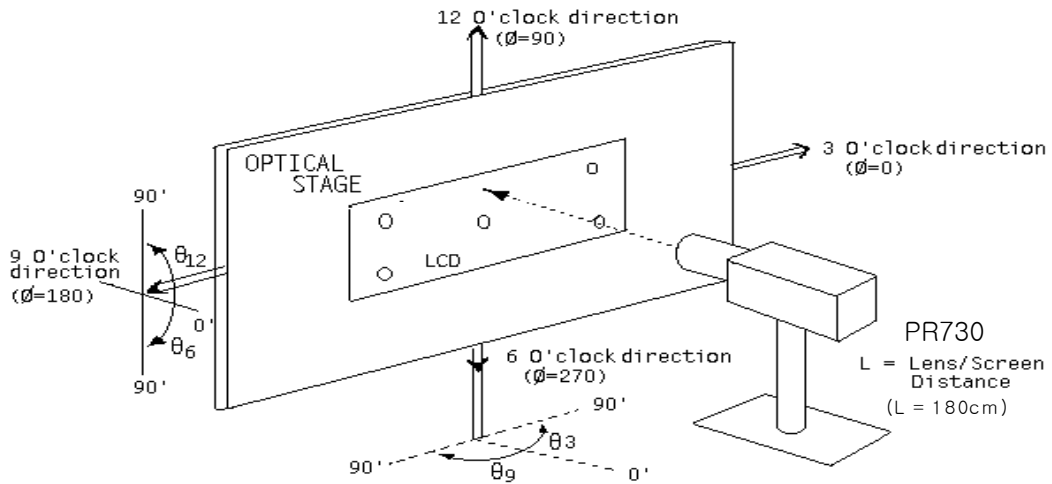
## 11.0 HANDLING & CAUTIONS

- (1) Cautions when taking out the module
  - Pick the pouch only, when taking out module from a shipping package.
- (2) Cautions for handling the module
  - As the electrostatic discharges may break the LCD module, handle the LCD module with care. Peel a protection sheet off from the LCD panel surface as slowly as possible.
  - As the LCD panel and back - light element are made from fragile glass material, impulse and pressure to the LCD module should be avoided.
  - As the surface of the polarizer is very soft and easily scratched, use a soft dry cloth without chemicals for cleaning.
  - Do not pull the interface connector in or out while the LCD module is operating.
  - Put the module display side down on a flat horizontal plane.
  - Handle connectors and cables with care.
- (3) Cautions for the operation
  - When the module is operating, do not lose CLK, ENAB signals. If any one of these signals is lost, the LCD panel would be damaged.
  - Obey the supply voltage sequence. If wrong sequence is applied, the module would be damaged.
- (4) Cautions for the atmosphere
  - Dew drop atmosphere should be avoided.
  - Do not store and/or operate the LCD module in a high temperature and/or humidity atmosphere. Storage in an electro-conductive polymer packing pouch and under relatively low temperature atmosphere is recommended.
- (5) Cautions for the module characteristics
  - Do not apply fixed pattern data signal to the LCD module at product aging.
  - Applying fixed pattern for a long time may cause image sticking.
- (6) Other cautions
  - Do not disassemble and/or re-assemble LCD module.
  - Do not re-adjust variable resistor or switch etc.
  - When returning the module for repair or etc., Please pack the module not to be broken. We recommend to use the original shipping packages.

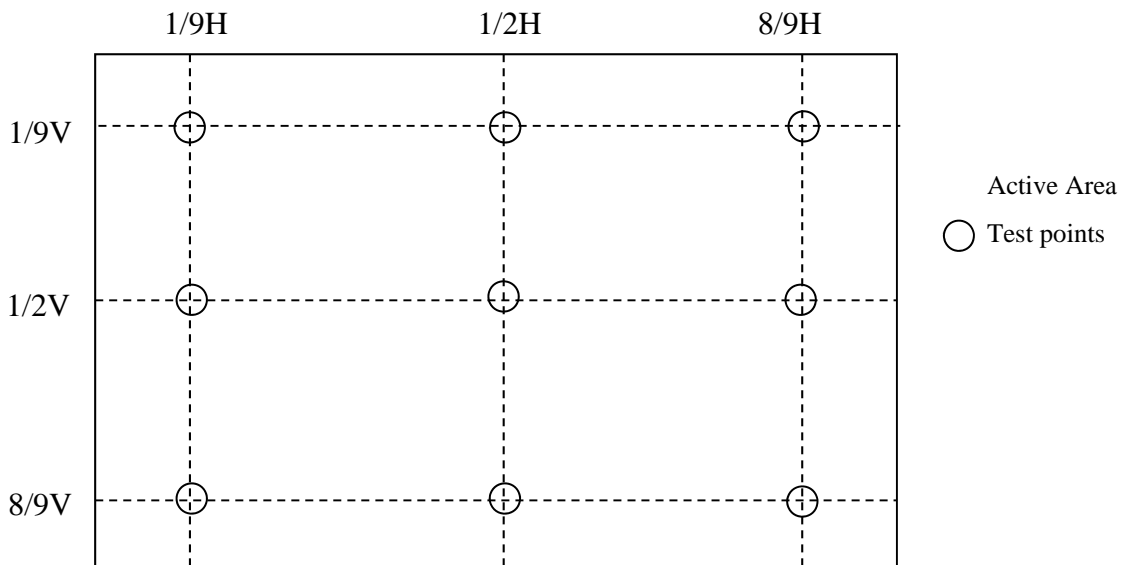
SPEC. NUMBER S8XX-XXXX	SPEC. TITLE DV550FHB-R01 Preliminary Product Specification	PAGE 24 of 28
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## 12.0 APPENDIX

< Figure 1. Measurement Set Up >



< Figure 2. White Luminance and Uniformity Measurement Locations >

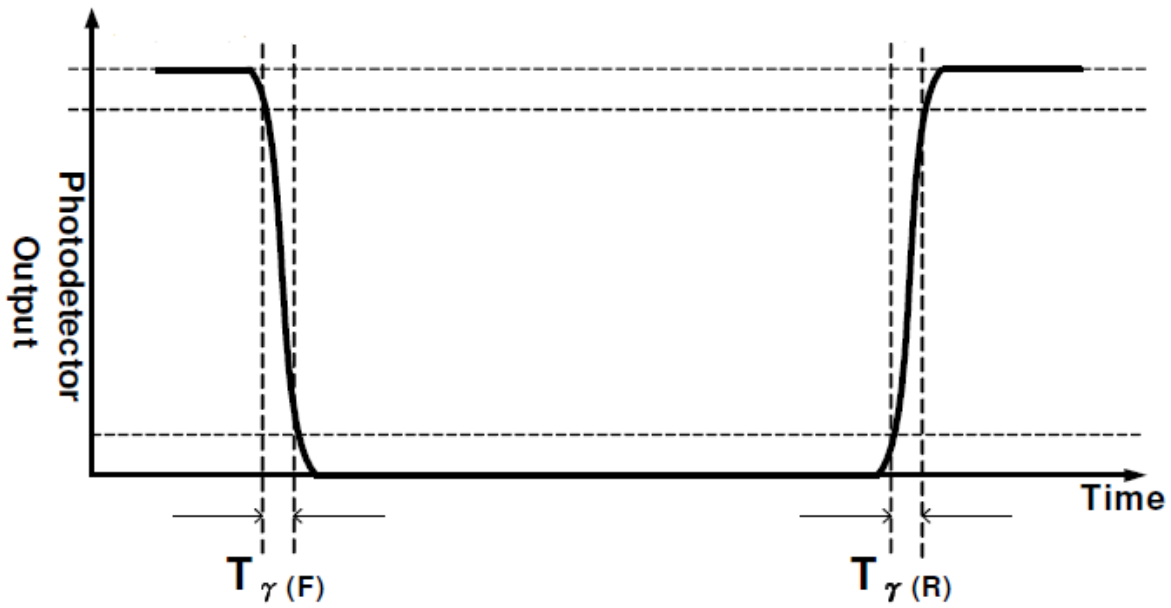


< Figure 3. Response Time Testing >

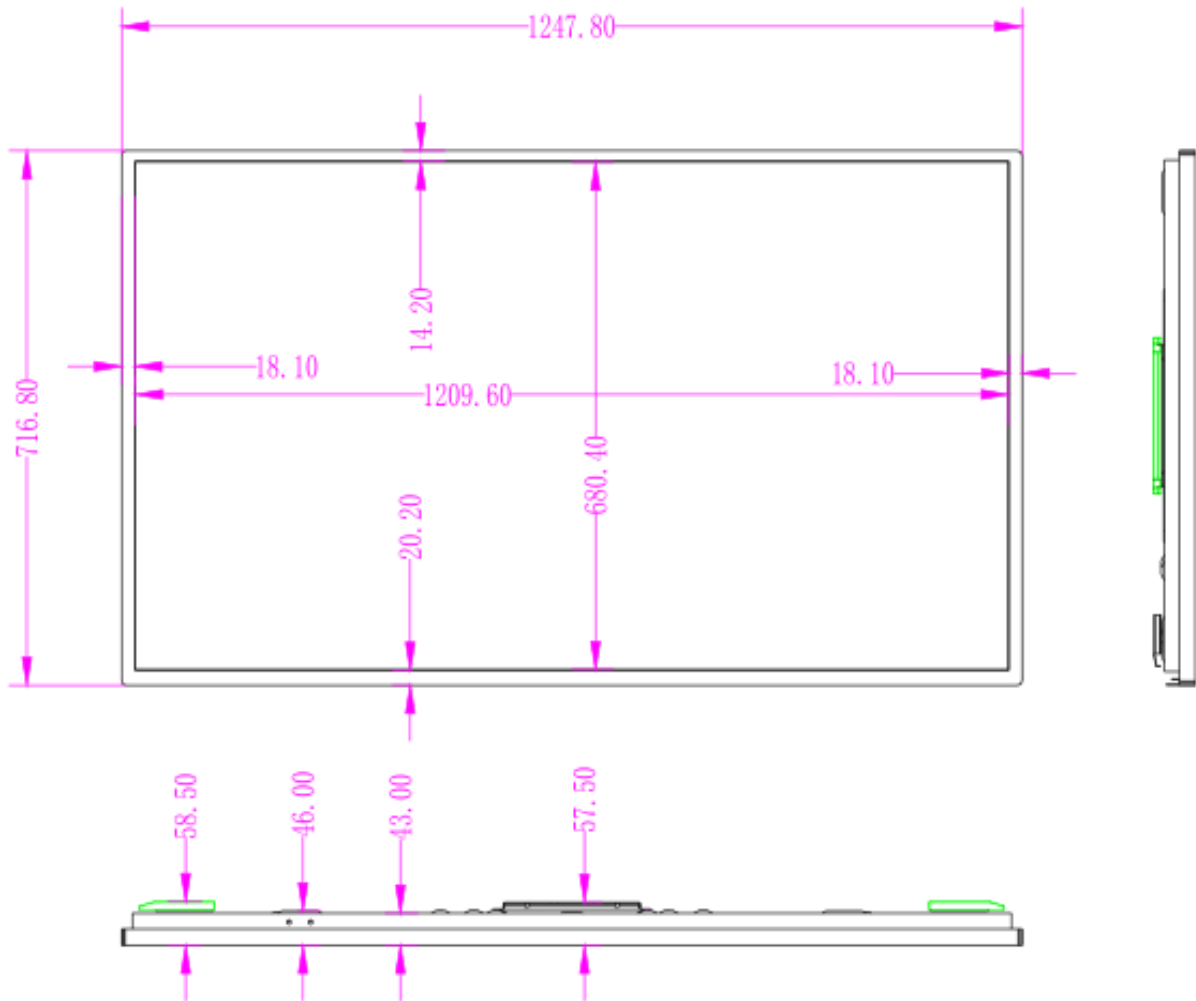
Any level of gray (Bright)

Any level of gray (Dark)

Any level of gray (Bright)



< Figure 4. TFT-LCD Module Outline Dimensions (Front View) >



< Figure 5. TFT-LCD Module Outline Dimensions (Rear View) >

