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Custom Display

Production Custom designs Installation

Mechanical design



MODEL NO : ET043WV03-T

MODEL VERSION: 01

SPEC VERSION : 1.0

ISSUED DATE: 2020-11-13

☐ Preliminary Specification

☒ Final Product Specification

Customer : _____

Approved by	Notes

Youri Confirmation

Prepared by	Reviewed by	Approved by
John	Johnny	Wang

1. Introduction

1.1 Scope of application

LCD specification: Dots 800xRGBx480

As to basic specification of the driver IC, refer to the IC (ST7262E43) specification and data book.

All material & processing of the LCD module should be Lead Free.

1.2 TFT features:

Structure: TFT PANNEL+IC +FPC+BL;

ALL O'CLOCK Type LCD

800dot-segment and 480dot-common outputs;

16.7M Color can be selected by software;

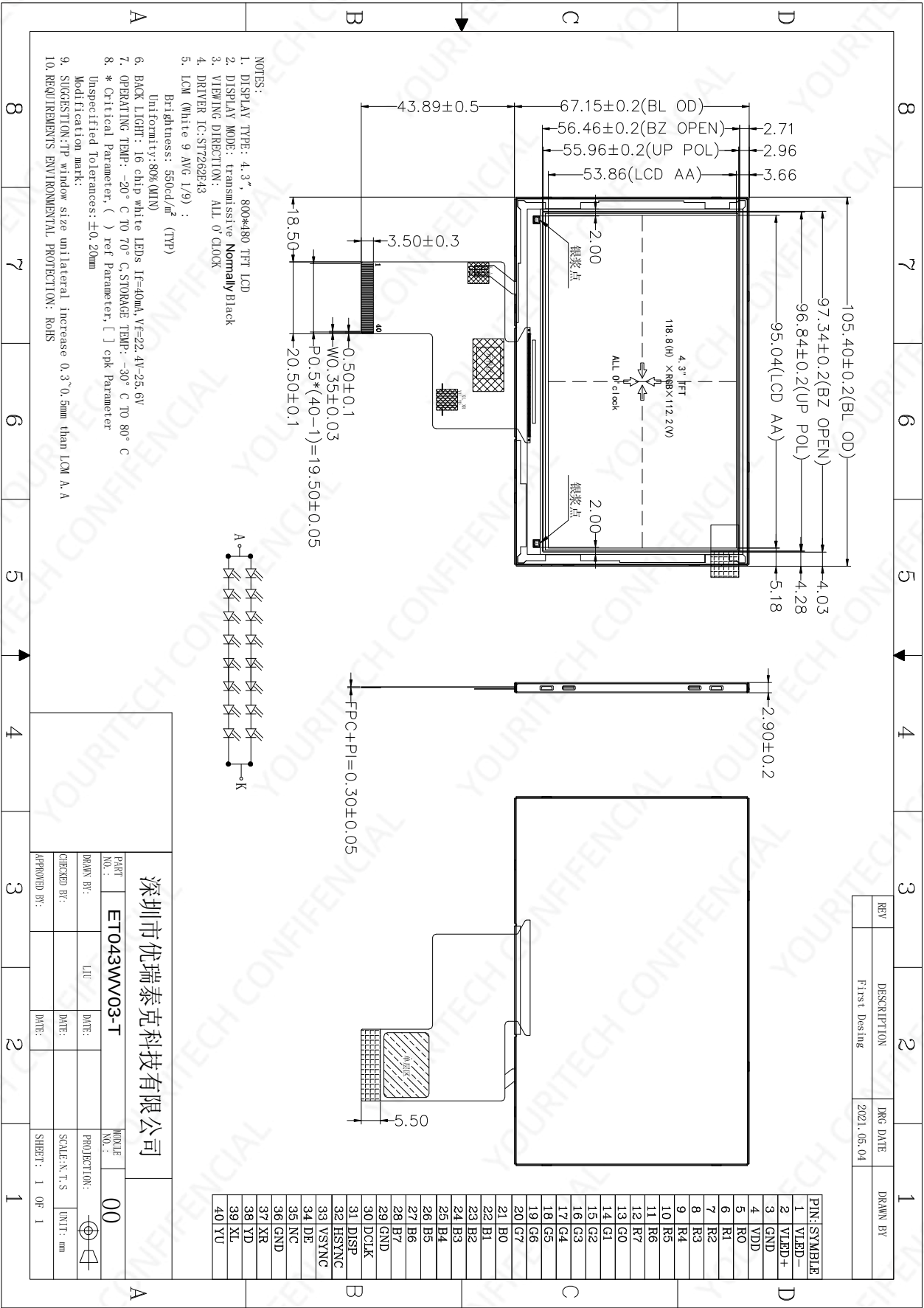
White LED back light;

24bit RGB Interface

1.3 Applications:

2. LCM General specification

ITEM	Standard value	Unit
LCD Type	Normally Black	--
Drive element	TFT active matrix	--
Number of pixels	800*3RGB(H)X480(V)	Dots
Pixel arrangement	RGB Vertical Stripe	--
Pixel Pitch (W*H)	0.1188 (H) x 0.1122 (V)	mm
Active area	95.04(H) x 53.86(V)	mm
Viewing direction	ALL O'CLOCK	--
TFT Driver IC	ST7262E43	--
TFT interface	24BIT RGB Interface	--
LCM Size(W*H*T)	105.40(W) ×67.15(H) ×2.90(T)	mm
Approx. Weight	TBD	g
Touch structure	--	--
Touch Driver IC	--	--
Touch Interface	--	--



3.Absolute Maximum Rating

Characteristics	Symbol	Min.	Max.	Unit
LCM Operating Temperature	T _{OPR}	-20	+70	°C
LCM Storage Temperature	T _{STG}	-30	+80	°C
Humidity	RH	--	90	%

4.Electrical Characteristics

4.1 TFT DC Characteristics

Characteristics	Symbol	Min.	Typ.	Max.	Unit
Supply Voltage for I/O	VDDIO	--	--	--	V
Supply Voltage for(DC/DC)	VDD	3.0	3.3	3.6	V
Supply Voltage for(DC/DC)	AVDD	--	--	--	V
Supply Voltage for(DC/DC)	AVEE	--	--	--	V

4.2 Back-Light Unit Characeristics

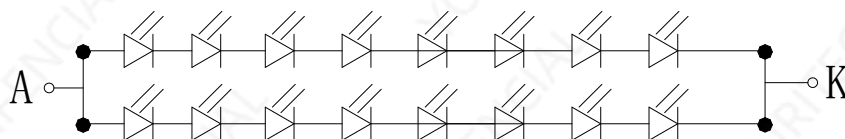
The back-light system is an edge-lighting type with 16 white LEDs. The characteristics of the back-light are shown in the following tables.

Characteristics	Symbol	Min.	Type	Max.	Unit	Notes
Forward Voltage	V _F	22.4	--	25.6	V	--
Forward current	I _F	--	40	--	mA	--
Luminance(With LCD)	L _v	--	550	--	cd/m ²	--
LED life time	N/A	--	30,000	--	Hr	Note 1

Note:

- (1) The “LED life time” is defined as the module brightness decrease to 50% of original brightness at I_L=20mA/LED. The LED life time could be decreased if operating I_L is larger than 25mA/LED.

Backlight circuit diagram shown in below:



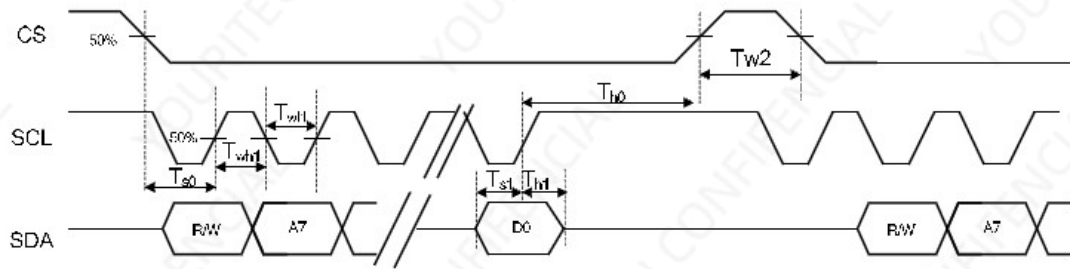
5. Module Function Description

LCM:

Pin No.	Symbol	Description	Notes
1	LEDK	POWER SUPPLY- FOR BACKLIGHT CATHODE	
2	LEDA	POWER SUPPLY+ FOR BACKLIGHT ANODE	
3	GND	Ground	
4	VDD	POWER SUPPLY	
5-12	R0-R7	Data bus	
13-20	G0-G7	Data bus	
21-28	B0-B7	Data bus	
29	GND	Ground	
30	DCLK	Pixel clock signal in RGB I/F	
31	DISP	Display on/off	
32	HSYNC	Horizontal sync. Signal in RGB I/F	
33	VSNC	Vertical sync. Signal in RGB I/F	
34	DE	Data enable signal in RGB I/F mode 1	
35	NC	NC	
36	GND	Ground	
37	XR	NC	
38	YD	NC	
39	XL	NC	
40	YU	NC	

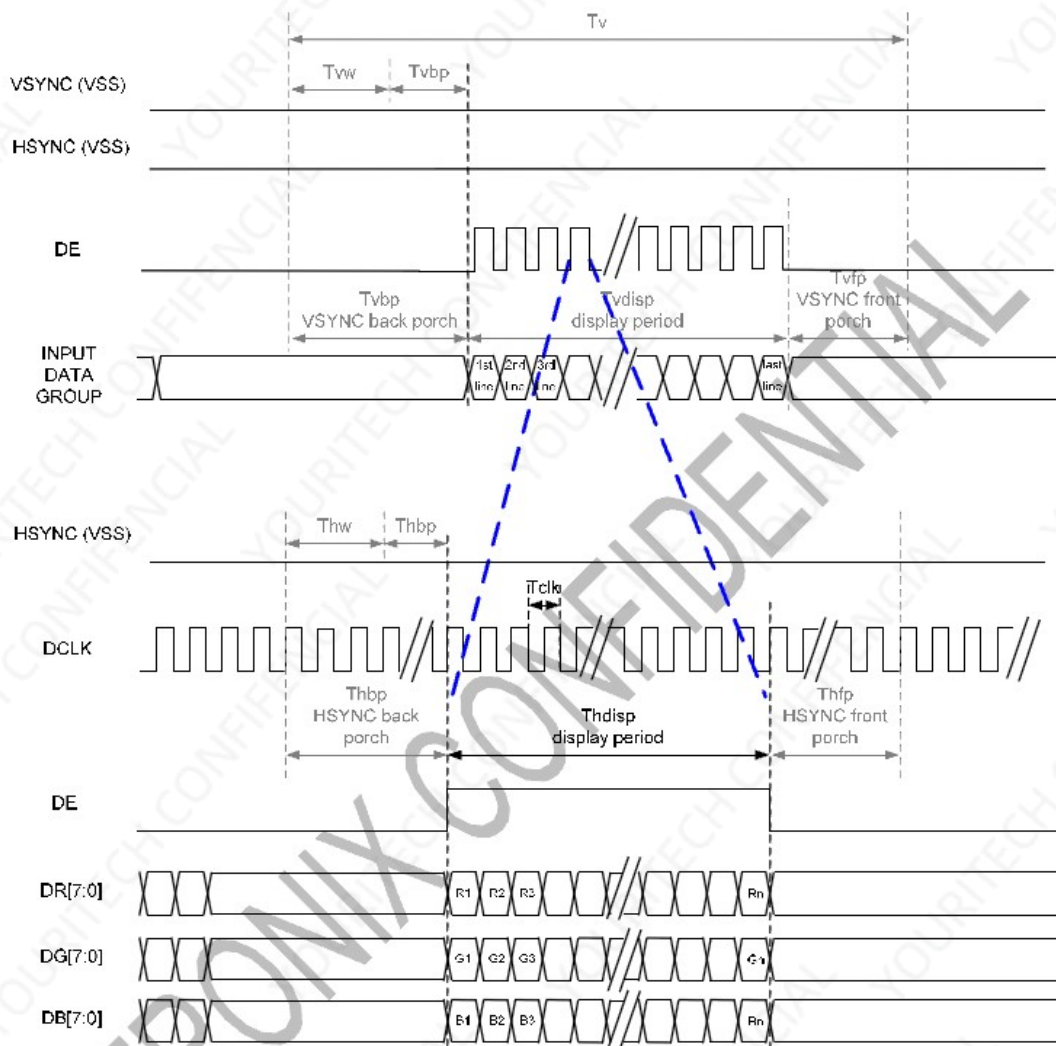
6. Timing Characteristics

System Bus Timing for 3-Wire SPI Interface



Item	Symbol	Min.	Typ.	Max.	Unit	Conditions
CS Input Setup Time	T_{s0}	50	-	-	ns	
Serial Data Input Setup Time	T_{s1}	50	-	-	ns	
CS Input Hold Time	T_{h0}	50	-	-	ns	
Serial Data Input Hold Time	T_{h1}	50	-	-	ns	
SCL Write Pulse High Width	T_{wh1}	50	-	-	ns	
SCL Write Pulse Low Width	T_{wl1}	50	-	-	ns	
SCL Read Pulse High Width	T_{rh1}	300	-	-	ns	
SCL Read Pulse Low Width	T_{rl1}	300	-	-	ns	
CS Pulse High Width	T_{w2}	400	-	-	ns	

DE Mode



Parallel 24-bit RGB Input Timing (PVDD=PVDD1=VDD=VDDI= 3.3V, AGND= 0V, TA=25°C)

Parallel 24-bit RGB Interface Timing Table						
Item	Symbol	Min.	Typ.	Max.	Unit	Remark
DCLK Frequency		Fclk	23	25	27	MHz
HSYNC	Period Time	Th	-	816	896	DCLK
	Display Period	Thdisp	800		DCLK	
	Back Porch	Thbp	-	8	48	DCLK
	Front Porch	Thfp	-	8	48	DCLK
	Pulse Width	Thw	-	4	8	DCLK
VSYNC	Period Time	Tv	-	496	504	HSYNC
	Display Period	Tvdisp	480		HSYNC	
	Back Porch	Tvbp	-	8	12	HSYNC
	Front Porch	Tvfp	-	8	12	HSYNC
	Pulse Width	Tvw	-	4	8	HSYNC

Note: The minimum blanking time depends on the GIP timing of the panel specification.

7.Optical Characteristics

Optical Specification

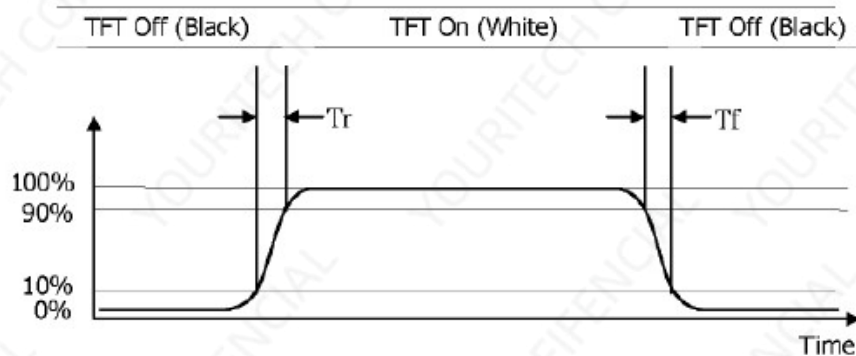
Parameter		Symbol	Condition	Min.	Typ.	Max.	Unit	Remark
Viewing Angle range	Horizontal	Θ_3	CR > 10	-	80	-	Deg.	Note 1
		Θ_9		-	80	-	Deg.	
	Vertical	Θ_{12}		-	80	-	Deg.	
		Θ_6		-	80	-	Deg.	
Luminance Contrast ratio		CR	$\Theta = 0^\circ$	-	1200	-		Note 2
Color Gamut	NTSC	CIE1931	$\Theta = 0^\circ$	-	50	-	%	Note 5 @C Light
Reproduction of color	White	Wx	$\Theta = 0^\circ$	Typ -0.03	0.311	Typ +0.03		
		Wy			0.338			
Response Time		Tr+Td	Ta= 25° C $\Theta = 0^\circ$	-	30	-	ms	Note 6

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 4 for a total of the measurements per display.
4. The White luminance uniformity on LCD surface is then expressed as : $\Delta Y = \frac{\text{Minimum Luminance of 9 Points or 5 points}}{\text{Maximum Luminance of 9 Points or 5 points}}$ (See FIGURE 2).
5. The color chromaticity coordinates specified in Table 5. shall be calculated from the spectral data measured with C light. Measurements shall be made at the center of the panel.
6. The electro-optical response time measurements shall be made as FIGURE 5 shown in Appendix by switching the "data" input signal ON and OFF. The times needed for the luminance to change from 10% to 90% is T_d , and 90% to 10% is T_r .



8. Reliability Test Item

No.	Test Item	Test Condition	Notes
1	High Temp. Storage	+80°C / 96H	1. Functional test is OK. Missing Segment, short, unclear segment non-display, display abnormally and liquid crystal leakage un-allowed. 2. No low temperature bubbles, end seal loose and fall, frame rainbow.
2	Low Temp. Storage	-30°C / 96H	
3	High Temp. Operating	+70°C / 96H	
4	Low Temp. Operating	-20°C / 96H	
5	High Temperature / Humidity storage	50°C x 90%RH / 96H	
6	Thermal and cold shock	Static state, -20°C (30min) ~70°C (30min), 50 cycles	

9. Packing Method----TBD

- END -