TFT LCD Specification

Model No.: AG101WT-P06R-NNG-V1

Customer: Solar Technologies

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Note:

REVISION HISTORY

Version	Date	Part Rev.	Page	Section	Description
0.1	Feb. 14, 2012	A			**PRELIMINARY**
0.2	Feb. 14, 2012	A	9	4	TIMING SPECIFICATION
		A	10	4	DATA INPUT FORMAT FOR LVDS
0.3	Feb. 14, 2012	A	1		APPROVAL ASSIGNMENT
1.0	Oct. 2, 2014	A	4	1.4 / 1.5	UPDATE SPECIFICATION
			6	2.2.2	
			7	3.1	

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1 GENERAL DESCRIPTION

1.1 OVERVIEW

AG101WT-P06R-NNG-V1 is 10.1" color TFT-LCD (Thin Film Transistor Liquid Crystal Display) Module composed of LCD panel, driver ICs, control circuit, and LED backlight.

The 10.1"screen produces a high resolution image that is composed of 1024×600 pixel elements in a stripe arrangement. Display 262K colors by 6 Bit R.G.B signal input..

1.2 FEATURES

- WSVGA (1024 x 600 pixels) resolution
- 3.3V LVDS (Low Voltage Differential Signaling) interface with 1 pixel/clock
- Built in LED Converter

1.3 APPLICATIONS

- Mobile notebook or netbook
- Multimedia tablet

1.4 GENERAL SPECIFICATI0NS

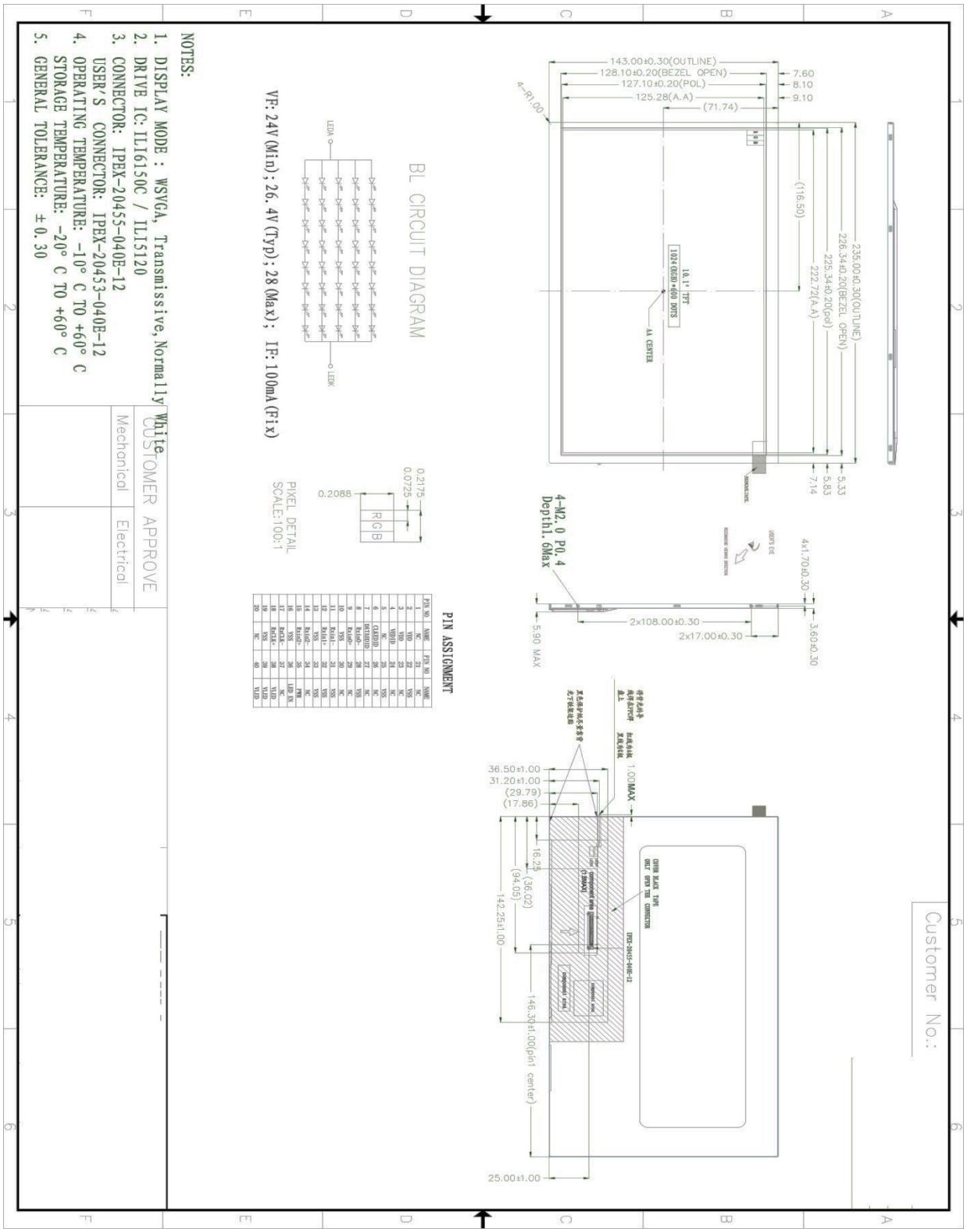
Item	Specification	Unit	Note
Panel Diagonal	10.1	inch	
Active Area	222.72×125.28	mm	
Bezel Opening Area	226.34 (H) x 128.10 (V)	mm	
Driver Element	a-Si TFT active matrix	-	-
Pixel Number	1024 x R.G.B. x 600	pixel	
Pixel Pitch	0.2175×0.2088	mm	-
Pixel Arrangement	RGB vertical stripe	-	-
Driver IC	ILI6150C / ILI5120		
Brightness(cd/m2)	600nit (typ)		
Display Operating Modes	Normally white	-	-
Surface Treatment	Glossy	-	-

1.5 MECHANICAL SPECIFICATIONS

Item		Min.	Typ.	Max.	Unit	Note
Module Size	Horizontal(H)		235.0		mm	(2)
	Vertical(V)		143.0		mm	
	Thickness(T)	-	5.9		mm	

Note (2) the thickness specification does not include PCB and components on the PCB.

Figure 1.1 Module front outline



2 ABSOLUTE MAXIMUM RATINGS

2.1 ABSOLUTE MAXIMUMS, ENVIRONMENTAL

Item	Symbol	Value		Unit	Note
		Min.	Max.		
Storage Temperature	T_{ST}	-20	60	ºC	
Operating Ambient Temperature	T_{OP}	-10	60	ºC	

2.2 ABSOLUTE MAXIMUMS, ELECTRICAL

Permanent damage to the device may occur if maximum values are exceeded. Operation should be restricted to the conditions described under Normal Operating Conditions.

2.2.1 TFT LCD MODULE

Item	Symbol	Value		Unit	Note
		Min.	Max.		
Power Supply Voltage	VDD	-0.3	5.0	V	

2.2.2 BACKLIGHT CONVERTER INPUT

Item	Symbol	Value		Unit	Note
		Min.	Max.		
Converter Input Voltage	VLED	4.5	21	V	

3 ELECTRICAL CHARACTERISTICS

3.1 TFT LCD

ITEM	SYMBOL	MIN.	TYP.	MAX.	UNIT	NOTE
Power Supply Voltage For LCD	VDD/ VEDID	3.0	3.3	3.6	V	
Power Supply Voltage For LED	VLED	4.5	18.7	21	V	
Input voltage 'H' level	VIH	0.7VDD	-	VDD	V	
Input voltage 'L' level	VIL	0	-	0.3VDD	V	
Output voltage 'H' level	VOH	VDD-0.4	-	-	V	
Output voltage 'L' level	VOL	-	-	GND+0.4	V	

3.2 TFT CURRENT CONSUMPTION

ITEM	SYMBOL	MIN.	TYPICAL	MAX.	UNIT	NOTE
Power Current	IDD	-	80	140	mA	

【Note1】 Typical: Under 64 gray pattern

Maximum: Under black pattern

(a)64 Gray Pattern

(b)Black Pattern

3.3 INTERFACE CONNECTION

Interface NO.	Symbol	I/O or connect to	Description
1	NC	-	No Connection (Reserve)
2	VDD	P	Power Supply
3	VDD	P	Power Supply
4	VEDID	P	EDID power supply
5	NC	-	No Connection (Reserve)
6	CLKEDID	I	DDC clock
7	DATAEDID	I	DDC data
8	Rxin0-	I	LVDS differential data input
9	Rxin0+	I	LVDS differential data input
10	VSS	P	Ground
11	Rxin1-	I	LVDS differential data input
12	Rxin1+	I	LVDS differential data input
13	VSS	P	Ground
14	Rxin2-	I	LVDS Differential Data Input
15	Rxin2+	I	LVDS Differential Data Input
16	VSS	P	Ground
17	RxCLK-	I	LVDS differential clock input
18	RxCLK-+	I	LVDS differential clock input
19	VSS	P	Ground
20	NC	-	No Connection (Reserve)
21	NC	-	No Connection (Reserve)
22	VSS	P	Ground
23	NC	-	No Connection (Reserve)
24	NC	-	No Connection (Reserve)
25	VSS	P	Ground
26	NC	-	No Connection (Reserve)
27	NC	-	No Connection (Reserve)
28	VSS	P	Ground
29	NC	-	No Connection (Reserve)
30	NC	-	No Connection (Reserve)
31	VSS	P	LED Ground
32	VSS	P	LED Ground
33	VSS	P	LED Ground
34	NC	-	No Connection (Reserve)
35	PWM	I	LED BLU Brightness Control
36	LED_EN	I	LED Converter Enable
37	NC	-	No Connection (Reserve)
38	VLED	P	LED Converter Input Power
39	VLED	P	LED Converter Input Power
40	VLED	P	LED Converter Input Power

4 TIMING SPECIFICATION

4.1 DE Mode

Parameter	Symbol	Value			Unit
		Min	Typ.	Max	
DCLK frequency Frame rate = 60Hz	fclk	40.8	51.2	67.2	MHz
Horizontal display area	thd		1024		DCLK
HSYNC period time	th	1114	1344	1400	DCLK
HSYNC blanking	thb+thfp	90	320	376	DCLK
Vertical display area	tvd	600			H
VSYNC period time	tv	610	635	800	H
VSYNC blanking	tvb+tvfp	10	35	200	H

Horizontal input timing

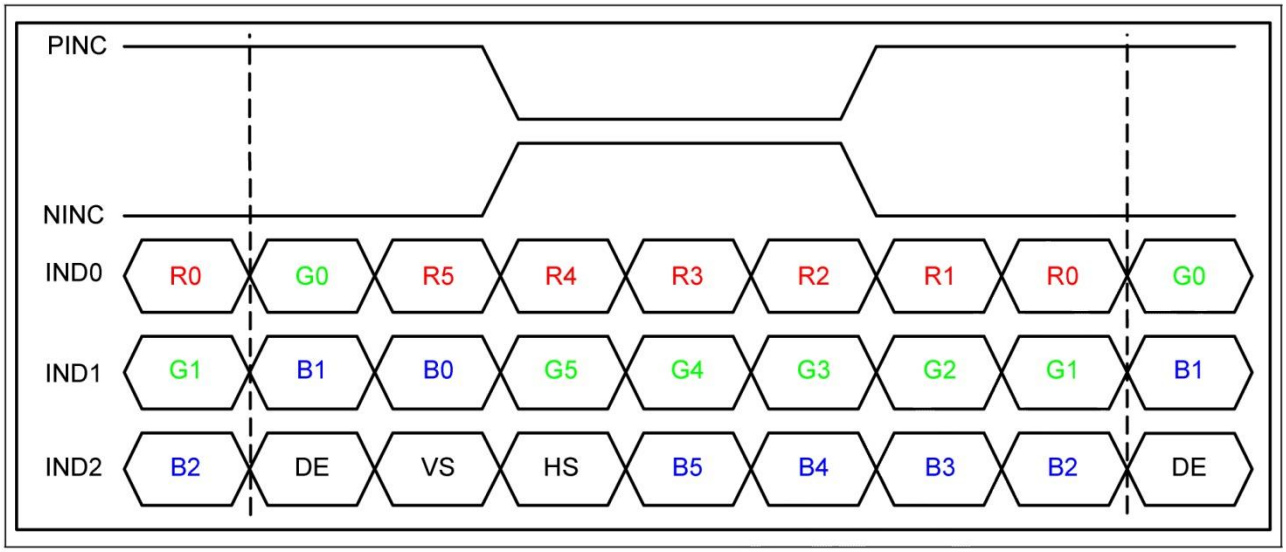
Parameter		Symbol	Value			Unit
Horizontal display area		thd	1024			DCLK
DCLK frequency Frame rate = 60Hz		fclk	Min	Typ.	Max	
			44.9	51.2	63	MHz
1 Horizontal Line		th	1200	1344	1400	DCLK
HSYNC pulse width	Min	thpw	1			DCLK
	Typ.		-			
	Max		140			
HSYNC blanking		thb	160	160	160	
HSYNC front porch		thfp	16	160	216	

Vertical input timing

Parameter	Symbol	Value			Unit
		Min	Typ.	Max	
Vertical display area	tvd		600		H
VSYNC period time	tv	624	635	750	H
VSYNC pulse width	tvpw	1	-	20	H
VSYNC blanking	tvb	23	23	23	H
VSYNC front porch	tvfp	1	12	127	H

4.2 Data Input Format for LVDS

6bit LVDS input



5 OPTICAL CHARACTERISTICS

ITEM		SYMBOL	MIN.	TYP.	MAX.	UNIT	NOTE
Contrast Ratio		CR	300	950	--	--	
Luminance*)		Lw	500	600	--	cd/m^2	
Luminance Uniformity		L	70	--	--	%	
Response Time (White - Black)		Tr+ Tf	--	25	40	ms	
Viewing Angle			40	50			
			70	80			
			70	80			
			70	80			
Color Coordinate	White	Wx Wy	0.2524 0.2865	0.3124 0.3465	0.3724 0.4065		
	Red	Rx Ry	0.5401 0.2963	0.5901 0.3463	0.6401 0.3963		
	Green	Gx Gy	0.2956 0.5449	0.3456 0.5949	0.3956 0.6449		
	Blue	Bx By	0.1067 0.0787	0.1567 0.1287	0.2067 0.1787		

6 RELIABILITY TEST

6.1 TEMPERATURE AND HUMIDITY

TEST ITEMS	CONDITIONS	NOTE
High Temperature Operation	60±2℃/120 hours	
High Temperature Storage	60±2℃/200 hours	
High Temperature High Humidity Operation	60℃, 90%RH, 240Hrs	
Low Temperature Operation	-10±2℃/120 hours	
Low Temperature Storage	-20±2℃/200 hours	

6.2 Shock and Vibration

TEST ITEMS	CONDITIONS	NOTE
Vibration Test	Frequency：10Hz~55Hz~10Hz Amplitude：1.5mm, X, Y, Z direction for total 3hours (Packing condition)	
Dropping test	Drop to the ground from 1m height, one time, every side of carton. (Packing condition)	

6.3 ESD

TEST ITEMS	CONDITIONS	NOTE
ESD test	Voltage:±8KV R: 330Ω C: 150pF Air discharge, 10time	