G104XVN01.0 EC Notice

GD Business

2022 Aug.

AUO Display+

G104XVN01.0 Cell EC Notice

Purpose

To upgrade model mode to AHVA and maintain key parts logistics, we will launch a new cell with new driver IC, and also change the corresponding parts, including PCBA, BLU and connector.

Changes

The product specification will change as list below.

1. Display Characteristics
2. Optical Characteristics
3. Functional Block Diagram
4. Absolute Ratings of TFT LCD Module
5. Electrical Characteristics
6. Backlight Unit
7. Timing Characteristics
8. Compatible connector
9. Protection film

EC Sample Schedule

Sample delivery	RA Test completed	Customer approval	Phase-in
2023/1/E	2023/2	2023/5	2023/7

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Before

2.1 Display Characteristics

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

Items	Unit	Specifications
Screen Diagonal	[inch]	10.4
Active Area	[mm]	210.4 (H) x 157.8 (V)
Pixels H x V		1024 x 3(RGB) x 768
Pixel Pitch	[mm]	0.2055 x 0.2055
Pixel Arrangement		R.G.B. Vertical Stripe
Display Mode		PSA, Normally Black
Nominal Input Voltage VDD	[Volt]	3.3 (typ.)
Typical Power Consumption	[Watt]	6.0W All black pattern
Weight	[Grams]	295(Typ.)
Physical Size	[mm]	238.6(H) x 175.8(V) x 6.5(D)(Typ.)
Electrical Interface		1 channel LVDS
Surface Treatment		Anti-glare, Hardness 3H
Support Color		16.2M / 262K colors
Temperature Range Operating Storage (Non-Operating)	 [°C] [°C]	 -30 to +80 -30 to +80
RoHS Compliance		RoHS Compliance

After

2.1 Display Characteristics

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

Items	Unit	Specifications
Screen Diagonal	[inch]	10.4
Active Area	[mm]	210.4 (H) x 157.8 (V)
Pixels H x V		1024 x 3(RGB) x 768
Pixel Pitch	[mm]	0.2055 x 0.2055
Pixel Arrangement		R.G.B. Vertical Stripe
Display Mode		AHVA, Normally Black
Nominal Input Voltage VDD	[Volt]	3.3 (typ.)
Typical Power Consumption	[Watt]	TBD All black pattern
Weight	[Grams]	295 (Max.)
Physical Size	[mm]	238.6(H) x 175.8(V) x 6.7(D) (Typ.)
Electrical Interface		1 channel LVDS
Surface Treatment		Anti-glare, Hardness 3H
Support Color		16.2M / 262K colors
Temperature Range Operating Storage (Non-Operating)	 [°C] [°C]	 -30 to +80 -30 to +80
RoHS Compliance		RoHS Compliance

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Before

2.2 Optical Characteristics

The optical characteristics are measured under stable conditions at 25℃ (Room Temperature):

Item	Unit	Conditions	Min.	Typ.	Max.	Remark
White Luminance	[cd/m2]	I_F= 80mA/1 LED Line (center point)	350	470	-	Note 1
Uniformity	%	5 Points	75	80	-	Note 2, 3
Contrast Ratio			2500	3000	-	Note 4
Response Time	[msec]	Rising	-	10	20	Note 5
	[msec]	Falling	-	20	30	
	[msec]	Raising + Falling	-	30	50	
Viewing Angle	[degree] [degree]	Horizontal (Right) CR = 10 (Left)	- -	89 89	- -	Note 6
	[degree] [degree]	Vertical (Upper) CR = 10 (Lower)	- -	89 89	- -	
Color / Chromaticity Coordinates (CIE 1931)		Red x	0.570	0.620	0.670	
		Red y	0.280	0.330	0.380	
		Green x	0.300	0.350	0.400	
		Green y	0.530	0.580	0.630	
		Blue x	0.100	0.150	0.200	
		Blue y	0.010	0.060	0.110	
		White x	0.263	0.313	0.363	
		White y	0.279	0.329	0.379	
Color Gamut	%		-	60	-	

After

2.2 Optical Characteristics

The optical characteristics are measured under stable conditions at 25℃ (Room Temperature):

Item	Unit	Conditions	Min.	Typ.	Max.	Remark
White Luminance	[cd/m2]	I_F= 80mA/1 LED Line (center point)	350	470	-	Note 1
Uniformity	%	5 Points	75	80	-	Note 2, 3
Contrast Ratio				1000	-	Note 4
Response Time	[msec]	Rising	-	15	20	Note 5
	[msec]	Falling	-	10	15	
	[msec]	Raising + Falling	-	25	35	
Viewing Angle	[degree] [degree]	Horizontal (Right) CR = 10 (Left)	- -	89 89	- -	Note 6
	[degree] [degree]	Vertical (Upper) CR = 10 (Lower)	- -	89 89	- -	
Color / Chromaticity Coordinates (CIE 1931)		Red x	TBD	TBD	TBD	
		Red y	TBD	TBD	TBD	
		Green x	TBD	TBD	TBD	
		Green y	TBD	TBD	TBD	
		Blue x	TBD	TBD	TBD	
		Blue y	TBD	TBD	TBD	
		White x	TBD	TBD	TBD	
		White y	TBD	TBD	TBD	
Color Gamut	%		-	60	-	

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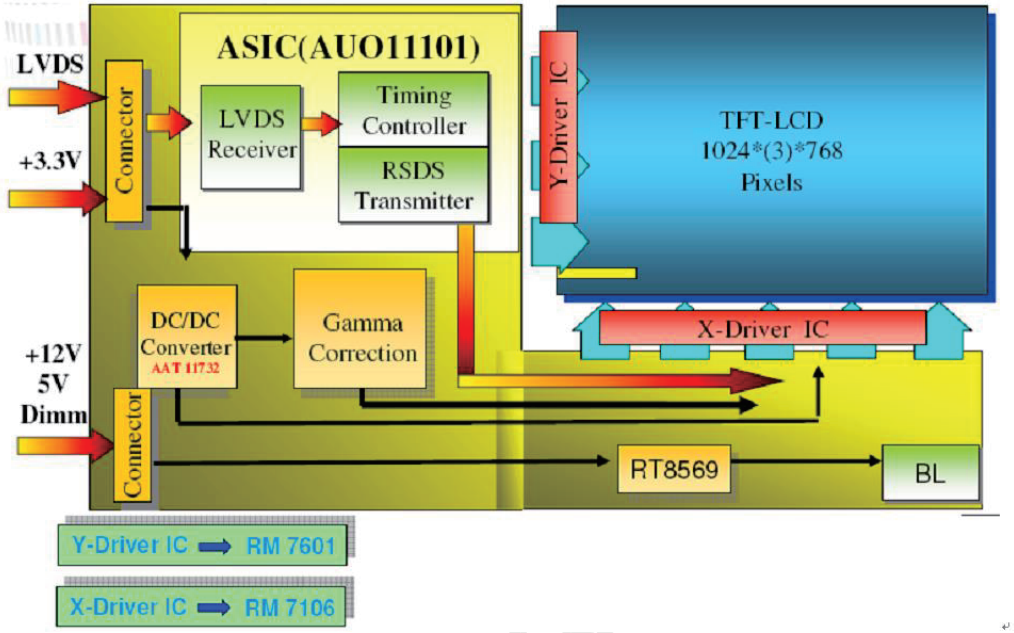
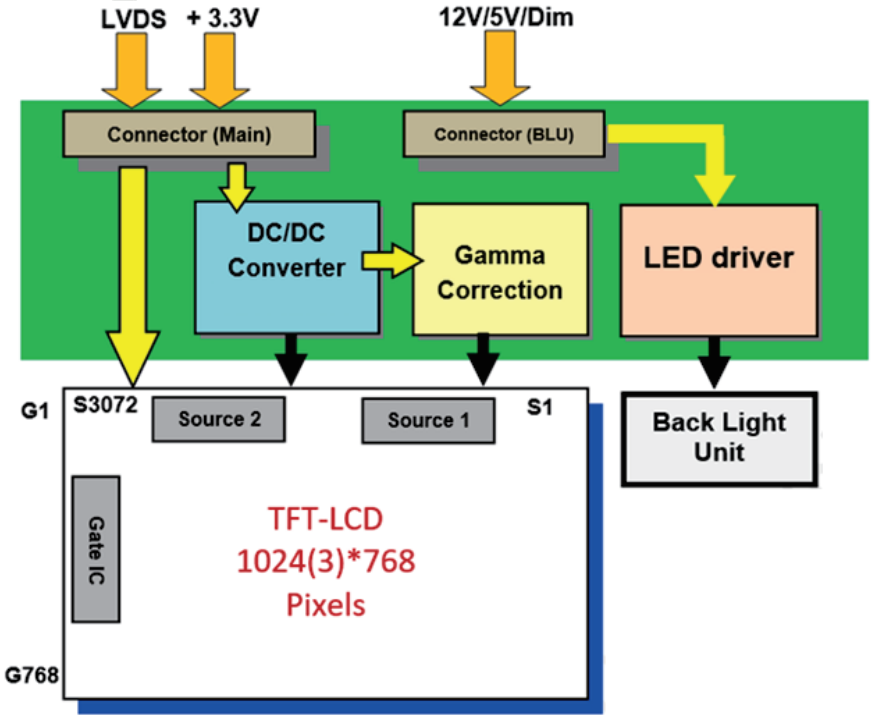
Before	After

3. Functional Block Diagram

The following diagram shows the functional block of the 10.4 inch color TFT/LCD module:





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Before

4.1 Absolute Ratings of TFT LCD Module

Item	Symbol	Min	Max	Unit
Logic/LCD Drive Voltage	Vin	-0.3	6	[Volt]

After

4. Absolute Maximum Ratings

4.1 Absolute Ratings of TFT LCD Module

Item	Symbol	Min	Max	Unit
Logic/LCD Drive Voltage	Vin	-0.3	5	[Volt]

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Before

5.1.1 Power Specification

Symbol	Parameter	Min	Typ	Max	Units	Remark
VDD	Logic/LCD Input Voltage	3.1	3.3	3.5	[Volt]	
I_{VDD}	LCD Input Current	-	300	-	[mA]	VDD=3.3V at 60 HZ, all Black Pattern
P_{VDD}	LCD Power comsumption	-	0.99	-	[Watt]	VDD=3.3V at 60 HZ, all Black Pattern
$I_{rush\ LCD}$	LCD Inrush Current	-	-	1.5	[A]	Note 1; VDD=3.3V Black Pattern, Rising time=470us
VDD_{rp}	Allowable Logic/LCD Drive Ripple Voltage	-	-	100	[mV] p-p	VDD=3.3V at 60 HZ, all Black Pattern

After

5.1.1 Power Specification

Symbol	Parameter	Min	Typ	Max	Units	Remark
VDD	Logic/LCD Input Voltage	3.0	3.3	3.6	[Volt]	
I_{VDD}	LCD Input Current	-	TBD	TBD	[mA]	VDD=3.3V at 60 HZ, all Black Pattern
P_{VDD}	LCD Power comsumption	-	TBD	TBD	[Watt]	VDD=3.3V at 60 HZ, all Black Pattern
$I_{rush\ LCD}$	LCD Inrush Current	-	-	1.5	[A]	Note 1; VDD=3.3V Black Pattern, Rising time=470us
VDD_{rp}	Allowable Logic/LCD Drive Ripple Voltage	-	-	100	[mV] p-p	VDD=3.3V at 60 HZ, all Black Pattern

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Before

5.2.1 Parameter guideline for LED backlight

Following characteristics are measured under a stable condition using a inverter at 25℃. (Room Temperature):

Symbol	Parameter	Min.	Typ.	Max.	Unit	Remark
VCC	Input Voltage	10.8	12	12.6	[Volt]	
I_{VCC}	Input Current	-	0.5	-	[A]	100% PWM Duty
P_{VCC}	Power Consumption	-	6	-	[Watt]	100% PWM Duty
$I_{INRUSH\ LED}$	Inrush Current	-	-	3	A	V_{LED} rising time ~ 470us
F_{PWM}	Dimming Frequency	200	-	20K	[Hz]	
$V_{LED\ ON/OFF}$	On Control Voltage	2.5	3.3	5.5	Volt	Note 4,5
	Off Control Voltage	-	-	0.8	Volt	
$V_{PWM\ DIM}$	Swing Voltage	2.5	3.3	5.5	[Volt]	
	Dimming duty cycle	5	-	100	%	
I_F	LED Forward Current	-	80	-	[mA]	Ta = 25°C
V_F	LED Forward Voltage	-	-	34.2	[Volt]	I_F = 80mA, Ta = -30°C
		-	29.7	32.4	[Volt]	I_F = 80mA, Ta = 25°C
		-	-	31.5	[Volt]	I_F = 80mA, Ta = 80°C
P_{LED}	LED Power Consumption	-	4.75	5.47	[Watt]	2 String of LED Light Bar
Operation Life		50,000	80,000	-	Hrs	I_F=80mA, Ta= 25°C

After

5.2.1 Parameter guideline for LED backlight

Following characteristics are measured under a stable condition using a inverter at 25℃. (Room Temperature):

Symbol	Parameter	Min.	Typ.	Max.	Unit	Remark
VCC	Input Voltage	10.8	12	13.2	[Volt]	
I_{VCC}	Input Current	-	TBD	-	[A]	100% PWM Duty
P_{VCC}	Power Consumption	-	TBD	-	[Watt]	100% PWM Duty
$I_{INRUSH\ LED}$	Inrush Current	-	-	3	A	V_{LED} rising time ~ 470us
F_{PWM}	Dimming Frequency	200	-	20K	[Hz]	
$V_{LED\ ON/OFF}$	On Control Voltage	2.5	3.3	5.5	Volt	Note 4,5
	Off Control Voltage	-	-	0.8	Volt	
$V_{PWM\ DIM}$	Swing Voltage	2.5	3.3	5.5	[Volt]	
	Dimming duty cycle	5	-	100	%	
P_{LED}	LED Power Consumption	-	TBD	TBD	[Watt]	2 String of LED Light Bar
Operation Life		70,000	-	-	Hrs	I_F=68mA, Ta= 25°C

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Before

6.5.1 Timing Characteristics

Signal		Symbol	Min.	Typ.	Max.	Unit
Clock Frequency		1/ T_{Clock}	50	65	81	MHz
Vertical Section	Period	T_V	776	806	1023	T_{Line}
	Active	T_{VD}	768	768	768	
	Blanking	T_{VB}	8	38	256	
Horizontal Section	Period	T_H	1054	1344	2047	T_{Clock}
	Active	T_{HD}	1024	1024	1024	
	Blanking	T_{HB}	30	320	1023	
Frame Rate		F	50	60	75	Hz

After

6.5.1 Timing Characteristics

Signal		Symbol	Min.	Typ.	Max.	Unit
Clock Frequency		1/ T_{Clock}	52	65	69	MHz
Vertical Section	Period	T_V	780	806	824	T_{Line}
	Active	T_{VD}	768	768	768	
	Blanking	T_{VB}	12	38	56	
Horizontal Section	Period	T_H	1114	1344	1400	T_{Clock}
	Active	T_{HD}	1024	1024	1024	
	Blanking	T_{HB}	90	320	376	
Frame Rate		F	60	60	60	Hz

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Before

7.1 TFT-LCD Signal (CN1): LVDS Connector

Connector Name / Designation	Signal Connector
Manufacturer	JAE or compatible
Connector Model Number	FI-XPB30SRLAHF11or compatible
Adaptable Plug	FI-X30HL or Compatible or compatible

7.2 LED Backlight Unit (CN2): Driver Connector

Connector Name / Designation	Lamp Connector
Manufacturer	ENTERY or compatible
Connector Model Number	3808K-F05N-02R or compatible
Mating Model Number	H208K–P05N-02B or compatible

Pin No.	symbol	description
Pin1	VCC	12V input
Pin2	VCC	12V input
Pin3	GND	GND
Pin4	Dimming	PWM
Pin5	On/OFF	3.3V or 5V-ON,0V-OFF

7.3 LED Backlight Unit (CN3): Light bar Connector

Connector Name / Designation	Lamp Connector
Manufacturer	ENTERY or compatible
Connector Model Number	H208K–P03N-02R or compatible
Mating Model Number(CN3)	3808K-F03N-02B or compatible

After

Compatible connector

7.1 TFT-LCD Signal (CN1): LVDS Connector

Connector Name / Designation	Signal Connector
Manufacturer	P-TWO or compatible
Connector Model Number	187007-30091-17 or compatible
Adaptable Plug	FI-X30HL or Compatible or compatible

7.2 LED Backlight Unit (CN2): Driver Connector

Connector Name / Designation	Lamp Connector
Manufacturer	STM or compatible
Connector Model Number	MSB24038P5D or compatible
Mating Model Number	P24038P5 or compatible

Pin No.	symbol	description
Pin1	VCC	10.8~13.2V input
Pin2	VCC	10.8~13.2V input
Pin3	GND	GND
Pin4	Dimming	PWM
Pin5	On/OFF	3.3V or 5V-ON,0V-OFF

7.3 LED Backlight Unit (CN3): Light bar Connector

Connector Name / Designation	Lamp Connector
Manufacturer	STM or compatible
Connector Model Number	MSB24038P3D or compatible
Mating Model Number(CN3)	P24038P3 or compatible

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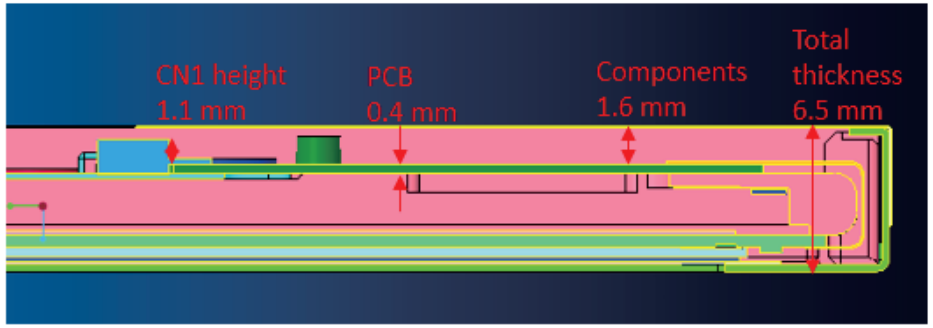
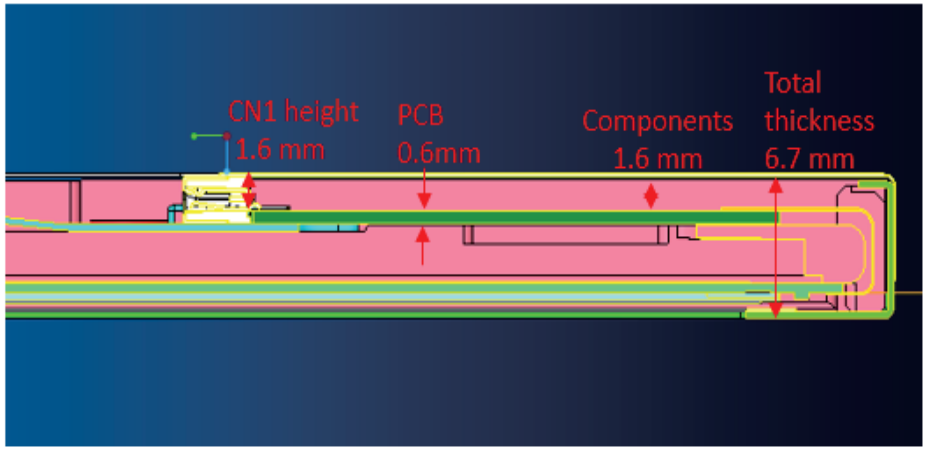
Before	After
	 Total thickness will be 6.7 mm.

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Before	After
Protection film design 	Antistatic protection film attached on polarizer 

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