DP-1561-01A Datasheet

1 Introduction

The DP-1561-01A is a 15.6-inch high-brightness IPS display with a resolution of 1920 × 1080 pixels, featuring a projected capacitive (PCAP) touch interface for smooth and responsive multi-touch operation.

Powered by the RM97030 display controller, the module delivers rich 16.7 million color output over a dual-channel LVDS interface, ensuring stable and high-speed image transmission. Touch input is managed by the ILI2511 controller, supporting both I²C and USB interfaces for flexible integration.

1.1 Features

- 15.6-inch high-brightness IPS display with 1920 × 1080 resolution and Projected Capacitive (PCAP) touch support
- Dual-port LVDS interface enabling high-resolution display data transmission with enhanced bandwidth efficiency
- Integrated ILI2511 touch controller with I²C/USB interface for accurate, low-latency capacitive touch response
- High-contrast panel with anti-glare coating for improved visibility in various lighting conditions

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2 Part Numbers/Ordering Information

Part No.	Description
DP-1561-01A	High Brightness IPS Display 15.6 inch (1920 x 1080 resolution) with PCAP Touch

Table 1 - Part Number/Ordering Information

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3 General Specifications

3.1 Liquid Crystal Module (LCM) General Information

Item	Specification	Unit
LCD Size	15.6	inch
Number of Pixels	1920(H)RGB x 1080(V)	pixels
Display Mode	AHVA & Normally Black	-
Viewing Direction	All	o'clock
Interface	2 port LVDS with JEIDA format DE mode	-
Display Colors	16.7M Colors (RGB 8 bit)	colors
Outline Dimension (with touch)	384.2(H) x 253.6 (V) x 8.6 (D)	mm
Active Area	344.16(H) * 193.59(V)	mm
Pixel Pitch	0.17925(H) * 0.17925(V)	mm
Brightness (with touch)	860	cd/m^2
Display Driver IC	RM97030	-
Touch Panel	PCAP (Capacitive)	-
Touch Driver IC	ILI2511	-
TFT & CTP Bonding	Optical Bonding (OCA)	-
Surface Treatment	Anti-glare	-
Nitrile Gloved Touch Sensing	Supported	-
Operation Temperature	-30~70°C	°C
Storage Temperature	-30~80°C	°C

Table 2 - LCM General Information

Note: Complies with environmental protection requirements and is RoHS compliant.

4 Hardware Description

The DP-1561-01A features a 15.6-inch high-brightness IPS display with a 1920 × 1080 resolution, integrated with a projected capacitive (PCAP) touch panel directly bonded to the LCD. Figure 1 and Figure 2 show the front and back views of the DP-1561-01A, respectively.

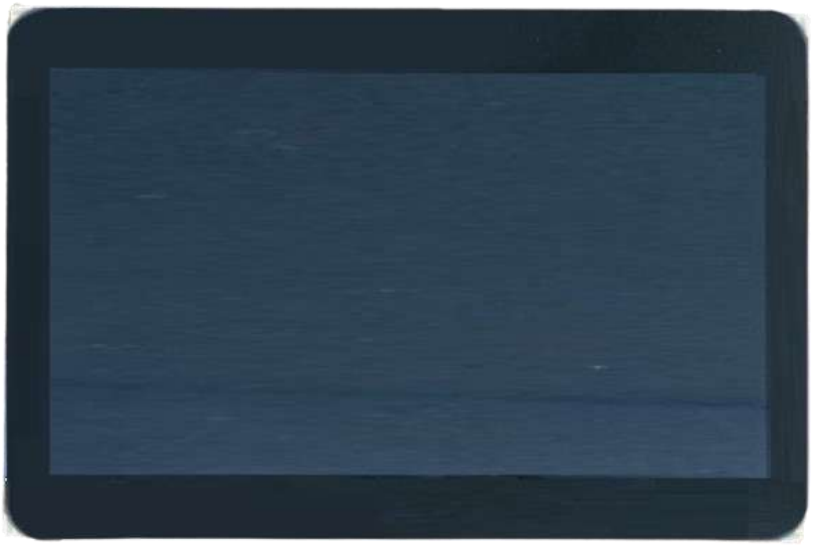

Figure 1 - DP-1561-01A Front View

Figure 2 - DP-1561-01A Back View

The DP-1561-01A includes the following accessory boards, as illustrated in Figure 3 to Figure 6 :

- Capacitive Touch Control Board： **ILI2511C2P2V1**
- LED Backlight Inverter Board (DC-DC Inverter)： **MY-1LB2212**

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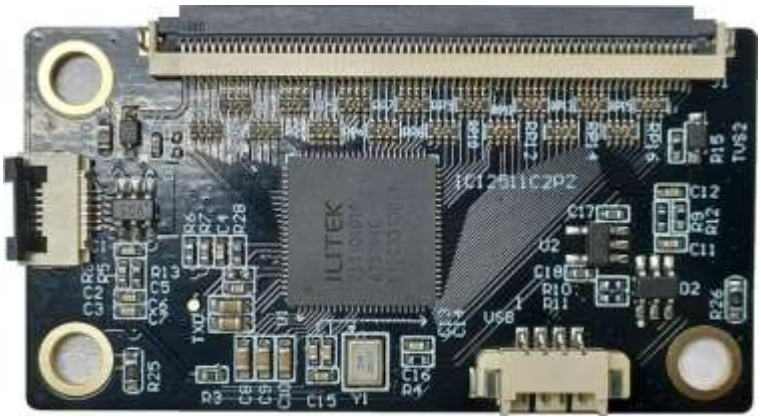

Figure 3 - Capacitive Touch Control Board Front View

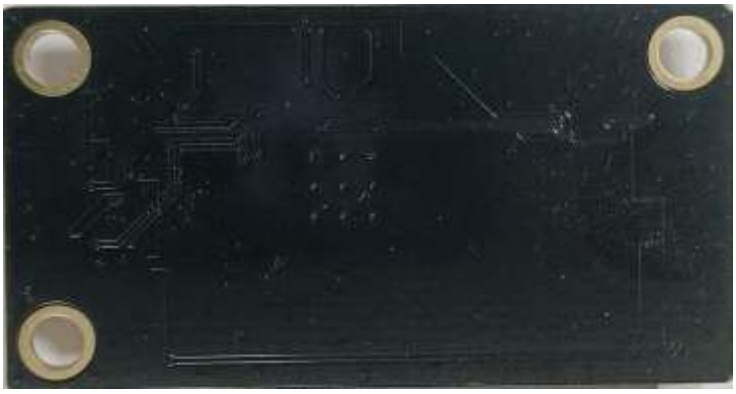

Figure 4 - Capacitive Touch Control Board Back View

Figure 5 - LED Backlight Inverter Board Front View

Figure 6 - LED Backlight Inverter Board Back View

4.1 Pin Assignment

The interface connector pin configurations are described in the following sections.

4.1.1 LCM Pin Assignment

Recommended connector: I-PEX, 20455-040E-76B

Pin no	Symbol	Description	Remark
1	NC	No Connection	
2	NC	No Connection	
3	NC	No Connection	
4	NC	No Connection	
5	NC	No Connection	
6	NC	No Connection	
7	NC	No Connection	
8	NC	No Connection	
9	NC	No Connection	
10	NC	No Connection	
11	LCD_VCC	LCD Power Supply. 3.3V (typical)	
12	LCD_VCC	LCD Power Supply. 3.3V (typical)	
13	LCD_VCC	LCD Power Supply. 3.3V (typical)	
14	NC	No Connection	
15	NC	No Connection	
16	NC	No Connection	
17	GND	Ground	
18	RXO0-	-LVDS differential data input	
19	RXO0+	+LVDS differential data input	
20	RXO1-	-LVDS differential data input	
21	RXO1+	+LVDS differential data input	
22	RXO2-	-LVDS differential data input	
23	RXO2+	+LVDS differential data input	
24	GND	Ground	
25	RXOC-	-LVDS differential clock input	
26	RXOC+	+LVDS differential clock input	
27	GND	Ground	
28	RXO3-	-LVDS differential data input	
29	RXO3+	+LVDS differential data input	
30	RXE0-	-LVDS differential data input	
31	RXE0+	+LVDS differential data input	
32	RXE1-	-LVDS differential data input	
33	RXE1+	+LVDS differential data input	
34	GND	Ground	
35	RXE2-	-LVDS differential data input	
36	RXE2+	+LVDS differential data input	
37	RXEC-	-LVDS differential clock input	

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38	RXEC+	+LVDS differential clock input	
39	RXE3-	-LVDS differential data input	
40	RXE3+	+LVDS differential data input	

Table 3 - LCM Pin Definition

4.1.2 Touch Connector Pin Assignment

I2C Interface Pin Definition, connector: FPC 0.5mm pitch 6pin

Pin no	Name	Type	Description
1	VDD33	P	3.3V Input power supply
2	I2C_SDA	I/O	I2C serial bus, data line
3	I2C_SCL	I/O	I2C serial bus, clock line
4	I2C_INT	O	Interrupt output
5	RSTN	I	Reset input
6	GND	P	GROUND

Table 4 - I2C Interface Touch Connector Pin Definition

USB Interface Pin Definition, connector: header 1.25mm pitch 4pin

Pin no	Name	Type	Description
1	VBUS	P	5V Input power supply
2	D-	I/O	Data -
3	D+	I/O	Data+
4	GND	P	GROUND

Table 5 - USB Interface Touch Connector Pin Definition

4.1.3 LED Backlight Inverter Connector Pin Assignment

CN1 Interface Pin Definition

Pin no	Name	Type	Description	Note
1	+12V	P	Input power supply	10.8 ~ 13.2V
2	+12V	P	Input power supply	10.8 ~ 13.2V
3	N/F	I	On/ Off Control	On=2-5V, Off=0-0.5V
4	ADJ	I	Dimming Control	0V=Min, 3.3V=Max
5	GND	P	GROUND	
6	GND	P	GROUND	

Table 6 - CN1 Interface Pin Definition

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5 Specifications

5.1 Electrical Specifications

5.1.1 Absolute Maximum Ratings

Maximum Ratings for TFT LCD

Item	Symbol	MIN.	MAX.	Unit	Note
LCD Power Supply Voltage	LCD_VCC	-0.3	4.0	V	Note 1

Table 7 - Maximum Ratings for TFT LCD

Note:

1. Permanent damage may occur to the LCD module if beyond this specification.
2. Functional operation should be restricted to the conditions described under normal operating conditions.

Maximum Ratings for Capacitive Touch Control Board

Item	Symbol	MIN.	MAX.	Unit
USB 5V Power Supply Voltage	VBUS	-0.3	6.0	V
VDD Power Supply Voltage	VDD33	-0.3	3.6	V

Table 8 - Maximum Ratings for Capacitive Touch Control Board

5.1.2 Operating Conditions

Recommended Operating Condition for TFT LCD

Item	Symbol	Min.	Typ.	Max.	Unit	Note
Analog Supply voltage	LCD_VCC	3.0	3.3	3.6	V	
Analog supply current	I_{CC}	-	260	-	mA	LCD_VCC=3.3 V

Table 9 - Recommended Operating Condition for TFT LCD

Recommended Operating Condition for CTP

Item	Symbol	Min.	Max.	Unit	Note
VDD Power Supply Voltage	VDD33	3	3.6	V	V_{DDIO}=VDD33

Table 10 - Recommended Operating Condition for CTP

Recommended Driving Condition for Backlight

Item	Symbol	Min.	Typ.	Max.	Unit	Note
Driving Current	I_F	-	480	-	mA	
Driving Voltage	V_F	-	33	-	V	
Power consumption	W_{BL}	-	15.8	-	W	
Luminance	L	-	860	-	cd/m²	With touch screen
LED Lifetime	N/A	50,000	-	-	Hours	Ta=25°C Note 1

Table 11 - Recommended Driving Condition for Backlight

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Note:

1. LED lifetime is defined as the module brightness decay 50% of original brightness at Ta=25°C, typical current.
2. LED circuit:

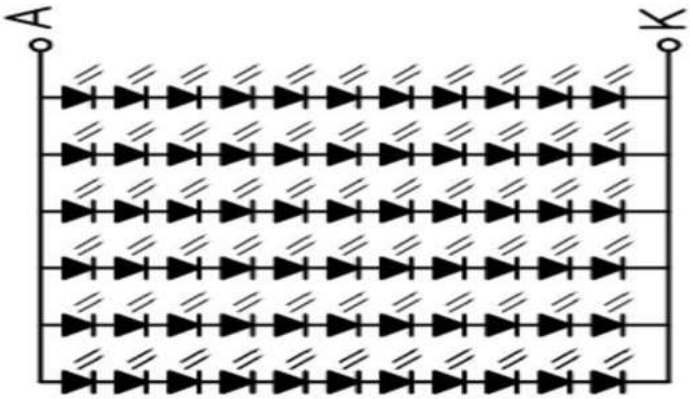

Figure 7 - Backlight LED Circuit

Recommended Operating Condition for LED Backlight Inverter

Item	Symbol	Min.	Typ.	Max.	Unit
Input Voltage	Vin	10.8	12	13.2	V
Input Current	Iin			1.8	A
Input Power	Pin	-		20	W
Brightness Voltage	V_{adj}	0 (Darkest)	-	3.3 (Brightest)	V
Control Voltage	Enable V_{on}=2 - 5.0V, Disable V_{off}= 0 - 0.5V				

Table 12 - Recommended Operating Condition for LED Backlight Inverter

Capacitive Touch Control Board DC Electrical Characteristics

Item	Symbol	Min.	Typ.	Max.	Unit	Note
Operating Current	I_{op}	-	100	-	mA	
Logic Input Voltage	V_{IL}	0	-	$0.3V_{DDIO}$	V	
	V_{IH}	$0.6V_{DDIO}$	-	V_{DDIO}+0.5	V	
Hysteresis Voltage	V_{HY}	-	$0.2V_{DDIO}$	-	V	
Negative Going Threshold	V_{ILS}	0	-	$0.2V_{DDIO}$	V	
Positive Going Threshold	V_{IHS}	$0.6V_{DDIO}$	-	V_{DDIO}+0.5	V	
Logic output voltage	V_{OL}	-	-	$0.3V_{DDIO}$	V	V_{DDIO}=3.3V, I_{OL}=10mA
	V_{OH}	$0.7V_{DDIO}$	-	-	V	V_{DDIO}=3.3V, I_{OH}=8mA

Table 13 - Capacitive Touch Control Board DC Electrical Characteristics

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Capacitive Touch Control Board USB DC Electrical Characteristics

Item	Symbol	Min.	Typ.	Max.	Unit	Note
Logic input voltage	$V_{IL(USB)}$	0	-	0.8	V	
	$V_{IH(USB)}$	2	-	-	V	
Differential Input Sensitivity	V_{DI}	0.2			V	(D+) – (D-)
Differential common mode range	V_{CM}	0.8		2.5	V	Includes V_{DI} range
Single-ended receiving threshold	V_{SE}	0.8		2.0	V	
Receiver hysteresis	V_{RH}		200		mV	
Logic output voltage	$V_{OL(USB)}$	0		0.3		
	$V_{OH(USB)}$	2.8		3.6		
Output signal crossover voltage	V_{CRS}	1.3		2.0		
Pull-up Resistance	R_{PU}	1.425		1.575		
Upstream port termination pull-up voltage	V_{TRM}	3.0		3.6		

Table 14 - Capacitive Touch Control Board USB DC Electrical Characteristics

LED Backlight Inverter Output Electrical Characteristics

Test condition: Vin=12V; Von=3.3V; Vadj=3.3V

Item	Symbol	Min.	Typ.	Max.	Unit
Output Current (per group)	Iout		480		mA
Output Voltage	Vout		33		V
Efficiency	η		93		%

Table 15 - LED Backlight Inverter Output Electrical Characteristics

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5.2 Timing

5.2.1 Data Input Format for LVDS

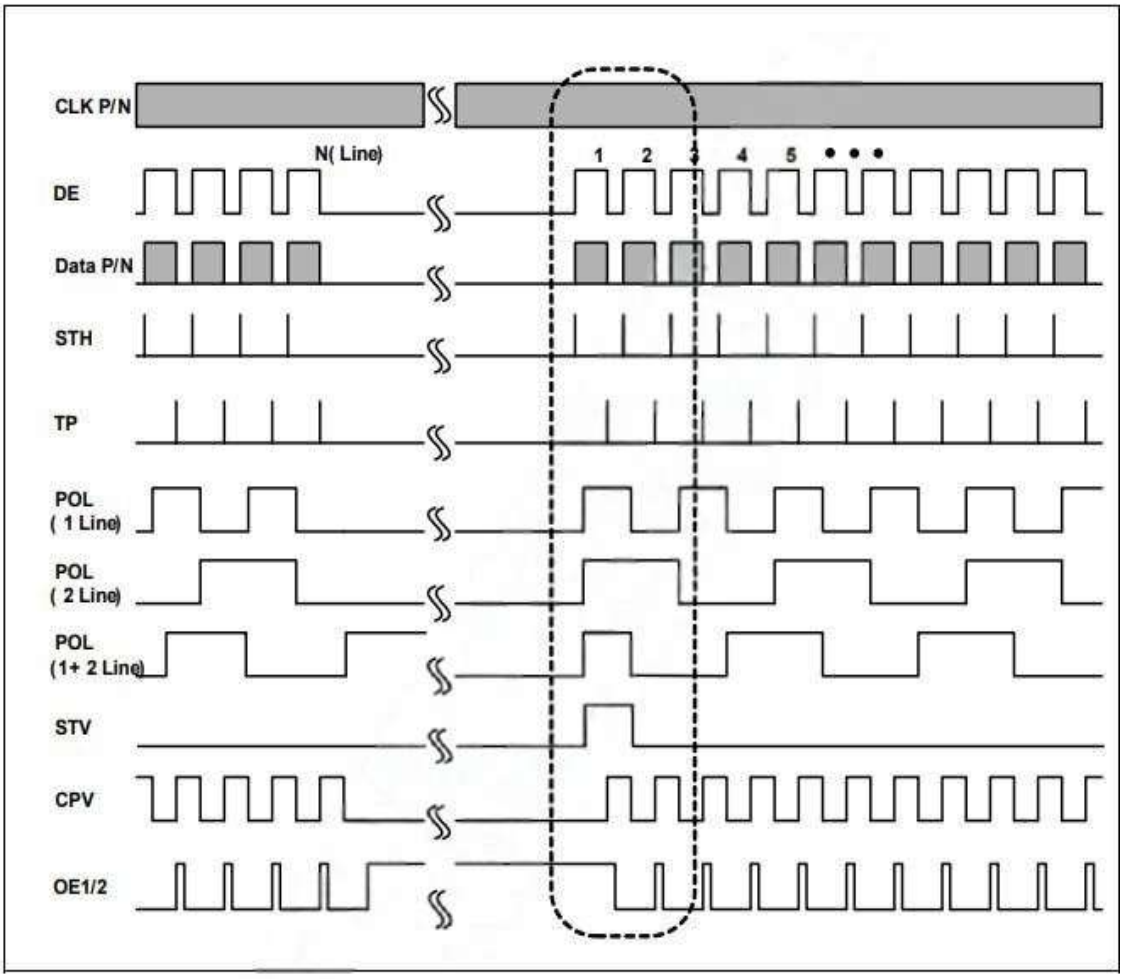

Figure 8 - Data Input Format for LVDS

5.2.2 Input Timing Characteristics

Item	Symbol	Min.	Typ.	Max.	Unit
Clock frequency	F_{pclk}	69	75	82.5	MHz
Horizontal period area	TH	2200	2240	2280	DCLK
Horizontal display area	THD	1920	1920	1920	DCLK
Horizontal blanking area	THB	280	320	360	DCLK
Vertical period area	TV	1110	1115	1120	TH
Vertical display area	TVD	1080	1080	1080	TH
Vertical blanking area	TVB	30	35	40	TH
Frame rate	FR	55	60	65	Hz

Table 16 - Input Timing Characteristics

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5.2.3 Power ON/OFF Timing

VDD_25 must be higher than VDD_11 during power on and power off.

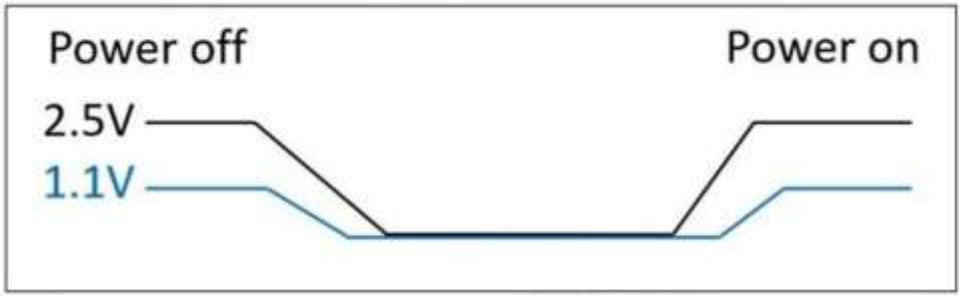

Figure 9 - Power ON/OFF Timing

5.2.4 Power ON Sequence

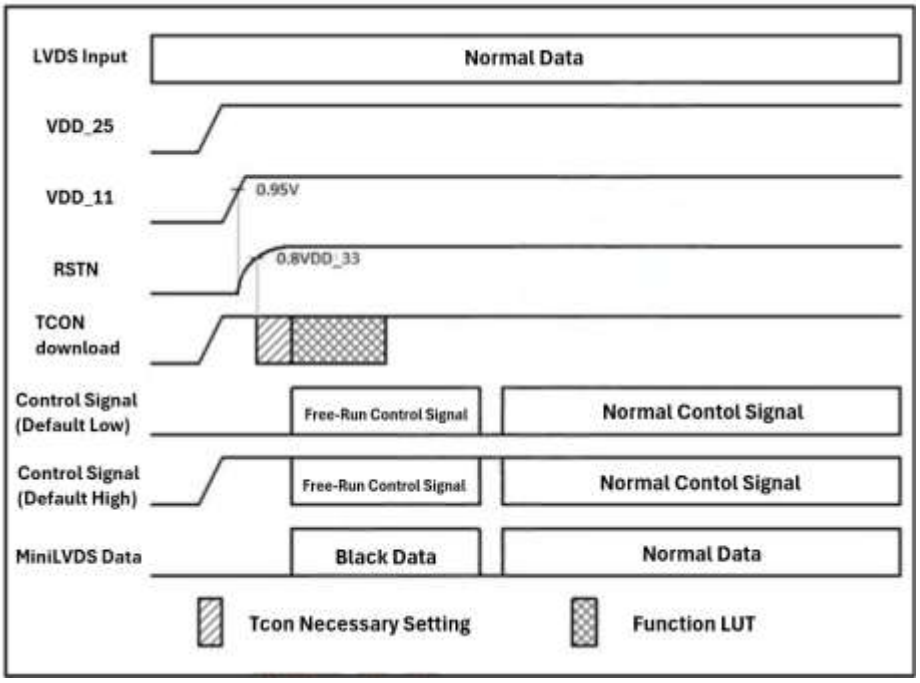

Figure 10 - Power ON Sequence

5.2.5 LED Driver IC Power On Sequence

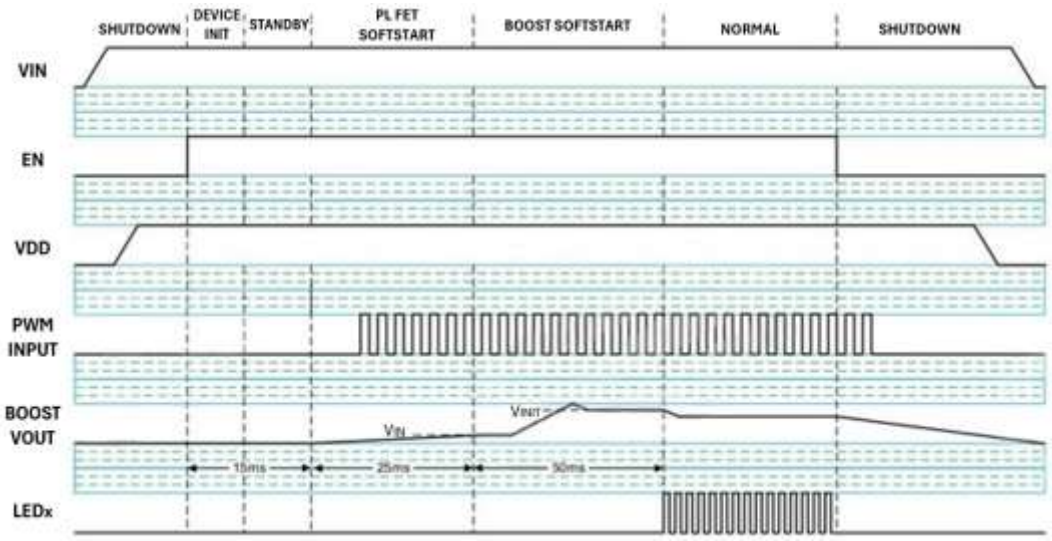

Figure 11 - LED Driver IC Power On Sequence

5.3 Optical Specifications

All optical specifications are measured under typical condition (Note 1, 2)

Item		Symbol	Condition	Min.	Typ.	Max.	Unit	Remark
Response Time		Tr+Tf	θ=0°	--	25	30	ms	Note 3
Contrast ratio		CR	θ=0°	700	800	--	--	Note 4
NTSC		%	θ=0°	67%	72%	--	%	C-light
Viewing Angle	Top		CR ≧10	80	85	--	deg.	Note 5
	Bottom					--		
	Left					--		
	Right					--		
Transmittance		Tr	θ=0°	2.79%	3.17%	--	%	w/o APCF & Haze @ PS06W12 V3 （Silicate）
Chromaticity	White	X	θ=0°	0.270	0.300	0.330		@C-Light Note 6
		Y	θ=0°	0.300	0.330	0.360		
	Red	X	θ=0°	0.631	0.661	0.691		
		Y	θ=0°	0.290	0.320	0.350		
	Green	X	θ=0°	0.230	0.260	0.290		
		Y	θ=0°	0.555	0.585	0.615		
	Blue	X	θ=0°	0.109	0.139	0.169		
		Y	θ=0°	0.049	0.079	0.109		

Table 17 - Optical Specifications

Remark: ***Above table, all Values are simulated only.***

Note 1: Measurement should be performed in the dark room, optically ambient temperature =25°C

Note 2: To be measured on the center area of panel with a field angle of 1°by Topcon luminance meter BM-5, or SR3 or DMS-803 after 10 minutes operation.

Note 3: The Optical features are based on emissive spectrum of the reference light source by CIE1931C-light. The LCD spectrum of transmission must be verified with the reference light-source to achieve the specified optical characteristics.

Note 4: Contrast ratio is calculated with the following formula.

$$\text{Contrast ratio} = \frac{\textbf{Photo detector output when LCD is at " White" state}}{\textbf{Photo detector output when LCD is at " Black" state}}$$

Note 5: Definition of viewing angle: refer to figure as below (FPC direction is at ψ=90).

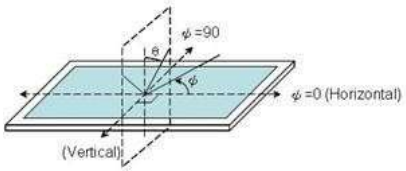

Figure 12 - Viewing Angle

Note 6: The viewing angles are measured at the center area of the panel when all the input terminals of LCD panels are electrically open.

6 Reliability Test Items

Test Item	Test Conditions	
High Temperature Storage	Ta= +80°C	240hrs
Low Temperature Storage	Ta= -30°C	240hrs
High Temperature Operation	Ta= +70°C	240hrs
Low Temperature Operation	Ta= -30°C	240hrs
High Temperature and Humidity Storage	Ta= +60°C, 90% RH	240hrs
Thermal Shock (Non-operation)	-30°C /30 min ~ +70°C /30 min for 100 cycles Start with cold temperature End with high temperature	
Electrostatic Discharge	Contact = ± 6 kV, class B Air = ± 8 kV, class B	

Table 18 - Reliability Test Items

Note: The test result shall be evaluated after the sample has been left at room temperature and humidity for 2 hours without load. No condensation shall be accepted. The sample will not be accepted if these defects appear:

1. Air bubble in the LCD
2. Seal leak or Glass crack
3. Non display or abnormal display
4. Brightness reduction >50%

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7 Mechanical Dimensions

7.1 LED Backlight Inverter Board

All units are in millimeters (mm)

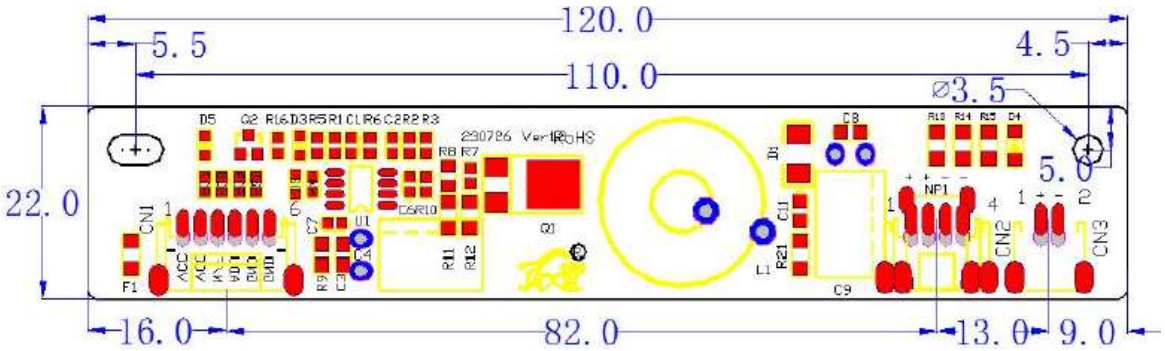

Figure 13 - LED Backlight Inverter Board Dimension

7.2 Capacitive Touch Control Board

All units are millimeters (mm): 26mm(W) x 50mm(L) x 4.7mm(H)

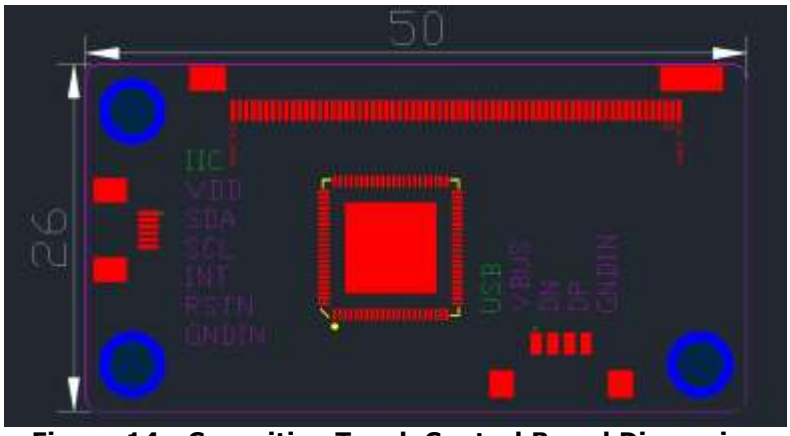

Figure 14 - Capacitive Touch Control Board Dimension

7.3 LCM Dimension

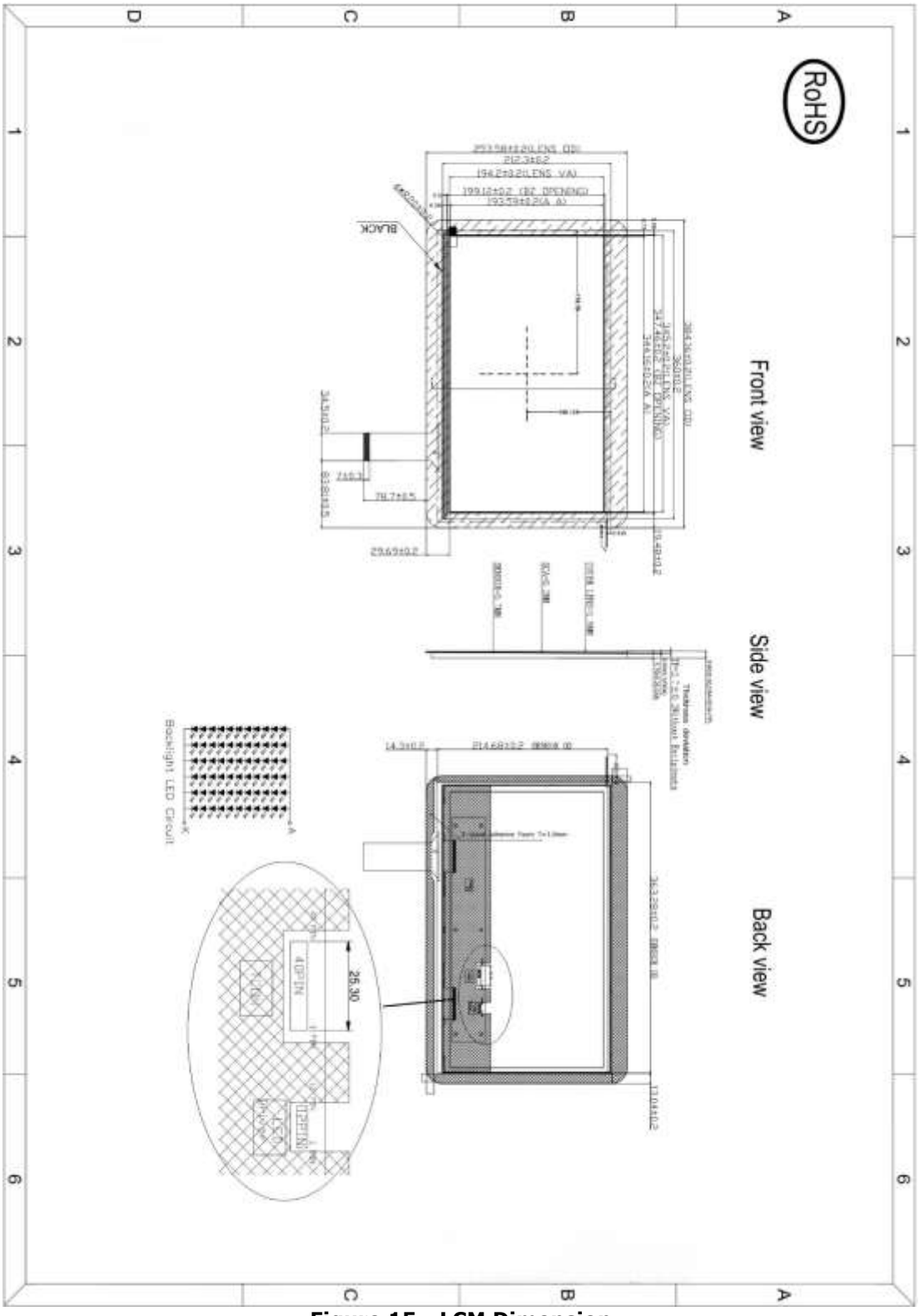

Figure 15 - LCM Dimension

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- The device has been damaged due to human factors, such as dropping, impact, water exposure, or unauthorized disassembly/modification.
- The device has malfunctioned due to improper use, mishandling, or usage beyond its intended design.
- The device has been disassembled, repaired, or modified by unauthorized personnel.
- Any other conditions that do not comply with our warranty policy. For details, please contact our sales team.

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10 Contact Information

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Appendix A – References

Document References

NA

Acronyms and Abbreviations

Terms	Description
AHVA	Advanced Hyper-Viewing Angle
APCF	Advanced Polarization Conversion Film
CTP	Capacitive Touch Panel
DC	Direct Current
FPC	Flexible Printed Circuit
HMIs	Human Machine Interfaces
IPS	In-Plane Switching
IC	Integrated Circuit
I2C	Inter-Integrated Circuit
LCD	Liquid Crystal Display
LCM	Liquid Crystal Module
LED	Light Emitting Diode
LEDA	Light Emitting Diode Anode
LEDK	Light Emitting Diode Cathode
LVDS	Low-Voltage Differential Signaling
PCAP	Projected Capacitive
TFT	Thin Film Transistor
USB	Universal Serial Bus

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Appendix C – Revision History

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