

DP-0701-01A Datasheet



1 Introduction

The DP-0701-01A is a 7-inch TFT-LCD module featuring a resolution of 800 × 480 pixels. The module integrates a TFT-LCD panel, driver ICs, flexible printed circuit (FPC), backlight unit, and a capacitive touch panel (CTP).

Powered by HX8664 and HX8264 display drivers, it delivers 16.7 million colors over an RGB interface, providing stable and high-speed image transmission. Touch input is handled by the FT5426 controller with I²C interface support, providing smooth, responsive and multi-touch capacitive functionality.

1.1 Features

- 7" TFT-LCD with 800 × 480 resolution and CTP support
- 16.7M RGB colors for vivid display
- RGB interface for stable transmission
- Integrated FT5426 touch controller with I²C interface providing accurate and low-latency capacitive touch response
- Meets RoHS requirements for environmental compliance

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2 Part Numbers/Ordering Information

Part No.	Description
DP-0701-01A	TFT Display 7 inch (800 x 480 resolution) with Capacitive Touch Panel

Table 1 - Part Number/Ordering Information

Contents

1	Introduction.....	1
1.1	Features	1
2	Part Numbers/Ordering Information	2
3	General Specifications.....	5
4	Hardware Description	6
4.1	Pin Assignment	6
4.1.1	TFT-LCD Interface Pin Assignment.....	6
4.1.2	CTP Interface Pin Assignment	7
5	Specifications.....	8
5.1	Absolute Maximum Ratings	8
5.1.1	Electrical Absolute Maximum Ratings	8
5.1.2	Environmental Absolute Maximum Ratings	8
5.2	Electrical Specifications.....	8
5.2.1	Electrical Characteristics	8
5.2.2	LED Backlight Specification.....	8
5.3	Timing	9
5.3.1	AC Electrical Characteristics.....	9
5.3.2	Data Input Timing Characteristics.....	10
5.3.3	Parallel RGB Mode Interface Timing Parameters	11
5.4	Optical Specifications	13
6	Reliability Test Items	16
7	Dimension.....	17
8	Disclaimer Notice: Use of Third-Party Software or Websites	18
9	Warranty Statement	19
10	Contact Information.....	20
	Appendix A – References.....	21
	Document References	21

Acronyms and Abbreviations	21
Appendix B – List of Tables & Figures.....	22
List of Tables	22
List of Figures	22
Appendix C – Revision History.....	23

3 General Specifications

Item	Specification	Unit	Note
LCD Type	TFT	-	
LCD Size	7.0	inch	
Number of Pixels	800(H) x 480(V)	pixels	
Viewing Direction	12	o'clock	
Gray Scale Inversion Direction	6	o'clock	
Interface	24-bit RGB		
Display Colors	16.7M Colors (RGB 8 bit)	colors	
Module Size	165(H) x 100(V) x 7.42(D)	mm	Note 3
Active Area	154.08(H) x 85.92(V)	mm	
Brightness	420	cd/m ²	
Display Driver IC	HX8664 & HX8262	-	
Touch Panel	Capacitive Touch Panel	-	
Touch Driver IC	FT5426	-	
Operation Temperature	-20~+70°C	°C	
Storage Temperature	-30~+80°C	°C	

Table 2 - General Specifications

Note:

1. Complies with environmental protection requirements and is RoHS compliant.
2. Color tune is slightly changed by temperature and driving voltage.
3. Module size excludes FPC and solder; with CTP.

4 Hardware Description

The DP-0701-01A features a 7-inch TFT-LCD with an 800 × 480 resolution, integrated with a capacitive touch panel directly bonded to the LCD.

4.1 Pin Assignment

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

4.1.1 TFT-LCD Interface Pin Assignment

Pin no	Symbol	Type	Description
1	VLED+	P	LED Anode
2	VLED+	P	LED Anode
3	VLED-	P	LED Cathode
4	VLED-	P	LED Cathode
5	GND	P	Ground
6	VCC	P	Power Supply
7	VCC	P	Power Supply
8	MODE	I	DE/SYNC Mode Select
9	DE	I	Data Enable Pin
10	VSYNC	I	Frame Sync Signal
11	HSYNC	I	Line Sync Signal
12	B7	I	Blue Data Input
13	B6	I	Blue Data Input
14	B5	I	Blue Data Input
15	B4	I	Blue Data Input
16	B3	I	Blue Data Input
17	B2	I	Blue Data Input
18	B1	I	Blue Data Input
19	B0	I	Blue Data Input
20	G7	I	Green Data Input
21	G6	I	Green Data Input
22	G5	I	Green Data Input
23	G4	I	Green Data Input
24	G3	I	Green Data Input
25	G2	I	Green Data Input
26	G1	I	Green Data Input
27	G0	I	Green Data Input
28	R7	I	Red Data Input
29	R6	I	Red Data Input
30	R5	I	Red Data Input
31	R4	I	Red Data Input
32	R3	I	Red Data Input
33	R2	I	Red Data Input
34	R1	I	Red Data Input

35	R0	I	Red Data Input
36	GND	P	Ground
37	DCLK	I	Data Clock
38	GND	P	Ground
39	L/R	I	Source driver right/left sequence control
40	U/D	I	Gate driver Up/Down scan control
41	VCC	P	Power Supply
42	VCC	P	Power Supply
43	NC	-	No Connection
44	RESET	I	Chip Reset Pin
45	NC	-	No Connection
46	NC	-	No Connection
47	DITHB	I	Dithering function
48	GND	P	Ground
49	NC	-	No Connection
50	NC	-	No Connection

Table 3 - TFT-LCD Interface Pin Definition

4.1.2 CTP Interface Pin Assignment

I2C Interface Pin Definition, connector: FPC 0.5mm pitch 10pin

Pin no	Name	Type	Description
1	GND	P	Ground
2	VDD_CTP	P	CTP Power Supply
3	SCL	I/O	Serial Clock Line
4	NC	-	No Connection
5	SDA	I/O	Serial Data Line
6	NC	-	No Connection
7	/RST	I	Reset Input
8	/WAKE	-	No Connection
9	/INT	I	External Interrupt to the CTP IC
10	GND	P	Ground

Table 4 - CTP Interface Pin Definition

5 Specifications

5.1 Absolute Maximum Ratings

5.1.1 Electrical Absolute Maximum Ratings

 Condition: $V_{SS}=0V$, $T_a=25^{\circ}C$

Item	Symbol	MIN.	MAX.	Unit	Note
Power Supply Voltage	VCC	-0.3	3.6	V	Note 1, 2

Table 5 - Electrical Absolute Maximum Ratings

Note:

1. Permanent damage to the LCD module may occur if operated beyond the specified limits. Operation beyond the specified electrical characteristics may lead to malfunction or reduced reliability.
2. VCC must always be greater than Vss.

5.1.2 Environmental Absolute Maximum Ratings

Item	Storage		Operating		Note
	MIN.	MAX.	MIN.	MAX.	
Ambient Temperature	-30°C	80°C	-20°C	70°C	Note 1, 2
Humidity	-	-	-	-	Note 3

Table 6 - Environmental Absolute Maximum Ratings

Note:

1. Response time decreases at low operating temperatures.
2. Background color may vary slightly with ambient temperature; this phenomenon is reversible.
3. $T_a \leq 40^{\circ}C$: 85%RH MAX
 $T_a > 40^{\circ}C$: Absolute humidity must not exceed the equivalent of 85% RH at 40°C.

5.2 Electrical Specifications

5.2.1 Electrical Characteristics

 Condition: $V_{SS}=0V$, $T_a=25^{\circ}C$

Item		Symbol	Min.	Typ.	Max.	Unit	Note
Power Supply		VCC	3.0	3.3	3.6	V	
Input Voltage	‘H’	V _{IH}	0.8*VCC	-	V _{vcc}	V	V _{vcc} =3.3V
	‘L’	V _{IL}	0	-	0.2*V _{vcc}	V	V _{vcc} =3.3V

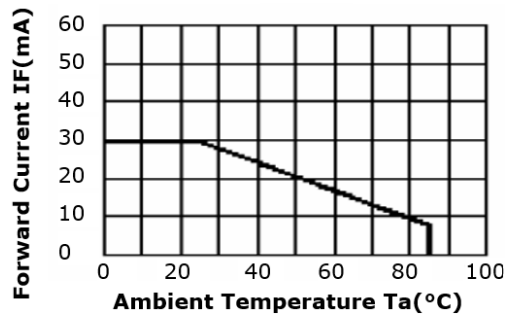
Table 7 - Electrical Characteristics

5.2.2 LED Backlight Specification

 Condition: $V_{SS}=0V$, $T_a=25^{\circ}C$, $I_f=180mA$

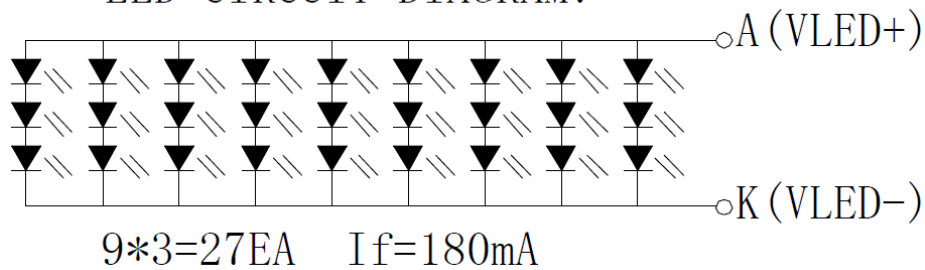
Item	Symbol	Min.	Typ.	Max.	Unit	Note
Supply Voltage	Vf	8.4	9.0	11	V	
Uniformity	ΔBp	75	-	-	%	

Table 8 - LED Backlight Specification


Figure 1 - Forward Current vs Ambient Temperature

Note: The forward current shown in Figure 1 is specified per LED string.

LED CIRCUIT DIAGRAM:


Figure 2 - Backlight LED Circuit

5.3 Timing

5.3.1 AC Electrical Characteristics

Item	Symbol	Values			Unit
		Min.	Typ.	Max.	
HS Setup Time	T_{hst}	8	-	-	ns
HS Hold Time	T_{hhd}	8	-	-	ns
VS Setup Time	T_{vst}	8	-	-	ns
VS Hold Time	T_{vhd}	8	-	-	ns
Data Setup Time	T_{dsu}	8	-	-	ns
Data Hold Time	T_{dhd}	8	-	-	ns
DE Setup Time	T_{esu}	8	-	-	ns
DE Hold Time	T_{ehd}	8	-	-	ns
VDD Power ON Slew Rate	T_{POR}	-	-	20	ms
RSTB Pulse Width	T_{Rst}	10	-	-	us
CLKIN Cycle Time	T_{cph}	20	-	-	ns
CLKIN Pulse Duty	T_{cwh}	40	50	60	%
Output Stable Time	T_{sst}	-	-	6	us

Table 9 - AC Electrical Characteristic

5.3.2 Data Input Timing Characteristics

Item	Symbol	Values			Unit
		Min.	Typ.	Max.	
Horizontal Display Area	thd	800			DCLK
DCLK Frequency	fclk	-	30	50	MHz
One Horizontal Line	th	889	928	1143	DCLK
HS Pulse Width	thpw	1	48	255	DCLK
HS Back Porch (Blanking)	thb	88			DCLK
HS Front Porch	thfp	1	40	255	DCLK
DE Mode Blanking	th-thd	85	128	512	DCLK

Table 10 - Horizontal Timing

Item	Symbol	Values			Unit
		Min.	Typ.	Max.	
Vertical Display Area	tvd	480			T _H
VS Period Time	tv	513	525	767	T _H
VS Pulse Width	tvpw	3	3	255	T _H
VS Back Porch (Blanking)	tvb	32			T _H
VS Front Porch	tvfp	1	13	255	T _H
DE Mode Blanking	tv-tvd	4	45	255	T _H

Table 11 - Vertical Timing

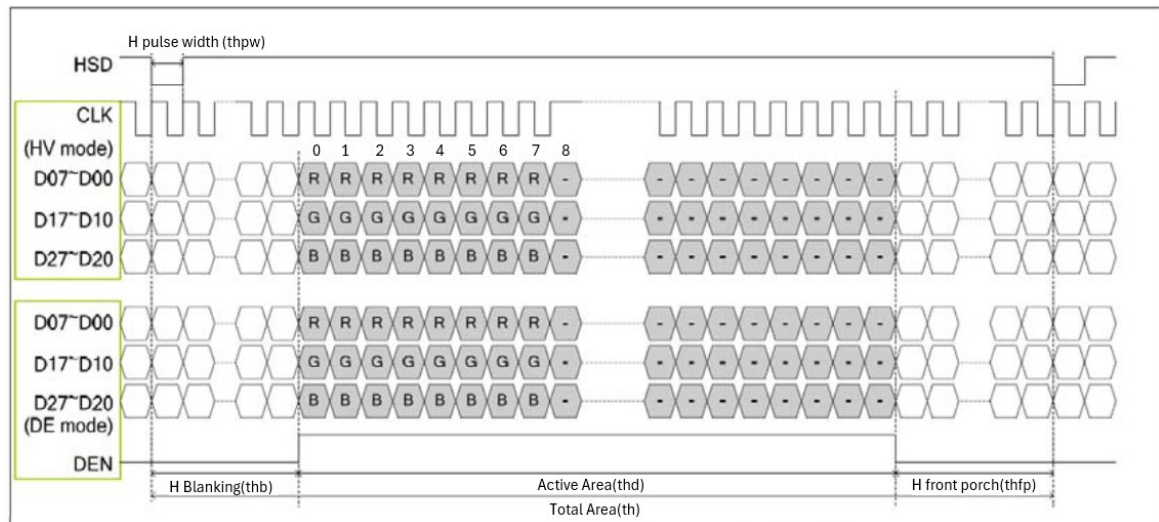
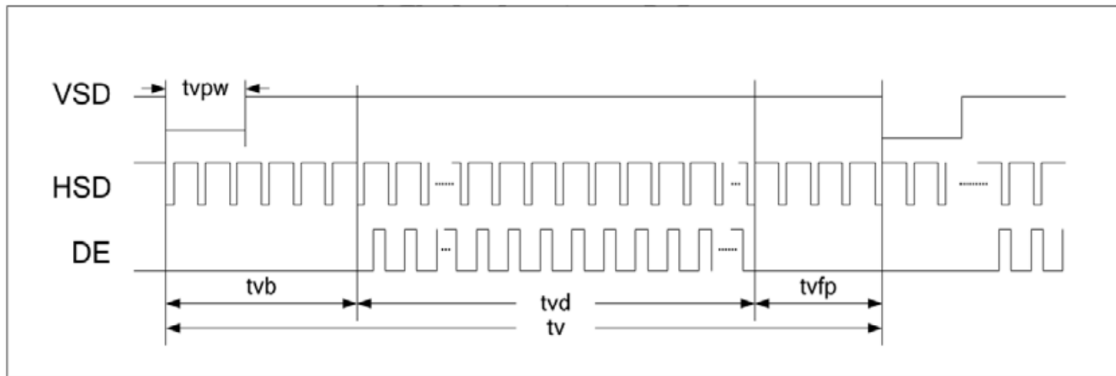
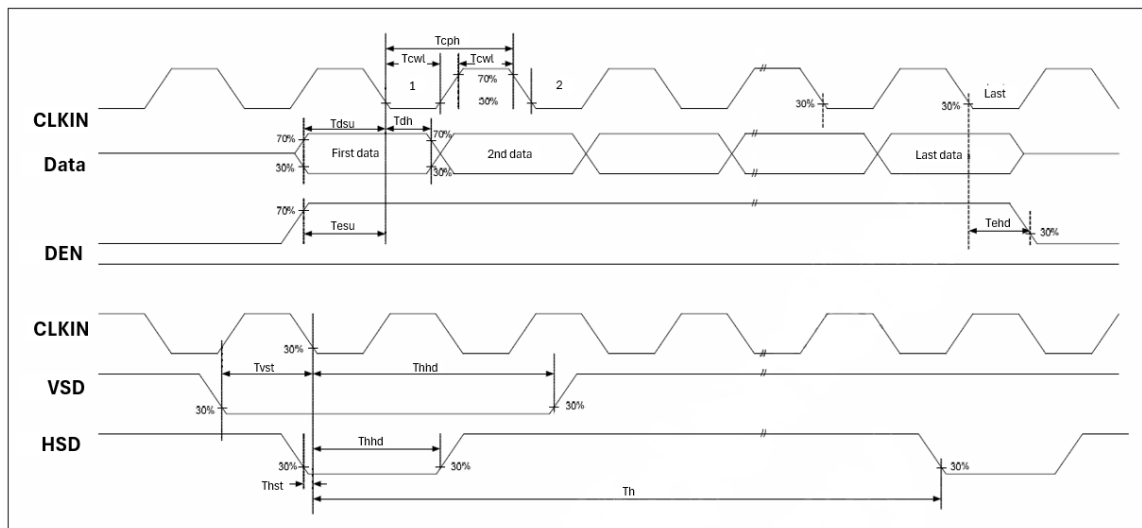


Figure 3 - Horizontal Input Timing Diagram


Figure 4 - Vertical Input Timing Diagram

5.3.3 Parallel RGB Mode Interface Timing Parameters

Item	Symbol	Values			Unit	Note
		Min.	Typ.	Max.		
CLKIN Frequency	Fclk	-	40	50	MHz	VCC=3.0V ~ 3.6V
CLKIN Cycle Time	Tclk	20	25	-	ns	
CLKIN Pulse Duty	Tcwh	40	50	60	%	Tclk
Time from HSD to Source Output	Thso	64			CLKIN	
Time from HSD to LD	Thld	64			CLKIN	
Time from HSD to STV	Thstv	2			CLKIN	
Time from HSD to CKV	Thckv	20			CLKIN	
Time from HSD to OEV	Thoev	4			CLKIN	
LD Pulse Width	Twld	10			CLKIN	
CKV Pulse Width	Twckv	66			CLKIN	
OEV Pulse Width	Twoev	74			CLKIN	

Table 12 - Parallel RGB Mode Interface Timing Parameters

Figure 5 - Input Clock and Data Timing Waveform

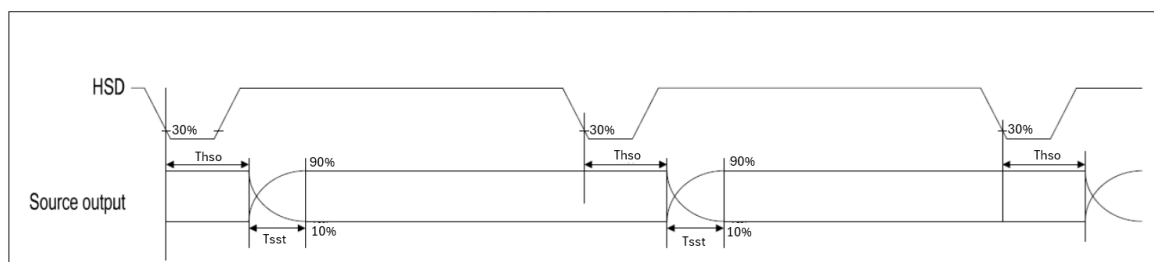


Figure 6 - Source Output Timing Waveform (Cascade)

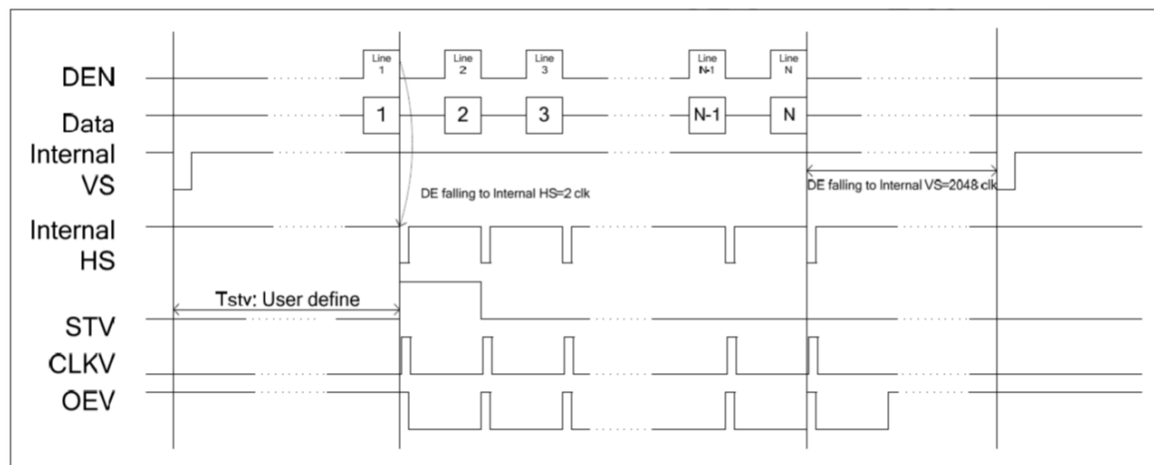


Figure 7 - Vertical Timing Diagram DE (Cascade)

5.4 Optical Specifications

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

Item	Symbol	Condition	Min.	Typ.	Max.	Unit	Note
Brightness	Bp	$\theta=0^\circ$ $\Phi=0^\circ$	-	420	-	Cd/m ²	Note 1
Uniformity	ΔBp		75	-	-	%	Note 1 Note 2
Viewing Angle	3:00	$Cr \geq 10$	-	65	-	Deg	Note 3
	6:00		-	55	-		
	9:00		-	65	-		
	12:00		-	65	-		
Contrast Ratio	Cr	$\theta=0^\circ$ $\Phi=0^\circ$	300	500	-	-	Note 4
Response Time	T _r		-	10	-	ms	Note 5
	T _f		-	10	-	ms	
Color of CIE Coordinate	W	x	$\theta=0^\circ$ $\Phi=0^\circ$	0.28		-	Note 1 Note 6
		y		0.33		-	
	R	X		0.51		-	
		y		0.34		-	
	G	x		0.31		-	
		y		0.56		-	
	B	x		0.15		-	
		y		0.14		-	
NTSC Ratio	S		50	60	-	%	

Table 13 - Optical Specifications

Remark: *Parameters may vary slightly depending on temperature, driving voltage, and material.*

Note:

- Data were measured after the LEDs were turned on for 5 minutes with the LCM displaying full white. Brightness is the average value of 9 measured points. Measurement equipment: PR-705 (Φ8mm)

Measuring Conditions:

- Environment: Dark room
- Temperature: Ta=25°C
- Operating voltage adjusted for optimum contrast at the center of the display
- Values measured at the center point of the LCD panel after more than 5 minutes of backlight operation

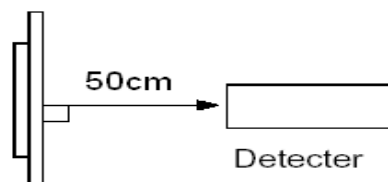


Figure 8 - Measurement Setup

2. The luminance uniformity is calculated using the following formula:

$$\Delta Bp = \frac{Bp \text{ (Min.)}}{Bp \text{ (Max.)}} \times 100\%$$

Bp (Max.) = Maximum brightness in 9 measured spots

Bp (Min.) = Minimum brightness in 9 measured spots

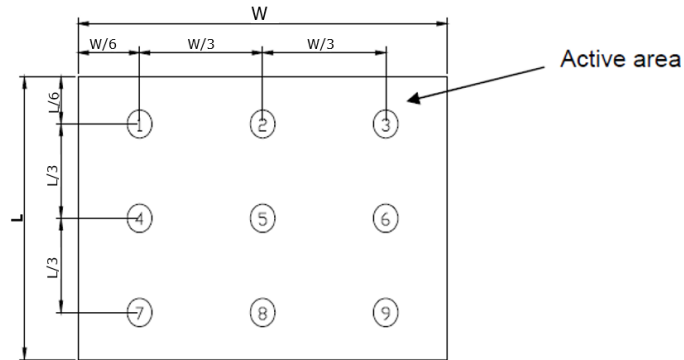


Figure 9 - Measurement Point

3. Definition of viewing angle: Refer to the figure below, indicated by θ and Φ .

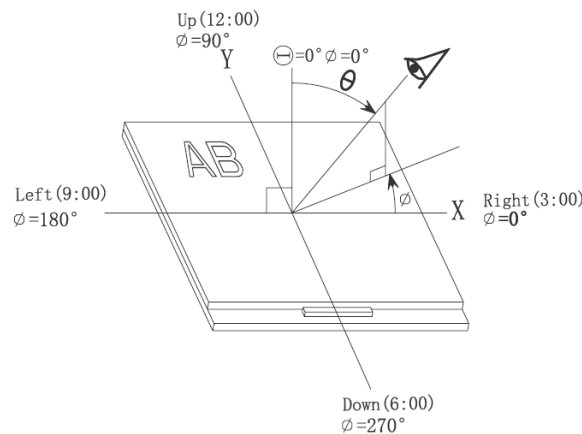


Figure 10 - Viewing Angle

4. Definition of Contrast ratio. (Test equipment: DMS501)

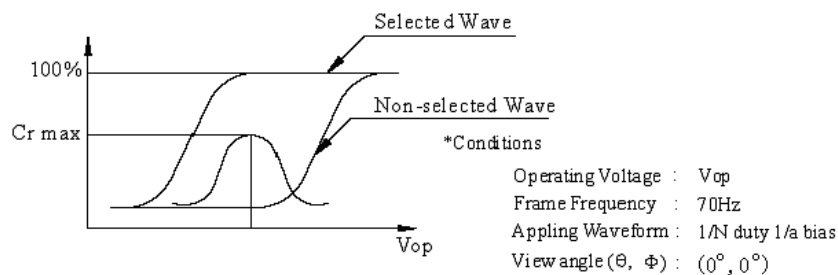


Figure 11 - Contrast Ratio

$$\text{Contrast ratio, Cr} = \frac{\text{Brightness of selected dots}}{\text{Brightness of non-selected dots}}$$

5. Definition of response time. (Test equipment: DMS501)

The output signals of the photo detector are measured when the input signal changes from "black" to "white" (falling time) and from "white" to "black" (rising time). Response time is defined as the time interval between 10% and 90% of the signal amplitude. Refer to the figure below for illustration.

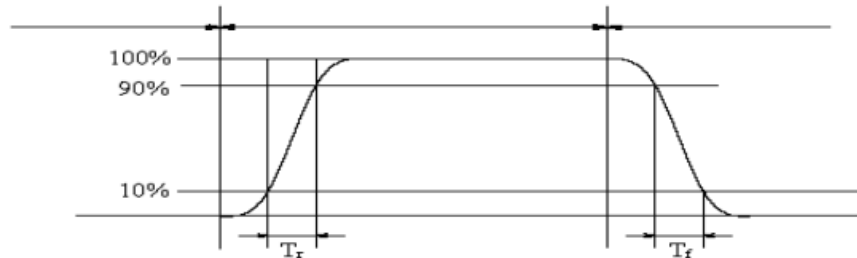


Figure 12 - Definition of Response Time

6. Definition of color in terms of CIE coordinates and NTSC ratio.

Color gamut:

$$S = \frac{\text{Area of RGB triangle}}{\text{Area of NTSC triangle}} \times 100\%$$

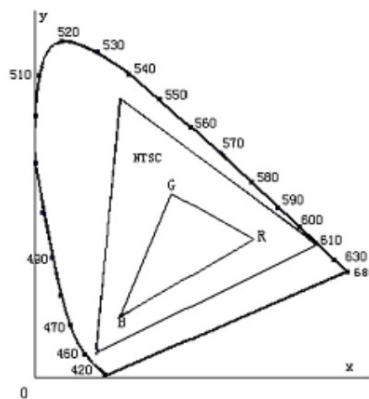


Figure 13 - 1931 CIE Chromaticity Diagram

7. Definition of cross talk.

$$\text{Cross talk ratio(\%)} = \frac{|\text{Pattern A Brightness} - \text{Pattern B Brightness}|}{\text{Pattern A Brightness}} \times 100\%$$

Electric volume value=3F+/-3Hex

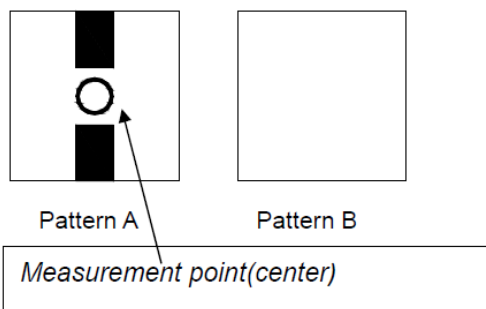


Figure 14 - Definition of Cross talk

6 Reliability Test Items

Test Item	Test Conditions	Note
High Temperature Storage	+80°C±2°C 96hrs Restore 2H at 25°C Power OFF	Note 1, 2
Low Temperature Storage	-30°C±2°C 96hrs Restore 2H at 25°C Power OFF	
High Temperature Operation	+70°C±2°C 96hrs Restore 2H at 25°C Power ON	
Low Temperature Operation	-20°C±2°C 96hrs Restore 4H at 25°C Power ON	
High Temperature and Humidity Storage	+60°C±2°C, 90%RH 96hrs Power OFF	
Thermal Cycle	-30°C ~ +80°C, 5 cycle 30 min dwell at each extreme, ≤5 min transfer; Restore 2H at 25°C; Power OFF	
Vibration Test	10Hz ~ 150Hz, 100m/s ² , 120min	Note 1
Shock Test	Half-sine wave, 300m/s ² , 11ms	

Table 14 - Reliability Test Items

Note:

1. No cosmetic or electrical defects shall be observed after testing.
2. The total current consumption shall not exceed twice the initial value.

7 Dimension

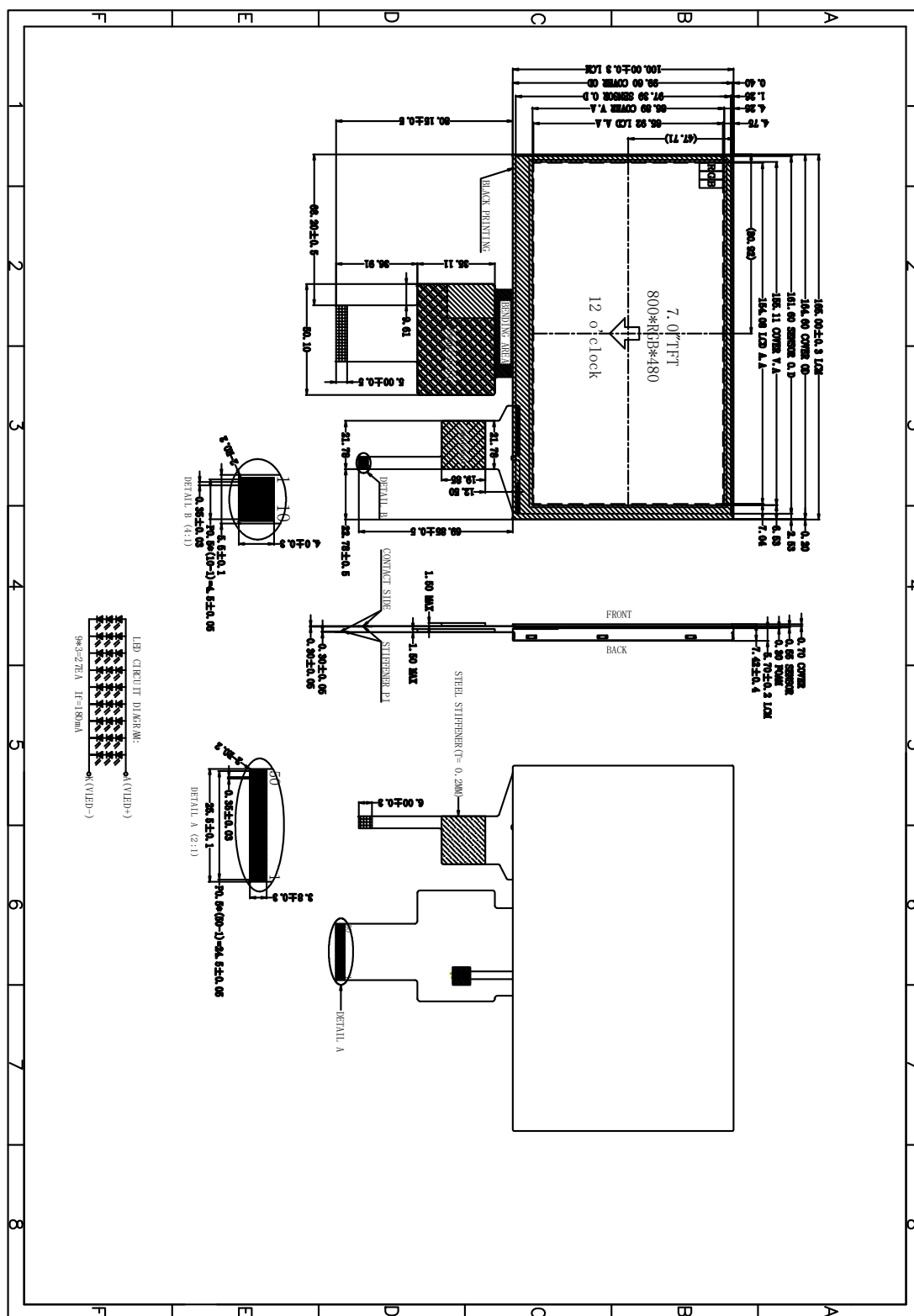


Figure 15 - LCM Dimension

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- 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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Appendix A – References

Document References

NA

Acronyms and Abbreviations

Terms	Description
CTP	Capacitive Touch Panel
DC	Direct Current
FPC	Flexible Printed Circuit
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
TFT	Thin Film Transistor

Appendix B – List of Tables & Figures

List of Tables

Table 1 - Part Number/Ordering Information.....	2
Table 2 - General Specifications	5
Table 3 - TFT-LCD Interface Pin Definition	7
Table 4 - CTP Interface Pin Definition	7
Table 5 - Electrical Absolute Maximum Ratings.....	8
Table 6 - Environmental Absolute Maximum Ratings	8
Table 7 - Electrical Characteristics	8
Table 8 - LED Backlight Specification	8
Table 9 - AC Electrical Characteristic.....	9
Table 10 - Horizontal Timing	10
Table 11 - Vertical Timing.....	10
Table 12 - Parallel RGB Mode Interface Timing Parameters	11
Table 13 - Optical Specifications.....	13
Table 14 - Reliability Test Items	16

List of Figures

Figure 1 - Forward Current vs Ambient Temperature.....	9
Figure 2 - Backlight LED Circuit	9
Figure 3 - Horizontal Input Timing Diagram	10
Figure 4 - Vertical Input Timing Diagram	11
Figure 5 - Input Clock and Data Timing Waveform	11
Figure 6 - Source Output Timing Waveform (Cascade)	12
Figure 7 - Vertical Timing Diagram DE (Cascade)	12
Figure 8 - Measurement Setup	13
Figure 9 - Measurement Point	14
Figure 10 - Viewing Angle.....	14
Figure 11 - Contrast Ratio	14
Figure 12 - Definition of Response Time	15
Figure 13 - 1931 CIE Chromaticity Diagram.....	15
Figure 14 - Definition of Cross talk	15
Figure 15 - LCM Dimension	17

Appendix C – Revision History

Document Title: DP-0701-01A Datasheet
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Revision	Changes	Date
Version 1.0	Initial Release	11-09-2025
Version 1.1	Corrected the typo in <u>Section 3 – General Specifications</u> <u>Item:</u> Interface <u>Spec:</u> Single-channel LVDS-24-bit RGB	14-10-2025