TFT LCD Specification

Model No.: AGD070DCBAFNN-A

Customer: _____

Approved by: _____

Note:

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REVISION HISTORY

Version	Date	Part Rev.	Page (New)	Section	Description
0.1	Jul. 22, 2013	A			**PRELIMINARY**

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1 GENERAL DESCRIPTION

1.1 OVERVIEW

AGD070DCBAXNN-A is 7" color TFT-LCD(Thin Film Transistor Liquid Crystal Display) module composed of LCD panel, driver ICs, control circuit, and LED backlight.

The 7.0"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

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1.3 APPLICATIONS

- Mobile notebook or netbook
- Multimedia tablet

1.4 GENERAL SPECIFICATI0NS

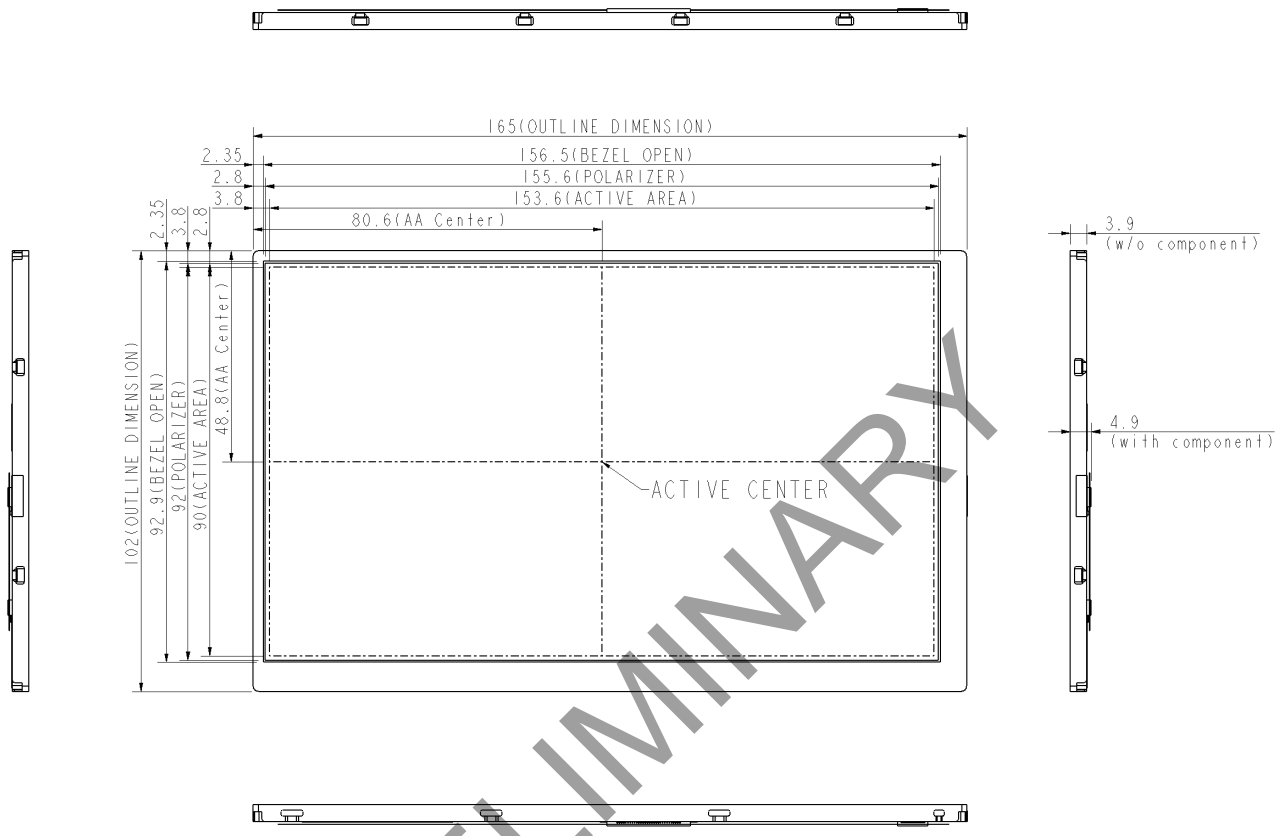
Item	Specification	Unit	Note
Panel Diagonal	7.0	inch	
Active Area	153.60 (H) x 90.00 (V) (7.0” diagonal)	mm	
Bezel Opening Area	156.50 (H) x 92.90 (V)	mm	
Driver Element	a-Si TFT active matrix	-	-
Pixel Number	1024 x R.G.B. x 600	pixel	
Pixel Pitch	0.150 (H) x 0.150 (V)	mm	-
Pixel Arrangement	RGB vertical stripe	-	-
Display Colors	262,144	color	18 bit
Brightness(cd/m2)	400nit (typ)		
Display Operating Modes	Normally white	-	-
Surface Treatment	Hard coating (3H), Anti-Glare	-	-

1.5 MECHANICAL SPECIFICATIONS

Item		Min.	Typ.	Max.	Unit	Note
Module Size	Horizontal(H)		165.0		mm	(2)
	Vertical(V)		102.0		mm	
	Thickness(T)	-	3.9		mm	
Weight		-	95		g	

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

Figure 1.1 Module front outline



NOTE:

1. General tolerance：±0.3mm

2. Unit：mm

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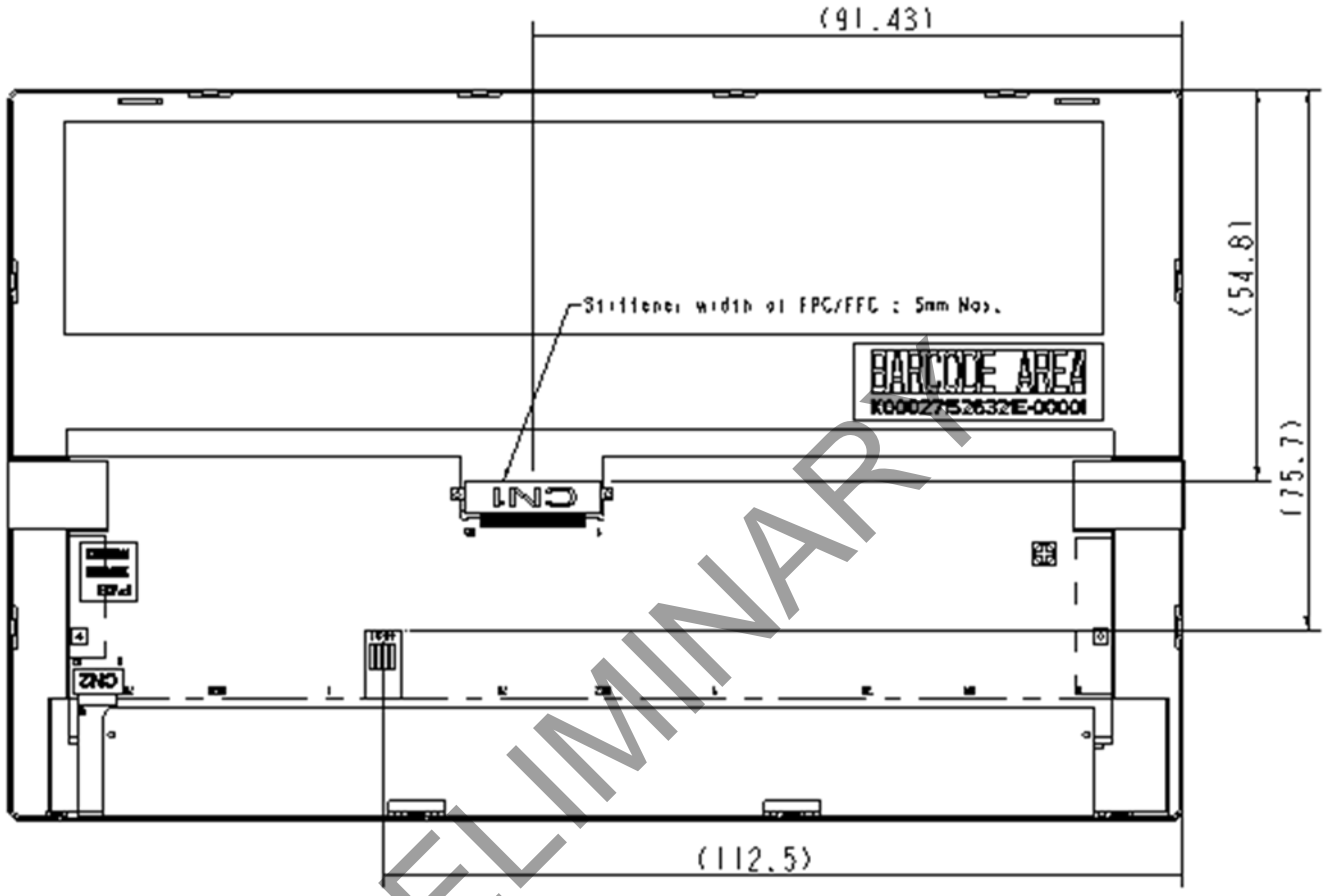
Figure 1.2 Module rear and side outline



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NOTE：

1. General tolerance：±0.3mm

2. LCD connector CN1(30pin)：STARCONN，P/N：Molex 52435-3071.

2 ABSOLUTE MAXIMUM RATINGS

2.1 ABSOLUTE MAXIMUMS, ENVIRONMENTAL

Item	Symbol	Value		Unit	Note
		Min.	Max.		
Storage Temperature	T_{ST}	TBD	TBD	ºC	
Operating Ambient Temperature	T_{OP}	TBD	TBD	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	VCC	-0.3	+4.0	V	
Logic Input Voltage	VIN	-0.3	V_{CC}+0.3	V	

2.2.2 BACKLIGHT CONVERTER INPUT

Item	Symbol	Value		Unit	Note
		Min.	Max.		
Converter Input Voltage	VLED	-0.3	7.0	V	
Converter Control Signal	ADJ	-0.3	VLED	V	

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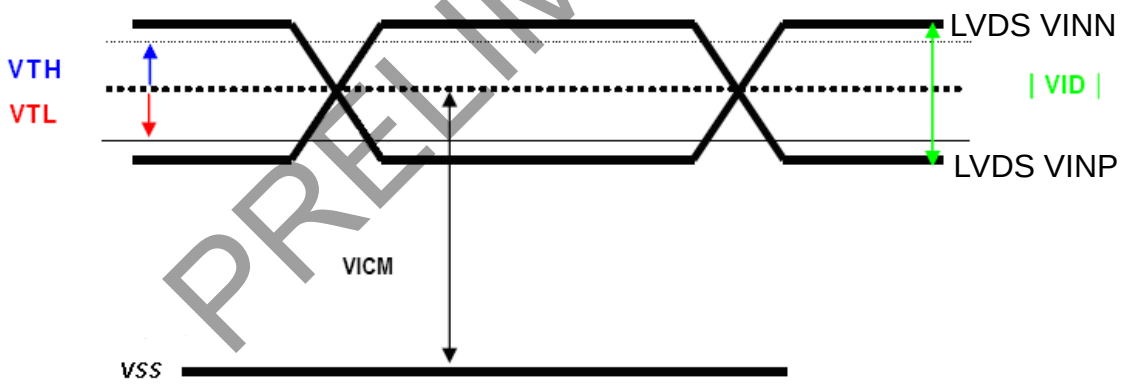
3 ELECTRICAL CHARACTERISTICS

3.1 TFT LCD

ITEM	SYMBOL	MIN.	TYP.	MAX.	UNIT	NOTE
Power Supply Voltage For LCD	VCC	3.0	3.3	3.6	V	
Power Supply Voltage For LED	VLED	4.5	5.0	5.5		
Logic Input Voltage (LVDS:IN+,IN-)	VCM	1.08	1.2	1.32	V	Note1
	| VID |	250	350	450	mV	Note1
	VTH	--	--	100	mV	Note1
	VTL	-100	--	--	mV	Note1 When VCM=+1.2V
U/D, L/R						
V_EDID, CLK_EDID, DATA_EDID		2.7		5.5	V	
ADJ Input Voltage	VIH	1.0		3.3	V	
	VIL	GND		0.3	V	

Note1: LVDS signal



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3.2 TFT CURRENT CONSUMPTION

ITEM	SYMBOL	MIN.	TYPICAL	MAX.	UNIT	NOTE
LCD Power Current	ICC	--	250	300	mA	Note1
LED Power Current	IDD		310	370	mA	Note2

【Note1】 Typical: Under 64 gray pattern

Maximum: Under black pattern

(a)64 Gray Pattern

(b)Black Pattern

【Note2】 Typical: When VLED is 5V

Maximum: When VLED is 4.5V

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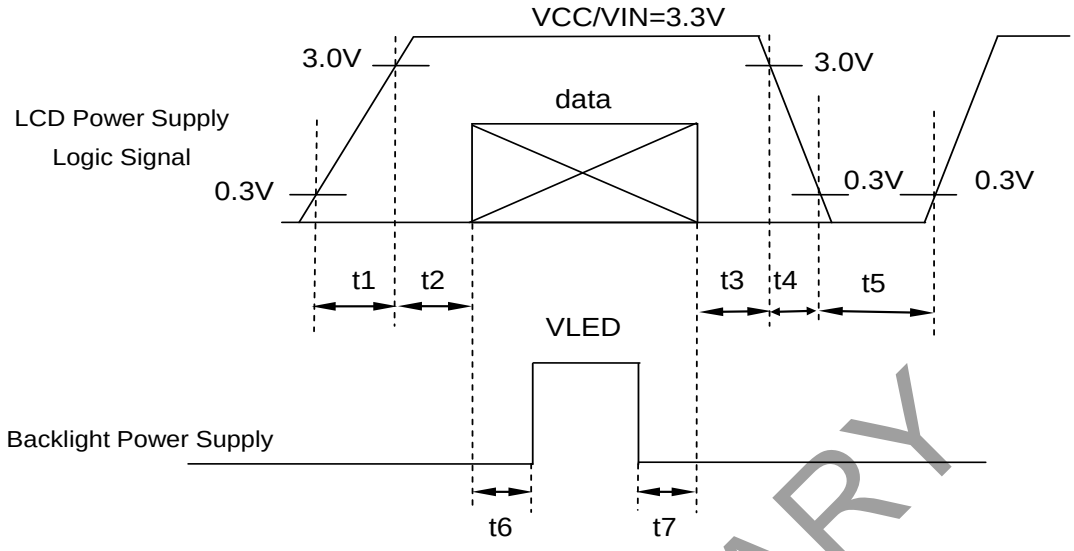
3.3 POWER SEQUENCE



Data: RGB DATA, DCLK, DENA

0.5<t1 ≦10ms 200ms≦t5

0＜t2 ≦50ms 200ms ≦t6

0＜t3 ≦50ms 200ms ≦t7

0＜t4 ≦10ms

3.4 BACKLIGHT

Item	Symbol	Condition	Min	Typ	Max	Unit	Remarks
LED Lifetime	-	Ta=25℃ Each serial = 20mA	TBD			Hr	

Definition LED lifetime：Luminance decays less than 50%.

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3.5 INTERFACE CONNECTION

Pin NO.	SYMBOL	DESCRIPTION
1	AVSS	Power Ground
2	VCC	Power Supply for Digital circuit
3	VCC	Power Supply for Digital circuit
4	V_EDID	Power Supply for EDID circuit
5	ADJ	Adjust for LED brightness
6	CLK_EDID	EDID clock inputs
7	DATA_EDID	EDID data inputs
8	RXIN0-	Negative LVDS differential data inputs
9	RXIN0+	Positive LVDS differential data inputs
10	AVSS	Power Ground
11	RXIN1-	Negative LVDS differential data inputs
12	RXIN1+	Positive LVDS differential data inputs
13	AVSS	Power Ground
14	RXIN2-	Negative LVDS differential data inputs
15	RXIN2+	Positive LVDS differential data inputs
16	AVSS	Power Ground
17	RXCLK-	Negative LVDS differential clock inputs
18	RXCLK+	Positive LVDS differential clock inputs
19	AVSS	Power Ground
20	NC	NC
21	NC	NC
22	LR	Left / Right Display Control
23	UD	Up / Down Display Control
24	VLED	Power Supply for LED
25	VLED	Power Supply for LED
26	VLED	Power Supply for LED
27	NC	NC
28	NC	NC
29	NC	NC
30	NC	NC

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NOTE：

1) NC Pin must be retained; this pin cannot contact GND or other signal.

2) GND Pin must connect to ground contact, cannot be floating.

3) ADJ adjusts the brightness of the control Pin. Higher Pulse duty ratio allows higher current flow at LED and generates brighter luminance. However at lower duty ratio, the converting efficiency may drop.

4) ADJ signal=0~3.3V，operation frequency：25±5KHz

5) U/D and L/R are display orientation control function:

L/R	U/D	FUNCTION
1	0	Normal display
0	0	Left and Right reversed
1	1	Up and Down reversed
0	1	Left and Right reversed，Up and Down reversed

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4 INPUT SIGNAL (DE only mode)

4.1 TIMING SPECIFICATION

ITEM				SYMBOL	MIN.	TYP.	MAX.	UNIT
LVDS input signal sequence	CLK Frequency			f_{CLKin}	39	45	52	MHz
LCD input signal sequence （Input LVDS Transmitter）	DENA	Horizontal	Horizontal total Time	t_H	1150	1200	1250	t_{CLK}
			Horizontal effective Time	t_{HA}	1024			t_{CLK}
			Horizontal Blank Time	t_{HB}	126	176	226	t_{CLK}
		Vertical	Frame	f_V	55	60	65	Hz
			Vertical total Time	t_V	610	625	640	t_H
			Vertical effective Time	t_{VA}	600			t_H
			Vertical Blank Time	t_{VB}	10	25	40	t_H

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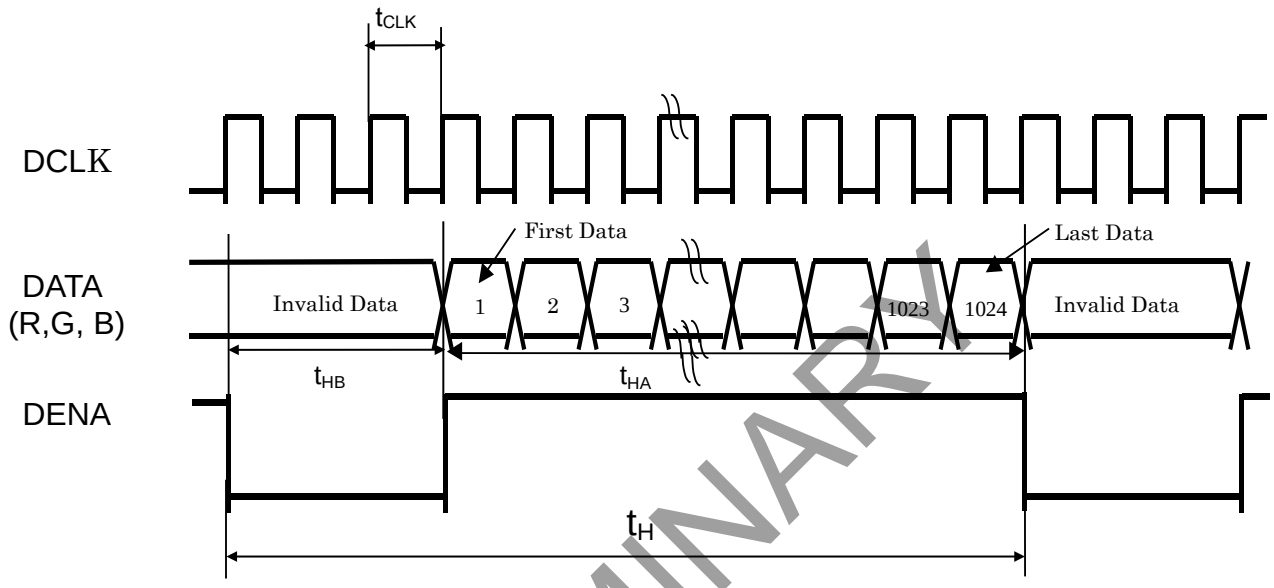
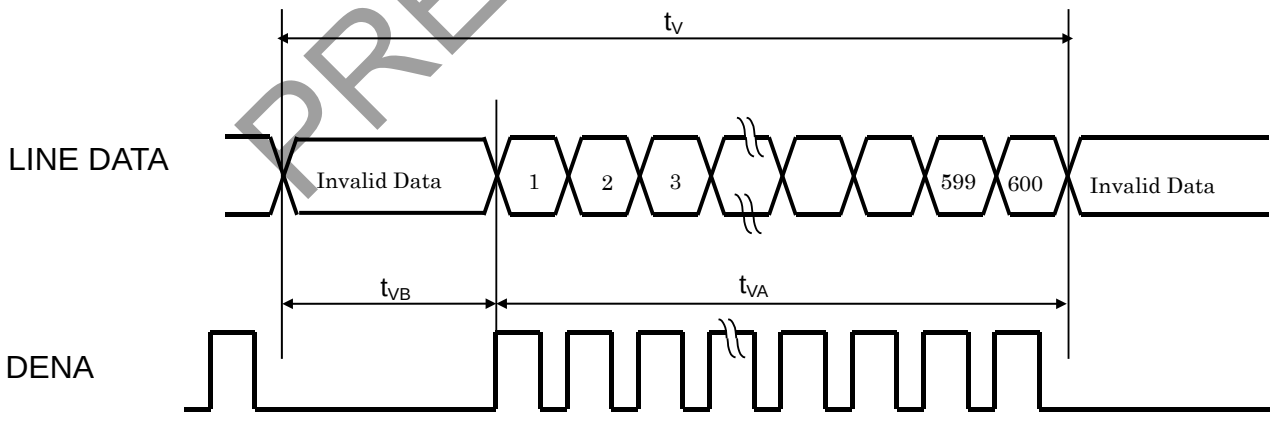
4.2 TIMING SEQUENCE

Horizontal Timing Sequence



Vertical Timing Sequence



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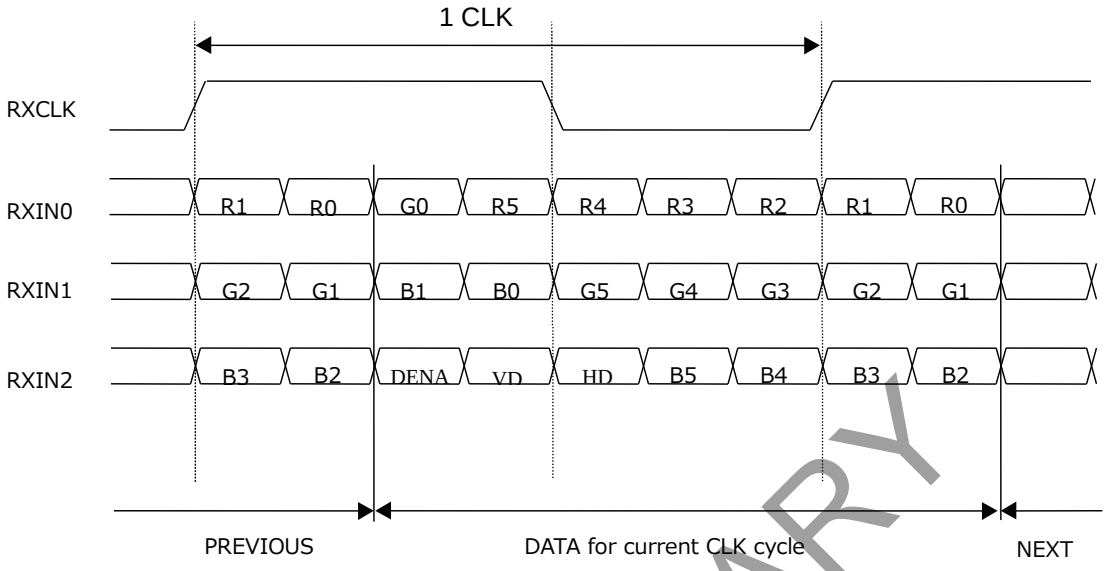
4.3 LVDS INPUT DATA MAPPING



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4.4 COLOR DATA ASSIGNMENT

COLOR	INPUT DATA	R DATA						G DATA						B DATA					
		R5	R4	R3	R2	R1	R0	G5	G4	G3	G2	G1	G0	B5	B4	B3	B2	B1	B0
		MSB					LSB	MSB					LSB	MSB					LSB
BASIC COLOR	BLACK	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	RED(63)	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0
	GREEN(63)	0	0	0	0	0	0	1	1	1	1	1	1	0	0	0	0	0	0
	BLUE(63)	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1
	CYAN	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1	1	1	1
	MAGENTA	1	1	1	1	1	1	0	0	0	0	0	0	1	1	1	1	1	1
	YELLOW	1	1	1	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0
	WHITE	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
RED	RED(0)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	RED(1)	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
	RED(2)	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
	RED(62)	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0
	RED(63)	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0
GREEN	GREEN(0)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	GREEN(1)	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0
	GREEN(2)	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0
	GREEN(62)	0	0	0	0	0	0	1	1	1	1	1	0	0	0	0	0	0	0
	GREEN(63)	0	0	0	0	0	0	1	1	1	1	1	1	0	0	0	0	0	0
BLUE	BLUE(0)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	BLUE(1)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
	BLUE(2)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
	BLUE(62)	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1	0
	BLUE(63)	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1

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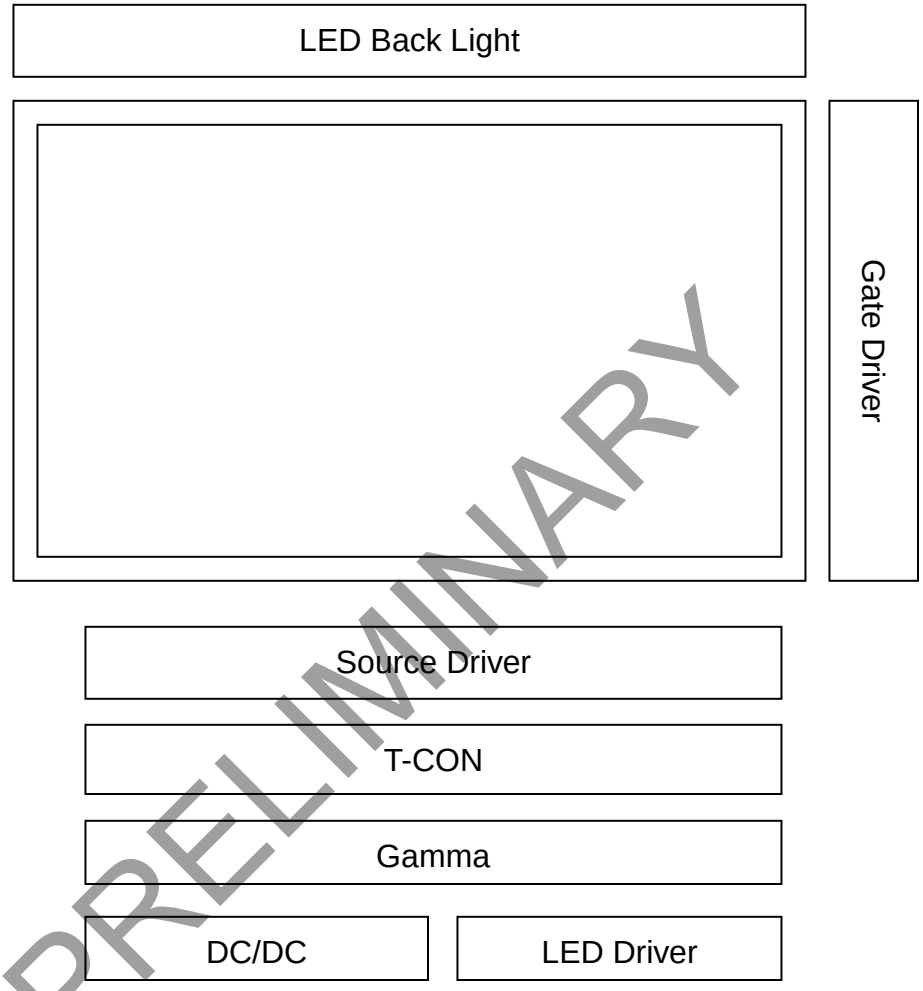
5 BLOCK DIAGRAM



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6 OPTICAL CHARACTERISTICS

ITEM		SYMBOL	CONDITION	MIN.	TYP.	MAX.	UNIT	NOTE
Constrast Ratio		CR	Point-5	---	400	--	--	
Luminance*)		Lw	Point-5	---	400	--	cd/m^2	
Luminance Uniformity		L		70	80	--	%	
Response Time (White - Black)		Tr+ Tf	Point-5	--	20	30	ms	
Viewing Angle	Horizontal	Ψ	CR≧10 Point-5	120	140	--	°	
	Vertical	Θ		100	120	--	°	
Color Coordinate	White	Wx Wy	Point-5	TBD	TBD	TBD		
	Red	Rx Ry		TBD	TBD	TBD		
	Green	Gx Gy		TBD	TBD	TBD		
	Blue	Bx By		TBD	TBD	TBD		

7 RELIABILITY TEST

7.1 TEMPERATURE AND HUMIDITY

TEST ITEMS	CONDITIONS	NOTE
High Temperature Operation	TBD	
High Temperature Storage	TBD	
High Temperature High Humidity Operation	TBD	
Low Temperature Operation	TBD	
Low Temperature Storage	TBD	
Thermal Shock	TBD	

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