



Specification

CLAA080MB0ACW
8.0" / 800x600 / TTL / LED

Version October 2007



CONTENTS

1. OVERVIEW	3
2. ABSOLUTE MAXIMUM RATINGS	4
3.ELECTRICAL CHARACTERISTICS	5
3.1TFT LCD Power Voltage.....	5
3.2 TFT-LCD current consumption	5
3.3 Power、Signal sequence.....	6
4. INTERFACE CONNECTION	6
5. INPUT SIGNAL(DE ONLY MODE)	9
5.1 Timing Specification.....	9
5.2 Timing Chart :	9
5.3 Color Data Assignment.....	11
6. BLOCK DIAGRAM	10
7. MECHANICAL DIMENSION	12
7.1 Front Side	12
7.2 Rear Side.....	13
8. OPTICAL CHARACTERISTICS	14
9. RELIABILITY TEST	16
9.1. Temperature and humidity	16
9.2. Shock and Vibration.....	16
9.3.ESD experiments	16
9.4. Judgment standard	16

1. OVERVIEW

CLAA080MB0ACW is 20.32 cm(8") color TFT-LCD(Thin Film Transistor Liquid Crystal Display)module composed of LCD panel,driver ICs,control circuit,and backlight.

The 8.0" screen produces a high resolution image that is composed of 800×600 pixel elements in a stripe arrangement.Display 262K colors by 6 Bit R.G.B signal input.Use 3.3 voltage to drive the power of LCD system, and 5 Voltage to drive the LED back light.

General specifications are summarized in the following table:

ITEM	SPECIFICATION
Panel Size	8 inch(panel diagonal)
Display Area (mm)	162(H)×121.5(W)
Number of Pixels	800 (H) ×3(RGB)×600(V)
Pixel Pitch (mm)	0.2025(H)×0.2025(V)
Color Pixel Arrangement	RGB vertical stripe
Display Mode	Normally white
Number of colors	262,144
Brightness(cd/m ²)	250nit
NTSC ratio	50%
Response Time (Tr+Tf)	25ms
Outline Dimension(in mm)	183.0(W)×141.0(H)×6.3(D)
Viewing Angle(BL on,CR ≥ 10)	140degree(H) · 120degree(V)
Power consumption	TBD
BL unit	LED
Electrical Interface(data)	TTL
Viewing Direction	6 o'clock
Weight(g)	208 (typ)
Surface Treatment	Anti-Glare · Hardness:3H

2. ABSOLUTE MAXIMUM RATINGS

Item	Symbol	Min.	Max.	Unit	Note
Power Supply Voltage	V _{cc}	-0.3	4.0	V	
Signal Input Voltage	R0~ R5 / G0~G5 B0~B5 / CLK	-0.3	V _{cc} + 0.3	V	
Static Electricity	VESDc	-200	200	V	【Note2】
	VESDm	-15K	15K	V	
ICC Rush Current	IRUSH	-	1	A	【Note3】
Operation temperature	T _{op}	-30	70	°C	【Note1】
Storage temperature	T _{stg}	-40	80	°C	【Note1】

[Note]

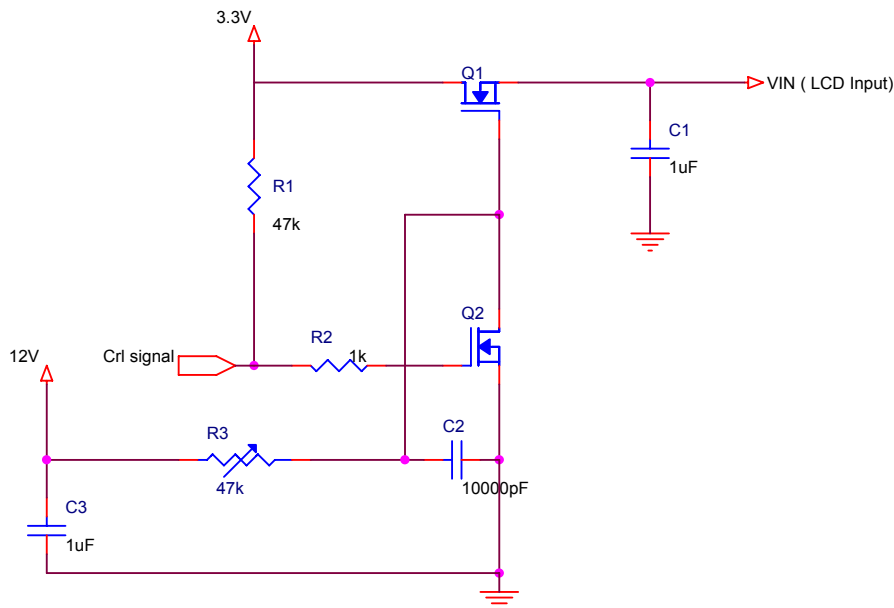
*1) If users use the product out of the environment operation range (temperature and humidity), it will concern for visual quality.

*2) Test Condition: IEC 61000-4-2 ,

VESDc : Contact discharge to input connector

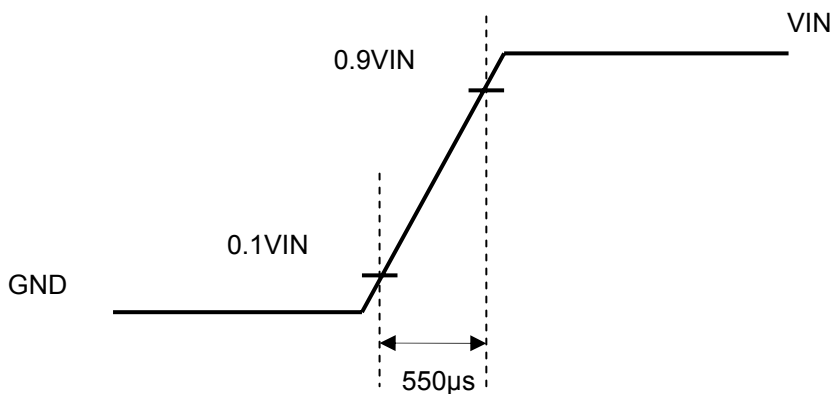
VESDm : Contact discharge to module

*3) The Input pulse-current measurement system as below :



Control signal: High(+3.3V)→Low(GND)

Supply Voltage of rising time should be from R3 and C2 tune to 550 us.



3.ELECTRICAL CHARACTERISTICS

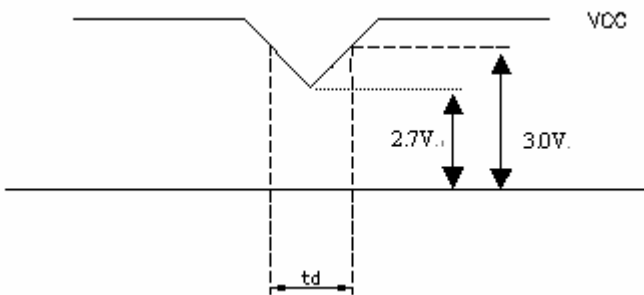
3.1TFT LCD Power Voltage

Ta=25°C

Item		Symbol	Min.	Typ	Max.	Unit	Note
Power Supply Voltage For LCD		VCC	3.0	3.3	3.6	V	[Note1]
Power Supply Voltage For LED		VDD	4.5	5	5.5	V	
Logic Input Voltage		VIH	0.7VCC		VCC	V	
		VIL	0		0.3VCC	V	
ADJ Input Voltage	Input Voltage(high)	VIH	3.0		3.3	V	
	Input Voltage(low)	VIL	GND		0.3	V	

[Note1]VCC –dip condition:

- 1) When $2.7\text{ V} \leq VCC < 3.0\text{ V}$, $td \leq 10\text{ ms}$.
- 2) $VCC > 3.0\text{ V}$, VCC-dip condition should be same as VCC-turn-on condition.



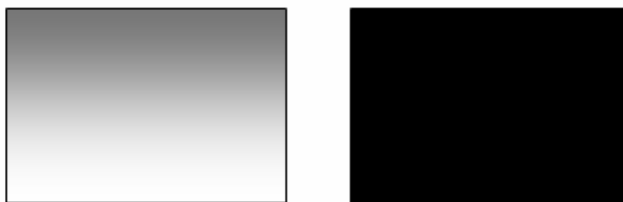
3.2 TFT-LCD current consumption

Item	Symbol	Min.	Typ	Max.	Unit	Note
LCD Power Current	ICC	--	150	200	mA	【Note1】
LED Power Current	IDD	--	450	550	mA	【Note2】

[Note1]

Typical: Under 64 gray pattern

Maximum: Under black pattern

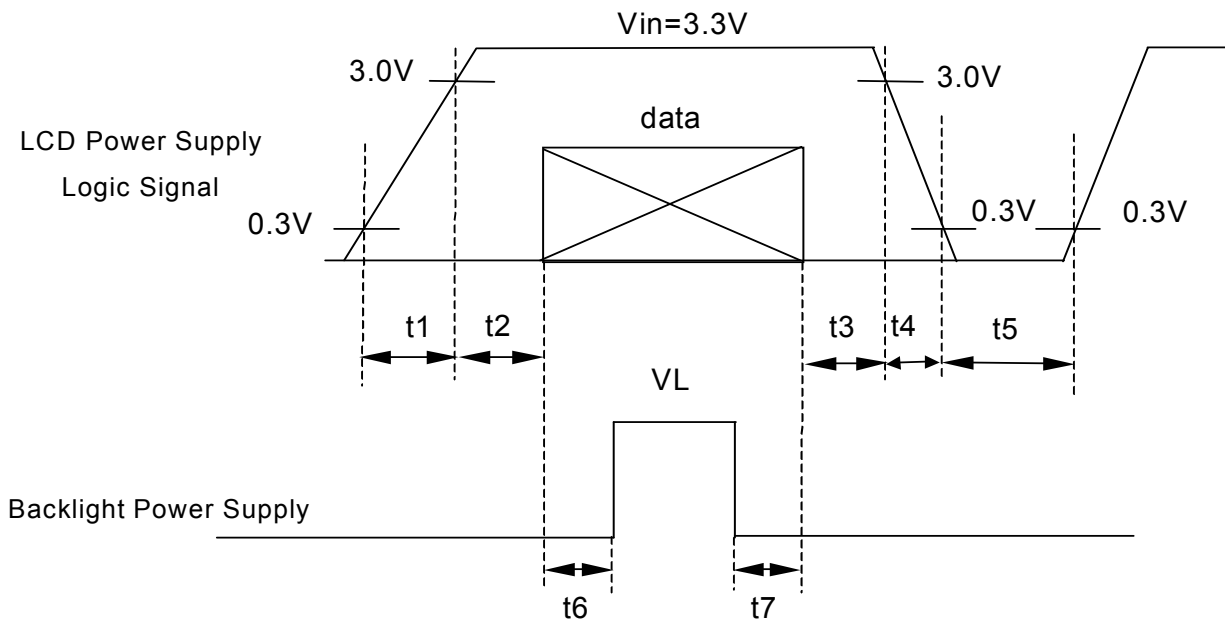


·· (a)64-Gray-Pattern······ (b)Black-Pattern····

[Note2] Typical: When VDD is 5V

Maximum: When VDD is 4.5V

3.3 Power 、 Signal sequence



Data: RGB DATA, DCLK, DENA

$$0 < t1 \leq 10\text{ms}$$

$$50\text{ms} \leq t2$$

$$0 < t3 \leq 50\text{ms}$$

$$0 < t4 \leq 10\text{ms}$$

$$1 \text{ sec} \leq t5$$

$$200\text{ms} \leq t6$$

$$200\text{ms} \leq t7$$

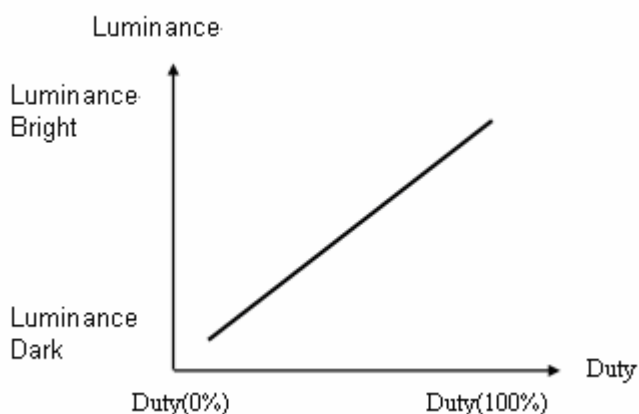
4. INTERFACE CONNECTION

CN1 : Connector type : FR03-S40D-2-E3000

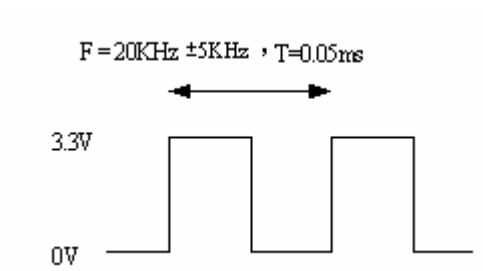
Pin NO.	SYMBOL	DESCRIPTION
1	V _{SS}	Power Ground
2	V _{SS}	Power Ground
3	ADJ	LED adjust
4	V _{LED}	Power Supply for LED (V _{LED} =5.0±0.5)
5	V _{LED}	Power Supply for LED (V _{LED} =5.0±0.5)
6	V _{LED}	Power Supply for LED (V _{LED} =5.0±0.5)
7	V _{CC}	Power Supply for LCD
8	V _{CC}	Power Supply for LCD
9	DE	Data Enable
10	V _{SS}	Power Ground
11	V _{SS}	Power Ground
12	V _{SS}	Power Ground
13	B5	Blure Data (MSB)
14	B4	Blure Data
15	B3	Blure Data
16	V _{SS}	Power Ground
17	B2	Blue Data
18	B1	Blue Data
19	B0	Blue Data (LSB)
20	V _{SS}	Power Ground
21	G5	Green Data (MSB)
22	G4	Green Data
23	G3	Green Data
24	V _{SS}	Power Ground
25	G2	Green Data
26	G1	Green Data
27	G0	Green Data (LSB)
28	V _{SS}	Power Ground
29	R5	Red Data (MSB)
30	R4	Red Data
31	R3	Red Data
32	V _{SS}	Power Ground
33	R2	Red Data
34	R1	Red Data
35	R0	Red Data (LSB)
36	V _{SS}	Power Ground
37	NC	None connect
38	DCLK	Clock
39	NC	None connect
40	NC	None connect

Remarks:

1) ADJ adjust brightness to control Pin , Pulse duty the bigger the brighter.



2)ADJ signal=0~3.3V , operation frequency : 20KHZ±5KHZ



3) V_{SS} Pin must ground contact , can not be floating.

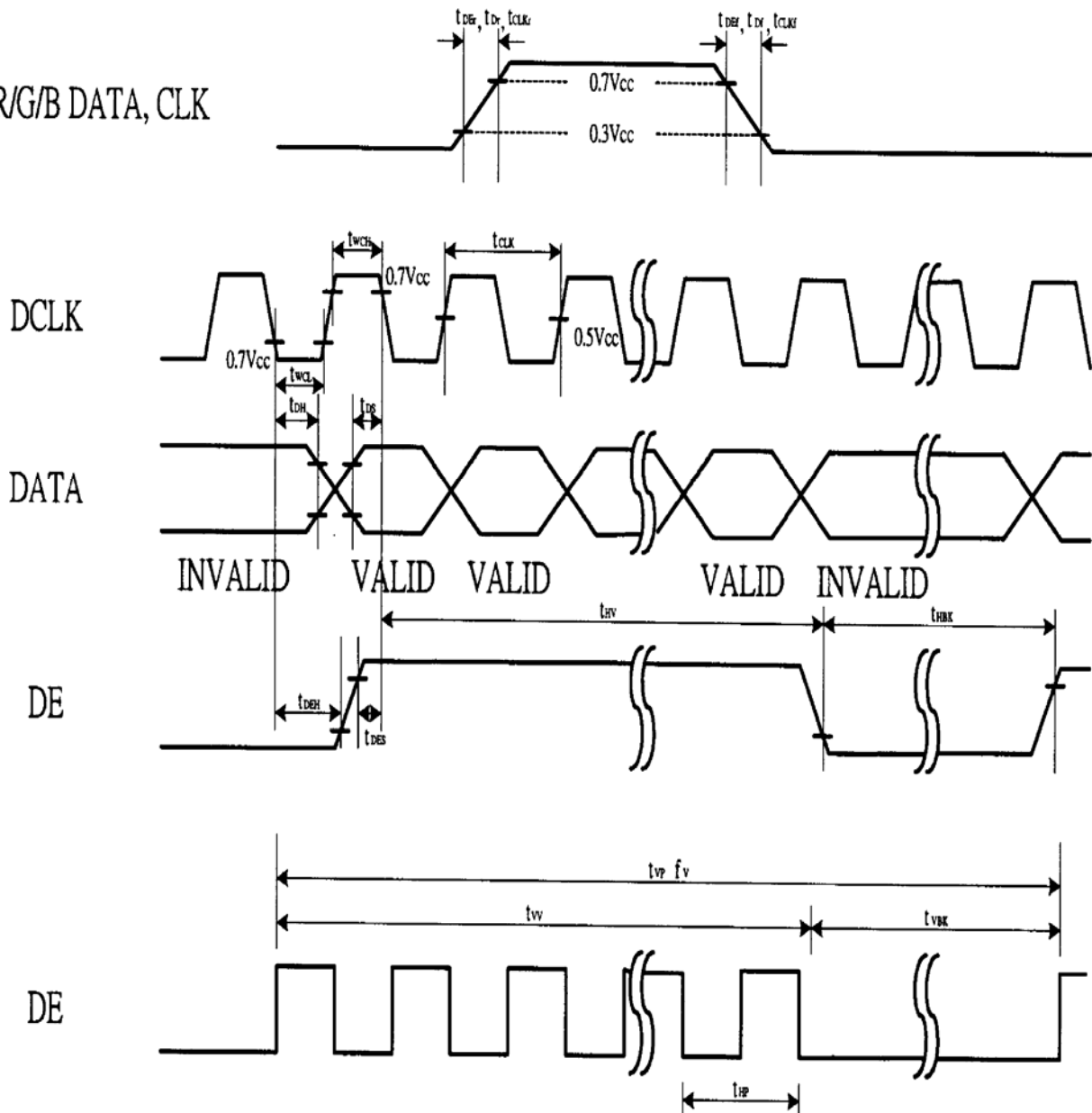
5. INPUT SIGNAL(DE ONLY MODE)

5.1 Timing Specification

		Item	SYMBOL	MIN.	TYP.	MAX.	UNIT	
LCD Input timing	DCLK	Dot clock	f_{CLK}	32	38.28	43	MHz	
		High level width	t_{WCH}	--	13	--	ns	
		Low level width	t_{WCL}	--	13	--	ns	
	DENA	Horizontal	Horizontal Period	t_{HP}	976	1016	1056	tCLK
			Horizontal Valid	t_{HV}	800	800	800	tCLK
			Horizontal Blank	t_{HBK}	176	216	256	tCLK
		Vertical	Frame	f_V	55	60	65	Hz
			Vertical Period	t_{VP}	625	628	631	t_H
			Vertical Valid	t_{VV}	600	600	600	t_H
	Data	Setup Time	t_{DS}	6	--	--	ns	
		Hold Time	t_{DH}	12	--	--	ns	
	DE	Setup Time	t_{DES}	6	--	--	ns	
		Hold Time	t_{DEH}	12	--	--	ns	

5.2 Timing Chart :

DE, R/G/B DATA, CLK



5.3 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
	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
BASIC	GREEN(63)	0	0	0	0	0	0	1	1	1	1	1	1	0	0	0	0	0	0
COLOR	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(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																			
	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(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																			
	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(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																			
	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

[Note]

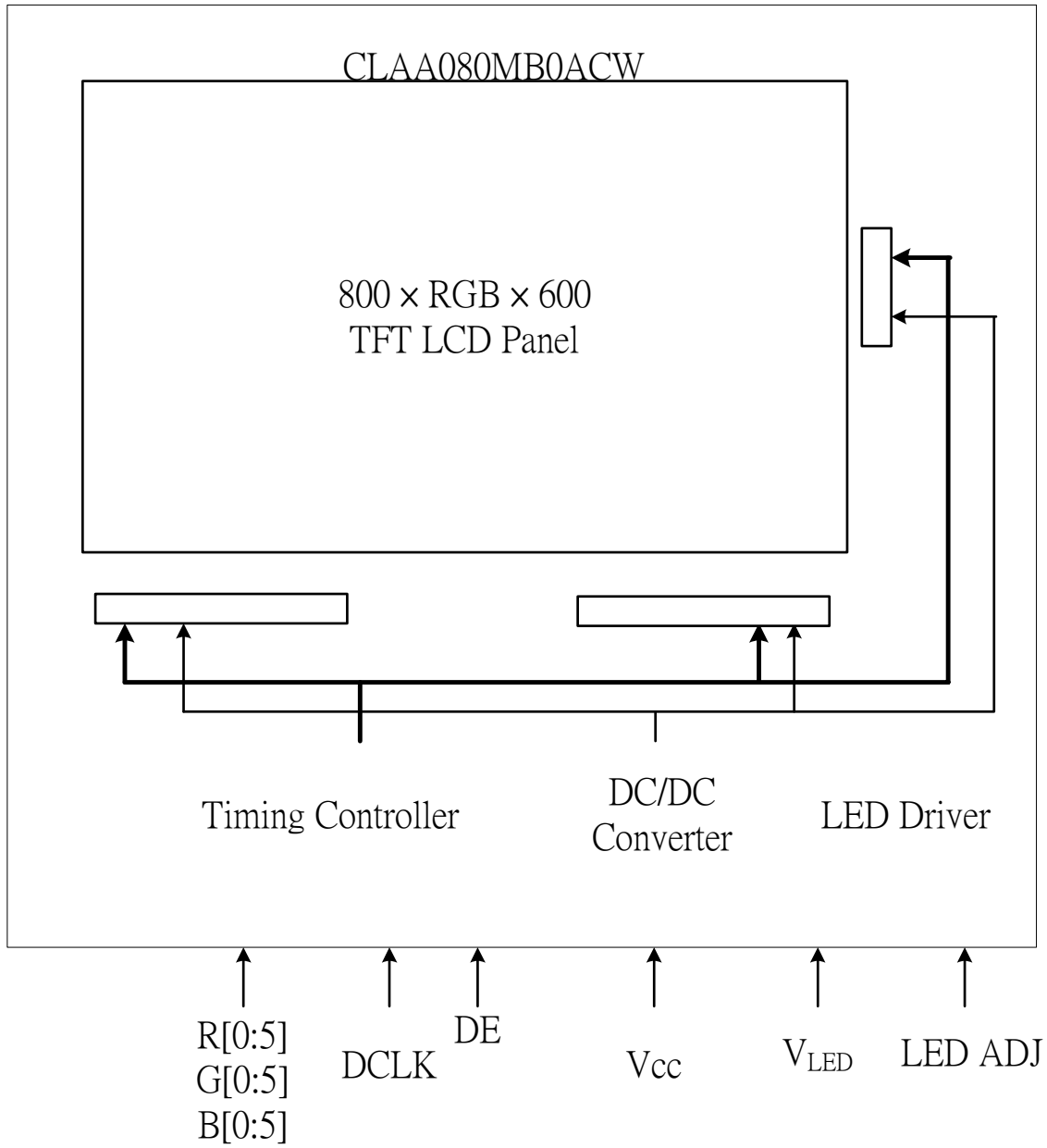
(1) Definition of Gray Scale

color(n) : n is series of Gray Scale

The more n value is, the bright Gray Scale.

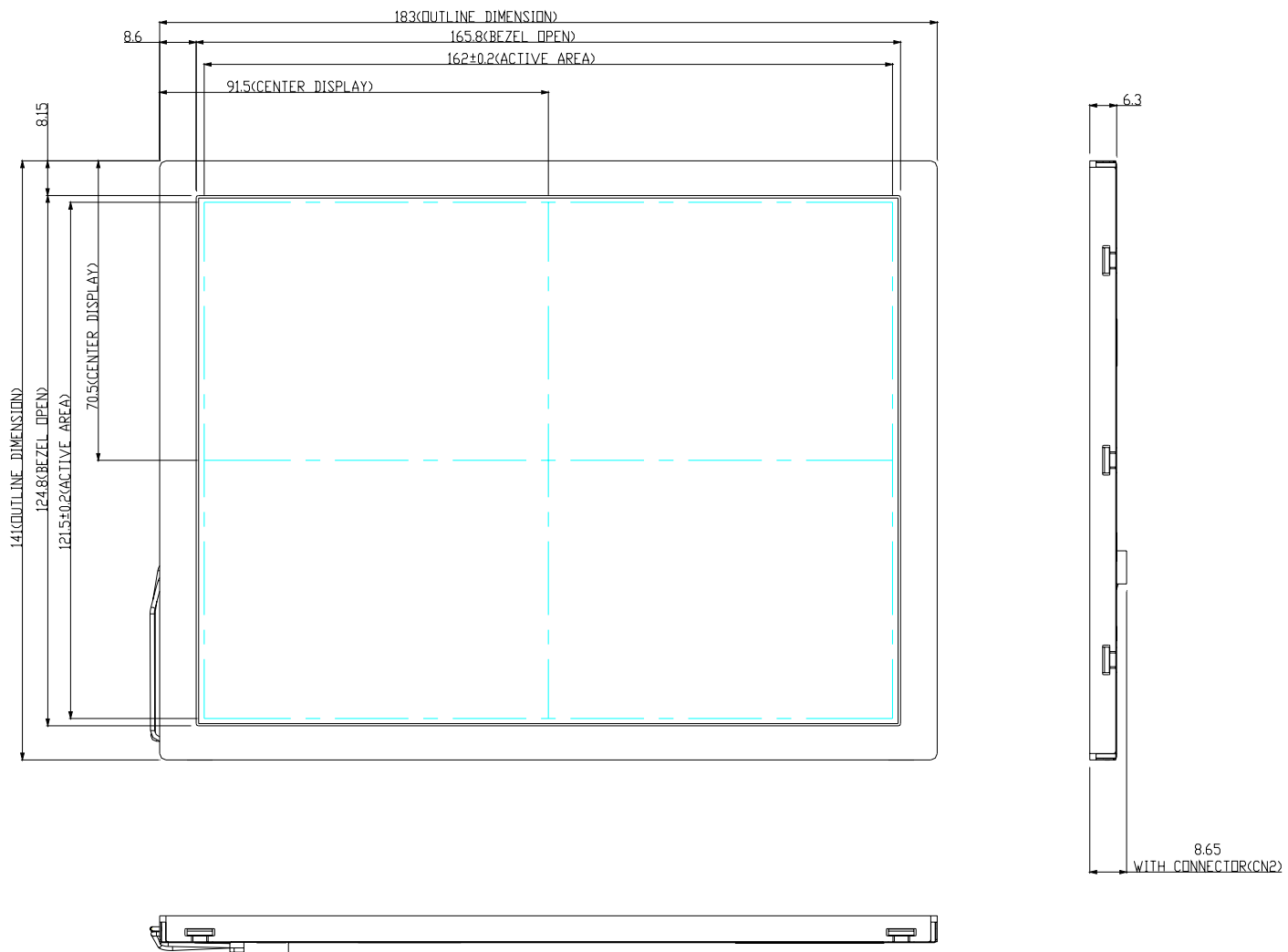
(2)Data:1-High,0-Low

6. BLOCK DIAGRAM

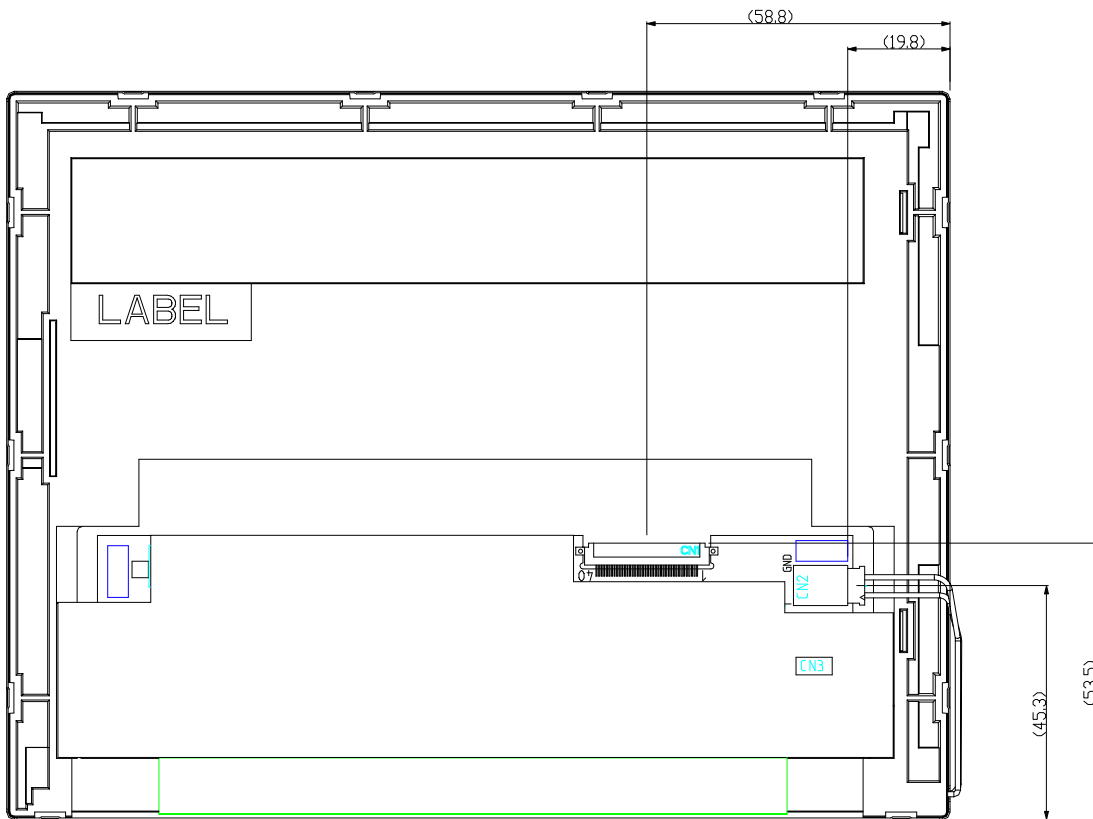


7. MECHANICAL DIMENSION

7.1 Front Side



7.2 Rear Side



NOTE:

1. GENERAL TOLERANCE: $\pm 0.3\text{mm}$
2. 6 O'CLOCK DIRECTION IS THE OPTIMUM VIEWING ANGLE.
3. CONNECTOR TYPE: STARCONN 089N40-000R00-G2 or CONN-TEK FR03-S40D-2-E3000
4. STIFFENER LENGTH OF FPC MUST BE 6.0mm MAX.

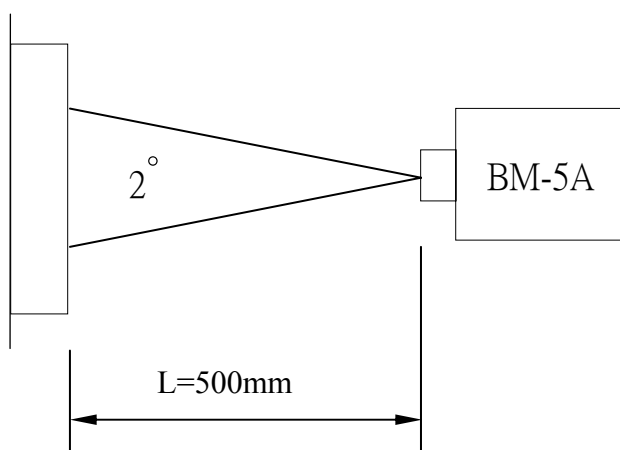
8. OPTICAL CHARACTERISTICS

Ta=25°C

ITEM	SYMBOL	CONDITION	MIN.	TYP.	MAX.	UNIT	Remarks
Contrast	CR	$\theta = \phi = 0^\circ$ Point-5	450	500	--	--	*1)
Luminance	Luminance (CEN)	$\theta = \phi = 0^\circ$	200	250	--	cd/m ²	*2)
	Luminance Uniformity	$\theta = \phi = 0^\circ$	70	80	--	%	*2)
Color saturation			--	50		%	
Response Time	tr+tf	$\theta = \phi = 0^\circ$	--	25	30	ms	*3) *5)
View angle	Horizontal	CR \geq 10 Point-5	130	140	--	°	*4)
	Vertical		110	120	--	°	*4)
Color Coordinate	White	Wx Wy	0.273 0.289	0.313 0.329	0.353 0.369	--	*1)*2)*3)
	Red	Rx Ry	0.577 0.301	0.607 0.331	0.637 0.361	--	
	Green	Gx Gy	0.295 0.565	0.325 0.595	0.355 0.625	--	
	Blue	Bx By	0.114 0.065	0.147 0.095	0.177 0.125	--	

Remarks :

*1) Measure condition : 25°C \pm 2°C , 60 \pm 10%RH , under 10 Lux in the dark room. BM-5A (TOPCON) , viewing angle 2° , VCC=3.3V , VDD=5V.



*2) Definition of contrast ratio :

Contrast Ratio (CR)= (White) Luminance of ON ÷ (Black) Luminance of OFF

*3) Definition of luminance :

Measure white luminance on the point 5 as figure8-1

Definition of Luminance Uniformity:

Measure white luminance on the point1~9 as figure8-1

$$\Delta L = [L(\text{Min})/L(\text{Max})] \times 100$$

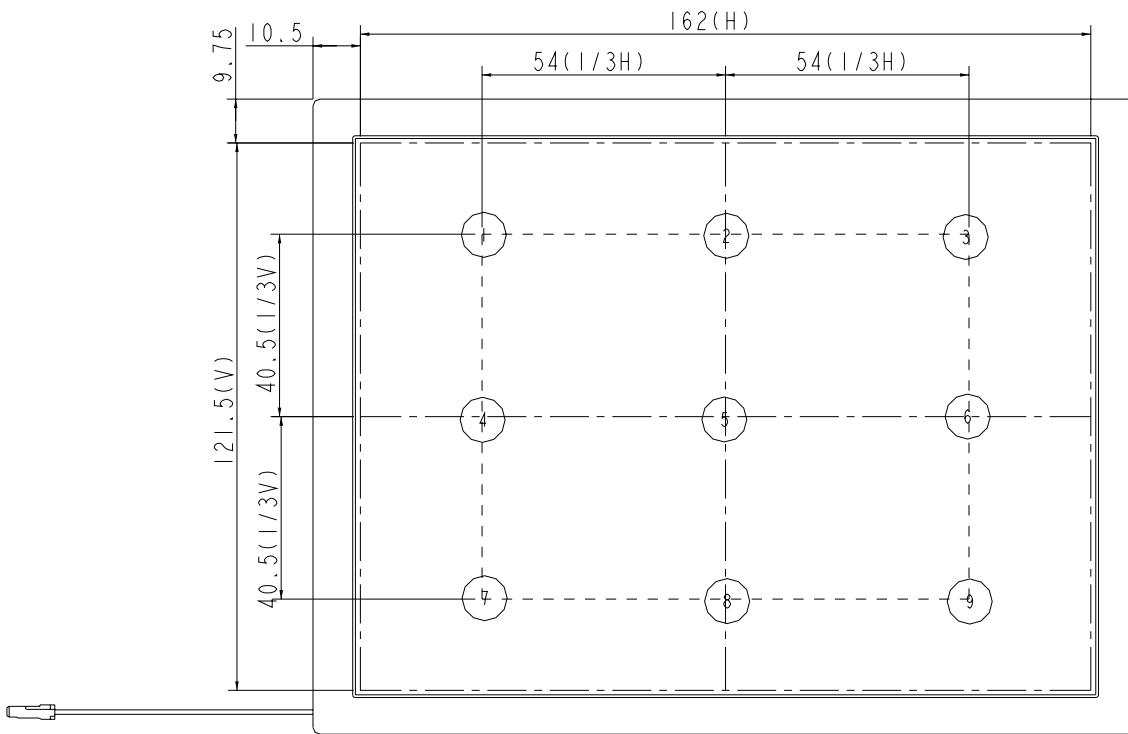


Fig8-1 Measuring point

*4) Definition of Viewing Angle(θ, ψ), refer to Fig8-2 as below :

These items are measured by EZ-CONTRAST(ELDIM) in the dark room. (no ambient light).

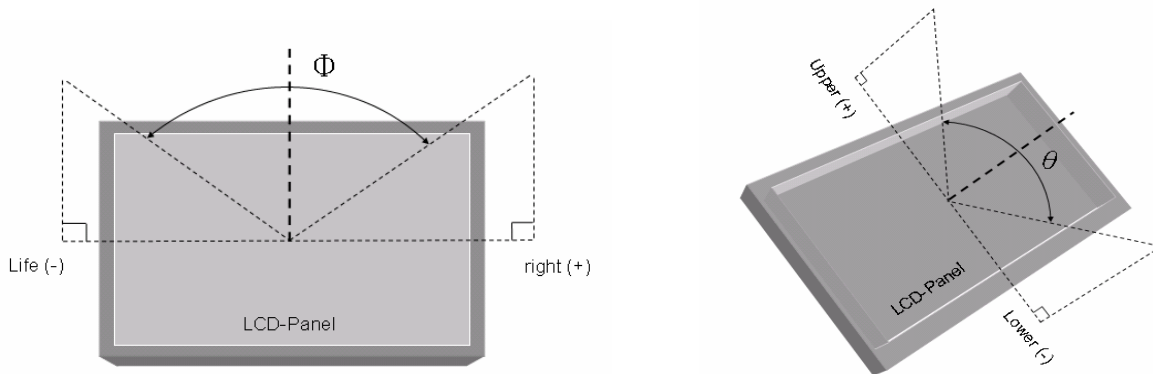


Fig8-2 Definition of Viewing Angle

*5) Definition of Response Time.(White-Black)

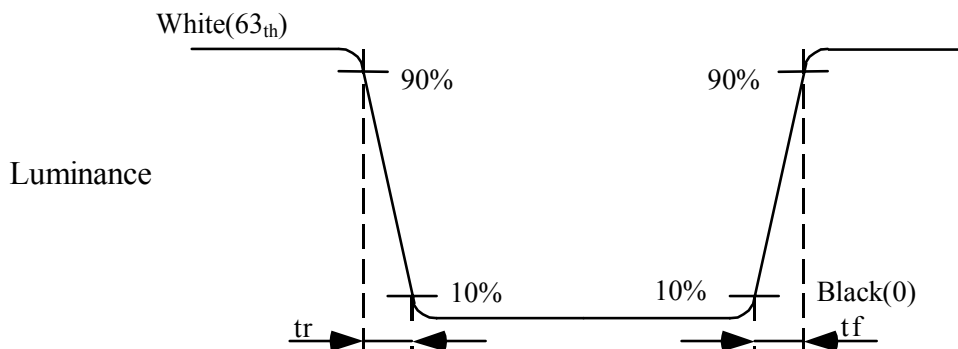


Fig8-3 Definition of Response Time(White-Black)

9. RELIABILITY TEST

9.1. Temperature and humidity

TEST ITEMS	CONDITIONS	REMARK
High Temperature Operation	70°C , 240Hrs	
High Temperature Storage	80°C , 240Hrs	
High Temperature High Humidity Operation	60°C , 90%RH , 240Hrs	No condensation
Low Temperature Operation	-30°C , 240Hrs	
Low Temperature Storage	-40°C , 240Hrs	
Thermal Shock	-30°C (0.5Hr) ~ 80°C(0.5Hr) 200 cycles	

9.2. Shock and Vibration

TEST ITEMS	CONDITIONS
Shock (Non-operation)	<ul style="list-style-type: none"> ● Shock level:980m/s²(equal to 100G) ● Waveform:half sinusoidal wave,6ms. ● Number of shocks:one shock input in each direction of three mutually perpendicular axes for a total of three shock inputs.
Vibration (Non-operation)	<ul style="list-style-type: none"> ● Frequency range:8~33.3Hz ● Stoke:1.3mm ● Vibration:sinusodial wave,perpendicularaxis(both x,z axis:2Hrs,y axis:4Hrs). ● Sweep:2.9G,33.3Hz-400Hz ● Cycle:15min

9.3.ESD experiments

ITEM	TESTING CONDITIONS	REMARK
E S D	150pF , 330Ω , ±8KV&±15KV air & contact test	*1)
	200pF , 0Ω , ±250V contact test	*2)

Remarks :

*1)LCD glass and metal bezel ◦

*2)IF connector pins ◦

9.4. Judgment standard

The Judgment of the above test should be made as follow:

Pass:Normal display image with no obvious non-uniformity and no line defect.Partial trasformation of the module parts should be ignored.

Fail:No display image,obvious non-uniformity,or line defect.