AZ Displays, Inc.

1. MECHANICAL DATA

(1) Product No.	AGM6420A	
(2) Module Size	210.6 (W)mm x 89.9 (H)mm x MAX2.8 (D)mm	
(3) Dot Size	0.24 (W)mm x 0.30 (H)mm	
(4) Dot Pitch	0.27 (W)mm x 0.33 (H)mm	
(5) Number of Dots	640 (W) x 200 (H)Dots	
(6) Duty	1/200	
(7) LCD Display Mode	FSTN: Black and White(Normal White/Positive Image)	
(8) Viewing Direction	☐ 6 O'clock	☐ 12 O'clock ☐____O'clock
(9) Weight	101.5 g	

2. ABSOLUTE MAXIMUM RATINGS

(1) ELECTRICAL ABSOLUTE RATINGS

ITEM	SYMBOL	MIN	MAX	UNIT	COMMENT
Power Supply for Logic	VDD−VSS	−0.3	6.5	V	
Power Supply for LCM	VDD−VEE	0	30	V	
Static Electricity	−	−	−	−	Note 1

Note 1 LCM should be grounded during handling

(2) ENVIRONMENTAL ABSOLUTE MAXIMUM RATINGS

ITEM	OPERATING		STORAGE	
	MIN.	MAX.	MIN.	MAX.
Ambient Temperature	0	50	−20	70
Humidity (Without condensation)	Note 1		Note 2	

Note 1 Ta ≦ 50°C : 85%RH max
Ta > 50°C : Absolute humidity must be lower than the humidity of 85%RH at 50°C

Note 2 Ta at −20°C will be < 48hrs, at 70°C will be < 120hrs

3. ELECTRICAL CHARACTERISTICS

ITEM	SYMBOL	CONDITION		MIN.	TYP.	MAX.	UNIT
Logic Circuit Power Supply	VDD−VSS	−		4.75	5.0	5.25	V
LCD Driver Power Supply	VDD−VEE	VDD = 5V 1/13 Bias	0°C	20.9	21.7	22.5	V
			25°C	19.2	20.2	21.0	
			50°C	17.4	18.4	19.2	
Input Voltage	VIH	H level		0.8VDD	−	VDD	V
	VIL	L level		GND	−	0.2VDD	V
Supply Current for Logic	IDD	VDD = 5.0V		−	−	6.0	mA
Supply Current for LCD	IEE	VDD−VEE=20.2V		−	−	5.0	mA

4. OPTICAL CHARACTERISTICS

AT Vop

ITEM / MODE		Cr(Contrast Ratio)		θ(Viewing Angle)		φ(Viewing Angle)	
		25℃		25℃		25℃	
		MIN.	TYP.	MIN.	TYP.	MIN.	TYP.
R	J	4	8	–	50	–	40
NOTE		NOTE6		NOTE5			

AT ø=0° θ=0°

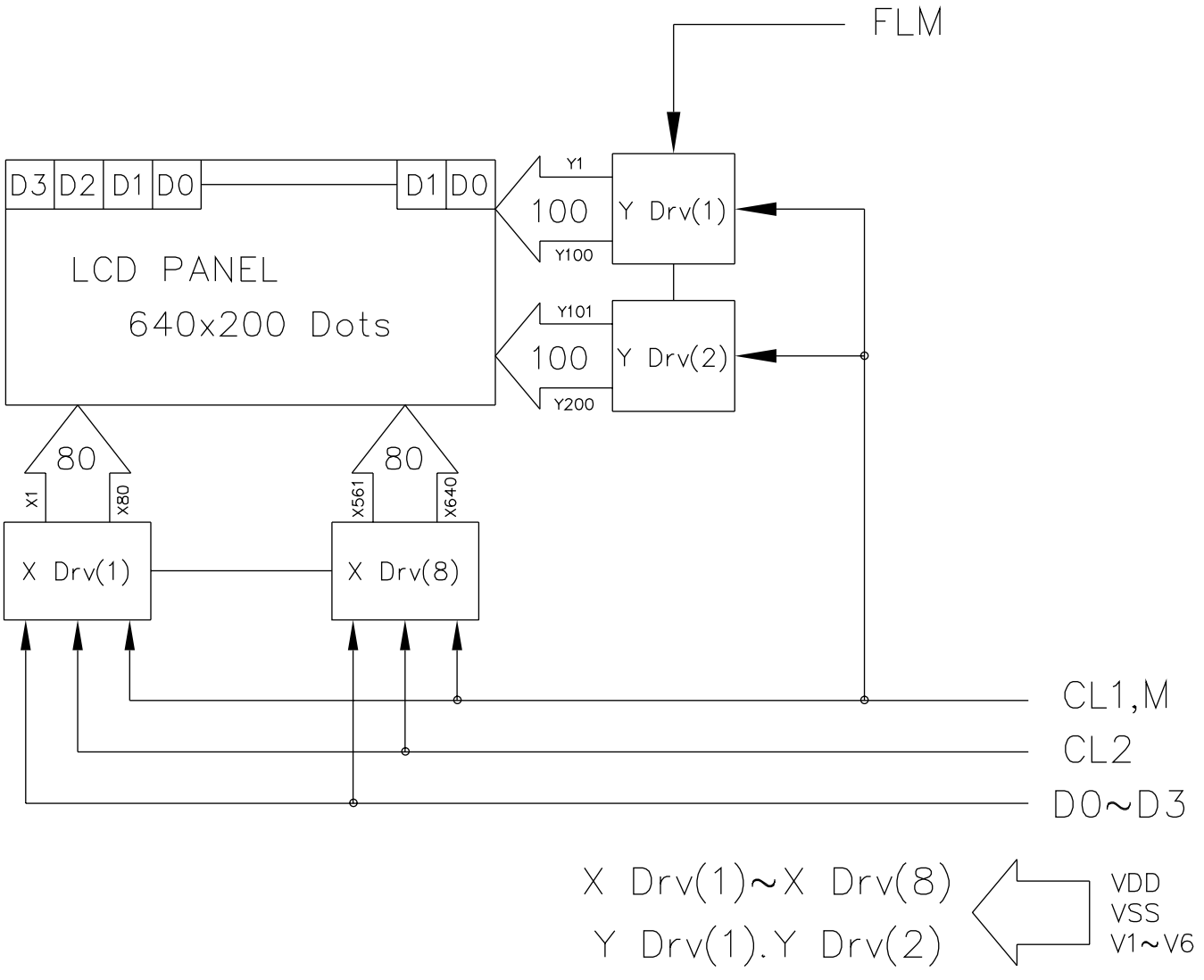
ITEM	SYMBOL	CONDITION	MIN.	TYP.	MAX.	UNIT	NOTE
Response Time (rise)	Tr	0℃	–	–	–	ms	NOTE 2
		25℃	–	130	260		
		50℃	–	–	–		
Response Time (fall)	Tr	0℃	–	–	–	ms	NOTE 2
		25℃	–	220	440		
		50℃	–	–	–		

NOTE :

R: REFLECTIVE

J: NORMALLY WHITE

5. BLOCK DIAGRAM

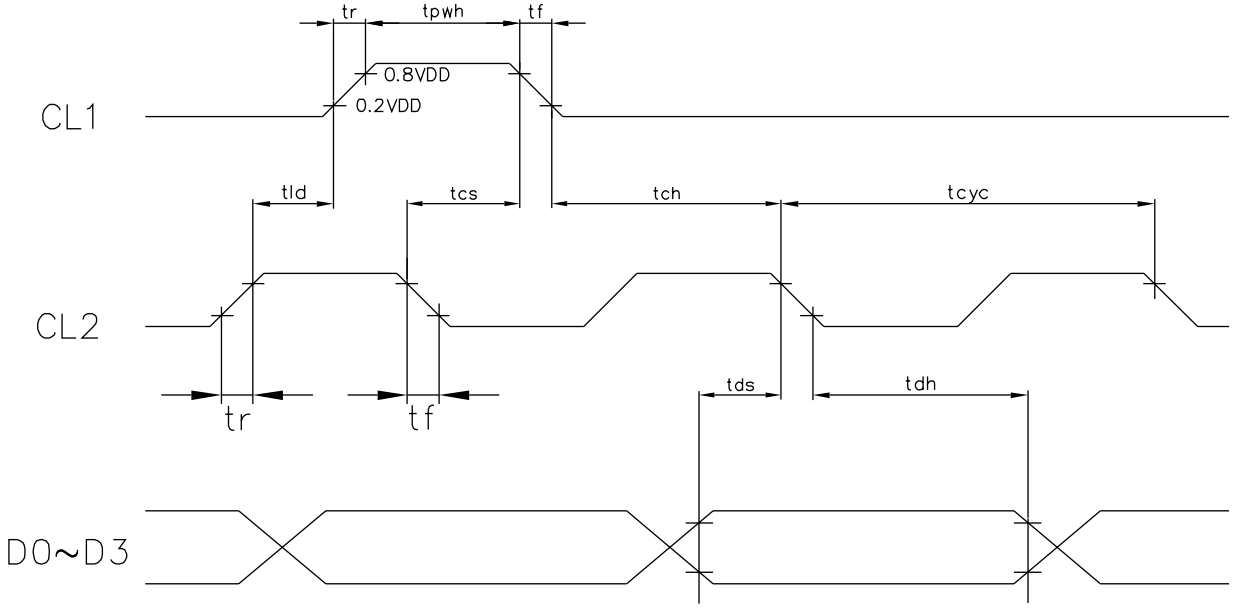


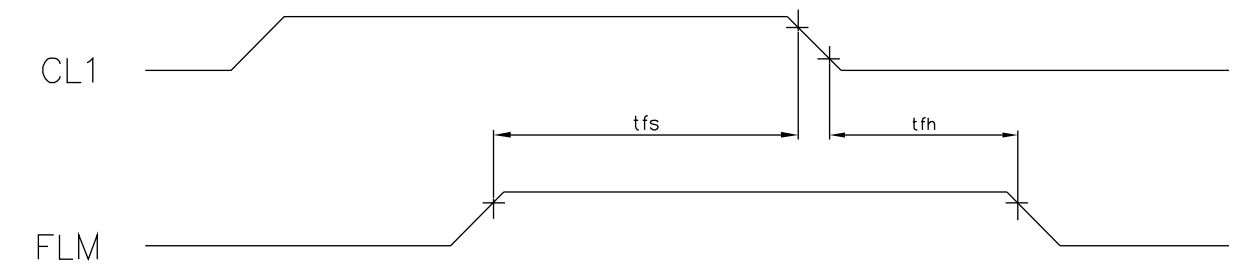
6. INTERNAL PIN CONNECTION

Pin No.	Symbol	Function	Level
1	VDD	Power supply for logic (+5V)	
2	VSS	Power supply (GND)	
3	FLM	First line marker	H
4	CL1	Display data latch clock	H → L
5	CL2	Display data shift clock	H → L
6	M	Control signal for AC driving	H/L
7	D0	Display data	H/L
8	D1	Display data	H/L
9	D2	Display data	H/L
10	D3	Display data	H/L
11	V1	Power supply for LCD(COM,SEG selected level)	
12	V2	Power supply for LCD(COM non-selected level)	
13	V3	Power supply for LCD(SEG non-selected level)	
14	V4	Power supply for LCD(SEG non-selected level)	
15	V5	Power supply for LCD(COM non-selected level)	
16	V6	Power supply for LCD(COM,SEG selected level)	

7. TIMING CHARACTERISTICS

Item	Symbol	Min.	Typ.	Max.	Unit
Clock cycle time	tcyc	160	–	–	ns
High-level pulse width	tpwh	125	–	–	ns
Latch delay time	tld	80	–	–	ns
Clock setup time	tcs	80	–	–	ns
Clock hold time	tch	120	–	–	ns
Rise and fall time	tr,tf	–	–	30	ns
Data setup time	tds	60	–	–	ns
Data hold time	tdh	60	–	–	ns
FLM setup time	tfs	100	–	–	ns
FLM hold time	tfh	100	–	–	ns





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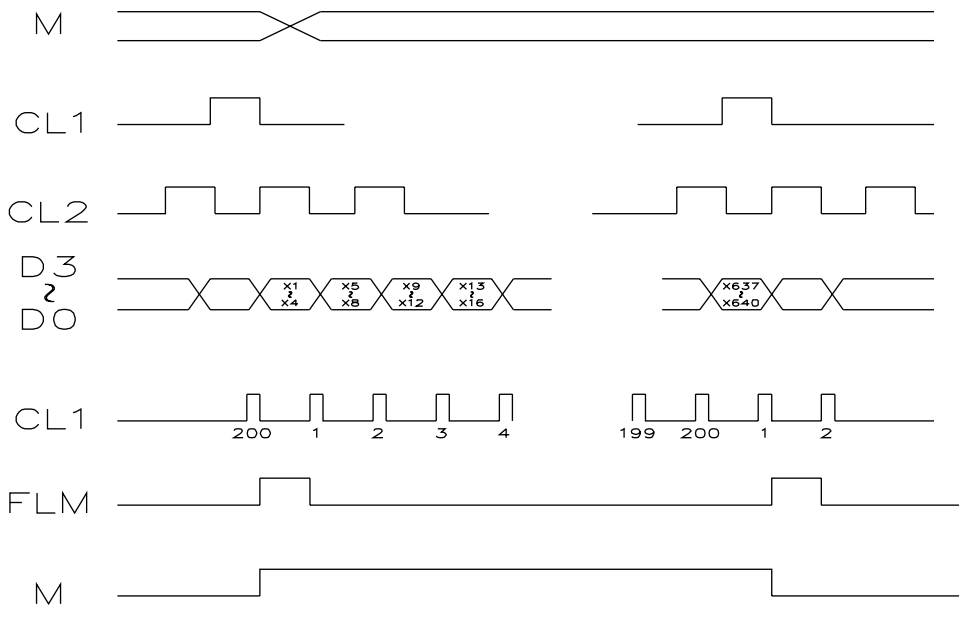
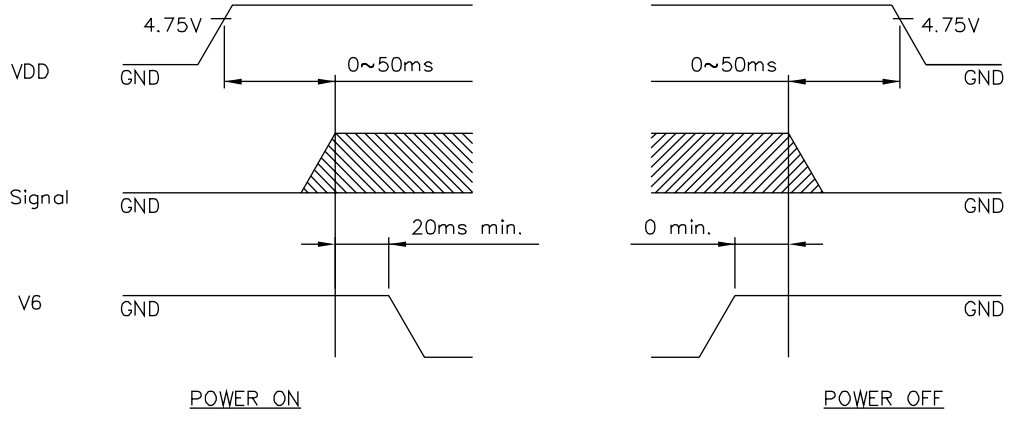
7－1. INTERFACE TIMING CHART



7－2. POWER ON/OFF TIMING



1. Power on sequence:

   The power on/off sequence is very important for the LCM. Please follow the power on/off sequence as stated:

   power on: VDD, VSS -> Signal -> V6 -> V1~V5

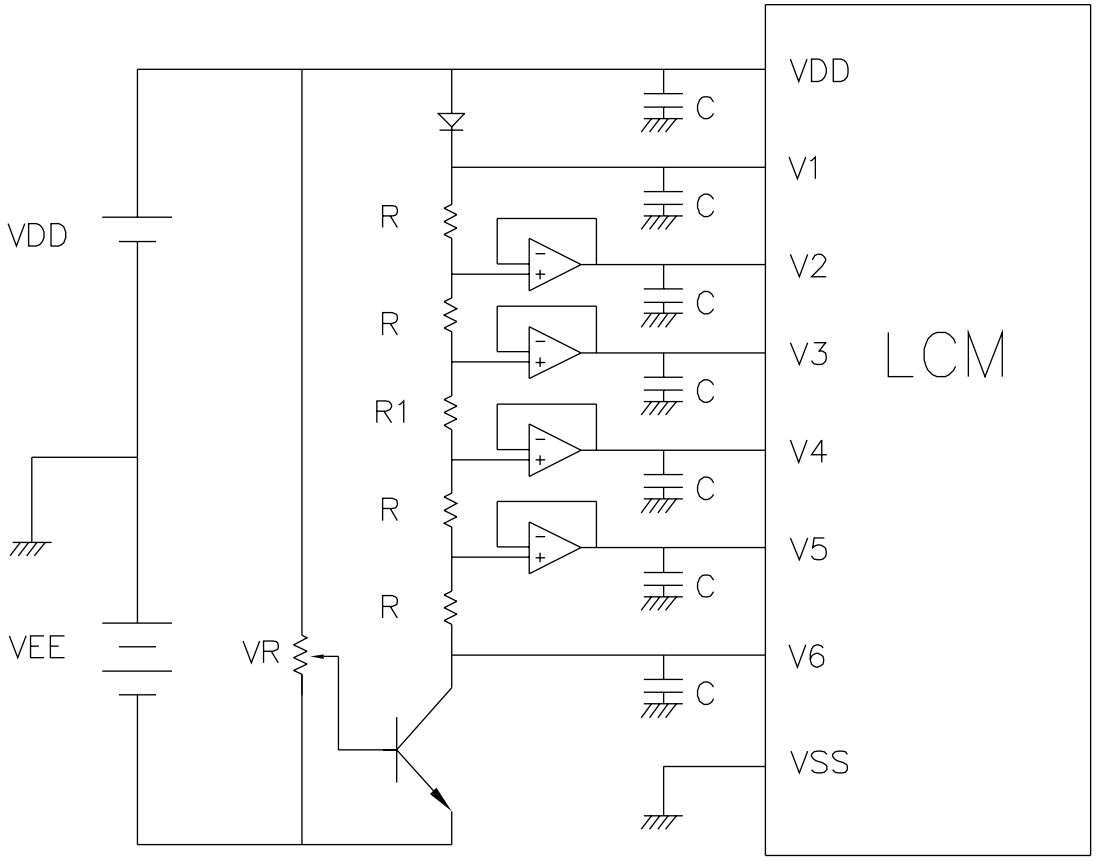
   power off: V1~V5 -> V6 -> Signal -> VSS, VDD

   If this proper sequence is not followed, the drivers of the LCM may become damaged.

2. LCM connection

   It is suggested that VSS never be shorted with V4~V6. If they are shorted, the drivers of the LCM may become damaged.

8. POWER SUPPLY



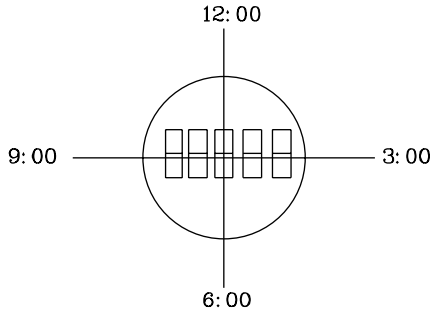
R1=9R~11R

C=3.3uF

VR=10K~20K

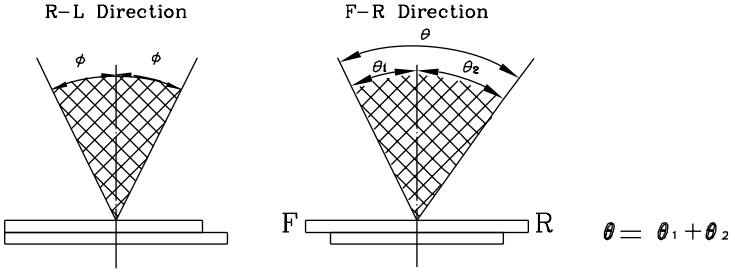
(NOTE 4)

Definition of Viewing Direction



(NOTE 5)

Definition of Viewing Angle



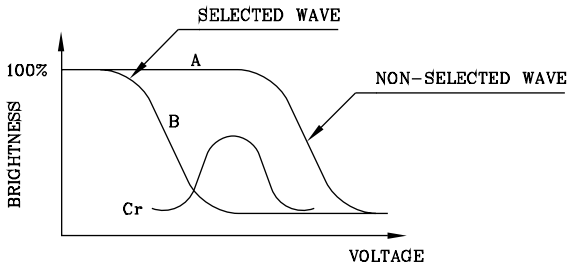
$\theta = \theta_1 + \theta_2$

*Conditions

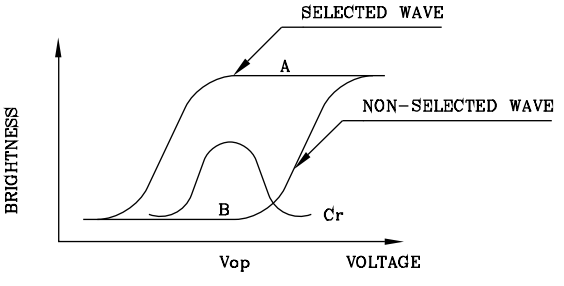
Operating Voltage : Vop
Frame Frequency : 70Hz
Appling Waveform : 1/N duty 1/a bias
Contrast Ratio : larger than 2

(NOTE 6)

Definition of Contrast Ratio (Cr)



(positive type)

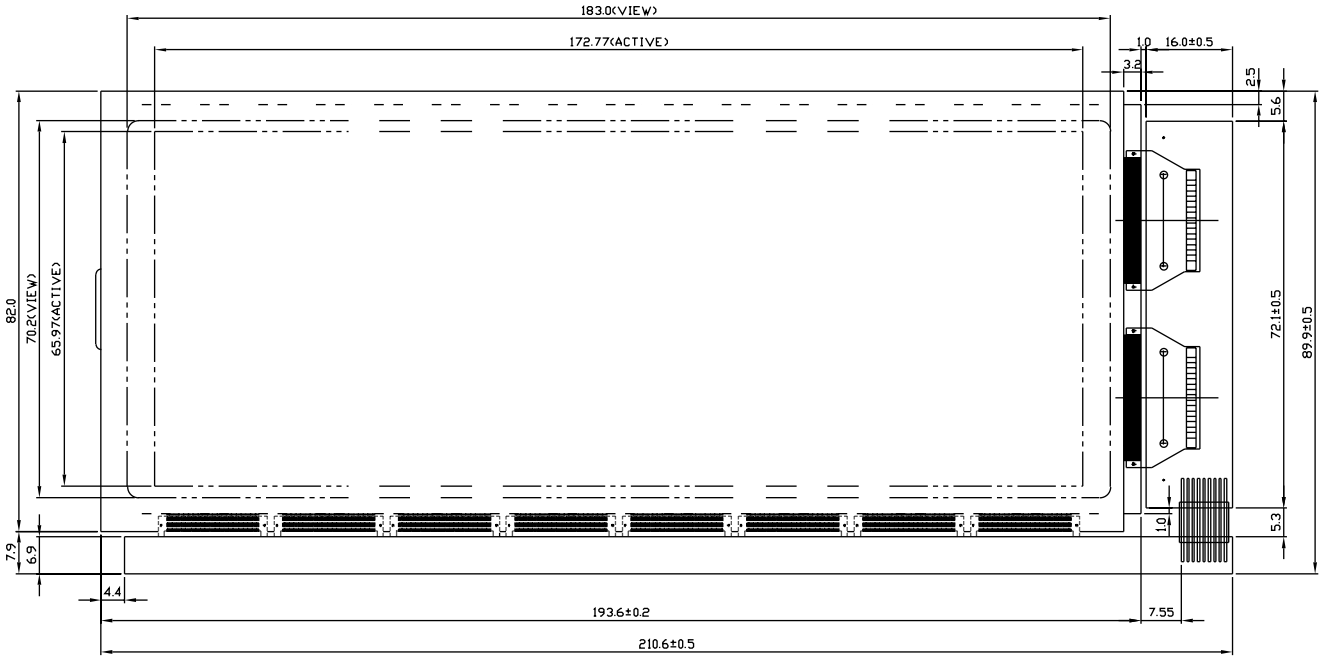


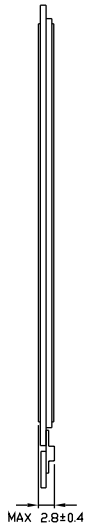
(negative type)

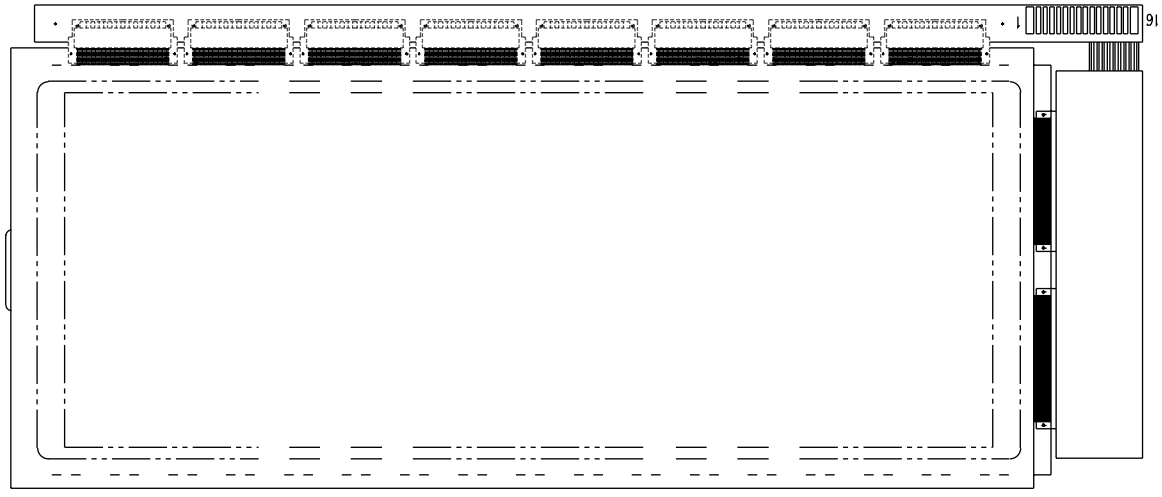
Contrast Ratio : Cr=A/B

*Conditions

Viewing Angle : 0
Frame Frequency : 70Hz
Appling Waveform : 1/N duty 1/a bias







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5	CL2	Display data shift clock	H → L
6	M	Control signal for AC driving	H/L
7	DO	Display data	H/L
8	D1	Display data	H/L
9	D2	Display data	H/L
10	D3	Display data	H/L
11	V1	Power supply for LCD(COM,SEG selected level)	
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15	V5	Power supply for LCD(COM non-selected level)	
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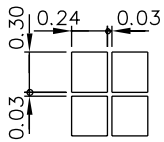

640x200 DOTS

	AGM6420A		AZ DISPLAYS, INC.		
	NAME	DATE	TITLE		
APPROVE					
CHECK			DWG-NO	TA-R023X	Rev.A
DESIGN			THIRD ANGLE PROJECT	UNIT : mm	
DRAW	MAY PING	84.08.07		SCALE : 2/3	