AZ Displays, Inc.

1. MECHANICAL DATA

(1) Product No.	AGM4832B
(2) Module Size	148.2 (W)mm x 101.5 (H)mm x MAX 6.0 (D)mm
(3) Dot Size	0.22 (W)mm x 0.22 (H)mm
(4) Dot Pitch	0.24 (W)mm x 0.24 (H)mm
(5) Number of Dots	480 (W) x 320 (H)Dots
(6) Duty	1/320
(7) LCD Display Mode	FSTN: Black and White (Normally White/Positive Image)
(8) Viewing direction	☐ 6 O'clock ☐ 12 O'clock ☐ ____ O'clock
(9) Weight	56g

2. ABSOLUTE MAXIMUM RATINGS

(1) ELECTRICAL ABSOLUTE RATINGS

VSS=0V

ITEM	SYMBOL	MIN	MAX	UNIT	COMMENT
Power Supply for Logic	VDD−VSS	−0.3	6.5	V	
Input Voltage	VI	−0.3	VDD	V	
Power Supply for LCD	VEE−VSS	−0.3	38.0	V	
Static Electricity	−	−	−	−	NOTE 1

NOTE 1 LCM should be grounded during handling

(2) ENVIRONMENTAL ABSOLUTE MAXIMUM RATINGS

ITEM	NORMAL TEMP.			
	OPERATING		STORAGE	
	MIN.	MAX.	MIN.	MAX.
Ambient Temperature	0	50	−20	70
Humidity (Without Condensation)	Note 1,3		Note 2,3	

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

NOTE 3 Background color changes slightly depending on ambient temperature. This phenomenon is reversible.

3. ELECTRICAL CHARACTERISTICS

VDD=5V±10%

ITEM	SYMBOL	CONDITION		MIN.	TYP.	MAX.	UNIT
Input Voltage	VIH	H level		0.8VDD	–	VDD	V
	VIO	L level		0	–	0.2VDD	V
Recommeded LC Driving Voltage	VEE	1/320 Duty 1/17.6 Bias	0°C	–	28.8	30.0	V
			25°C	25.9	26.8	27.5	
			50°C	23.5	24.3	–	
Power Supply Current	IDD	VDD = 5.0V		–	2.0	–	mA
	IEE	VEE = 27.0V		–	3.0	–	mA

4. OPTICAL CHARACTERISTICS

AT Vop

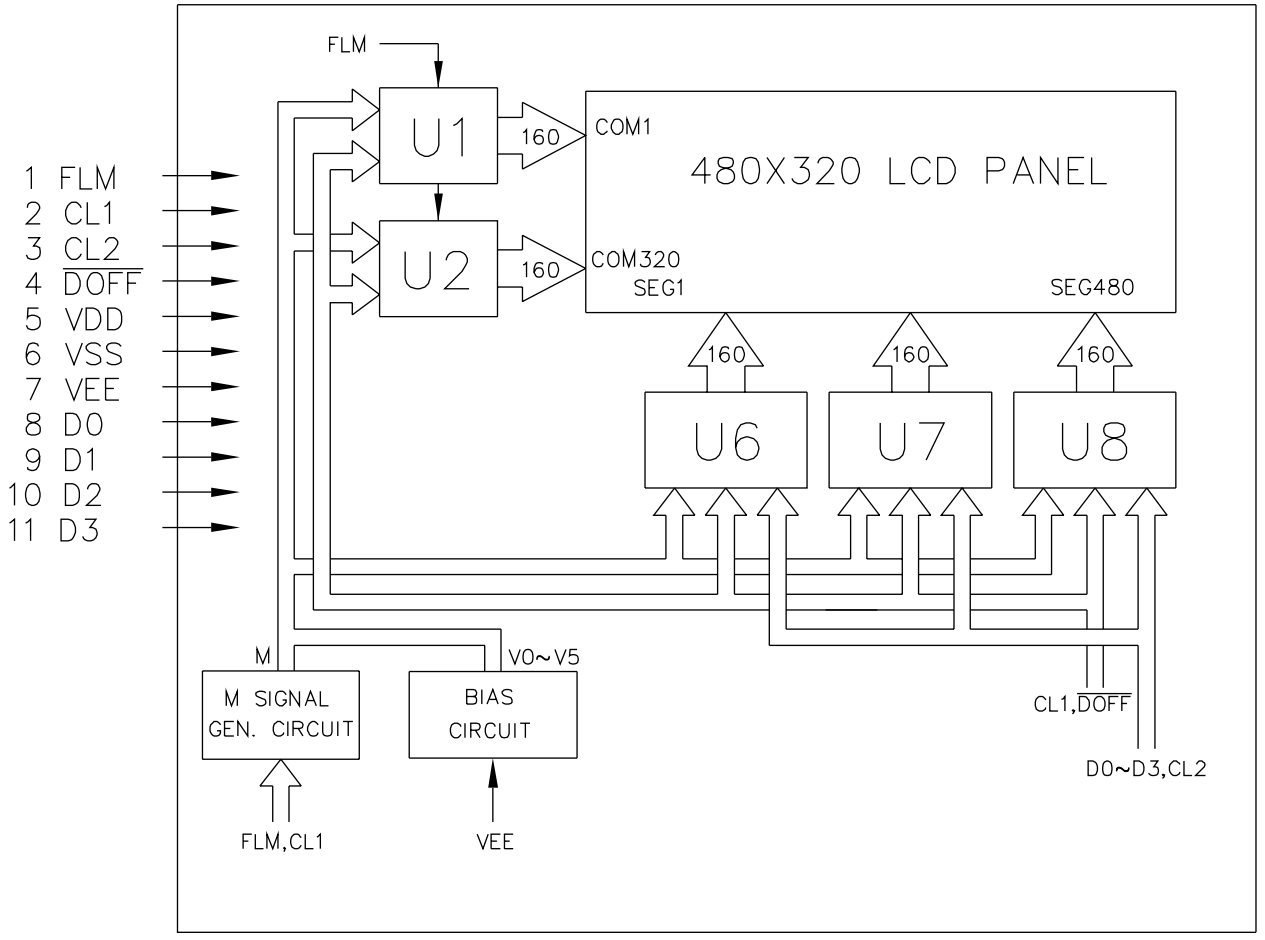
ITEM / MODE		Cr(Contrast Ratio)		θ(Viewing Angle)		φ(Viewing Angle)	
		25℃		25℃		25℃	
		MIN.	TYP.	MIN.	TYP.	MIN.	TYP.
R	J	3	5.5	30	50	20	30
NOTE		NOTE6		NOTE5			

AT ϕ=0° θ=0°

ITEM	SYMBOL	CONDITION	MIN.	TYP.	MAX.	UNIT	NOTE
Response Time (rise)	Tr	0℃	–	500	1000	ms	NOTE 2
		25℃	–	150	300		
		50℃	–	85	170		
Response Time (fall)	Tf	0℃	–	700	1400	ms	NOTE 2
		25℃	–	280	500		
		50℃	–	120	240		

note:
R: REFLECTIVE
J: NORMALLY WHITE

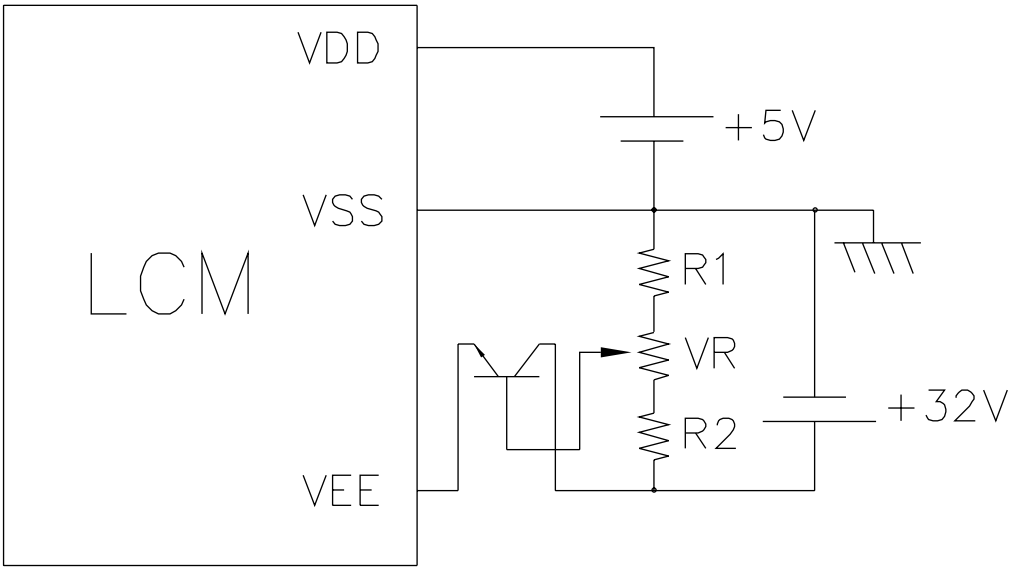
5. BLOCK DIAGRAM



6. INTERNAL PIN CONNECTION

Pin No.	Symbol	Level	Function	
1	FLM	H/L	FRAME SIGNAL	
2	CL1	H/L	DATA LATCH SIGNAL	
3	CL2	H/L	DATA SHIFT SIGNAL	
4	$\overline{DOFF}$	H/L	DISPLAY OFF CONTROL	
5	VDD	–	+5V	POWER SUPPLY
6	VSS	–	0V	
7	VEE	–	LCD DRIVING VOLTAGE	
8	D0	H/L	DATA BUS LINE	
9	D1	H/L		
10	D2	H/L		
11	D3	H/L		

7. POWER SUPPLY



R1+VR+R2=10~20KΩ

8. TIMING CHARACTERISTICS

8-1. INTERFACE TIMING

VDD=4.5~5.5V

Item	Symbol	Test condition	Min.	Typ.	Max.	Unit
Clock Cycle	tC	Fig.a	125	–	–	ns
SCP Pulse Width	tSWH,tSWL	Fig.a	50	–	–	ns
Data Set Up Time	tDSU	Fig.a , Fig.b	80	–	–	ns
Data Hold Time	tDHD	Fig.a , Fig.b	50	–	–	ns
SCP Rise/Fall Time	tr,tf	Fig.a , Fig.b	–	–	50	ns
LP Rise Time	tLRP	Fig.a	50	–	–	ns
LP Fall Time	tLFP	Fig.a	50	–	–	ns
LP Pulse Width	tLW	Fig.a	45	–	–	ns
SCP To LP Delay Time	tSL	Fig.a	40	–	–	ns
LP To SCP Delay Time	tLS	Fig.a	40	–	–	ns
LP "H" Pulse Width	tCWH	Fig.b	30	–	–	ns
LP "L" Pluse Width	tCWL	Fig.b	195	–	–	ns

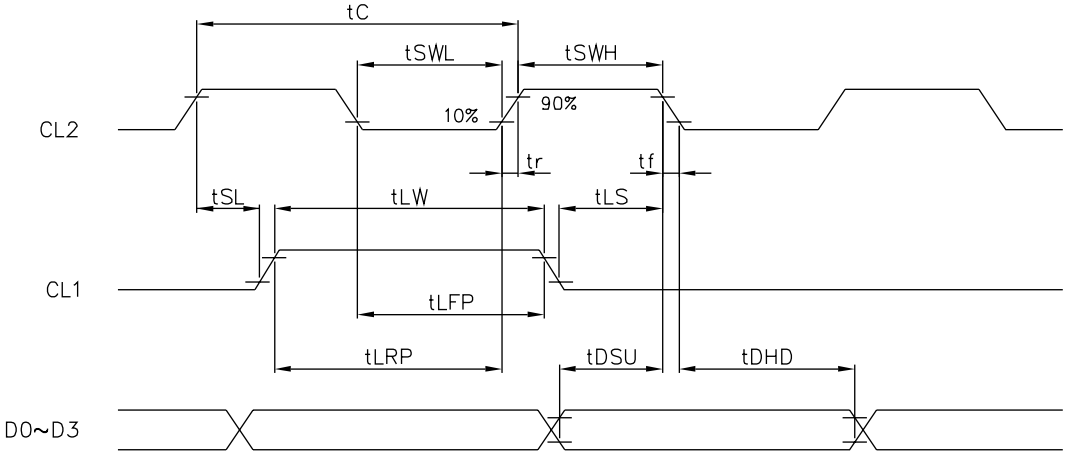


Fig . a Interface timing (SEGMENT)

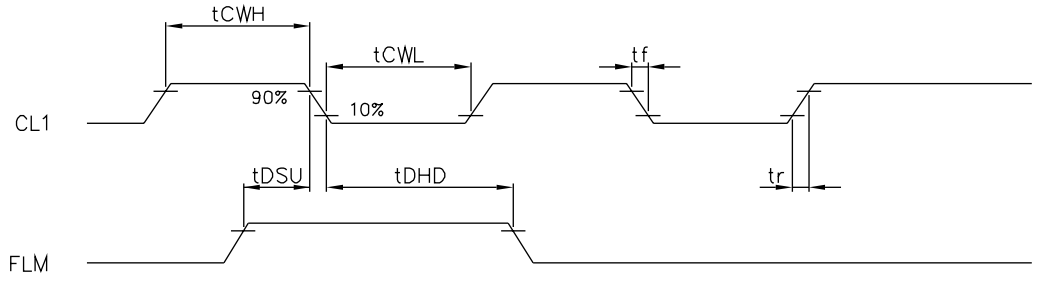
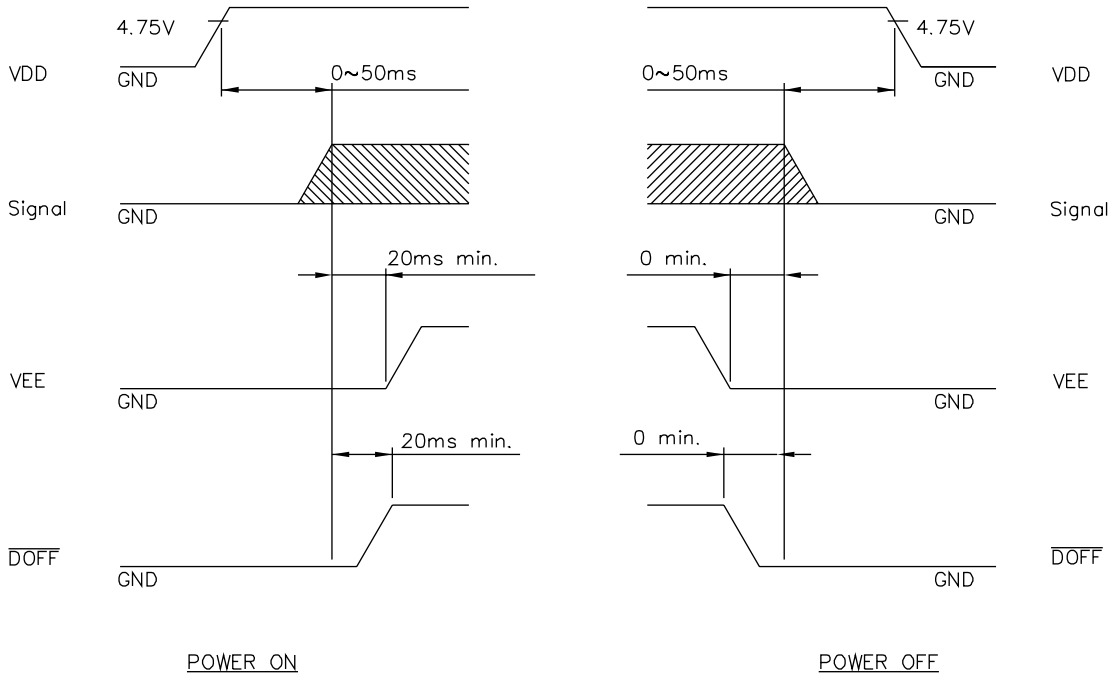


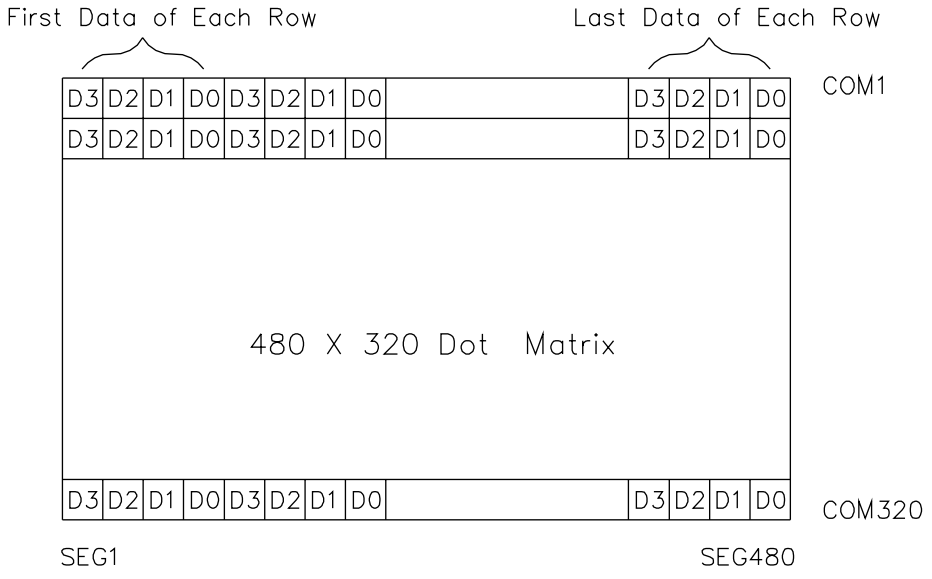
Fig . b Interface timing (COMMON)

8-2 POWER ON/OFF TIMING



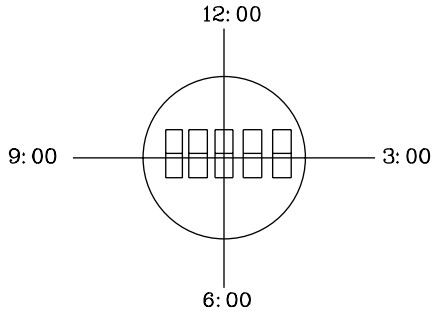
Missing pixels may occur when the LCM is driven beyond above power interface timing sequence.

9. DISPLAY PATTERN



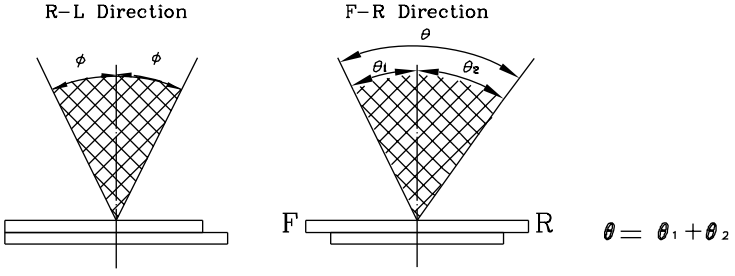
(NOTE 4)

Definition of Viewing Direction



(NOTE 5)

Definition of Viewing Angle



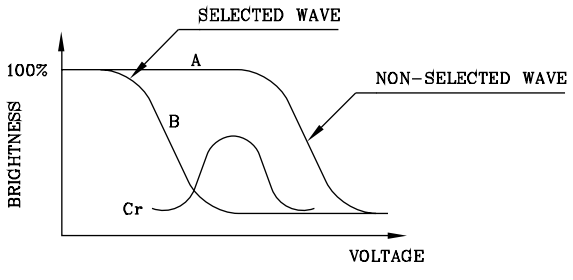
$\theta = \theta_1 + \theta_2$

*Conditions

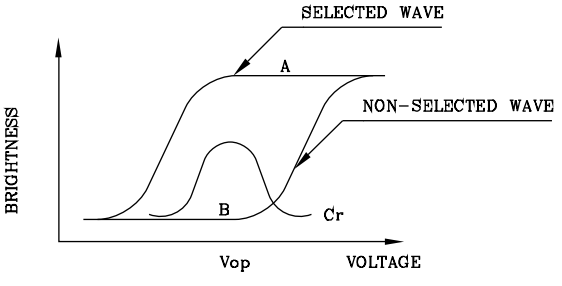
Operating Voltage : Vop
Frame Frequency : 70Hz
Appling Waveform : 1/N duty 1/a bias
Contrast Ratio : larger than 2

(NOTE 6)

Definition of Contrast Ratio (Cr)



(positive type)

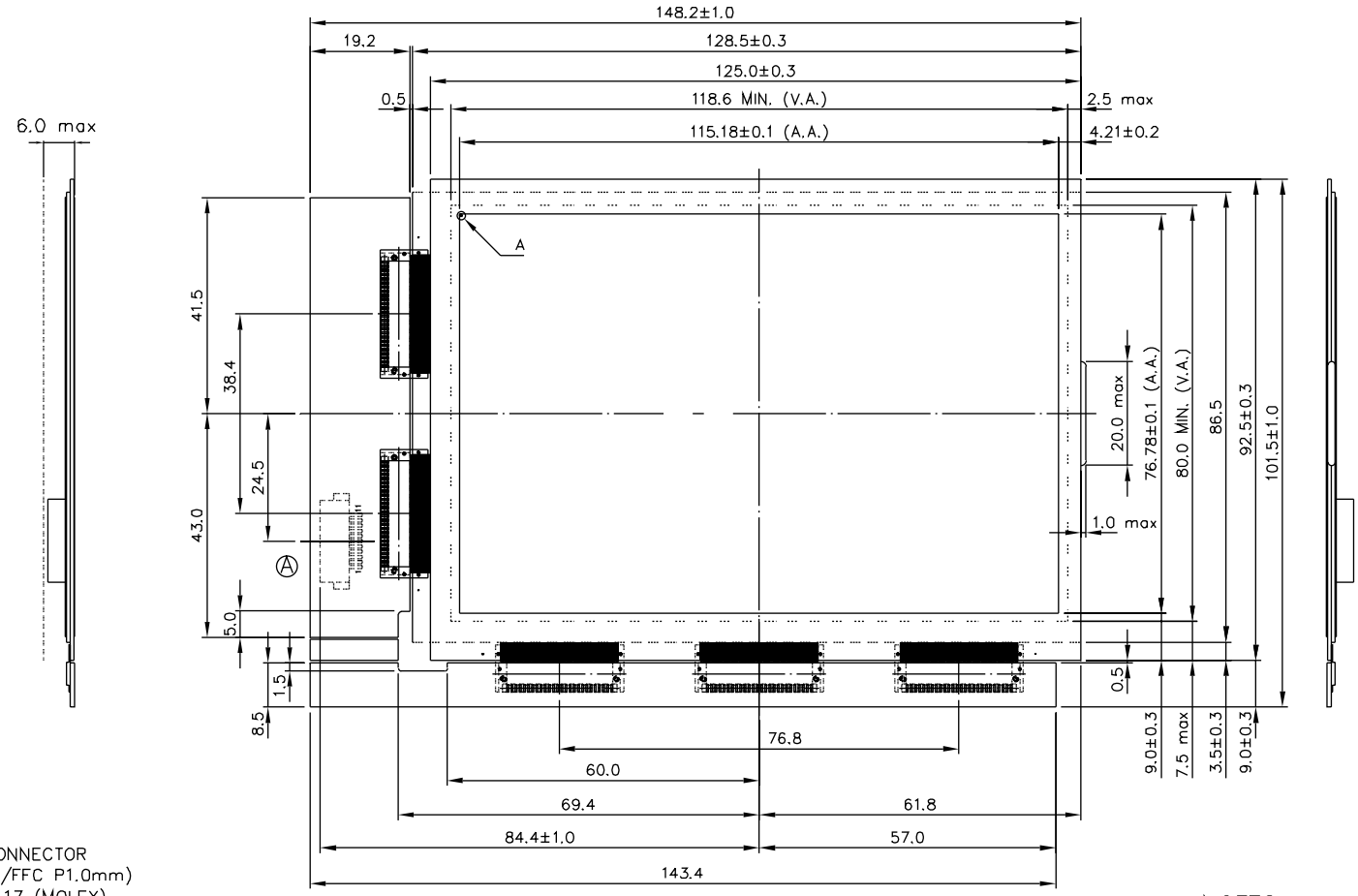


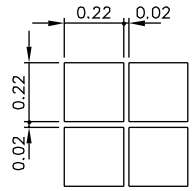
(negative type)

Contrast Ratio : Cr=A/B

*Conditions

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





480 X 320 Dots

A DETAIL

Ⓐ INTERFACE CONNECTOR
(11 pins, FPC/FFC P1.0mm)
SD-52207-1117 (MOLEX)

Pin No.	Symbol	Description
1	FLM	Frame Signal
2	CL1	Data Latch Signal
3	CL2	Data Shift Signal
4	$\overline{DOFF}$	Display OFF Control
5	VDD	Power Supply (+5V)
6	VSS	Power Supply (GND)
7	VEE	LCD Driving Voltage
8	D0	Data Bus
9	D1	
10	D2	
11	D3	

NOTES:

1. RESOLUTION : 480 x 320 Dots
2. CONTROLLER : Without
3. DC/DC : Without
4. General Tolerance : ±0.5mm

	AGM4832B		AZ DISPLAYS, INC.		
	NAME	DATE			
APPROVE			TITLE		
CHECK			DWG-NO	TA-X054X	Rev.A
DESIGN			THIRD ANGLE PROJECT	UNIT : mm	
DRAWN	MAY PING	86.11.4		SCALE : 2/3	