

AZ DISPLAYS, INC.

COMPLETE LCD SOLUTIONS

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SPECIFICATIONS FOR LIQUID CRYSTAL DISPLAY

PART NUMBER:

ACM 2001A SERIES

DATE:

April 18, 2001

1. FEATURES

The features of LCD Module are as follows.

- * Display Model : STN, Positive. Reflective
- * Color : Display dot : Dark Blue
Background : Yellow/Green
- * Display format : 20 Characters X 1 Line
- * Interface Input Data : 4-Bit or 8-Bit Available
- * Driving Method : 1/16 Duty
- * Viewing Direction : 6 O'clock

2 MECHANICAL SPECIFICATIONS

Item	Specification	Unit
Module Size	182.0(W) x 33.5 (H) x 10.0max (T)	mm
Viewing Area	154.3(W) x 15.3(H)	mm
Effective display Area	147.3(W) x 11.5(H)	mm
Character Font	5 x 7 Dot with cursor	-
Character Size	6.7(W) x 11.5(H)	mm
Character Pitch	7.4(W) x 11.5(H)	mm
Dot Size	1.30(W) x 1.30 (H)	mm
Dot Pitch	1.35(W) x 1.35 (H)	mm

3. ELECTRICAL SPECIFICATIONS

3-1. ABSOLUTE MAXIMUM RATINGS(Ta =25°C)

Item	Symbol	Standard Value			Unit
		Min.	Type	Max.	
Supply Voltage For Logic	V _{DD} - V _{SS}	-0.3	-	7.0	V
Supply Voltage For LCD Drive	V _{DD} - V ₀	V _{DD} -11.5	-	V _{DD} +0.3	V
Input Voltage	V _I	-0.3	-	V _{DD} +0.3	V
Operating Temp.	Top	0	-	+50	°C
Storage Temp.	Tst	-20	-	+70	°C

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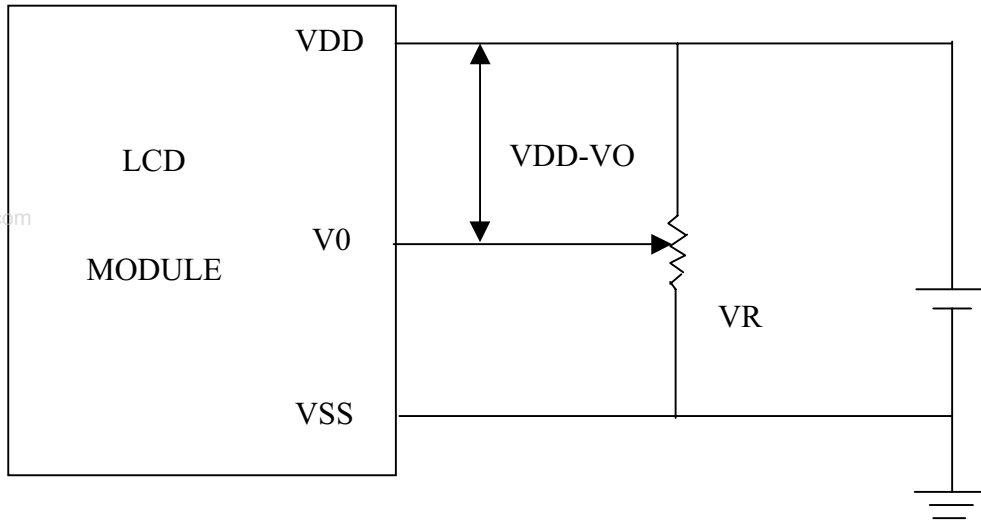
PRODUCT SPECIFICATIONS

REV : A

3-2 . ELECTRICAL CHARACTERISTICS

Item	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Supply Voltage For Logic	VDD - VSS	-	4.5	5.0	5.5	V
Supply Voltage For LCD	VDD - V0	-	-	4.4	-	V
Input Voltage	VI	H Level	2.2	-	V _{DD}	V
		L Level	-0.3	-	0.6	V
Output Voltage	V0	H Level	2.4	-	-	V
		L Level	0	-	0.4	V
Supply Current	IDD	VDD = 5V	-	-	3	m A

4. POWER SUPPLY



* $VDD-V0$ = Operating voltage for LCD

* $VR = 10 \text{ Kohm to } 20 \text{ Kohm}$

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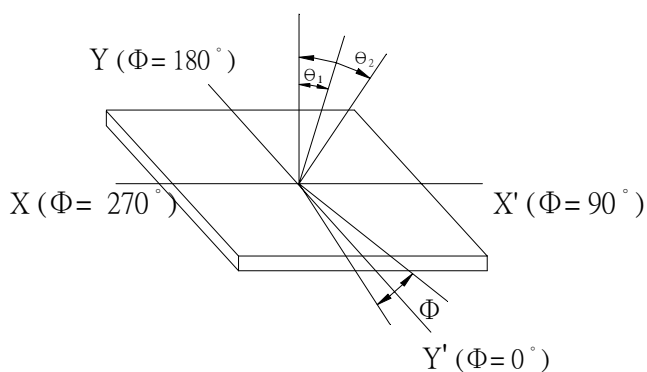
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5. ELECTRO-OPTICAL CHARACTERISTICS

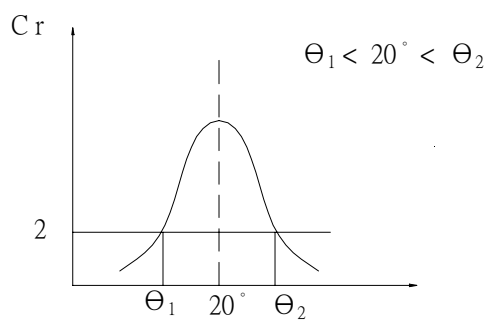
($T_a = 25^\circ\text{C}$ $V_{DD} - V_0 = 4.4\text{V}$)

Item	Symbol	Min.	Typ.	Max.	Unit	Condition	Note
Viewing Angle	$\Theta_1 - \Theta_2$	60	—	—	deg.	Cr=2.0	1.2
	Φ	± 30					
Contrast Ratio	Cr	3	4	—	—	$\Theta = 20^\circ$ $\Phi = 0^\circ$	3
Response Time (rise)	Tr	—	—	150	ms	$\Theta = 20^\circ$ $\Phi = 0^\circ$	4
Response Time (fall)	Tf	—	—	250	ms	$\Theta = 20^\circ$ $\Phi = 0^\circ$	4

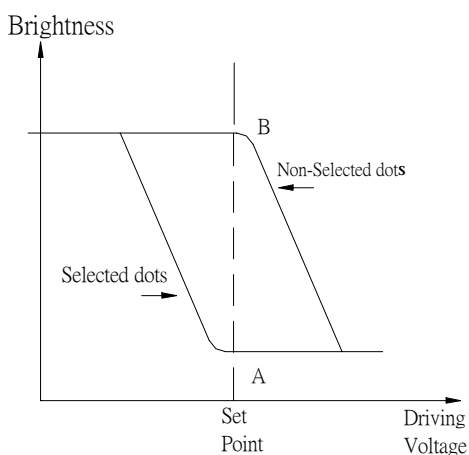
Note 1. Definition of angle Θ & Φ



Note 2. Definition of viewing angle Θ_1 & Θ_2

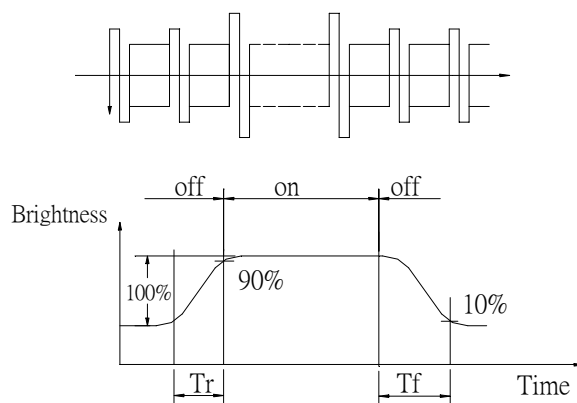


Note 3. Definition of contrast ratio (Cr)



$$Cr = B / A$$

Note 4. Definition of response time



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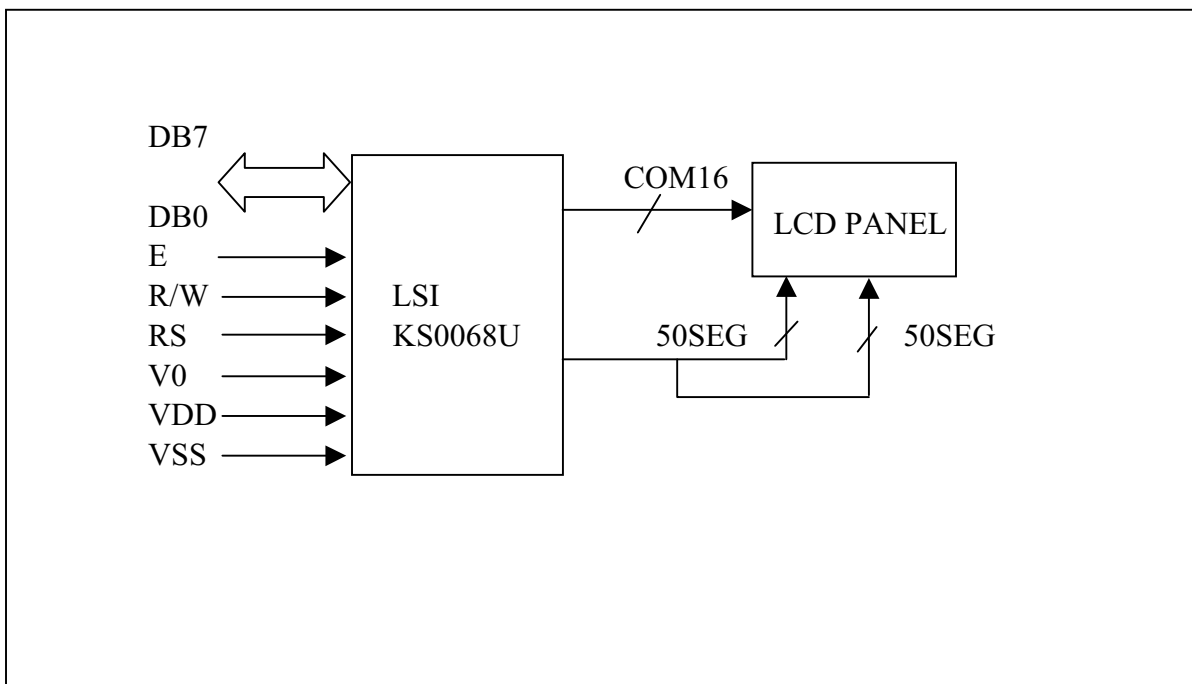
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6. TERMINAL FUNCTIONS AND BLOCK DIAGRAM

6-1. INTERFACE PIN FUNCTION DESCRIPTION

PIN NO.	SYMBOL	FUNCTIONS
1	VSS	Ground (0V)
2	VDD	Power supply for logic circuit(5V)
3	V0	Operating voltage for LCD driving (Variable)
4	RS	H : Data input ; L : Instruction code input
5	$\overline{R/W}$	H : Data Read (LCM to MPU) ; L : Data Write (MPU to LCM)
6	E	Enable
7 - 14	DB0-DB7	Data bus line
15	A	LED + (4.2V)
16	K	LED - (0V)

6-2.BLOCK DIAGRAM



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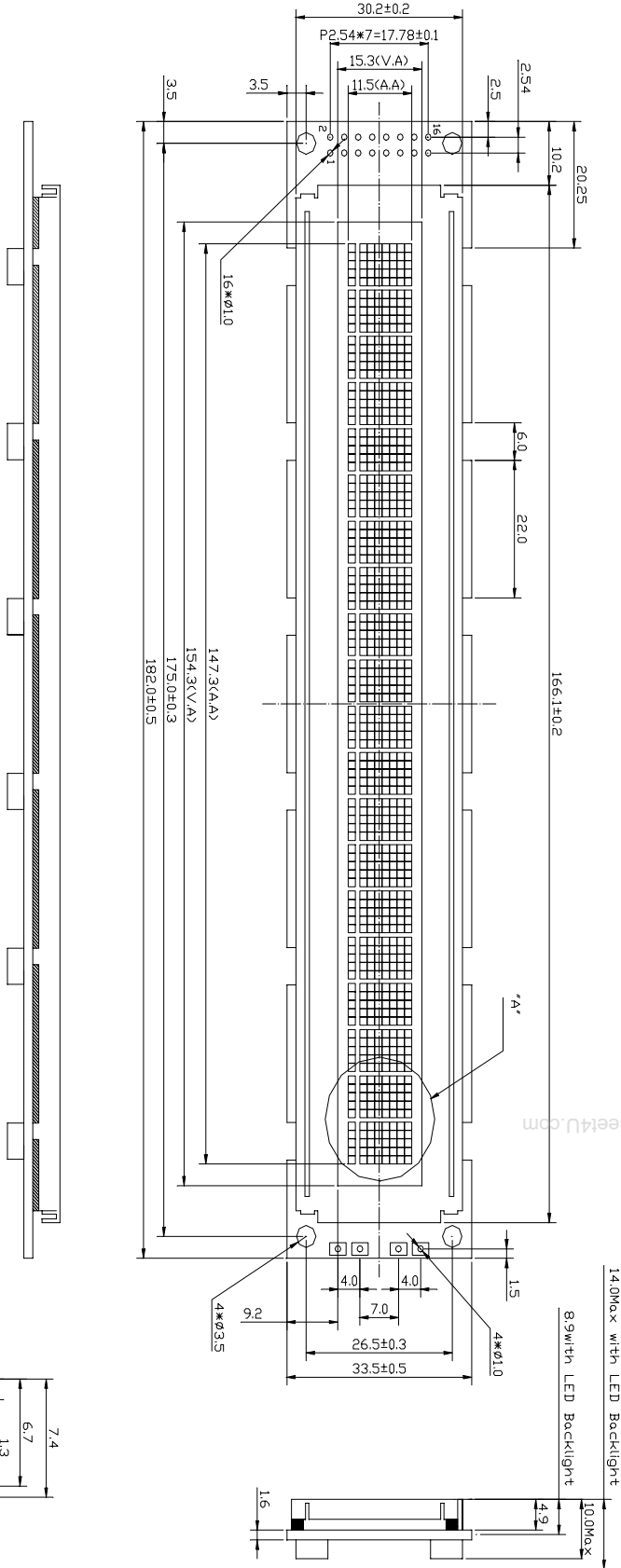
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7. OUTLINE DIMENSION

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NOTE: ALL THE UNLISTED DEVIATION IS ±0.2



DETAIL "A"

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