



WINSTAR Display Co.,Ltd.
華凌光電股份有限公司

SPECIFICATION

MODULE NO.: WH2004A

General Specification

Item	Dimension	Unit
Number of Characters	20 Characters x 4 Lines	—
Module dimension	98.0 x 60.0 x 13.6(MAX)	mm
View area	77.0 x 25.2	mm
Active area	70.4 x 20.8	mm
Dot size	0.55 x 0.55	mm
Dot pitch	0.60 x 0.60	mm
Character size	2.95 x 4.75	mm
Character pitch	3.55 x 5.35	mm
Duty	1/16	
Backlight Type	LED	
IC	RW1063	
Interface	6800	

Absolute Maximum Ratings

Item	Symbol	Min	Typ	Max	Unit
Operating Temperature	T_{OP}	-20	—	+70	°C
Storage Temperature	T_{ST}	-30	—	+80	°C
Input Voltage	V_{IN}	-0.3	—	$V_{DD}+0.3$	V
Supply Voltage For Logic	$V_{DD}-V_{SS}$	-0.3	—	5.5	V
Supply Voltage For LCD	$V_{DD}-V_0$	$V_{SS}-0.3$	—	$V_{SS}+7.0$	V

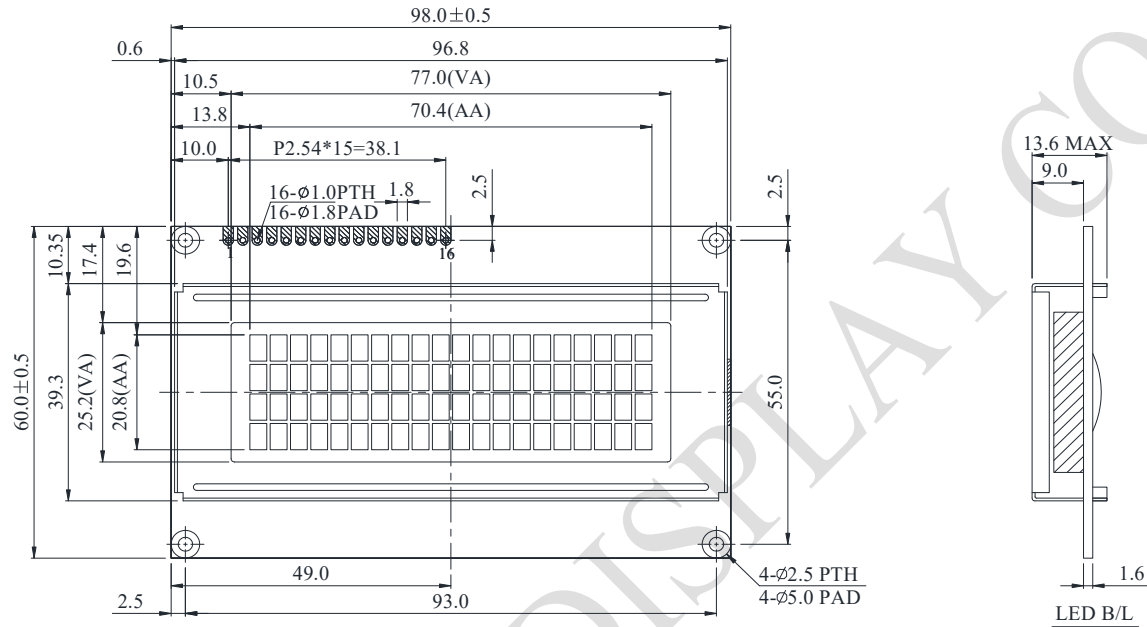
Electrical Characteristics

Item	Symbol	Condition	Min	Typ	Max	Unit
Supply Voltage For Logic	$V_{DD}-V_{SS}$	—	4.5	5.0	5.5	V
Supply Voltage For LCD	$V_{DD}-V_0$	$T_a=-20^{\circ}\text{C}$	—	—	5.3	V
		$T_a=25^{\circ}\text{C}$	4.4	4.5	4.6	V
		$T_a=70^{\circ}\text{C}$	3.8	—	—	V
Input High Volt.	V_{IH}	—	2.5	—	V_{DD}	V
Input Low Volt.	V_{IL}	—	-0.3	—	0.6	V
Output High Volt.	V_{OH}	—	3.9	—	V_{DD}	V
Output Low Volt.	V_{OL}	—	-	—	0.4	V
Supply Current	I_{DD}	$V_{DD}=5.0\text{V}$	1.0	1.2	1.5	mA

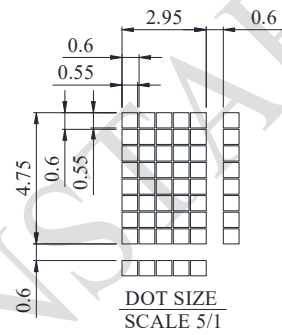
Interface Pin Function

Pin No.	Symbol	Level	Description
1	V _{SS}	0V	Ground
2	V _{DD}	5.0V	Supply Voltage for logic
3	VO	(Variable)	Operating voltage for LCD
4	RS	H/L	H: DATA, L: Instruction code
5	R/W	H/L	H: Read(Module→MPU) L: Write(MPU→Module)
6	E	H,H→L	Chip enable signal
7	DB0	H/L	Data bus line
8	DB1	H/L	Data bus line
9	DB2	H/L	Data bus line
10	DB3	H/L	Data bus line
11	DB4	H/L	Data bus line
12	DB5	H/L	Data bus line
13	DB6	H/L	Data bus line
14	DB7	H/L	Data bus line
15	A	—	Power supply for B/L(+)
16	K	—	Power supply for B/L(-)

Contour Drawing



PIN NO.	SYMBOL
1	V _{SS}
2	V _{DD}
3	V _O
4	RS
5	R/ \bar{W}
6	E
7	DB0
8	DB1
9	DB2
10	DB3
11	DB4
12	DB5
13	DB6
14	DB7
15	A
16	K



The non-specified tolerance of dimension is ± 0.3 mm .