



WINSTAR Display Co.,Ltd.
華凌光電股份有限公司

SPECIFICATION

MODULE NO.:

WH2004D1

General Specification

Item	Dimension	Unit
Number of Characters	20 characters x 4Lines	—
Module dimension	77.0 x 47.0 x 12.4(MAX)	mm
View area	60.0 x 22.0	mm
Active area	55.1 x 17.56	mm
Dot size	0.46 x 0.42	mm
Dot pitch	0.51 x 0.47	mm
Character size	4.03 x 2.30	mm
Character pitch	4.51 x 2.78	mm
Duty	1/16	
Backlight Type	LED	
IC	RW1063	
Interface	4-Line SPI	

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

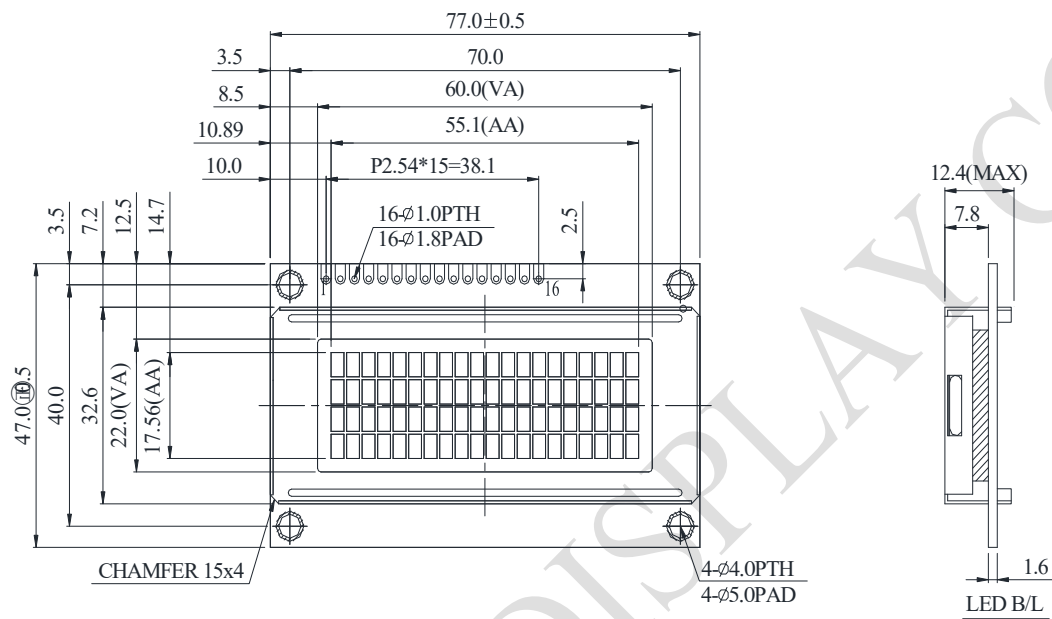
Electrical Characteristics

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	In bus mode, used as register selection input. When RS = “High”, Date register is selected. When RS = “Low”, Instruction register is selected.
5	NC	—	No connection
6	NC	—	No connection
7	NC	—	No connection
8	NC	—	No connection
9	NC	—	No connection
10	NC	—	No connection
11	NC	—	No connection
12	CSB	H/L	In 4-SPI serial mode, used as chip selection input. When CSB = “Low”, selected When CSB = “High”, not selected. (Low access enable)
13	SCLK	H/L	Serial clock input
14	SID	H/L	Serial data input
15	A	—	Power supply for B/L(+)
16	K	—	Power supply for B/L(-)

Contour Drawing



PIN NO.	SYMBOL
1	Vss
2	Vdd
3	Vo
4	RS
5	NC
6	NC
7	NC
8	NC
9	NC
10	NC
11	NC
12	CSB
13	SCLK
14	SID
15	A
16	K

