WINSTAR Display

OLED SPECIFICATION

Model No:

WEO1602x#HPP3N00000-FC

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Represented by:

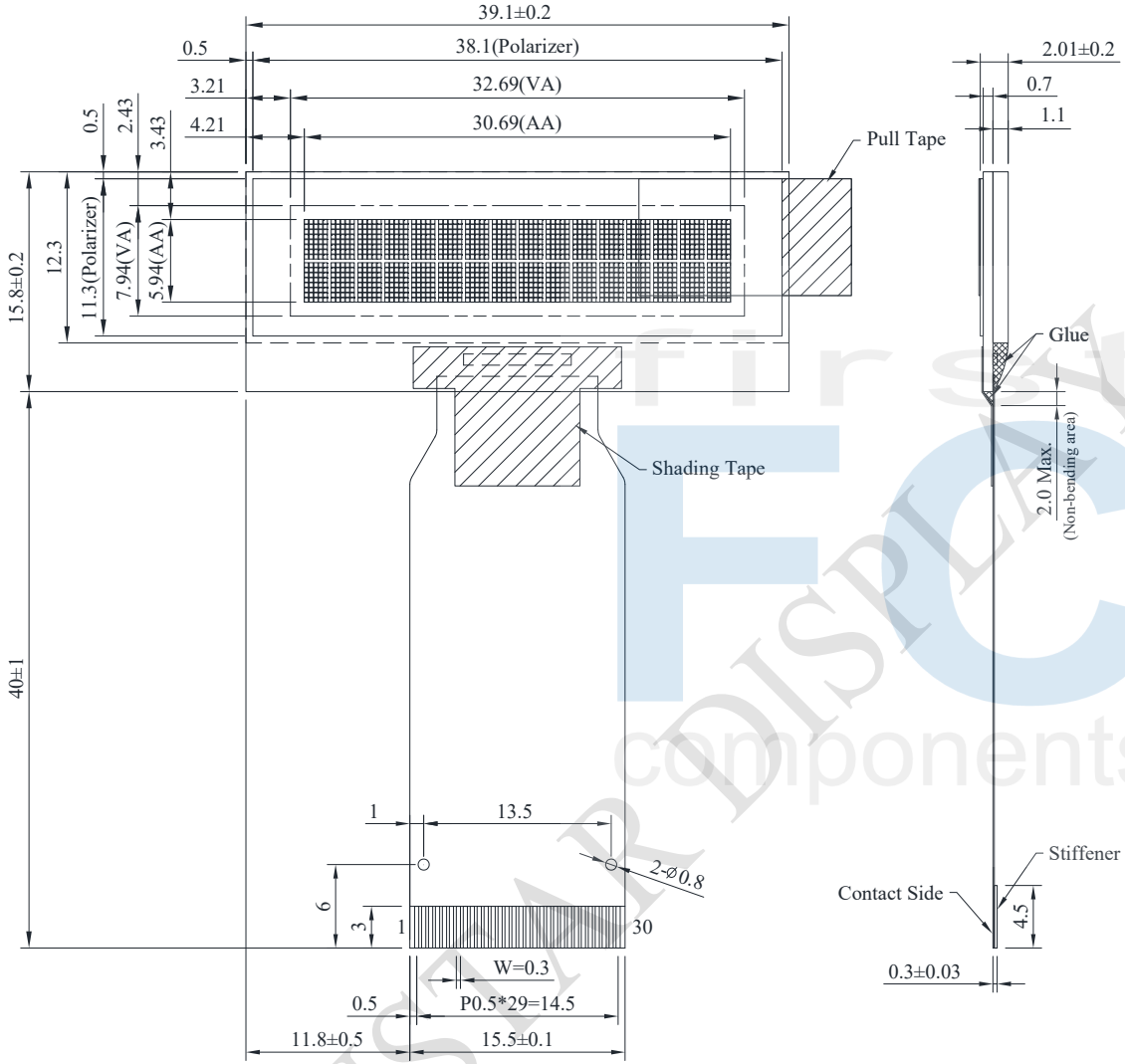
FIRST Components s.r.l.
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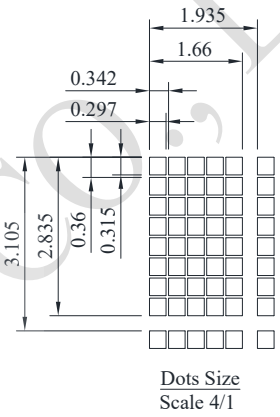
General Specification

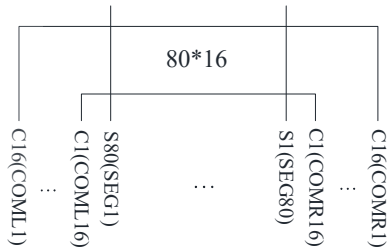
Item	Dimension	Unit
Number of Characters	16 characters x 2 Lines	–
Module dimension	39.1 x 15.8 x 2.01	mm
View area	32.69 x 7.94	mm
Active area	30.69 x 5.94	mm
Dot size	0.297 x 0.315	mm
Dot pitch	0.342 x 0.36	mm
Character size	1.66 x 2.835	mm
Character pitch	1.935 x 3.105	mm
Panel type	OLED , Monochrome	
Duty	1/16	
IC	WS0012	
Interface	6800, 8080, SPI, I2C	
Size	1.23 inch	

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Contour Drawing & Block Diagram







PIN	SYMBOL
1	GND
2	V16
3	VCI
4	GND
5	VCC
6	BVR
7	DVR
8	VBREF
9	RESE
10	GDR
11	FB
12	VDD
13	IM1
14	IM0
15	RESETB
16	RS
17	CSB
18	RDB
19	WRB
20	SDA
21	SDC
22	DB7
23	DB6
24	DB5
25	DB4
26	DB3
27	DB2
28	DB1
29	DB0
30	GND

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

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Interface Pin Function

<table>
<tr><th>Pin No.</th><th>Symbol</th><th>Level</th><th>Description</th></tr>
<tr><td>1</td><td>GND</td><td>P</td><td>Ground Pin</td></tr>
<tr><td>2</td><td>V16</td><td>I</td><td>This is the most positive voltage supply pin of the chip. It can be supplied externally or generated internally by using internal DC-DC voltage converter.</td></tr>
<tr><td>3</td><td>VCI</td><td>P</td><td>DCDC buffer Power Supply</td></tr>
<tr><td>4</td><td>GND</td><td>P</td><td>Ground Pin</td></tr>
<tr><td>5</td><td>VCC</td><td>P</td><td>Power Pin</td></tr>
<tr><td>6</td><td>BVR</td><td>I</td><td>Brightness control pin. It should be connected to VCC.</td></tr>
<tr><td>7</td><td>DVR</td><td>I</td><td>Pre charge time control. It should be connected to VCC.</td></tr>
<tr><td>8</td><td>VBREF</td><td>O</td><td>This pin is the internal voltage reference of DCDC1 circuit. A stabilization capacitor should be connected between this pin and GND</td></tr>
<tr><td>9</td><td>RESE</td><td>I</td><td>NMOS source input pin:
This pin connects to the source current pin of the external NMOS of the booster circuit.</td></tr>
<tr><td>10</td><td>GDR</td><td>O</td><td>Gate drive pulse output pin:
This output pin drives the gate of external NMOS of the booster circuit.</td></tr>
<tr><td>11</td><td>FB</td><td>I</td><td>Feedback voltage input pin:
This pin is the feedback resistor input of the booster circuit. It is used to adjust the booster output voltage level.</td></tr>
<tr><td>12</td><td>VDD</td><td>P</td><td>Power Pin (connect to stabilization capacitor)</td></tr>
<tr><td>13</td><td>IM1</td><td>I</td><td rowspan="2">Interface selection
<table><tr><th>IM1</th><th>IM0</th><th>Interface</th></tr><tr><td>L</td><td>L</td><td>6800-series</td></tr><tr><td>L</td><td>H</td><td>8080-series</td></tr><tr><td>H</td><td>L</td><td>SPI</td></tr><tr><td>H</td><td>H</td><td>I2C</td></tr></table></td></tr>
<tr><td>14</td><td>IM0</td><td>I</td></tr>
<tr><td>15</td><td>RESETB</td><td>I</td><td>Reset pin</td></tr>
<tr><td>16</td><td>RS</td><td>I</td><td>Register Select Input Pin
When this pin is set to "0", it is used as an Instruction Register.
When this pin is set to "1", it is used for as the Data Register.</td></tr>
<tr><td>17</td><td>CSB</td><td>I</td><td>Chip select input pins
Data / instruction I/O is enabled only when CSB is “L”.</td></tr>
</table>

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<table>
<tr><td>18</td><td>RDB</td><td>I</td><td>Read / Write execution control pin<table><tr><th>MPU Type</th><th>RDB</th><th>Description</th></tr><tr><td>6800-series</td><td>E</td><td>Read / Write control input pin
- RW = “H”: When E is “H”, DB0 to DB7 are in an output status.
- RW = “L”: The data on DB0 to DB7 are latched at the falling edge the E signal.</td></tr><tr><td>8080-series</td><td>RDB</td><td>Read enable clock input pin
When / RDB is “L”, DB0 to DB7 are in an output status.</td></tr></table></td></tr>
<tr><td>19</td><td>WRB</td><td>I</td><td>Read / Write execution control pin<table><tr><th>MPU Type</th><th>WRB</th><th>Description</th></tr><tr><td>6800-series</td><td>RW</td><td>Read / Write control input pin
- RW = “H” : read
- RW = “L” : write</td></tr><tr><td>8080-series</td><td>WRB</td><td>Write enable clock input pin.
The data on DB0 to DB7 are latched at the rising edge of the /WRB signal.</td></tr></table></td></tr>
<tr><td>20</td><td>SDA</td><td>I/O</td><td>SDA is the serial data input for I2C.</td></tr>
<tr><td>21</td><td>SDC</td><td>I/O</td><td>SDC is the serial clock input/output for I2C.</td></tr>
<tr><td>22~25</td><td>DB7~DB4</td><td>I/O</td><td>High Order Bidirectional Data I/O Pins
These pins are used for data transfer and reception between the MPU and WS0012.
When SPI is selected, DB5 will be the serial clock input: SCL
DB7 will be the serial data input: SDI.
DB6 will be the serial data output: SDO.</td></tr>
<tr><td>26~29</td><td>DB3~DB0</td><td>I/O</td><td>Low Order Bidirectional Data I/O Pins
These pins are used for data transfer and reception between the MPU and WS0012.
These pins are not used during a 4-bit operation.</td></tr>
<tr><td>30</td><td>GND</td><td>P</td><td>Ground Pin</td></tr>
</table>

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Absolute Maximum Ratings

Item	Symbol	Min	Max	Unit
Operating Temperature	TOP	-40	+80	°C
Storage Temperature	TST	-40	+85	°C
Supply Voltage For Logic	VCC	-0.3	3.6	V
Supply Voltage For DCDC	VCI	-0.3	3.6	V
Supply Voltage for Display	V16	-0.3	19.0	V

Electrical Characteristics

DC Electrical Characteristics

Item	Symbol	Condition	Min	Typ	Max	Unit
Supply Voltage For Logic	VCC	–	2.6	3.3	3.5	V
Supply Voltage For DCDC converter	VCI	–	2.6	3.3	3.5	V
Supply Voltage for Display	V16	–	–	12.5	13.0	V
Input High Volt.	VIH	–	0.9xVCC	–	VCC	V
Input Low Volt.	VIL	–	GND	–	0.1xVCC	V
Output High Volt.	VOH	IOH=-0.5mA	0.8xVCC	–	VCC	V
Output Low Volt.	VOL	IOL=0.5mA	GND	–	0.2xVCC	V
50% Checkerboard Operating Current	I16	V16=12.5V	–	2	4	mA

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