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Brighten The Future

NEXT VISION DISPLAY

SPECIFICATION

CUSTOMER : _____

MODULE NO.: NG12864GN003WS

Version	L
Engineer	
Date	2020/12/15

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Customer:
Approved by

NEXT VISION DISPLAY CO., LTD.

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MODLE NO :
DOC. FIRST ISSUE

RECORDS OF REVISION

VERSION	DATE	REVISED PAGE NO.	SUMMARY
0	2009/01/15		First issue
A	2009/02/20		Correct IC=ST7565P
B	2011/05/03		Modify V0-VSS
C	2012/07/17		Modify Backlight Information
D	2013/11/21		Remove IC information Add Pull Tape
E	2014/09/30		Correct Response Time.
F	2016/01/27		Modify Precautions in use of LCD Modules & Static electricity test
G	2016/11/18		Add FPC bending rule
H	2018/12/03		Modify Luminance.
I	2019/07/23		Correct Interface Pin Function.
J	2019/08/27		Modify Material List of Components for RoHs
K	2019/12/17		Modify Precautions in use of LCD Modules
L	2020/12/15		Add Interface

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Precautions in use of LCD Modules

(1)Avoid applying excessive shocks to the module or making any alterations or modifications to it.

(2)Don't make extra holes on the printed circuit board, modify its shape or change the components of LCD module.

(3)Don't disassemble the LCM.

(4)Don't operate it above the absolute maximum rating.

(5)Don't drop, bend or twist LCM.

(6)Soldering: only to the I/O terminals.

(7)Storage: please storage in anti-static electricity container and clean environment.

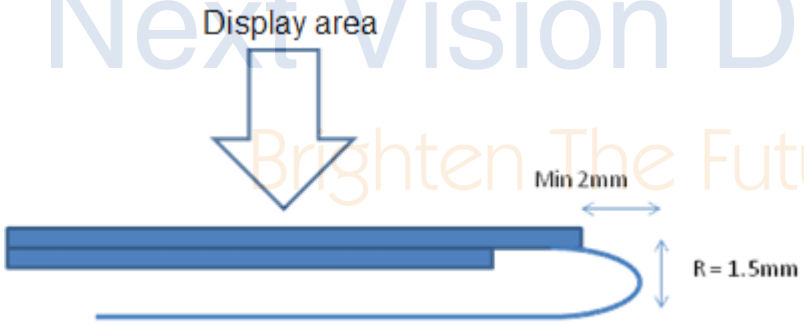
(8) NV have the right to change the passive components, including R3,R6 & backlight adjust resistors. (Resistors,capacitors and other passive components will have different appearance and color caused by the different supplier.)

(9) NV have the right to change the PCB Rev. (In order to satisfy the supplying stability, management optimization and the best product performance...etc, under the premise of not affecting the electrical characteristics and external dimensions, NV have the right to modify the version.)

(10) To ensure the stability of the display screen, please apply screen saver after showing 30 mins of fixed display content.

(11) The limitation of FPC bending

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(12)Please heat up a little the tape sticking on the components when removing it; otherwise the components might be damaged.

General Specification

Item	Dimension	Unit
Number of Dots	128 x 64 dots	—
Module dimension	55.2x 39.8 x 6.5(MAX)	mm
View area	45.2 x 27.0	mm
Active area	40.92 x 24.28	mm
Dot size	0.28 x 0.34	mm
Dot pitch	0.32 x 0.38	mm
LCD type	FSTN Positive Transflective (In LCD production, It will occur slightly color difference. We can only guarantee the same color in the same batch.)	
Duty	1/64 , 1/9 Bias	
View direction	6 o'clock	
Backlight Type	LED White	
IC	ST7565P	
Interface	6800/8080/4-Line SPI	

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Absolute Maximum Ratings

Item	Symbol	Min	Typ	Max	Unit
Operating Temperature	T_{OP}	-20	—	+70	℃
Storage Temperature	T_{ST}	-30	—	+80	℃
Power Supply Voltage	VDD	-0.3	—	3.6	V
Power supply voltage (VDD standard)	V0, VOUT	-0.3	—	14.5	V
Power supply voltage (VDD standard)	V1, V2, V3, V4	-0.3	—	V0+0.3	V

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Electrical Characteristics

Item	Symbol	Condition	Min	Typ	Max	Unit
Supply Voltage For Logic	V_{DD}-V_{SS}	—	2.7	3.0	3.3	V
Supply Voltage For LCM	VOP	Ta=-20℃	—	—	—	V
		Ta=25℃	9.4	9.6	9.8	V
		Ta=70℃	—	—	—	V
Input High Volt.	V_{IH}	—	0.8 V_{DD}	—	V_{DD}	V
Input Low Volt.	V_{IL}	—	Vss	—	0.2 V_{DD}	V
Output High Volt.	V_{OH}	—	0.8 V_{DD}	—	V_{DD}	V
Output Low Volt.	V_{OL}	—	Vss	—	0.2V_{DD}	V
Supply Current(No include LED Backlight)	I_{DD}	V_{DD}=3.0V	—	0.49	1.0	mA

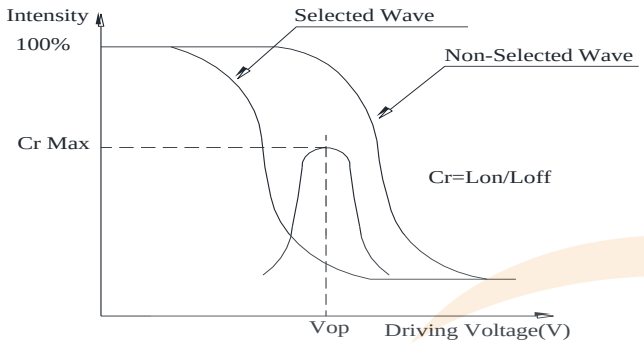
NOTE 1: Please kindly consider to design the Vop to be adjustable while programing the software to match LCD contrast tolerance

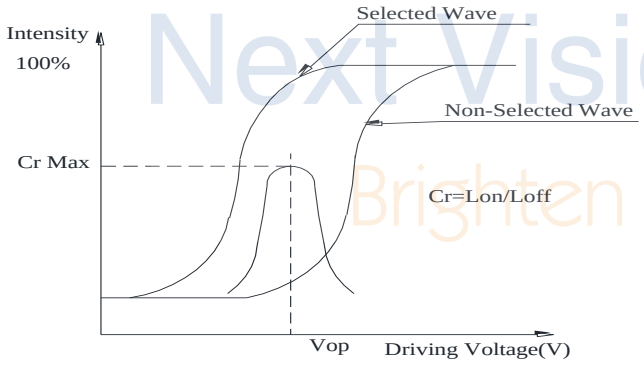
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Optical Characteristics

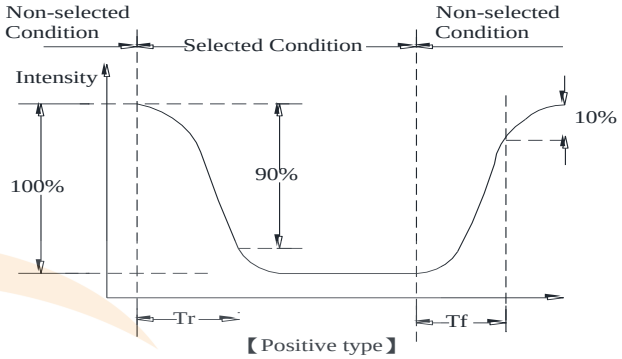
Item	Symbol	Condition	Min	Typ	Max	Unit
View Angle	θ	CR≧2	0	—	30	ϕ = 180°
	θ	CR≧2	0	—	60	ϕ = 0°
	θ	CR≧2	0	—	45	ϕ = 90°
	θ	CR≧2	0	—	45	ϕ = 270°
Contrast Ratio	CR	—	—	5	—	—
Response Time	T rise	—	—	200	300	ms
	T fall	—	—	250	350	ms

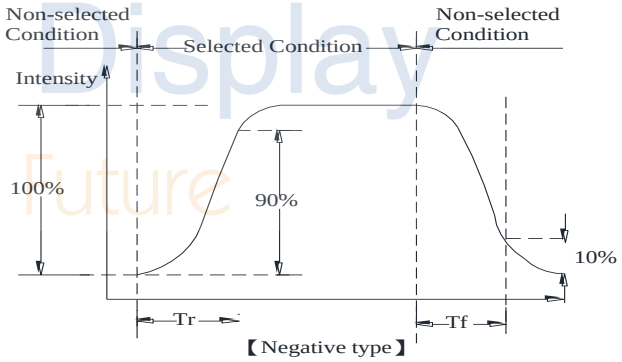
Definition of Operation Voltage (Vop)





Definition of Response Time (Tr , Tf)





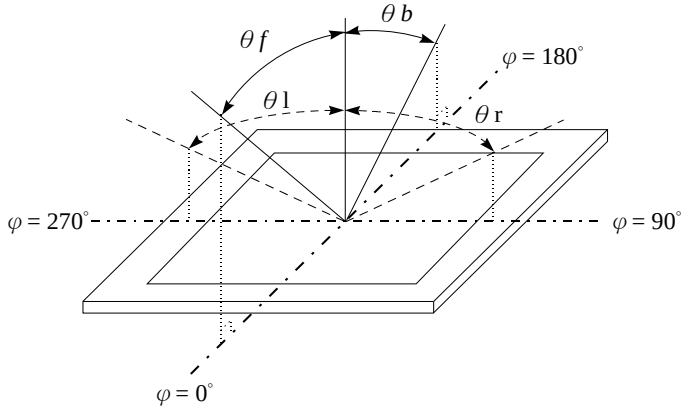
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Conditions :

Operating Voltage : Vop　　Viewing Angle(θ ， φ) : 0°， 0°

Frame Frequency : 64 HZ　　Driving Waveform : 1/N duty , 1/a bias

Definition of viewing angle(CR≧2)



Interface Pin Function

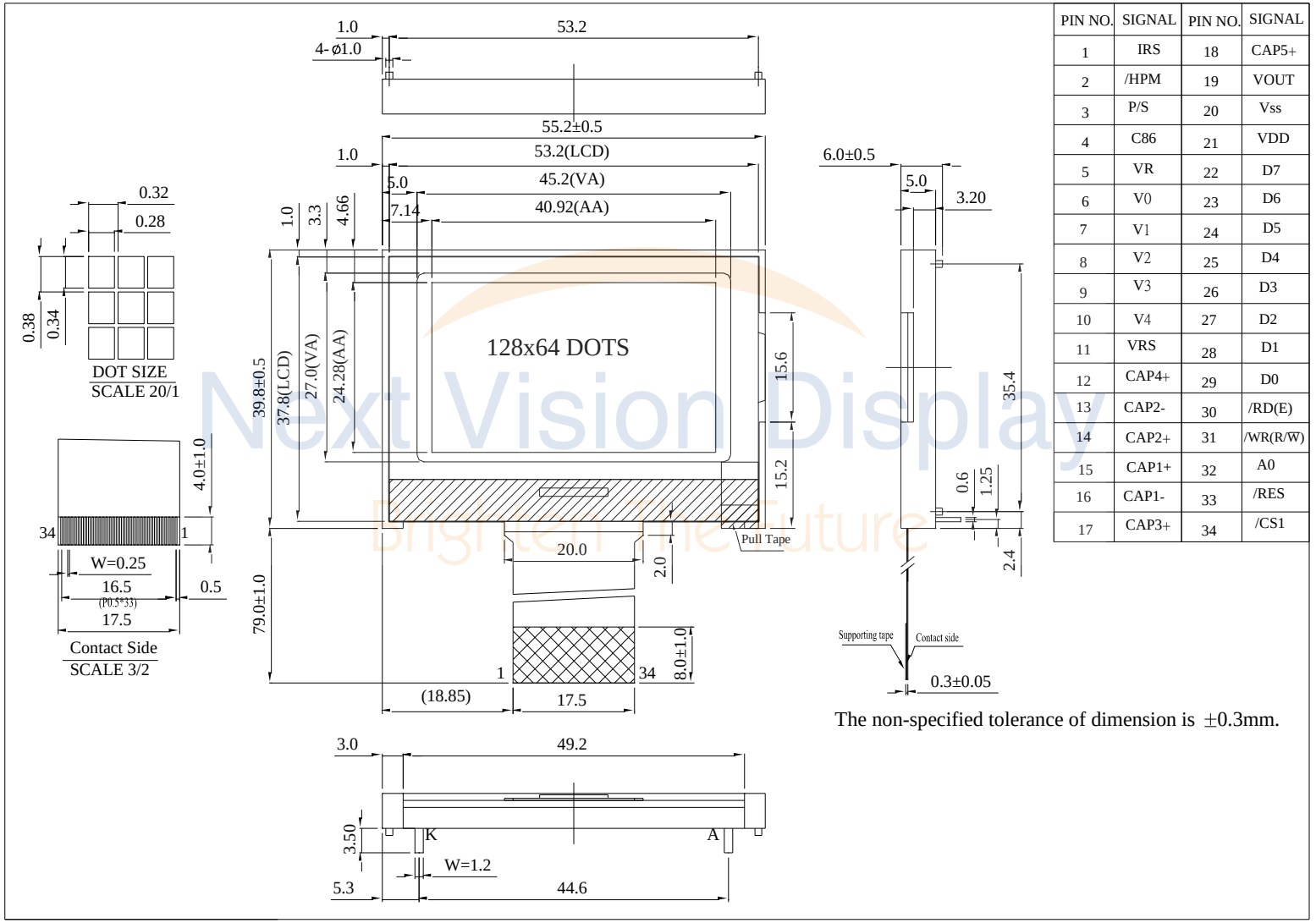
<table>
<tr><th>Pin No.</th><th>Symbol</th><th>Level</th><th>Description</th></tr>
<tr><td>1</td><td>IRS</td><td>I</td><td>This terminal selects the resistors for the V0 voltage level adjustment.
IRS = “H”: Use the internal resistors
IRS = “L”: Do not use the internal resistors. The V0 voltage level is regulated by an external resistive voltage divider attached to the VR terminal</td></tr>
<tr><td>2</td><td>/HPM</td><td>I</td><td>This is the power control terminal for the power supply circuit for liquid crystal drive.
/HPM = “H”: Normal mode
/HPM = “L”: High power mode (Default)</td></tr>
<tr><td>3</td><td>P/S</td><td>I</td><td>This is the parallel data input/serial data input switch terminal.
P/S = “H”: Parallel data input.
P/S = “L”: Serial data input.
The following applies depending on the P/S status:
<table>
<tr><th>P/S</th><th>Data/Command</th><th>Data</th><th>Read/Write</th><th>Serial Clock</th></tr>
<tr><td>“H”</td><td>A0</td><td>D0 to D7</td><td>/RD, /WR</td><td>X</td></tr>
<tr><td>“L”</td><td>A0</td><td>SI (D7)</td><td>Write only</td><td>SCL (D6)</td></tr>
</table>
When P/S = “L”, D0 to D5 fixed “H”.
/RD (E) and /WR (R/W) are fixed to either “H” or “L”.
With serial data input, It is impossible read data from RAM</td></tr>
<tr><td>4</td><td>C86</td><td>I</td><td>This is the MPU interface selection pin.
C86 = “H”: 6800 Series MPU interface.
C86 = “L”: 8080 Series MPU interface</td></tr>
<tr><td>5</td><td>VR</td><td>I</td><td>Output voltage regulator terminal. Provides the voltage between VSS and V0 through a resistive voltage divider.
IRS = “L” : the V0 voltage regulator internal resistors are not used.
IRS = “H” : the V0 voltage regulator internal resistors are used.</td></tr>
<tr><td>6~10</td><td>V0~V4</td><td>Power Supply</td><td>This is a multi-level power supply for the liquid crystal drive.</td></tr>
<tr><td>11</td><td>VRS</td><td>Power Supply</td><td>This is the internal-output VREG power supply for the LCD power supply voltage regulator.</td></tr>
<tr><td>12</td><td>CAP4+</td><td>O</td><td>DC/DC voltage converter.</td></tr>
<tr><td>13</td><td>CAP2-</td><td>O</td><td>DC/DC voltage converter. Connect a capacitor between this terminal and the CAP2P terminal.</td></tr>
</table>

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14	CAP2+	O	DC/DC voltage converter. Connect a capacitor between this terminal and the CAP2N terminal.
15	CAP1+	O	DC/DC voltage converter. Connect a capacitor between this terminal and the CAP1N terminal.
16	CAP1-	O	DC/DC voltage converter. Connect a capacitor between this terminal and the CAP1P terminal.
17	CAP3+	O	DC/DC voltage converter. Connect a capacitor between this terminal and the CAP1N terminal.
18	CAP5+	O	DC/DC voltage converter.
19	VOUT	O	DC/DC voltage converter. Connect a capacitor between this terminal and vss or VDD
20	VSS	Power Supply	Ground
21	VDD	Power Supply	Power supply
22~29	D7~D0	I/O	Data bus line
30	/RD(E)	I	• When connected to 8080 series MPU, this pin is treated as the "/RD" signal of the 8080 MPU and is LOW-active. The data bus is in an output status when this signal is "L". • When connected to 6800 series MPU, this pin is treated as the "E" signal of the 6800 MPU and is HIGH-active. This is the enable clock input terminal of the 6800 Series MPU.
31	/WR(R/W)	I	• When connected to 8080 series MPU, this pin is treated as the "/WR" signal of the 8080 MPU and is LOW-active. The signals on the data bus are latched at the rising edge of the /WR signal. • When connected to 6800 series MPU, this pin is treated as the "R/W" signal of the 6800 MPU and decides the access type : When R/W = "H": Read. When R/W = "L": Write.
32	A0	I	This is connect to the least significant bit of the normal MPU address bus, and it determines whether the data bits are data or command. A0 = "H": Indicates that D0 to D7 are display data. A0 = "L": Indicates that D0 to D7 are control data.
33	/RES	I	When RES is set to "L", the setting are initialized.
34	/CS1	I	This is the chip select signal.

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Contour Drawing



PIN NO.	SIGNAL	PIN NO.	SIGNAL
1	IRS	18	CAP5+
2	/HPM	19	VOUT
3	P/S	20	Vss
4	C86	21	VDD
5	VR	22	D7
6	V0	23	D6
7	V1	24	D5
8	V2	25	D4
9	V3	26	D3
10	V4	27	D2
11	VRS	28	D1
12	CAP4+	29	D0
13	CAP2-	30	/RD(E)
14	CAP2+	31	/WR(R/W)
15	CAP1+	32	A0
16	CAP1-	33	/RES
17	CAP3+	34	/CS1

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

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