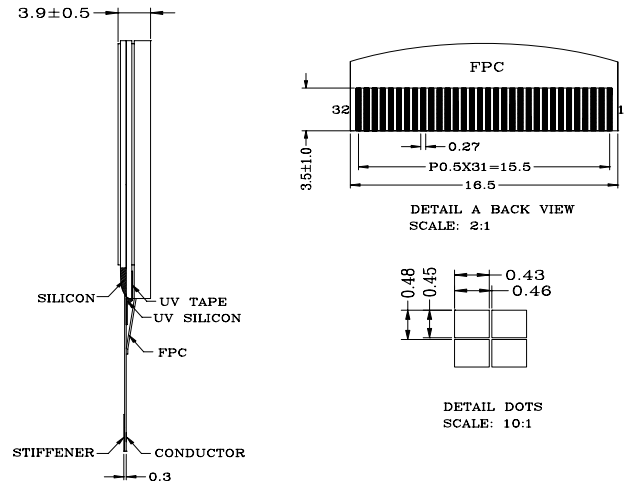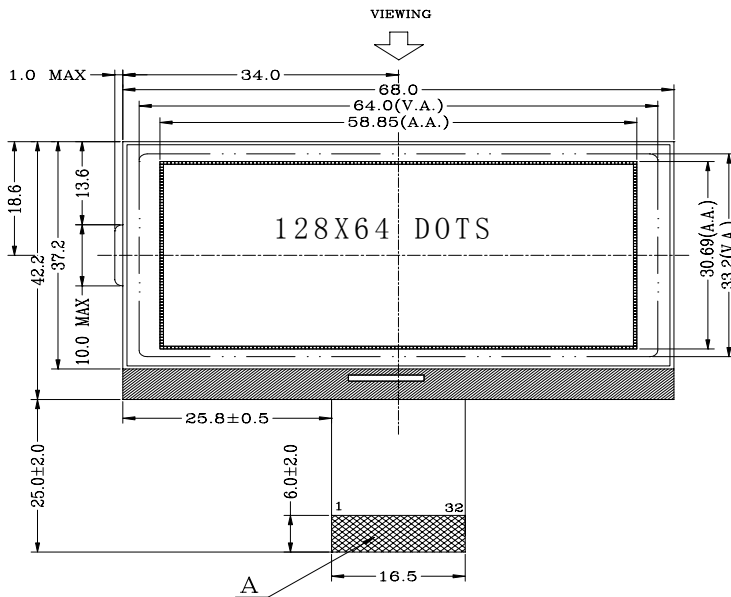## Outline Dimension

Graphic Type

Feature：

1、128x64 dot-matrix

2、STN/Transflective/Positive/Y-G

3、Backlight: White/side light

4、Operating Temp.: -10℃~+50℃

5、1/64 duty cycle, 1/9 Bias

6、Built-in Controller（ST7565P or equivalent）

7、Viewing angle: 12 o'clock

Absolute Maximum Rating：

Item	Symbol	Standard value			Unit
		M_{IN}	T_{YP}	M_{AX}	
Power supply for logic	V_{DD}-V_{SS}	-0.3	--	+4.0	V
Input voltage	V_I	-0.3	--	V_{DD} +0.3	V

Electrical Characteristic： (VSS=0V, Ta = 25℃)

Parameter	Symbol	Condition	M_{IN}	T_{YP}	M_{AX}	Unit
Supply voltage for logic	V_{DD}	--	3.1	3.3	3.5	V
Supply current for logic	I_{DD}	--	--	1	--	mA
Operating voltage for LCD	V_{LCD}	-10℃	--	--	--	V
		+25℃	--	8.4	--	V
		+50℃	--	--	--	V
Supply voltage for Backlight	V_{BL}	--	--	3.2	--	V
Supply current for Backlight	I_{BL}	--	--	60	--	mA

Interface Pin Connections：

Pin No.	Symbol	Level	Description
1	VDD	+3.3V	Supply voltage for logic operating.
2	P/S	H/L	This pin configures the interface to be parallel mode or serial mode. P/S = "H": Parallel data input/output. P/S = "L": Serial data input. The following applies depending on the P/S status: When P/S = "L", D0 to D5 must be fixed to "H". /RD (E) and /WR (R/W) are fixed to either "H" or "L". The serial access mode does NOT support read operation.

Interface Pin Connections：

Pin No.	Symbol	Level	Description
3	VSS	0V	Ground.
4	V5	--	This is a multi-level power supply for the liquid crystal drive. The voltage Supply applied is determined by the liquid crystal cell, and is changed through the use of a resistive voltage divided or through changing the impedance using an op. amp. Voltage levels are determined based on Vss, and must maintain the relative magnitudes shown below. $V0 \geqq V1 \geqq V2 \geqq V3 \geqq V4 \geqq Vss$ When the power supply turns ON, the internal power supply circuits produce the V1 to V4 voltages shown below. The voltage settings are selected using the LCD bias set command.
5	V4	--	
6	V3	--	
7	V2	--	
8	V1	--	
9	C2+	--	DC/DC voltage converter. Connect a capacitor between this terminal and the C2- terminal.
10	C2-	--	DC/DC voltage converter. Connect a capacitor between this terminal and the C2+ terminal.
11	C1-	--	DC/DC voltage converter. Connect a capacitor between this terminal and the C1+ terminal.
12	C1+	--	DC/DC voltage converter. Connect a capacitor between this terminal and the C1- terminal.
13	C3+	--	DC/DC voltage converter. Connect a capacitor between this terminal and the C1- terminal.
14	VOUT	--	DC/DC voltage converter output.
15	VSS	0V	Ground.
16	VDD	+3.3V	Supply voltage for logic operating.
17~24	DB7~DB0	H/L	This is an 8-bit bi-directional data bus that connects to an 8-bit or 16-bit standard MPU data bus. When the serial interface (SPI-4) is selected (P/S = "L") : D7: serial data input (SI) ; D6 : the serial clock input (SCL). D0 to D5 should be connected to VDD or floating. When the chip select is not active, D0 to D7 are set to high impedance.
25	VDD	+3.3V	Supply voltage for logic operating.
26	/RD	H/L	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.
27	/WR	H/L	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 : R/W = "H": Read. R/W = "L": Write.
28	A0	H/L	A0 = "H": D0 to D7 are display data. A0 = "L": D0 to D7 are control data.
29	/RES	H/L	When /RES is set to "L", the register settings are initialized (cleared).
30	/CS1	H/L	/CS1="L", Chip select becomes active.
31	LED+	+3.1V	Power supply for Backlight.
32	LED-	--	Ground for Backlight.