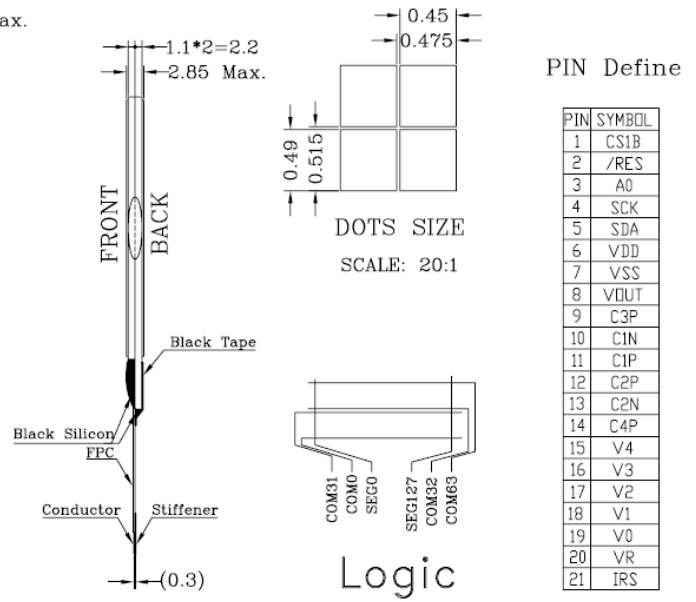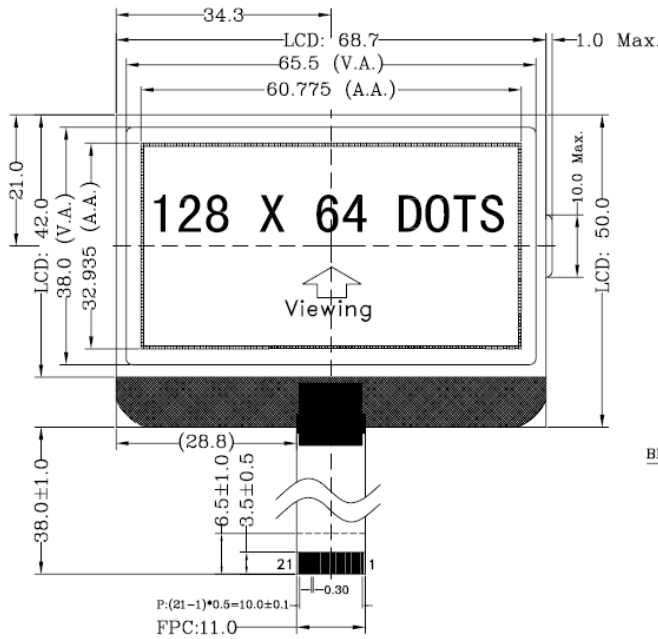## Outline Dimension

Graphic Type

Feature：

1、128x64 dot-matrix
2、STN/Transmissive/Positive/Y-G
3、Non-Backlight
4、Operating Temp.: -20℃～+70℃
5、1/64 duty cycle, 1/9 Bias
6、Built-in Controller（ST7565P or equivalent）
7、Viewing angle: 6 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}	-20℃	--	--	--	V
		+25℃	--	9.8	--	V
		+70℃	--	--	--	V
Supply voltage for Backlight	V_{BL}	--	--	--	--	V
Supply current for Backlight	I_{BL}	--	--	--	--	mA

Interface Pin Connections：

Pin No.	Symbol	Level	Description
1	CS1B	H/L	This is the chip select signal. When CS1B="L", then the chip select becomes active, and data/command I/O is enabled.
2	/RES	H/L	When /RES is set to "L", the settings are initialized. The reset operation is performed by the /RES signal level
3	A0	H/L	A0 = "H": D0 to D7 are display data. A0 = "L": D0 to D7 are control data.
4	SCK	H/L	the serial clock input terminal
5	SDA	H/L	the serial data input terminal
6	VDD	+3.3V	Supply voltage for logic operating.
7	VSS	0V	Ground.
8	VOUT	--	DC/DC voltage converter output.
9	C3P	--	DC/DC voltage converter. Connect a capacitor between this terminal and the C1N terminal.
10	C1N	--	DC/DC voltage converter. Connect a capacitor between this terminal and the C1P terminal.
11	C1P	--	DC/DC voltage converter. Connect a capacitor between this terminal and the C1N terminal.
12	C2P	--	DC/DC voltage converter. Connect a capacitor between this terminal and the C2N terminal.
13	C2N	--	DC/DC voltage converter. Connect a capacitor between this terminal and the C2P terminal.
14	C4P	--	DC/DC voltage converter. Connect a capacitor between this terminal and the C2N terminal.
15	V4	--	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.
16	V3	--	
17	V2	--	$V0 \geqq V1 \geqq V2 \geqq V3 \geqq V4 \geqq Vss$ 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.
18	V1	--	
19	V0	--	(table of duty/voltage values)
20	VR	--	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.
21	IRS	H/L	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