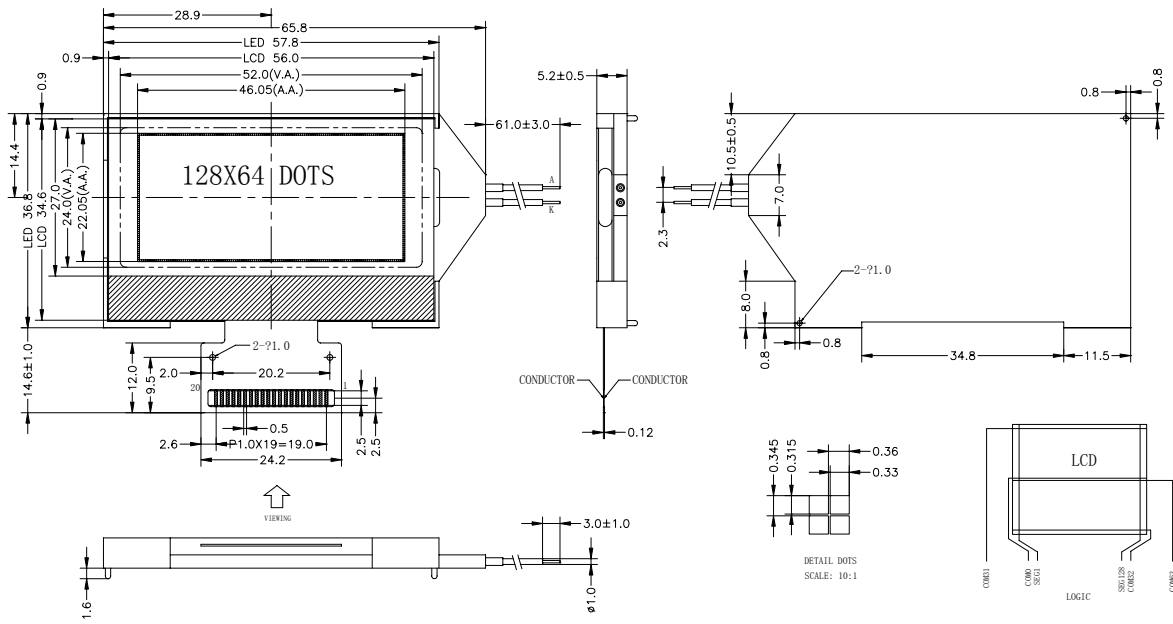


Outline Dimension



Graphic Type

Feature :

- 128x64 dot-matrix
- STN/Transmissive/Positive/Y-G
- Backlight: Green/side light
- Operating Temp.: 0°C ~ +50°C
- 1/65 duty cycle, 1/9 Bias
- Built-in Controller (ST7565R or equivalent)
- 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 : (V_{SS}=0V, T_a = 25°C)

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°C	--	--	--	V
		+25°C	--	9.8	--	V
		+70°C	--	--	--	V
Supply voltage for Backlight	V _{BL}	--	--	3.1	--	V
Supply current for Backlight	I _{BL}	--	--	15	--	mA

Interface Pin Connections :

Pin No.	Symbol	Level	Description																														
1	/CS	H/L	This is the chip select signal. When /CS="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	D6	H/L	the serial clock input terminal																														
5	D7	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	CAP3+	--	DC/DC voltage converter. Connect a capacitor between this terminal and the CAP1- terminal.																														
10	CAP1-	--	DC/DC voltage converter. Connect a capacitor between this terminal and the CAP1+ terminal.																														
11	CAP1+	--	DC/DC voltage converter. Connect a capacitor between this terminal and the CAP1- terminal.																														
12	CAP2+	--	DC/DC voltage converter. Connect a capacitor between this terminal and the CAP2- terminal.																														
13	CAP2-	--	DC/DC voltage converter. Connect a capacitor between this terminal and the CAP2+ terminal.																														
14	V1	--	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 divider or through changing the impedance using an op. amp. Voltage levels are determined based on V _{SS} , and must maintain the relative magnitudes shown below. V ₀ ≧ V1 ≧ V2 ≧ V3 ≧ V4 ≧ V _{SS}																														
15	V2	--																															
16	V3	--																															
17	V4	--																															
18	V0	--	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.																														
			<table border="1"> <thead> <tr> <th></th> <th>1/65 DUTY</th> <th>1/49 DUTY</th> <th>1/33 DUTY</th> <th>1/55 DUTY</th> <th>1/53 DUTY</th> </tr> </thead> <tbody> <tr> <td>V1</td> <td>8.9*V₀ 6.7*V₀</td> <td>7.8*V₀ 5.6*V₀</td> <td>5.6*V₀ 4.5*V₀</td> <td>7.8*V₀ 5.6*V₀</td> <td>7.8*V₀ 5.6*V₀</td> </tr> <tr> <td>V2</td> <td>7.9*V₀ 5.7*V₀</td> <td>6.8*V₀ 4.6*V₀</td> <td>4.6*V₀ 3.5*V₀</td> <td>6.8*V₀ 4.6*V₀</td> <td>6.8*V₀ 4.6*V₀</td> </tr> <tr> <td>V3</td> <td>2.9*V₀ 2.7*V₀</td> <td>2.8*V₀ 2.6*V₀</td> <td>2.6*V₀ 2.5*V₀</td> <td>2.8*V₀ 2.6*V₀</td> <td>2.8*V₀ 2.6*V₀</td> </tr> <tr> <td>V4</td> <td>1.9*V₀ 1.7*V₀</td> <td>1.8*V₀ 1.6*V₀</td> <td>1.6*V₀ 1.5*V₀</td> <td>1.8*V₀ 1.6*V₀</td> <td>1.8*V₀ 1.6*V₀</td> </tr> </tbody> </table>		1/65 DUTY	1/49 DUTY	1/33 DUTY	1/55 DUTY	1/53 DUTY	V1	8.9*V ₀ 6.7*V ₀	7.8*V ₀ 5.6*V ₀	5.6*V ₀ 4.5*V ₀	7.8*V ₀ 5.6*V ₀	7.8*V ₀ 5.6*V ₀	V2	7.9*V ₀ 5.7*V ₀	6.8*V ₀ 4.6*V ₀	4.6*V ₀ 3.5*V ₀	6.8*V ₀ 4.6*V ₀	6.8*V ₀ 4.6*V ₀	V3	2.9*V ₀ 2.7*V ₀	2.8*V ₀ 2.6*V ₀	2.6*V ₀ 2.5*V ₀	2.8*V ₀ 2.6*V ₀	2.8*V ₀ 2.6*V ₀	V4	1.9*V ₀ 1.7*V ₀	1.8*V ₀ 1.6*V ₀	1.6*V ₀ 1.5*V ₀	1.8*V ₀ 1.6*V ₀	1.8*V ₀ 1.6*V ₀
	1/65 DUTY	1/49 DUTY	1/33 DUTY	1/55 DUTY	1/53 DUTY																												
V1	8.9*V ₀ 6.7*V ₀	7.8*V ₀ 5.6*V ₀	5.6*V ₀ 4.5*V ₀	7.8*V ₀ 5.6*V ₀	7.8*V ₀ 5.6*V ₀																												
V2	7.9*V ₀ 5.7*V ₀	6.8*V ₀ 4.6*V ₀	4.6*V ₀ 3.5*V ₀	6.8*V ₀ 4.6*V ₀	6.8*V ₀ 4.6*V ₀																												
V3	2.9*V ₀ 2.7*V ₀	2.8*V ₀ 2.6*V ₀	2.6*V ₀ 2.5*V ₀	2.8*V ₀ 2.6*V ₀	2.8*V ₀ 2.6*V ₀																												
V4	1.9*V ₀ 1.7*V ₀	1.8*V ₀ 1.6*V ₀	1.6*V ₀ 1.5*V ₀	1.8*V ₀ 1.6*V ₀	1.8*V ₀ 1.6*V ₀																												
19	VR	--	Output voltage regulator terminal. Provides the voltage between V _{SS} 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.																														
20	C86/P/S /HPM/IRS	H/L	C86 = "H": 6800 Series MPU interface. C86 = "L": 8080 Series MPU interface. P/S = "H": Parallel data input/output. P/S = "L": Serial data input. /HPM = "H": Normal mode /HPM = "L": High power mode IRS = "H": Use the internal resistors IRS = "L": Do not use the internal resistors.																														