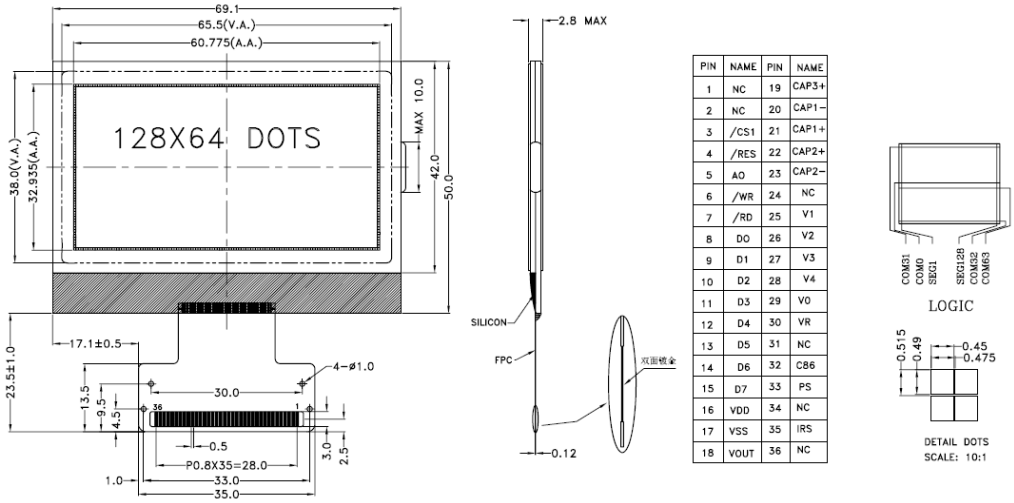
Outline Dimension



PIN	NAME	PIN	NAME
1	NC	19	CAP3+
2	NC	20	CAP1−
3	/CS1	21	CAP1+
4	/RES	22	CAP2+
5	A0	23	CAP2−
6	/WR	24	NC
7	/RD	25	V1
8	D0	26	V2
9	D1	27	V3
10	D2	28	V4
11	D3	29	V0
12	D4	30	VR
13	D5	31	NC
14	D6	32	C86
15	D7	33	PS
16	VDD	34	NC
17	VSS	35	IRS
18	VOUT	36	NC

Graphic Type

Feature：

1、128x64 dot-matrix
2、STN/Transmissive/Positive/Y-G
3、Non-Backlight
4、Operating Temp.: -10℃～+60℃
5、1/65 duty cycle, 1/9 Bias
6、Built-in Controller（NT7538H 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}	--	2.8	3.0	3.2	V
Supply current for logic	I_{DD}	--	--	1	--	mA
Operating voltage for LCD	V_{LCD}	+10℃	--	--	--	V
		+25℃	--	9.0	--	V
		+60℃	--	--	--	V
Supply voltage for Backlight	V_{BL}	--	--	--	--	V
Supply current for Backlight	I_{BL}	--	--	--	--	mA

Interface Pin Connections：

Pin No.	Symbol	Level	Description
1~2	NC	--	Non-connection.
3	/CS1	H/L	/CS1="L", Chip select becomes active.
4	/RES	H/L	When /RES= "L", the settings are initialized.
5	A0	H/L	A0 = "H": D0~D7 are display data A0 = "L": D0~D7 are control data
6	/WR	H/L	When connected to an 8080 MPU, this is active LOW. This terminal connects to the 8080 MPU /WR signal. The signals on the data bus are latched at the rising edge of the /WR signal. When connected to a 6800 Series MPU, this is the read/write control signal input terminal. R/W = "H": Read R/W = "L": Write
7	/RD	H/L	When connected to an 8080 MPU, it is active LOW. This pad is connected to the /RD signal of the 8080MPU, and the NT7538 data bus is in an output status when this signal is "L". When connected to a 6800 Series MPU, this is active HIGH. This is used as an enable clock input of the 6800 series MPU.

Interface Pin Connections：

Pin No.	Symbol	Level	Description
8~15	D0~D7	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 is selected (P/S="L"), then D7 serves as the serial data input terminal (SI) and D6 serves as the serial clock input terminal (SCL). When the serial interface is selected, fix D0~D5 pads to VDD or VSS level. When the chip select is inactive, D0 to D7 are set to high impedance.
16	VDD	+3.0V	Supply voltage for logic operating.
17	VSS	0V	Ground.
18	VOUT	--	DC/DC voltage converter output.
19	CAP3+	--	DC/DC voltage converter. Connect a capacitor between this terminal and the CAP1- terminal.
20	CAP1-	--	DC/DC voltage converter. Connect a capacitor between this terminal and the CAP1+ terminal.
21	CAP1+	--	DC/DC voltage converter. Connect a capacitor between this terminal and the CAP1- terminal.
22	CAP2+	--	DC/DC voltage converter. Connect a capacitor between this terminal and the CAP2- terminal.
23	CAP2-	--	DC/DC voltage converter. Connect a capacitor between this terminal and the CAP2+ terminal.
24	NC	--	Non-connection.
25	V1	--	LCD driver supplies voltages. The voltage determined by the LCD cell is impedance-converted by a resistive driver or an operation amplifier for application. Voltages should be according to the following relationship: V0≥V1≥V2≥V3≥V4≥VSS2. When the on-chip operating power circuit is on, the following voltages are supplied to V1 to V4 by the on-chip power circuit. Voltage selection is performed by the LCD bias SET command.
26	V2	--	
27	V3	--	
28	V4	--	
29	V0	--	
30	VR	--	Voltage adjustment pad. Applies voltage between V0 and VSS using a resistive divider..
31	NC	--	Non-connection.
32	C86	H/L	C86 = "H": 6800 Series MPU interface C86 = "L": 8080 Series MPU interface
33	P/S	H/L	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: When P/S = "L", fix D0~D5 pads to VDD or VSS level. /RD (E) and /WR (R/W) are fixed to either "H" or "L". With serial data input, RAM display data reading is not supported.
34	NC	--	Non-connection.
35	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. This pad is enabled only when the master operation mode is selected. It is fixed to either "H" or "L" when the slave operation mode is selected.
36	NC	--	Non-connection.

LCD bias	V1	V2	V3	V4
1/4 bias	3/4V0	2/4V0	2/4V0	1/4V0
1/5 bias	4/5V0	3/5V0	2/5V0	1/5V0
1/6 bias	5/6V0	4/6V0	2/6V0	1/6V0
1/7 bias	6/7V0	5/7V0	2/7V0	1/7V0
1/8 bias	7/8V0	6/8V0	2/8V0	1/8V0
1/9 bias	8/9V0	7/9V0	2/9V0	1/9V0

P/S	Data/Command	Data	Read/Write	Serial Clock
"H"	A0	D0 to D7	/RD, /WR	-
"L"	A0	SI (D7)	Write only	SCL (D6)