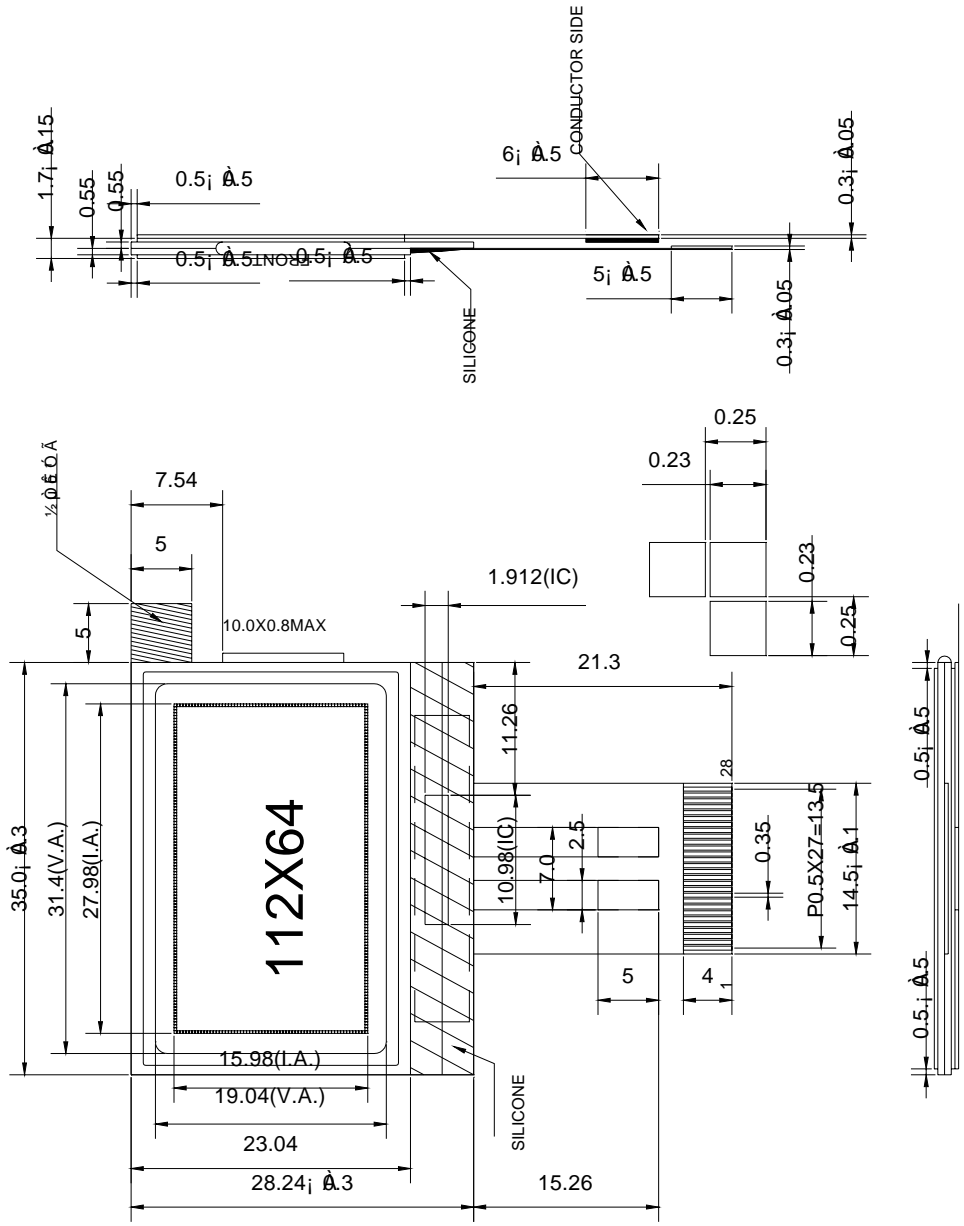


1. General Specifications

Display Fonts:	Graphics Matrix
Display Type:	FSTN
Display Color:	Black
Display Mode:	Transflective / Positive
Viewing direction:	6 O'clock
Driver Mode:	1/65 Duty , 1/9 Bias
Module size (W×H×T) :	35.0 × 28.2 × 1.7 mm
Viewing area (W×H) :	31.4× 19.04 mm
Number of dots:	112 × 64 dots
Dot size (W×H) :	0.23 × 0.23 mm
Dot pitch (W×H) :	0.25 × 0.25 mm
Operation temperature:	-20 °C ~ 70 °C
Storage temperature:	-30 °C ~ 80 °C
Assy. Type:	COG + FPC
Backlight:	EL – Blue-green
Controller IC:	SSD1815Z or equivalent

2. Mechanical Diagram



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### 3. Absolute Maximum Ratings

Unless otherwise noted, VSS = 0 V

| <b>Absolute Maximum Ratings Parameter</b> | <b>Symbol</b>     | <b>Conditions</b>    | <b>Unit</b> |
|-------------------------------------------|-------------------|----------------------|-------------|
| Power Supply Voltage                      | VDD               | -0.3 to +4.0         | V           |
| Power supply voltage                      | VOUT              | -0.3 to -12          | V           |
| Power supply voltage                      | V1, V2,<br>V3, V4 | -0.3 to V0           | V           |
| Input voltage                             | VIN               | -0.3 to VDD +<br>0.3 | V           |
| Output voltage                            | VO                | -0.3 to -12          | V           |

### 4. Electrical Characteristics

| Item                |           | Symbol  | Conditions                   | Min.   | Typ. | Max.   | Unit |
|---------------------|-----------|---------|------------------------------|--------|------|--------|------|
| Supply Voltage      | Logic     | Vdd     |                              | 3.0    | 3.3  | 3.6    | V    |
|                     | LCD drive | Vdd-Vee |                              | --     | 9.0  | --     |      |
| Input Voltage       | "H" Level | Vih     |                              | 0.8Vdd | —    | Vdd    |      |
|                     | "L" Level | Vil     |                              | VSS    | —    | 0.2Vdd |      |
| Output Voltage      | "H" Level | Voh     | Ioh=-0.5mA                   | 0.8Vdd | —    | Vdd    |      |
|                     | "L" Level | Vol     | Iol=0.5mA                    | VSS    | —    | 0.2Vdd |      |
| Current Consumption | Logic     | Idd     | Vdd=3.3V<br>Vdd-Vee=<br>9.0V | —      | 0.5  | 1.0    | mA   |



## 5. Interface Pin Function

| Pin No. | Sysbom           | Level | Description                                                                                                                |
|---------|------------------|-------|----------------------------------------------------------------------------------------------------------------------------|
| 1       | C86              | H/L   | This is the MPU interface switch terminal.<br>MPUS = "H": 68-series MPU interface.<br>MPUS = "L": 80-series MPU interface. |
| 2       | VSS              | --    | This is a 0 V terminal connected to the system VSS.                                                                        |
| 3       | V5               | --    | This is a multi-level power supply for the liquid crystal drive.                                                           |
| 4       | V4               |       |                                                                                                                            |
| 5       | V3               |       |                                                                                                                            |
| 6       | V2               |       |                                                                                                                            |
| 7       | V1               |       |                                                                                                                            |
| 8       | CAP2+            | --    | Capacitor 2 positive connection pin for voltage converter                                                                  |
| 9       | CAP2-            | --    | Capacitor 2 positive connection pin for voltage converter                                                                  |
| 10      | CAP1-            | --    | Capacitor 1 positive connection pin for voltage converter                                                                  |
| 11      | CAP1+            | --    | Capacitor 1 negative connection pin for voltage converter                                                                  |
| 12      | CAP3-            | --    | Capacitor 3 positive connection pin for voltage converter                                                                  |
| 13      | V <sub>OUT</sub> | --    | DC/DC voltage converter input/output pin, connect a capacitor between this terminal and VSS                                |
| 14      | VSS              | --    | This is a 0 V terminal connected to the system VSS.                                                                        |
| 15      | VDD              | --    | Shared with the MPU power supply terminal VCC                                                                              |
| 16      | DB7              | H/L   | Data bus line.                                                                                                             |
| 17      | DB6              |       |                                                                                                                            |
| 18      | DB5              |       |                                                                                                                            |
| 19      | DB4              |       |                                                                                                                            |
| 20      | DB3              |       |                                                                                                                            |
| 21      | DB2              |       |                                                                                                                            |
| 22      | DB1              |       |                                                                                                                            |
| 23      | DB0              |       |                                                                                                                            |



## Interface Pin Function(Continue)

| Pin No. | Sysbom | Level | Description                                                                                                                      |
|---------|--------|-------|----------------------------------------------------------------------------------------------------------------------------------|
| 24      | /RD    | H/L   | Enable clock signal input for the 68-series MPU, active high. Active low input pin for the 80-series MPU /RD signal              |
| 25      | /WR    | H/L   | Read/Write control signal with 68-series MPU R/W="H": Read, R/W="L": Write Active low input pin for the 80 series MPU /WR signal |
| 26      | A0     | H/L   | Determines whether the data bits are data or the instruction (command).                                                          |
| 27      | /RES   | H/L   | When /RST is set to "L," the settings are initialized.                                                                           |
| 28      | /CS1   | H/L   | This is the chip select signal.                                                                                                  |

