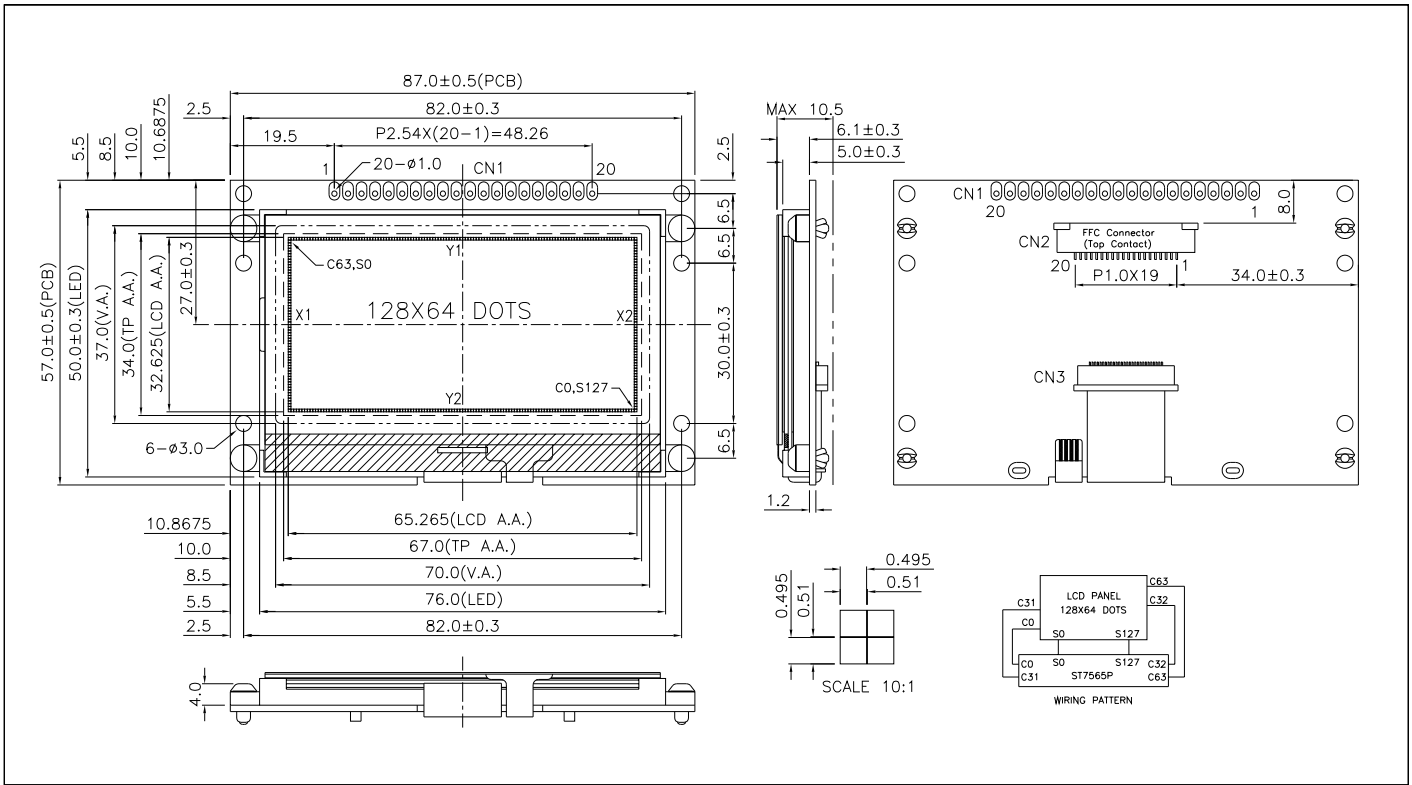


VS12864U-DW-TP 128 x 64 dots + white led backlight + touch panel, 8-bit parallel or SPI, 3.3V to 5.5V



ABSOLUTE MAXIMUM RATINGS

| Item | Symbol | Min. | Max. | Unit |
|-----------------------|--------------------|------|----------------|------|
| Supply Voltage(Logic) | $V_{DD} - V_{SS}$ | -0.3 | 6.0 | V |
| Supply Voltage(LCD) | $V_{OUT} - V_{SS}$ | -0.3 | 14.5 | V |
| Input Voltage | V_I | -0.3 | $V_{DD} + 0.3$ | V |
| Operating Temp. | T_{opr} | -20 | 70 | °C |
| Storage Temp. | T_{stg} | -30 | 80 | °C |

MECHANICAL DATA

| Item | Nominal Dimensions | Unit |
|-------------------------|--------------------|------|
| Module Size (W x H x T) | 87.0 x 57.0 x 10.5 | mm |
| Viewing Area (W x H) | 70.0 x 37.0 | mm |
| Dot Pitch (W x H) | 0.51 x 0.51 | mm |
| Dot Size (W x H) | 0.495 x 0.495 | mm |
| Weight | Approx. 50 | g |

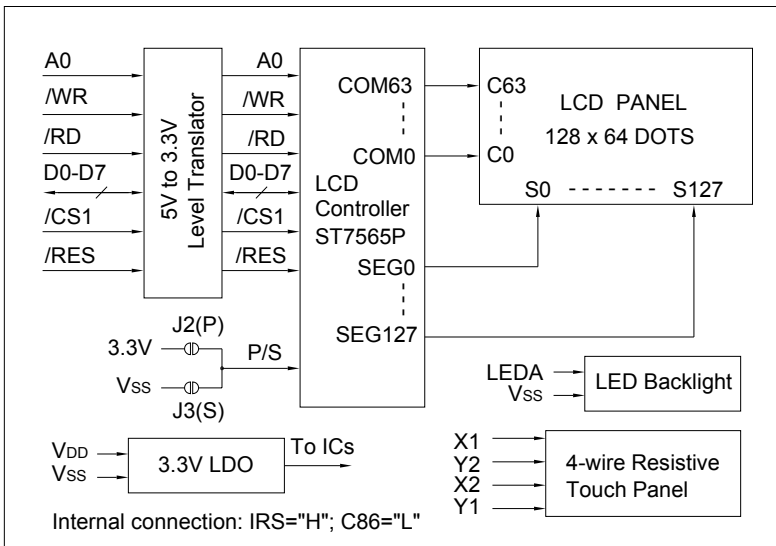
ELECTRICAL CHARACTERISTICS ($V_{DD}=3.3V$ to 5.5V)

| Item | Symbol | Test Condition | Min. | Typ. | Max. | Unit |
|---------------------|----------------|-------------------|--------------|------|----------|------|
| Input High Voltage | V_{IH} | -- | 2.0 | -- | V_{DD} | V |
| Input Low Voltage | V_{IL} | -- | 0 | -- | 0.8 | V |
| Output High Voltage | V_{OH} | $I_{OH} = -0.1mA$ | $V_{DD}-0.2$ | -- | V_{DD} | V |
| Output Low Voltage | V_{OL} | $I_{OL} = 0.1mA$ | 0 | -- | 0.2 | V |
| Supply Current | I_{DD} | $V_{DD} = 5.0V$ | -- | 0.8 | 1.6 | mA |
| LCD Driving Voltage | $V_0 - V_{SS}$ | $T_a=25^\circ C$ | -- | 10.3 | -- | V |

PIN CONNECTIONS (CN1/CN2)

| Pin | Symbol | Level | Function | |
|-------|----------|-------------|---|---|
| 1 | V_{SS} | 0V | GND | |
| 2 | V_{DD} | 3.3 to 5.5V | Power supply for logic | |
| 3 | LEDA | 5V | Power supply for LED backlight LEDK is connected to V_{SS} on PCB | |
| 4 | A0 | H/L | A0="H": Display data A0="L": Instruction code | |
| 5 | /CS1 | L | Chip selection signal. Active "L". | |
| 6 | /RES | L | Reset signal. Active "L". | |
| 7 | D7 | H/L | When P/S="H" (Parallel mode): D0 to D7 are 8-bit bidirectional data bus. | |
| 8 | D6 | H/L | | |
| 9 | D5 | H/L | | |
| 10 | D4 | H/L | | |
| 11 | D3 | H/L | | When P/S="L" (Serial mode): D7 is serial data input (SI). D6 is serial colck input (SCL). |
| 12 | D2 | H/L | | |
| 13 | D1 | H/L | | |
| 14 | D0 | H/L | | |
| 15 | /WR | L | Write signal. Active "L" | |
| 16 | /RD | L | Read signal. Active "L" | |
| 17-18 | X1, Y2 | -- | Touch panel terminals | |
| 19-20 | X2, Y1 | -- | Touch panel terminals | |

BLOCK DIAGRAM



LED BACKLIGHT SPECIFICATIONS ($T_a=25^\circ C$)

| Item | Symbol | Typ. | Max. | Unit |
|-----------------|--------|-------|------|------|
| Forward Voltage | V_f | 3.0 | 3.2 | V |
| Forward Current | I_f | 40 | -- | mA |
| LED Color | | White | | |