# ANDpSiTFT08C351-HB

## 8.4” SVGA Color p-Si TFT LCD Module

The ANDpSiTFT08C351-HB is 800 x 600 Color TFT display that utilizes new poly-silicon (p-Si) technology to provide a brighter, thinner and lighter display with high-resolution. The p-Si TFT technology allows the row and column LCD drivers to be fabricated directly on the LCD glass. This eliminates the need for discrete TAB drivers. Wide viewing angle technology provides excellent images from all directions. The dual tube CCFL backlight offers a very bright display with extended operating life. This makes it ideal for computer, instrumentation, medical or industrial applications.

## Features

- p-Si construction with drivers on glass
- Wide viewing angle (± 45° at CR> 30)
- High luminance, long life backlight (50,000 hours)
- Dual CCFL backlight
- Clear 256K colors (K=1024)
- Thin and lightweight design
- SVGA (800 x 600 pixels color display)
- Applications: Display Terminals; Scientific, Medical, Test & Measurement Instruments; Office Automation Equipmen

### Mechanical Characteristics

| Item | Specification | Unit |
|---|---|---|
| Outline Dimensions | 199.5 (H) x 149.5 (V) x 12.0 max (D) | mm |
| Number of Pixels | 800 (H) x 600 (V) | pixels |
| Active Area | 170.4 (H) x 127.8 (V) | mm |
| Pixel Pitch | 0.213 (H) x 0.213 (V) | mm |
| Weight (approx.) | 395 | gram |
| Backlight | CCFL, Side-light type (2 lamps) | – |

### Absolute Maximum Ratings

| Item | Symbol | Min. | Max. | Unit |
|---|---|---|---|---|
| Supply Voltage | $V_{DD}$ | -0.3 | 4.5 | V |
| | $V_{FL}$ | 0 | 2000 | Vrms |
| FL Driving Frequency | $f_{FL}$ | 0 | 100 | kHz |
| Input Signal Voltage | $V_{IN}$ | -0.3 | $V_{DD}$ + 0.3 | V |
| Operating Temperature | $T_{op}$ | 0 | 50 | °C |
| Storage Temperature | $T_{stg}$ | -20 | 60 | °C |
| Humidity (Max. Wet bulb temp = 29°C) | – | 10 | 90 | % RH |

### Electrical Characteristics (Ta = 25°C)

| Item | Symbol | Min. | Typ. | Max. | Unit |
|---|---|---|---|---|---|
| Supply Voltage ($I_{FL}$=6mA) | $V_{DD}$ | 3.0 | 3.3 | 3.6 | V |
| | $V_{FL}$ | 480 | 530 | 580 | Vrms |
| FL Start Voltage (Ta = 0°C) | – | 1400 | – | 1600 | Vrms |
| High Level Input Voltage | $V_{IH}$ | 0.8 | _ | $V_{DD}$ | V |
| Low Level Input Voltage | $V_{IL}$ | 0 | – | 0.2 | V |
| Current Consumption | $I_{DD}$ | – | 240 | – | mA |
| | $I_{FL}$ | 3.0 | – | 6.0 | mArms |
| Power Consumption (*1) | P | – | 7.2 | – | W |

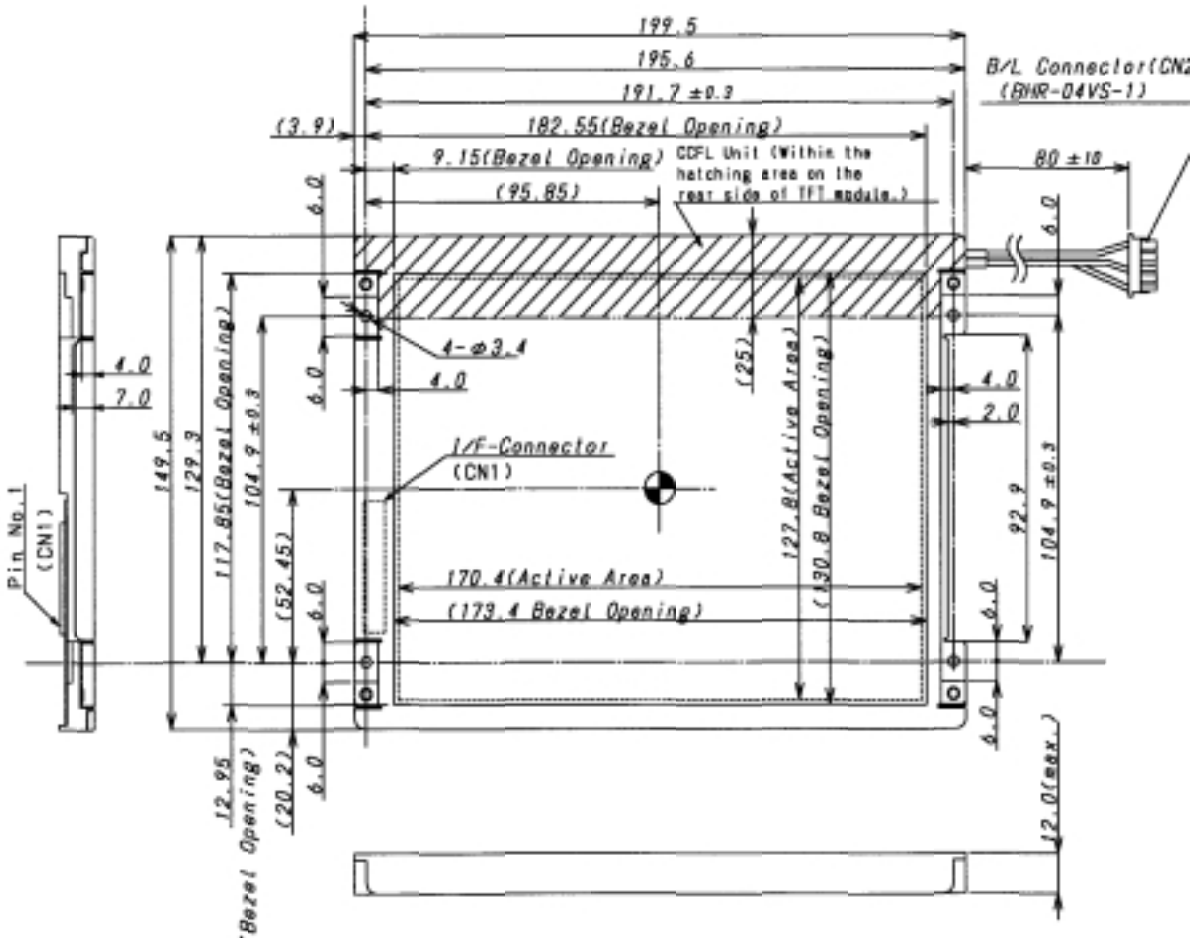
*1: Before the efficiency loss of CCFL inverter, $I_{FL}$ =6mA

### Optical Characteristics (Ta = 25˚C)

| Item | Symbol | Min. | Typ. | Max. | Unit |
|---|---|---|---|---|---|
| Contrast | CR | 100 | 250 | – | – |
| Response | $t_{on}$ | – | – | 50 | ms |
| | $t_{off}$ | – | – | 50 | ms |
| Luminance ($I_{FL}$ =6mA) | L | 280 | 350 | – | cd/m$^2$ |
| Viewing Angle (CR>30) | ϕL/ ϕR | 40/40 | 45/45 | – | deg |
| | ϕU/ ϕD | 45/45 | 50/50 | – | deg |

**Dimensional Outline**

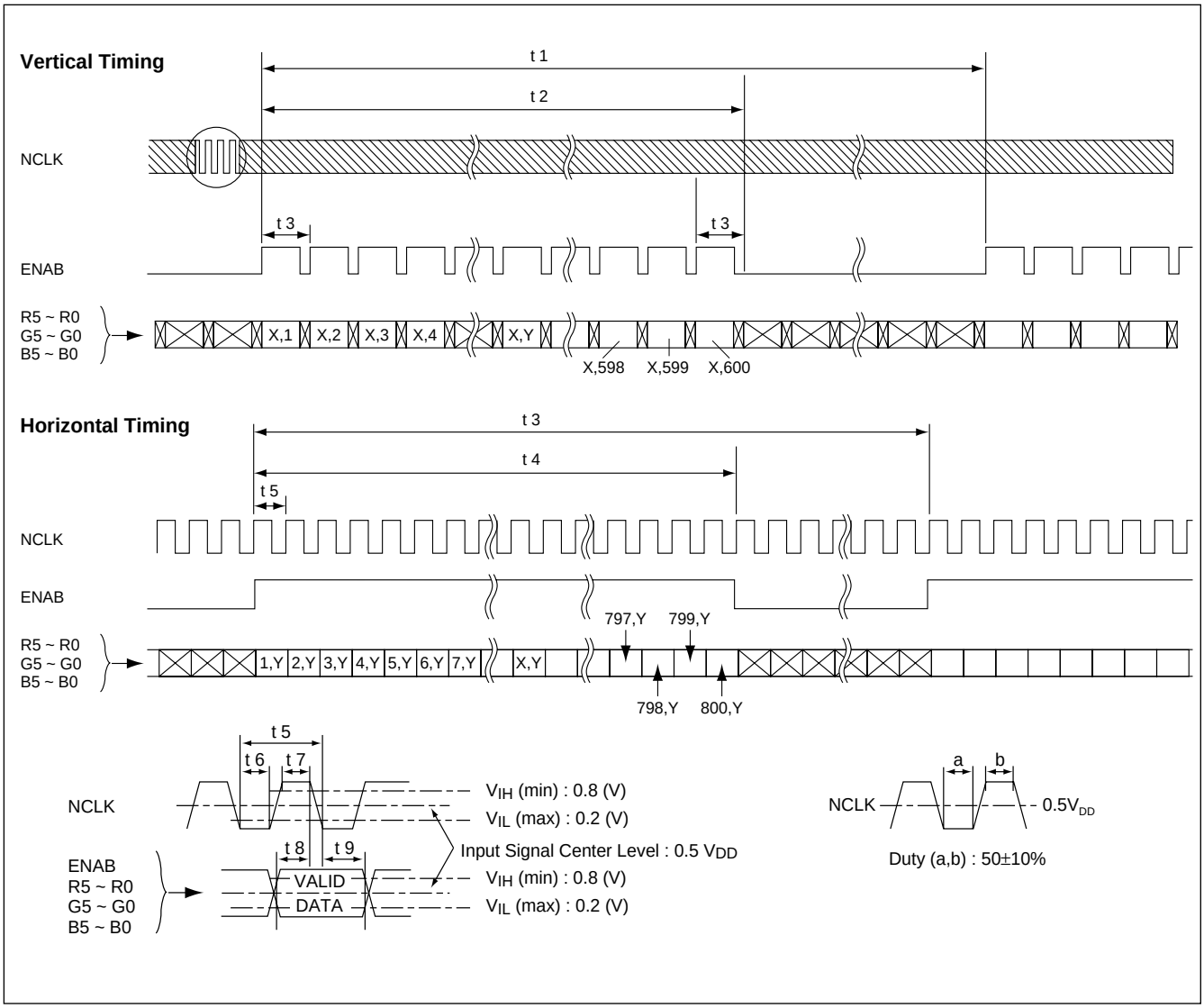
Unit: mm
Standard Tolerance: 0.5mm

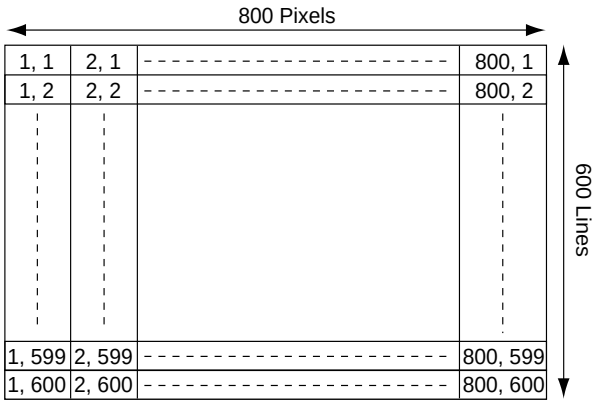


## Timing Specifications

| Item | Symbol | Min | Typ | Max | Unit |
|---|---|---|---|---|---|
| Frame Period | t1 | 604 x t3<br>– | 625 x t3<br>17.78 | 628 x t3<br>17.86 | –<br>ms |
| Vertical Display Term | t2 | 600 x t3 | 600 x t3 | 600 x t3 | t2 = N •t3 |
| One Line Scanning Time | t3 | 944 x t5<br>(26.3) | 1056 x t5<br>26.4 | 1064 x t5 | –<br>µs |
| Horizontal Display Period | t4 | 800 x t5 | 800 x t5 | 800 x t5 | – |
| Clock Period | t5 | 24.7 | 25.0 | 27.8 | ns |
| Clock “L” Time | t6 | 9.0 | – | – | ns |
| Clock “H” Time | t7 | 9.0 | – | – | ns |
| Set Up Time | t8 | 4.0 | – | – | ns |
| Hold Time | t9 | 5.0 | – | – | ns |

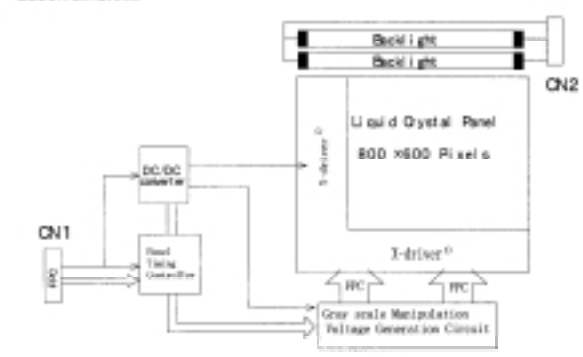
## Timing Chart






Recommended Inverter: INV8m122325 (12VDC Input)

**Block Diagram**




1) Drivers are fabricated on the LCD glass

2) Connectors
CN1-DF19G-30P-1H/Hirose Electric Co.
Mating Connector - DF19G-30S-1C (Housing)

CN2-BHR-04VS-1/Japan Solderless Terminal Co., Ltd.
Mating Connector - SM04(4.0)B-BHS-1-TB/JST

## Connector Pin Assignment for Interface

**CN1 Input Signal (1)**
**(DF19G-30P-1H/Hirose Electric Co.)**

| Terminal No. | | Symbol | Function |
|---|---|---|---|
| 1 | | GND | Ground |
| | 2 | VDD | +3.3V Power Supply |
| 3 | | VDD | +3.3V Power Supply |
| | 4 | GND | Ground |
| 5 | | ENAB | Compound Synchronization Signal |
| | 6 | B5(2) | Blue Display Data (MSB) |
| 7 | | B4(2) | Blue Display Data |
| | 8 | B3(2) | Blue Display Data |
| 9 | | B2(2) | Blue Display Data |
| | 10 | B1(2) | Blue Display Data |
| 11 | | B0(2) | Blue Display Data (LSB) |
| | 12 | GND | Ground |
| 13 | | G5(2) | Green Display Data (MSB) |
| | 14 | G4(2) | Green Display Data |
| 15 | | G3(2) | Green Display Data |
| | 16 | G2(2) | Green Display Data |
| 17 | | G1(2) | Green Display Data |
| | 18 | G0(2) | Green Display Data (LSB) |
| 19 | | GND | Ground |
| | 20 | R5(2) | Red Display Data (MSB) |
| 21 | | R4(2) | Red Display Data |
| | 22 | R3(2) | Red Display Data |
| 23 | | R2(2) | Red Display Data |
| | 24 | R1(2) | Red Display Data |
| 25 | | R0(2) | Red Display Data (LSB) |
| | 26 | GND | Ground |
| 27 | | NC | No Connect |
| | 28 | NC | No Connect |
| 29 | | NCLK | Sampling Clock |
| | 30 | GND | Ground |

**CN2 CCFL Power Source**
**(BHR-04VS-1/Japan Solderless Terminal Mfg Co., Ltd.)**

| Terminal No. | Symbol | Function |
|---|---|---|
| 1 | VL | CCFL Power Supply (High Voltage) |
| 2 | VL | CCFL Power Supply (High Voltage) |
| 3 | NC(1) | – |
| 4 | GL | CCFL Power Supply (GND Side) |

Note (1) NC terminal is open.

Note (2): 256K colors are displayed by the combinations of 18 data bits.

| | Display | R5 | R4 | R3 | R2 | R1 | R0 | G5 | G4 | G3 | G2 | G1 | G0 | B5 | B4 | B3 | B2 | B1 | B0 | Gray Scale Level |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Basic Color | Black | L | L | L | L | L | L | L | L | L | L | L | L | L | L | L | L | L | L | – |
| | Blue | L | L | L | L | L | L | L | L | L | L | L | L | H | H | H | H | H | H | – |
| | Green | L | L | L | L | L | L | H | H | H | H | H | H | L | L | L | L | L | L | – |
| | Lt. Blue | L | L | L | L | L | L | H | H | H | H | H | H | H | H | H | H | H | H | – |
| | Red | H | H | H | H | H | H | L | L | L | L | L | L | L | L | L | L | L | L | – |
| | Purple | H | H | H | H | H | H | L | L | L | L | L | L | H | H | H | H | H | H | – |
| | Yellow | H | H | H | H | H | H | H | H | H | H | H | H | L | L | L | L | L | L | – |
| | White | H | H | H | H | H | H | H | H | H | H | H | H | H | H | H | H | H | | – |
| Gray Scale of Red | Black | L | L | L | L | L | L | L | L | L | L | L | L | L | L | L | L | L | L | L0 |
| | Dark | L | L | L | L | L | H | L | L | L | L | L | L | L | L | L | L | L | L | L1 |
| | | L | L | L | L | H | L | L | L | L | L | L | L | L | L | L | L | L | L | L2 |
| | | | | | : | | | | | | : | | | | | | : | | | L3~L60 |
| | | | | | : | | | | | | : | | | | | | : | | | |
| | | H | H | H | H | L | H | L | L | L | L | L | L | L | L | L | L | L | L | L61 |
| | Light | H | H | H | H | H | L | L | L | L | L | L | L | L | L | L | L | L | L | L62 |
| | Red | H | H | H | H | H | H | L | L | L | L | L | L | L | L | L | L | L | L | Green L63 |
| Gray Scale of Green | Black | L | L | L | L | L | L | L | L | L | L | L | L | L | L | L | L | L | L | L0 |
| | Dark | L | L | L | L | L | L | L | L | L | L | L | H | L | L | L | L | L | L | L1 |
| | | L | L | L | L | L | L | L | L | L | L | H | L | L | L | L | L | L | L | L2 |
| | | | | | : | | | | | | : | | | | | | : | | | L3~L60 |
| | | | | | : | | | | | | : | | | | | | : | | | |
| | | L | L | L | L | L | L | H | H | H | H | L | H | L | L | L | L | L | L | L61 |
| | Light | L | L | L | L | L | L | H | H | H | H | H | L | L | L | L | L | L | L | L62 |
| | Green | L | L | L | L | L | L | H | H | H | H | H | H | L | L | L | L | L | L | Green L63 |
| Gray Scale of Blue | Black | L | L | L | L | L | L | L | L | L | L | L | L | L | L | L | L | L | L | L0 |
| | Dark | L | L | L | L | L | L | L | L | L | L | L | L | L | L | L | L | L | H | L1 |
| | | L | L | L | L | L | L | L | L | L | L | L | L | L | L | L | L | H | L | L2 |
| | | | | | : | | | | | | : | | | | | | : | | | L3~L60 |
| | | | | | : | | | | | | : | | | | | | : | | | |
| | | L | L | L | L | L | L | L | L | L | L | L | L | H | H | H | H | L | H | L61 |
| | Light | L | L | L | L | L | L | L | L | L | L | L | L | H | H | H | H | H | L | L62 |
| | Blue | L | L | L | L | L | L | L | L | L | L | L | L | H | H | H | H | H | H | Blue L63 |
| Gray Scale of White & Black | Black | L | L | L | L | L | L | L | L | L | L | L | L | L | L | L | L | L | L | L0 |
| | Dark | L | L | L | L | L | H | L | L | L | L | L | H | L | L | L | L | L | H | L1 |
| | | L | L | L | L | H | L | L | L | L | L | H | L | L | L | L | L | H | L | L2 |
| | | | | | : | | | | | | : | | | | | | : | | | L3~L60 |
| | | | | | : | | | | | | : | | | | | | : | | | |
| | | H | H | H | H | L | H | H | H | H | H | L | H | H | H | H | H | L | H | L61 |
| | Light | H | H | H | H | H | L | H | H | H | H | H | L | H | H | H | H | H | L | L62 |
| | White | H | H | H | H | H | H | H | H | H | H | H | H | H | H | H | H | H | H | White L63 |