



Features

- Low Temperature Poly Silicon (LTPS) construction
- High luminance, low power consumption
- Horizontal scan can be left to right or right to left
- Vertical scan can be up to down or down to up
- Minimal external circuits and components
- Slim and lightweight design
- Transmissive display
- Applications: portable, battery-operated applications

Mechanical Characteristics

| Item | Specification | Unit |
|--------------------------|----------------------------|------|
| Display Size (diag.) | 2.5 (6.35cm) | inch |
| Display Type | Transmissive | — |
| Active Area | 49.42 (W) x 38.304 (H) | mm |
| Number of Dots | 882 (W) x 228 (H) | dot |
| Dot Pitch | 0.056 (W) x 0.168 (H) | mm |
| Color Arrangement | RGB Delta | — |
| Color Numbers | 16 Million/ Full Color | — |
| Outline Dim. (W x H x D) | 59.1 x 45.3 x 3(Approach)* | mm |
| Weight | 16(Approach) | g |

* Exclude FPC and protrusions.

AND-TFT-pSi025TP-LED

2.5" Color p-Si TFT LCD Module (Transmissive)

The AND-TFT-pSi025TP-LED is a 882 x 228 Color TFT display that utilizes new LTPS (Low Temperature Poly Silicon) technology to provide brighter, thinner and lighter display with high luminance. The 2.5" (6.35 cm) LCD module is an active matrix color TFT LCD module with Analog Interface. Vertical and horizontal drivers are built on the panel. NTSC and PAL format are compatible. All these features making it ideal for portable applications including personal digital assistants (PDAs), medical instruments and test & measurements instruments.

Absolute Maximum Ratings (GND=0V)

| Item | Symbol | Min. | Max. | Unit |
|--|---------------------------------------|------|------|------|
| Power Supply for Horizontal Driver | HVDD | -1.0 | +14 | V |
| Power Supply for Vertical Driver | VVDD | -1.0 | +14 | V |
| Vertical Driver Neg. Power Supply Voltage | VVEE | -6.0 | -1.0 | V |
| Common Electrode Voltage | VCOM | -1.0 | +14 | V |
| Horizontal Driver / Precharge Data Input Voltage | STH, XSTH, CKH1, CKH2, CSH, PCG, XPCG | -1.0 | +14 | V |
| Vertical Driver / Precharge Data Input Voltage | STV, XSTV, CKV1, CKV2, CSV, ENB, XENB | -1.0 | +14 | V |
| Video / Precharge Data Input Voltage | VG, VR, VB, VPCD | -1.0 | +14 | V |
| Operating Temp. | Topr | -10 | +60 | °C |
| Storage Temp. | Tstg | -30 | +80 | °C |

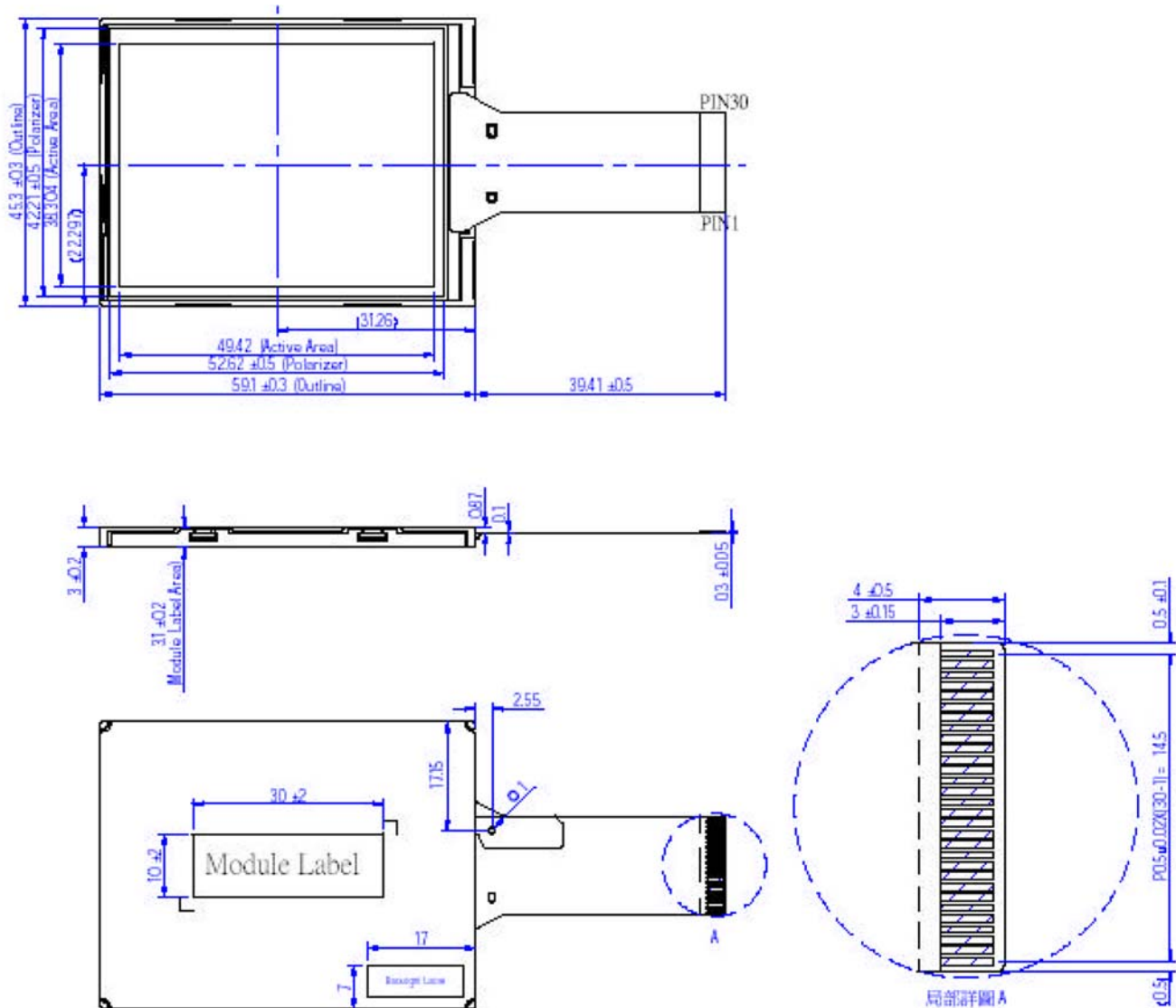
Driving Backlight (Ta = 25°C)

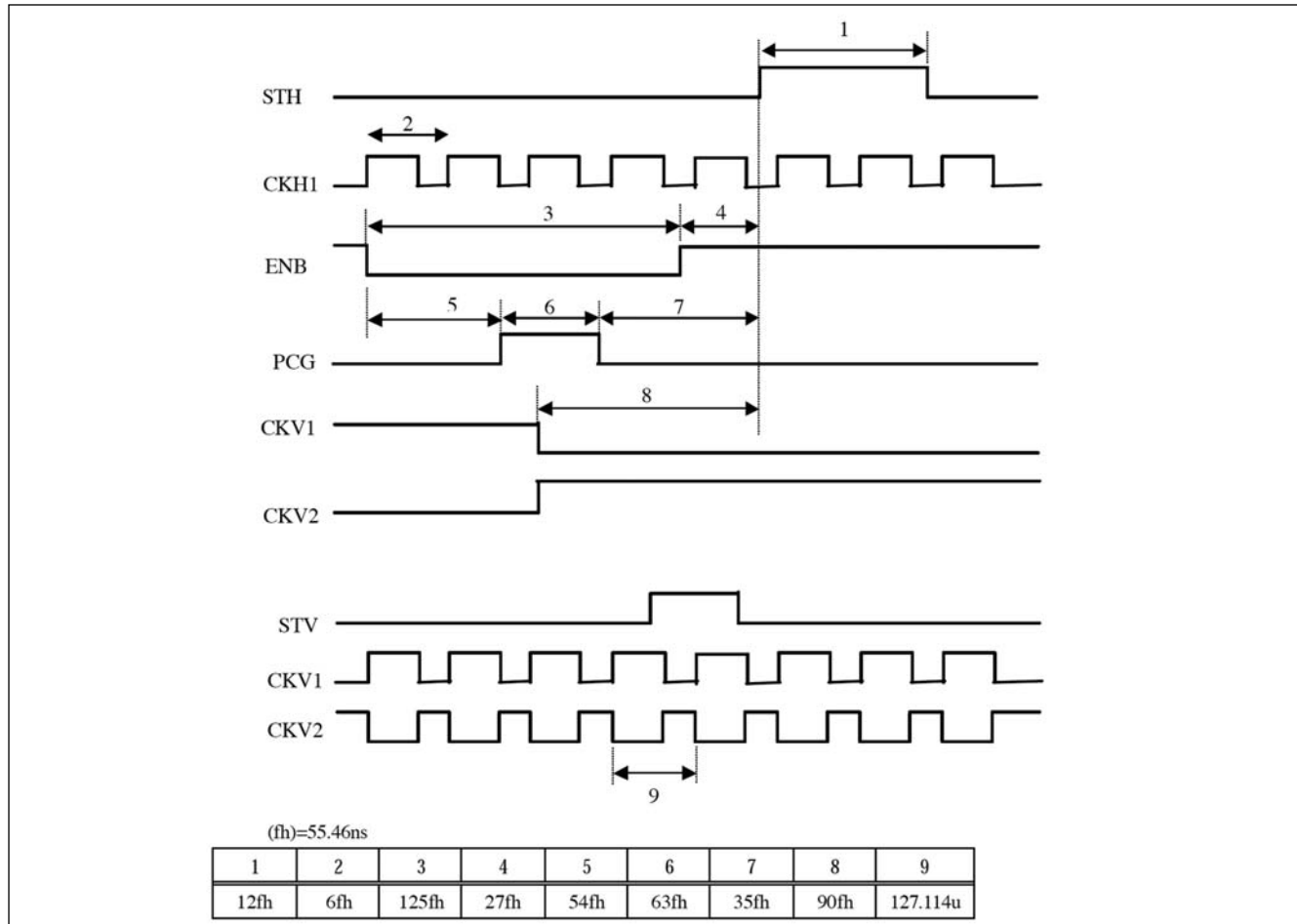
| Item | Symbol | Min. | Typ. | Max. | Unit | Remarks |
|-----------------------------|-----------------|------|------|------|------|---------|
| Forward Current | I _F | — | 20 | — | mA | Note 1 |
| Forward Current Voltage | V _F | — | 14.4 | 16 | V | |
| Backlight Power Consumption | W _{BL} | — | 288 | — | mW | |

Note 1: Backlight driving circuit is recommended as the fix current circuit.

Product specifications contained herein may be changed without prior notice. It is therefore advisable to contact Purdy Electronics before proceeding with the design of equipment incorporating this product.

Dimensional Outline
Front View

Unit: mm
Standard Tolerance: 0.5mm


Timing Chart

Optical Specification - See Notes below Ta=25°C

| Item | | Symbol | Condition | Min. | Typ. | Max. | Unit |
|---------------------|---------|----------------|--------------------|------|------|------|-------------------|
| Viewing Angles | | Θ 11 | CR = 10 | 35 | 45 | — | degree |
| | | Θ 12 | | 35 | 45 | — | |
| | | Θ 21 | | 12 | 17 | — | |
| | | Θ 22 | | 35 | 45 | — | |
| Contrast Ratio | | CR | $\Theta = 0^\circ$ | 120 | 200 | — | — |
| Response Time | Rising | Tr | | — | 15 | 25 | — |
| | Falling | TF | | — | 25 | 45 | — |
| Luminance (IF=20mA) | | L | | 200 | 250 | — | cd/m ² |
| Chromaticity | White | x _W | | 0.26 | 0.31 | 0.36 | — |
| | | y _W | | 0.29 | 0.34 | 0.39 | |

Note 1: Driving voltage with Digital Interface: HVDD = 8.5V, VVDD = 8.5V

VVC = 2.6V, VCOM = Optimum common electrode voltage

Driving voltage with Analog Interface: HVDD = 12.0V, VVDD = 12.0V

VVC = 5.2V, VCOM = Optimum common electrode voltage

Note 2: Ambient Temperature: ta = 25°C

Note 3: Testing Point: Measure in the display center point and the test angle $\Theta = 0^\circ$

Note 4: R, G, B signal input voltage VG, VR, VB; VG, VR, VB = VVC ± VAC (VAC: Signal Amplitude)

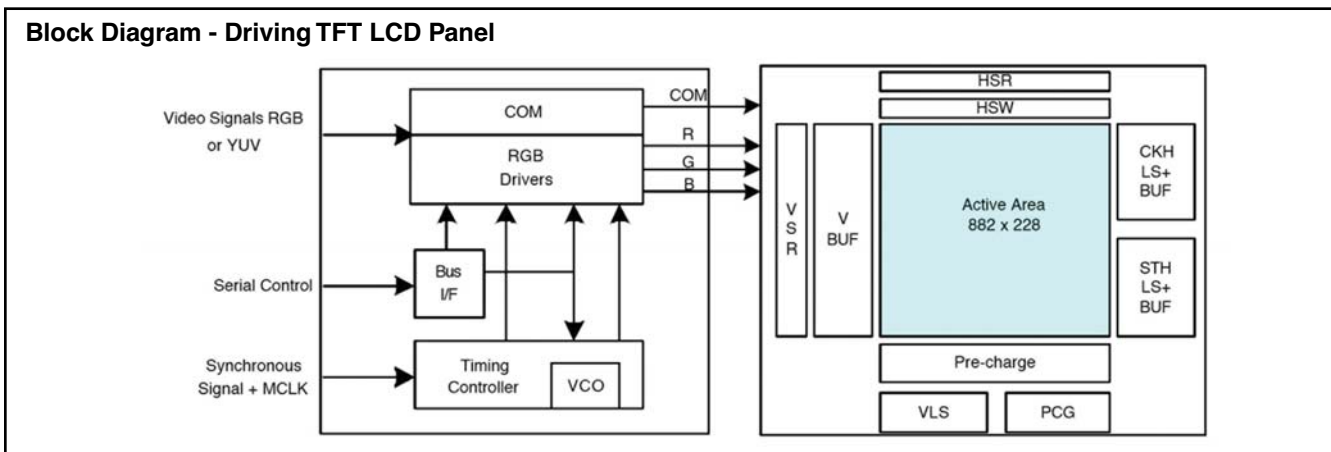
Note 5: LED Current: IF = 20mA.

Input/Output Terminals
TFT LCD Panel

| Pin | Symbol | I/O | Description | Remarks |
|-----|-----------------|-----|---|---|
| 1 | NC | – | No Connection | |
| 2 | V _{FS} | I | GND for LED Backlight | |
| 3 | V _F | I | LED Input Voltage | |
| 4 | NC | – | No Connection | |
| 5 | NC | – | No Connection | |
| 6 | NC | – | No Connection | |
| 7 | VCOM | I | Common Electrode Voltage | |
| 8 | CKV1 | I | Vertical Clock 1 | |
| 9 | CKV2 | I | Vertical Clock 2 | |
| 10 | STV | I | Vertical start signal | |
| 11 | XSTV | I | Inverted signal of STV | |
| 12 | VVDD | I | Power SUPply for Vertical Driver | |
| 13 | ENB | I | Enable signal | |
| 14 | XENB | I | Inverse signal of ENB | |
| 15 | CSV | I | Up/Down inverse control signal | |
| 16 | VBB | O | Vertical driver output power voltage | VBB be used for digital interface; NC be used for analog interface. |
| | NC | – | No Connection | |
| 17 | PCG | I | Precharge data signal | |
| 18 | XPCG | I | Inverted signal of PCG | |
| 19 | PCD | I | Precharge data signal for pixel | |
| 20 | B | I | Video Signal (B) | |
| 21 | R | I | Video Signal (R) | |
| 22 | G | I | Video Signal (G) | |
| 23 | CSH | I | Right/Left inverse control signal | |
| 24 | VVEE | I | Vertical driver negative power supply voltage | VVEE be used for digital interface; VSS be used for analog interface. |
| | VSS | I | GND | |
| 25 | VSS | I | Ground | |
| 26 | STH | I | Horizontal start signal | |
| 27 | XSTH | I | Inverse signal of STH | |
| 28 | HVDD | I | Power SUPply for Horizontal Driver | |
| 29 | CKH1 | I | Horizontal Clock 1 | |
| 30 | CKH2 | I | Horizontal Clock 2 | |

Electrical Characteristics - Driving TFT LCD Panel with Digital Interface

| Item | Symbol | Min. | Typ. | Max. | Unit |
|---|----------------|----------------|----------|----------------|------|
| Power Supply for Horizontal Driver | HVDD | 8.2 | 8.5 | 8.8 | V |
| Power Supply for Vertical Driver | VVDD | 8.2 | 8.5 | 8.8 | V |
| Vertical Driver Neg. Pwr Supply Voltage | VVEE | – | -4.0 | – | V |
| Horiz. Driver Input Voltage | Low | VHIL | -0.3 | 0.0 | V |
| | High | VHIH | 2.5 | 3.0 | V |
| Vert. Driver Input Voltage | Low | VVIL | -0.3 | 0.0 | V |
| | High | VVIH | 2.5 | 3.0 | V |
| CSH, CSV | Low | VSIL | -0.3 | 0.0 | V |
| | High | VSIH | 8.2 | 8.5 | V |
| Video Signal Center Voltage | VVC | 2.4 | 2.6 | 2.8 | V |
| Video Signal Voltage | Blk (H) | Vblock(H) | 4.0 | 4.2 | V |
| | Blk (L) | Vblock (L) | 0.8 | 1.0 | V |
| | Wh-Bk | V sig w-b | – | – | V |
| Common Electrode Signal Ctr Voltage | VCOMc | (VVC-0.2) -0.2 | (VVC0.2) | (VVC-0.2) +0.2 | V |
| Common Electrode Signal Ctr Range | VCOMp-p | – | 3.8 | – | V |
| Panel Power Consumption | W _P | 13 | 20 | 26 | mW |

Block Diagram - Driving TFT LCD Panel

Electrical Characteristics (VSS=0V, Ta = 25°C) Driving TFT LCD Panel with Analog Interface

| Item | Symbol | Min. | Typ. | Max. | Unit | Remarks |
|----------------------------------|----------------|----------|----------|----------|------|---------|
| Power Supply for Vertical Driver | VVDD | 11.7 | 12 | 12.3 | V | |
| Power Supply for Horiz. Driver | HVDD | 11.7 | 12 | 12.3 | V | |
| Horizontal Driver Input Voltage | Low | VHIL | -0.3 | 0.0 | V | |
| | High | VHIH | 2.5 | 3.0 | V | |
| Vertical Driver Input Voltage | Low | VVIL | -0.3 | 0.0 | V | |
| | High | VVIH | 2.5 | 3.0 | V | |
| CSH, CSV | Low | VSIL | -0.3 | 0.0 | V | |
| | High | VSIH | 11.5 | 12 | V | |
| Video Signal Center Voltage | VVC | 5.0 | 5.2 | 5.4 | V | Note 1 |
| Video Input Voltage Range | VG, VR, VB | VCC -3.5 | – | VVC +3.5 | V | |
| Common Electrode Voltage | VCOM | – | VVC -0.2 | – | V | Note 2 |
| Panel Power Consumption | W _P | 35 | 50 | 65 | mW | |

Note 1: Video signal and Precharge data signal shall be input symmetrically around VVC.

Note 2: Set common electrode voltage to the optimum voltage.