



Features

- a-Si TFT-LCD
- 640 (W) x 3 (RGB) x 480 (H) vertical stripes, Highly minute
- “Transmitting type”, low reflection treatment, high brightness, High contrast, Ultra wide viewing angle
- Digital 6 bit RGB input interface
- COG (Chip on Glass) composition
- LCD drive circuit is built in, but inverter for backlight is not built in.
- Applications include portable instruments and PDAs

Mechanical Characteristics (H=Horizontal, V=Vertical, D=Depth)

| Item | Specification | Unit |
|-------------------------|----------------------------------|--------|
| Outline Dimensions | 151.0 (H) x 115.5 (V) x 10.0 (D) | mm |
| Number of Pixels | 640 (H) x 3 (RGB) x 480 (V) | pixels |
| Color-Filter-Array | RGB vertical stripes | mm |
| Pixel Pitch | 0.0685 (H) x 0.2055 (V) | mm |
| Effective Display Area | 131.52 (H) x 98.63 (V) | mm |
| Gray Scales | 64 | — |
| Front Surface Treatment | Anti-Glare Coat (with WV film) | — |
| Backlight | CCFL with 3 wavelength spectrum | L-type |
| Consumption Power | 4.00 | W |
| Weight (TYP.) | 205 | grams |

Absolute Maximum Ratings

| Item | Symbol | Min. | Max. | Unit |
|---------------------------------------|-----------|------|----------------|------|
| Logic Voltage | V_I | -0.3 | 4.5 | V |
| Supply Voltage | V_{DD} | -0.3 | $V_{DD} + 0.3$ | V |
| Backlight Input Voltage | — | — | 3000 | Vrms |
| Operating Temperature (Panel Surface) | T_{op} | -10 | 60 | °C |
| Storage Temperature (Panel Surface) | T_{stg} | -20 | 70 | °C |

AND065A041F-HB-KIT

Custom 6.5" VGA ColorTFT-LCD Integrated Display Module

The AND065A041F-HB-KIT is a custom VGA (640 x 480) color a-Si TFT-LCD panel with a 6.5" diagonal viewing area.

Electrical Characteristics (Ta = 25°C)

| Item | Symbol | Min. | Typ. | Max. | Unit |
|-------------------------------------|----------|----------------|------|----------------|-------|
| Power Voltage (input voltage) | V_{DD} | +3.15 | +3.3 | +3.45 | V |
| Power Voltage (current consumption) | I_{DD} | — | 240 | 350 | mArms |
| Input Low Voltage | V_{IL} | 0.0 | — | 0.3 * V_{DD} | V |
| Input High Voltage | V_{IH} | 0.7 * V_{DD} | — | V_{DD} | V |
| Allowable Ripple Voltage | V_{RP} | — | — | 100 | mVp-p |

*1: 8 color bars pattern

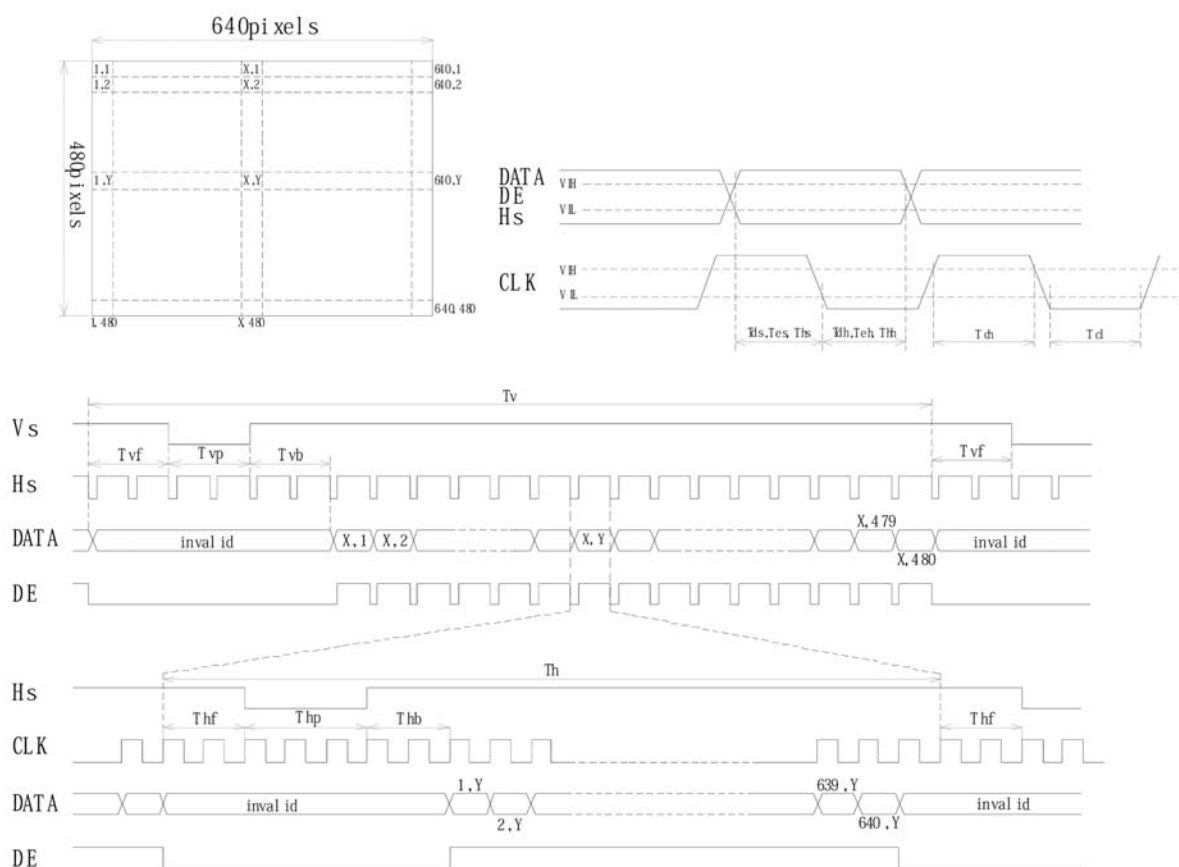
Optical Characteristics (Ta = 25°C)

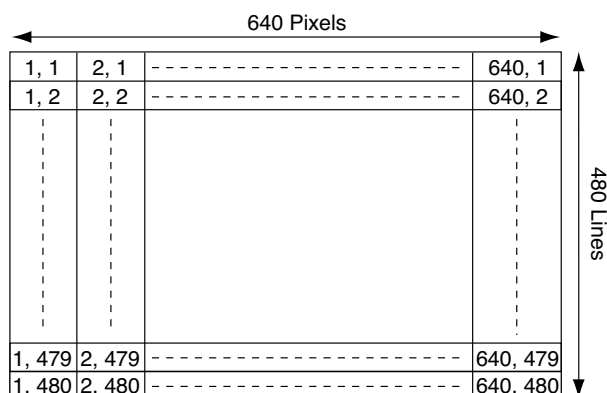
| Item | Sym. | Condition | | | Standard Value | | | Unit |
|--------------------------|------------|------------|--------|-----------|----------------|------|------|-------------------|
| | | θ | ϕ | C | Min | Typ | Max | |
| Brightness | B | 0° | 0° | — | 300 | 400 | — | cd/m ² |
| Contrast ratio | Cmax | Best Angle | | | 100 | 250 | — | — |
| White color chromaticity | X | 0° | 0° | — | 0.27 | 0.31 | 0.35 | — |
| | Y | 0° | 0° | — | 0.28 | 0.32 | 0.36 | — |
| Bright./uniformity | — | 0° | 0° | — | 0.7 | — | — | — |
| Vert. viewing angle | θU | — | 0° | ≥ 10 | 40 | 60 | — | ° |
| | θD | — | 0° | ≥ 10 | 20 | 30 | — | ° |
| Horz. viewing angle | ϕL | 0° | — | ≥ 10 | 45 | 60 | — | ° |
| | ϕR | 0° | — | ≥ 10 | 45 | 60 | — | ° |
| Response time | τr | 0° | 0° | — | — | 10 | 20 | ms |
| | τd | 0° | 0° | — | — | 15 | 30 | ms |

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.

Timing Specifications

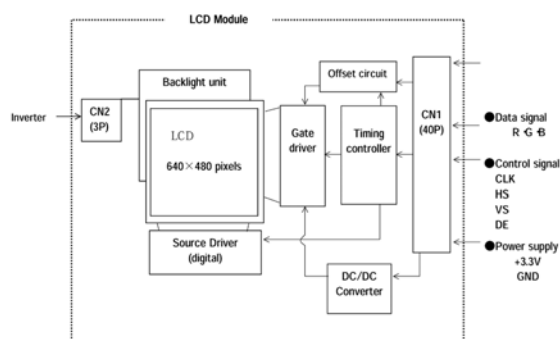
| Characteristics | | SYMBOL | MIN | TYP. | MAX | UNIT | REMARKS |
|-----------------|------------------|---------|----------|----------|----------|-------|---------|
| CLK Clock | Frequency | Fck | — | 25.175 | — | MHz | |
| | Period | Clk | — | 39.72 | — | ns | |
| | High/Low Time | Tch/Tcl | 12/12 | — | — | ns | |
| DATA Data | Setup/Hold Time | Tds/Tdh | 5/10 | — | — | ns | |
| DE Data Enable | Setup/Hold Time | Tes/Teh | 5/10 | — | — | ns | |
| Hs Horiz. Sync. | Setup/Hold Time | Ths/Thh | 5/10 | — | — | ns | |
| | Period | Th | 700 | 800 | 832 | clk | |
| | Pulse Width | Thp | 4 | 96 | — | clk | |
| | Front/Back Porch | Thf/Thb | —/7 | 13/51 | —/— | clk | |
| Vs Vert. Sync. | Period | Tv | 516/16.2 | 525/16.7 | 534/17.6 | th/ms | |
| | Pulse Width | Tvp | 1 | 2 | — | th | |
| | Front/Back Porch | Thf/Thb | —/4 | 11/32 | —/— | th | |

Timing Chart




Recommended Inverter: TBD

Block Diagram



- 1) Drivers are fabricated on the LCD glass
- 2) Connectors
CN1
1L-FHR-B40S-HF / JAE
Mating connector: FFC (0.5mm pitch)

Photo of back of display



Connector Pin Assignments for Interface CN1; Signal Interface

| Terminal No. | | Symbol | Function |
|--------------|----|--------|-------------------------------------|
| 1 | | VDD | +3.3V Power Supply |
| | 2 | VDD | +3.3V Power Supply |
| 3 | | VDD | +3.3V Power Supply |
| | 4 | VDD | +3.3V Power Supply |
| 5 | | GND | Signal Ground |
| | 6 | GSX1 | Display period compensation signal |
| 7 | | GND | Signal Ground |
| | 8 | DOFF1 | Non-display pd. compensation signal |
| 9 | | GND | Signal Ground |
| | 10 | DE | Data Enable Signal |
| 11 | | GND | Signal Ground |
| | 12 | VS | Vertical Sync. |
| 13 | | GND | Signal Ground |
| | 14 | HS | Horizontal Sync. |
| 15 | | GND | Signal Ground |
| | 16 | B5 | Blue Data |
| 17 | | B4 | |
| | 18 | B3 | |
| 19 | | B2 | |
| | 20 | B1 | |
| 21 | | B0 | |
| | 22 | GND | Signal Ground |
| 23 | | G5 | Green Data |
| | 24 | G4 | |
| 25 | | G3 | |
| | 26 | G2 | |
| 27 | | G1 | |
| | 28 | G0 | |
| 29 | | GND | Signal Ground |
| | 30 | R5 | Red Data |
| 31 | | R4 | |
| | 32 | R3 | |
| 33 | | R2 | |
| | 34 | R1 | |
| 35 | | R0 | |
| | 36 | GND | Signal Ground |
| 37 | | GND | Signal Ground |
| | 38 | CLK | Dot Clock |
| 39 | | GND | Signal Ground |
| | 40 | GND | Signal Ground |

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 | 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 | L | L1 |
| | | L | L | L | L | H | L | L | L | L | L | L | L | L | L | L | L | L | L | L | L2 |
| | | : | | | | | | : | | | | | | : | | | | | | L3~L60 | |
| | | : | | | | | | : | | | | | | : | | | | | | | |
| | Light | H | H | H | H | L | H | L | L | L | L | L | L | L | L | L | L | L | L | L | L61 |
| | | H | H | H | H | H | L | 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 | 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 | L | L1 |
| | | L | L | L | L | L | L | L | L | L | L | H | L | L | L | L | L | L | L | L | L2 |
| | | : | | | | | | : | | | | | | : | | | | | | L3~L60 | |
| | | : | | | | | | : | | | | | | : | | | | | | | |
| | Light | L | L | L | L | L | L | H | H | H | H | L | H | L | L | L | L | L | L | L | L61 |
| | | L | L | L | L | L | L | H | H | H | H | H | L | 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 | 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 | L | L1 |
| | | L | L | L | L | L | L | L | L | L | L | L | L | L | L | L | L | H | L | L | L2 |
| | | : | | | | | | : | | | | | | : | | | | | | L3~L60 | |
| | | : | | | | | | : | | | | | | : | | | | | | | |
| | Light | L | L | L | L | L | L | L | L | L | L | L | L | L | H | H | H | H | L | H | L61 |
| | | L | 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 | 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 | L | L1 |
| | | L | L | L | L | H | L | L | L | L | L | H | L | L | L | L | L | H | L | L | L2 |
| | | : | | | | | | : | | | | | | : | | | | | | L3~L60 | |
| | | : | | | | | | : | | | | | | : | | | | | | | |
| | Light | H | H | H | H | L | H | H | H | H | L | H | L | H | H | H | H | H | L | H | L61 |
| | | H | H | H | H | H | L | H | H | H | H | H | L | 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 | H | White L63 |

Mechanical Drawing

