

1. FEATURES

- The 3.0" LCD module is the active matrix color TFT LCD module. LTPS (Low Temperature Poly Silicon) TFT technology is applied with vertical and horizontal drivers built on the panel.
- Both of horizontal and vertical scan are reversible and controlled by the serial interface commands.
- The product is designed for the requirement of the green product, and the specification complies with Toppoly's "Green Product Chemical Substance Specification Standard Hand Book".

2. GENERAL SPECIFICATIONS

Item	Description	Unit
Display Size (Diagonal)	3.0	Inch
Aspect ratio	4:3	-
Display Type	Transmissive	-
Active Area (HxV)	60.03x45	mm
Number of Dots (HxV)	960 x 240	Dot
Dot Pitch (HxV)	0.0625 x 0.1875	mm
Color Arrangement	RGB Delta	-
Color Numbers	16Million	-
NTSC	40	%
Outline Dimension (H x V x T)	70.5 x 52.2 x 3.97	mm
Weight	27.8	G

*Exclude FPC and protrusions.

3. INPUT/OUTPUT TERMINALS

3.1 TFT LCD Panel

Recommend connector:

Compatible with HRS FH26-45S-0.3SHW

Pin	Symbol	I/O	Description	Remark
1	CP3	C	Capacitor for power setting	
2	CP4	C	Capacitor for power setting	
3	CP5	C	Capacitor for charge pump	
4	CP6	C	Capacitor for charge pump	
5	CP7	C	Capacitor for charge pump	
6	CP8	C	Capacitor for charge pump	
7	DUMMY	--	Dummy	
8	DUMMY	--	Dummy	
9	PCD	C	Capacitor for pre-charge data signal high	
10	VCOML	C	Capacitor for VCOM low	
11	VCOMH	C	Capacitor for VCOM high	
12	AGND	--	Analog ground	
13	DUMMY	--	Dummy	
14	AVDD	C	Regulation capacitor for analog voltage	
15	CP1	C	Capacitor for charge pump	
16	CP2	C	Capacitor for charge pump	
17	PWM	O	Power transistor gate signal for the boost converter	
18	FB	I	Main boost regulator feedback input.	
19	LED-	--	LED power: cathode	Note 3-1
20	LED-	--	LED power: cathode	Note 3-1
21	XL	O	T/P terminal (X-Right)	Note 3-2
22	YL	O	T/P terminal (Y-Upper)	Note 3-2
23	XR	O	T/P terminal (X-Left)	Note 3-2
24	YU	O	T/P terminal (Y-Lower)	Note 3-2
25	DUMMY	--	Dummy	
26	LED+	--	LED power: anode	Note 3-1
27	LED+	--	LED power: anode	Note 3-1
28	GND	--	Ground	
29	VCC	--	Power supply for digital circuit and charge pump circuit	
30	VSYNC	I	Vertical sync input. Negative polarity	
31	HSYNC	I	Horizontal sync input. Negative polarity	

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32	DCLK	I	Clock signal, latch data onto line latches at the rising edge	
33	DIN0	I	Data input	
34	DIN1	I	Data input	
35	DIN2	I	Data input	
36	DIN3	I	Data input	
37	DIN4	I	Data input	
38	DIN5	I	Data input	
39	DIN6	I	Data input	
40	DIN7	I	Data input	
41	SDA	I/O	Serial interface data line	
42	SCL	I	Serial interface clock line	
43	SCEN	I	Serial interface chip enable line	
44	SHDB	I	Shutdown input	Note 2:
45	GREST	I	System reset pin	

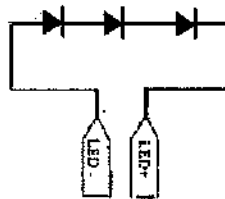
I: Input O: Output P: Power C: Capacitor D: Dummy I/O : Input/Output

Note 2: SHDB

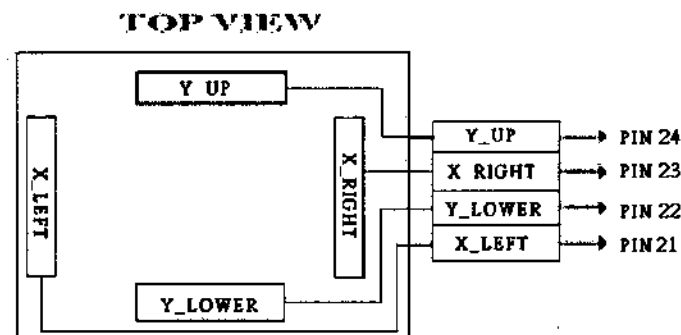
Pull High: Sleep mode is controlled by register setting. (address: 0x04)

Pull Low: Panel is in sleep mode

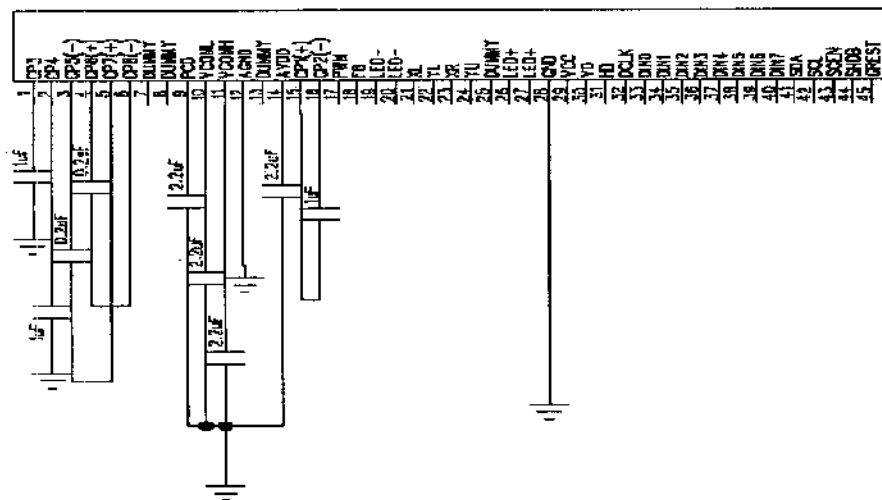
Note 3-1: The figure below shows the connection of backlight LED.



Note 3-2: The figure below shows the connection of Touch panel. (top view)



FPC is 45 pin (include touch panel interface):



Application side	Capacitance (F)	Rated voltage (V)
CP1	1u	16
CP2		
CP3	1u	16
CP4	1u	25
CP5	0.2u	25
CP7		
CP6	0.2u	25
CP8		
AVDD	2.2u	16
PCD	2.2u	16
VCOMH	2.2u	16
VCOML	2.2u	16

CP1→CP2(1 uF) capacitor suggest using X5R dielectric.

9 HANDLING CAUTIONS

9.1 ESD (Electrical Static Discharge) Strategy

ESD will cause serious damage of the panel, ESD strategy is very important in handling. Following items are the recommend ESD strategy

- (1) In handling LCD panel, please wear non-charged material gloves. And the conduction ring connect wrist to the earth and the conducting shoes to the earth is necessary.
- (2) The machine and working table for the panel should have ESD prohibition strategy.
- (3) In handling the panel, ionize flowing decrease the charge in the environment is necessary.
- (4) In the process of assembly the module, shield case should connect to the ground.

9.2 Environment

- (1) Working environment of the panel should in the clean room.
- (2) The front polarizer is easy damaged, handle it carefully and do not scratch it by sharp material.
- (3) Panel has polarizer protective film in the surface please remove the protection film of polarizer slowly with ionized air to prevent the electrostatic discharge.

9.3 Touch panel

- (1) The front touch panel is vulnerable to heavy weight, so any input must be done by special stylus or by a finger. Do not put any heavy stuff on it.
- (2) When any dust or stain is observed on a film surface, clean it using a lens cleaner for glasses or something similar.

9.4 Others

- (1) Turn off the power supply before connecting and disconnecting signal input cable.
- (2) The connection area of FPC and panel is very weak, do not handle panel only by FPC or bend FPC.
- (3) Water drop on the surface or condensation as panel power on will corrode panel electrode.
- (4) As the packing bag open, watch out the environment of the panel storage. High temperature and high humidity environment is prohibited.
- (5) When the TFT LCD module is broken, please watch out whether liquid crystal leaks out or not. If your hand touches liquid crystal, wash your hand cleanly by water and soap as soon as possible.

10 Application Note

10.1 Design notes on touch panel

(1) Explanation of each boundary of touch panel

A. Boundary of Double-sided adhesive

- a. Electrically detectable within this zone.

When holding the touch panel by housing, it needs to be held at outside of this zone.

- b. Film is supported by double-sided adhesive tape.

B. Viewing area

- a. Cosmetic inspection to be done for this area.

This area is set as inside of boundary of double-sided adhesive with tolerance.

C. Boundary of transparent insulation

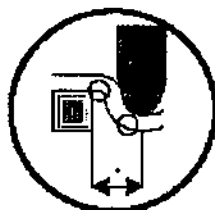
- a. Purpose is to "Help" to secure insulation.
- b. Electrical insulation on this area is not guaranteed.
- c. We do recommend not to hold this area by something like housing or gasket.

D. Active area

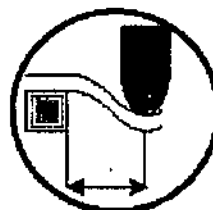
- a. This area is where the performance is guaranteed.

This area set as some distance inside from the boundary area of double-sided adhesive tape since its neighboring area is less durable to writing friction.

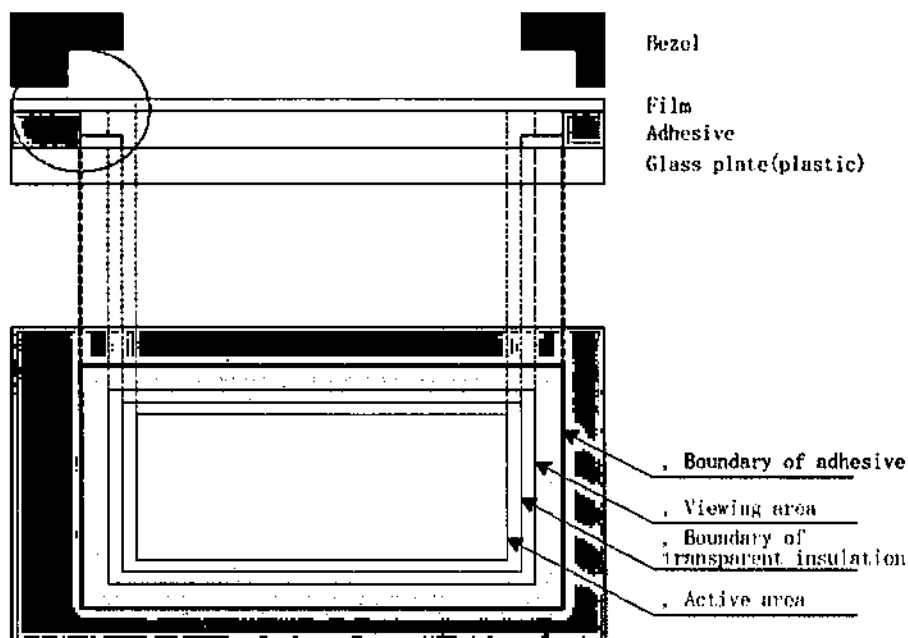
- b. Please refer to the attached module drawing for the bezel opening and window size design.



¹ There is some possibility
to damage ITO

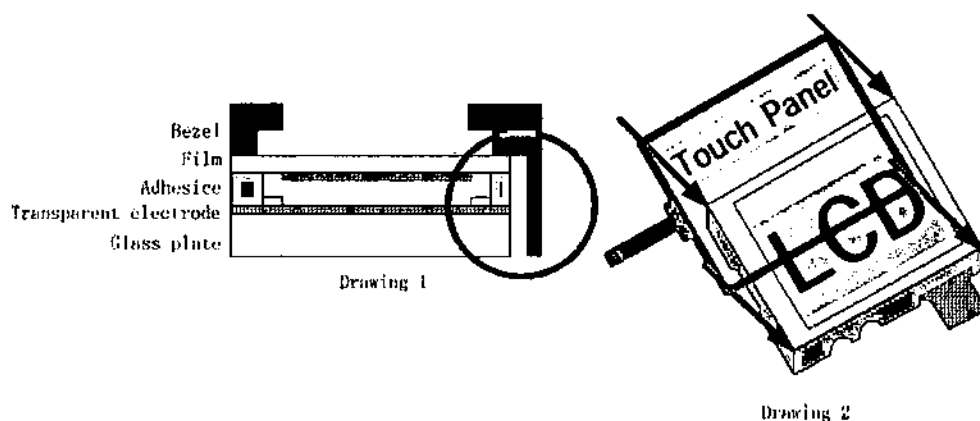


No Damage to ITO



(2) Housing and touch panel

- Please have clearance between the side of touch panel, and any conductive material such as metal frame.(drawing.1) Transparent electrode exists on glass of touch panel from end to end.
- It is recommended to fix a touch panel on the LCD module chassis rather than the touch panel housing. Clinging at conductive material and side of touch panel might cause malfunction.



Technical drawing of a cross-section of a composite beam. The drawing shows a central core of 125 mm width and 138 mm height, surrounded by a 0.3 mm thick layer. The total width is 137 mm and the total height is 138 mm. Dimensions for the core and surrounding layers are provided, along with a maximum dimension of 0.1 mm.

Dimensions (mm):

- Core width: 125 ± 0.05
- Core height: 138 ± 0.05
- Surrounding layer thickness: 0.3 ± 0.03
- Total width: 137 ± 0.1
- Total height: 138 ± 0.05
- Maximum dimension: 0.1 Max