4. Application

This specification is applied to the 4.3 inch supported TFT-LCD module, and can display true 16.7M colors(8 bit/ color).The module is designed for PMP, GPS application and other electronic products which require flat panel display of digital signal interface.

This module is composed of a 4.3”TFT-LCD panel, a driver circuit and backlight unit and used as the input devices for general electric appliances via both finger and Capacitive stylus pen.

5. Features

- WQVGA (480×272 pixels) resolution.
- 24 bit parallel RGB.
- Projected Capacitive Touch
  - I^2C Interface
  - Multi Touch (Ten points)
  - 2048 x 2048 resolution

6. General Specifications

Item	Specifications	Unit
Screen Size	4.3 (Diagonal)	inch
Display Format	480RGB(H)×272(V)	dot
Active Area	95.04(H)×53.856(V)	mm
Pixel Pitch	0.198(H)×0.198(V)	mm
Pixel Configuration	RGB Vertical Stripe	-
Display Mode	IPS Type/Transmissive Mode/Normally Black	-
Surface Treatment	Clear(7H)	-
Viewing Direction	Full view angle	-
Outline Dimension	105.5(W)×67.2(H)×4.65(D)	mm
Weight	（68.8）	g
RoHS Compliance	RoHS Compliance	-

7. Absolute Maximum Ratings

7.1 Absolute Ratings of Environment

Item	Symbol	Value		Unit	Note
		Min.	Max.		
Storage Temperature	T_{ST}	-30	+80	°C	(1)(2)
Operating Ambient Temperature	T_{OP}	-30	+80	°C	(1)(2)

Note1: Background color changes slightly depending on ambient temperature.
This phenomenon is reversible.

Note2: Please refer to item of RELIABILITY.

7.2 Electrical Absolute Ratings

7.2.1 TFT-LCD Module

(Ta=25±2°C, VSS=0V)

Item	Symbol	Value		Unit	Note
		Min.	Max.		
Power Supply Voltage	VDD	-0.3	4.0	V	-

7.2.2 Backlight Unit

(Ta=25±2°C)

Item	Symbol	Value		Unit	Note
		Min.	Max.		
Current of Backlight Unit	I_B	-	25	mA	(1)
Reverse Voltage	V_R	-	50	V	(1)

Note (1) Permanent damage to the device may occur if maximum values are exceeded or reverse voltage is loaded.

8. Electrical Characteristics

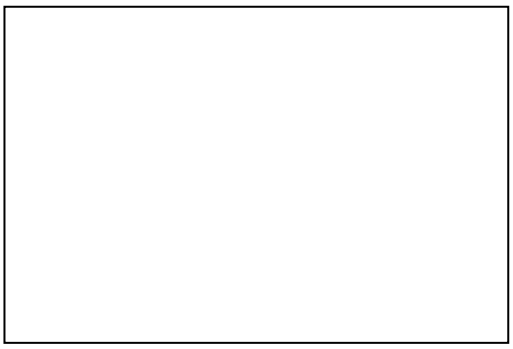
8.1 TFT-LCD Module

(Ta=25±2°C)

Item	Symbol	Value			Unit	Note
		Min.	Typ.	Max.		
Power Supply Voltage	VDD	3.0	3.3	3.6	V	-
Power Supply Current	IDD	-	37	51.8	mA	(1)
Input High Threshold Voltage	VIH	0.7xVDD	-	VDD	V	-
Input Low Threshold Voltage	VIL	0	-	0.3xVDD	V	-
Pixel Clock	DCLK	-	9.0	-	MHz	-

Note (1) The specified power consumption is under the conditions at VDD = 3.3V,FV=60Hz, DCLK=9.0 MHz, whereas a power dissipation check Pattern below is displayed.

White Pattern / 255 Gray



Active Area

8.2 Backlight Unit

(Ta=25±2°C)

Item	Symbol	Value			Unit	Note
		Min.	Typ.	Max.		
Backlight Driver Power Supply	VLED	11.5	12.0	12.5	V	-
Backlight Driver Current	ILED	-	120	168	mA	VLED=12V
PWM signal Low voltage	V_{BLENIL}	-	-	0.4	V	-
PWM signal High voltage	V_{BLENIH}	1.2	-	-	V	-
PWM frequency	f_{BLENI}	6.5	-	100	kHz	-
LED life time	-	50000	60000	-	Hr	(1)

Note (1)：LED life time is defined as under 25±2°C , when the average brightness decrease to 50% of original brightness

8.3 Projected Capacitive Touch

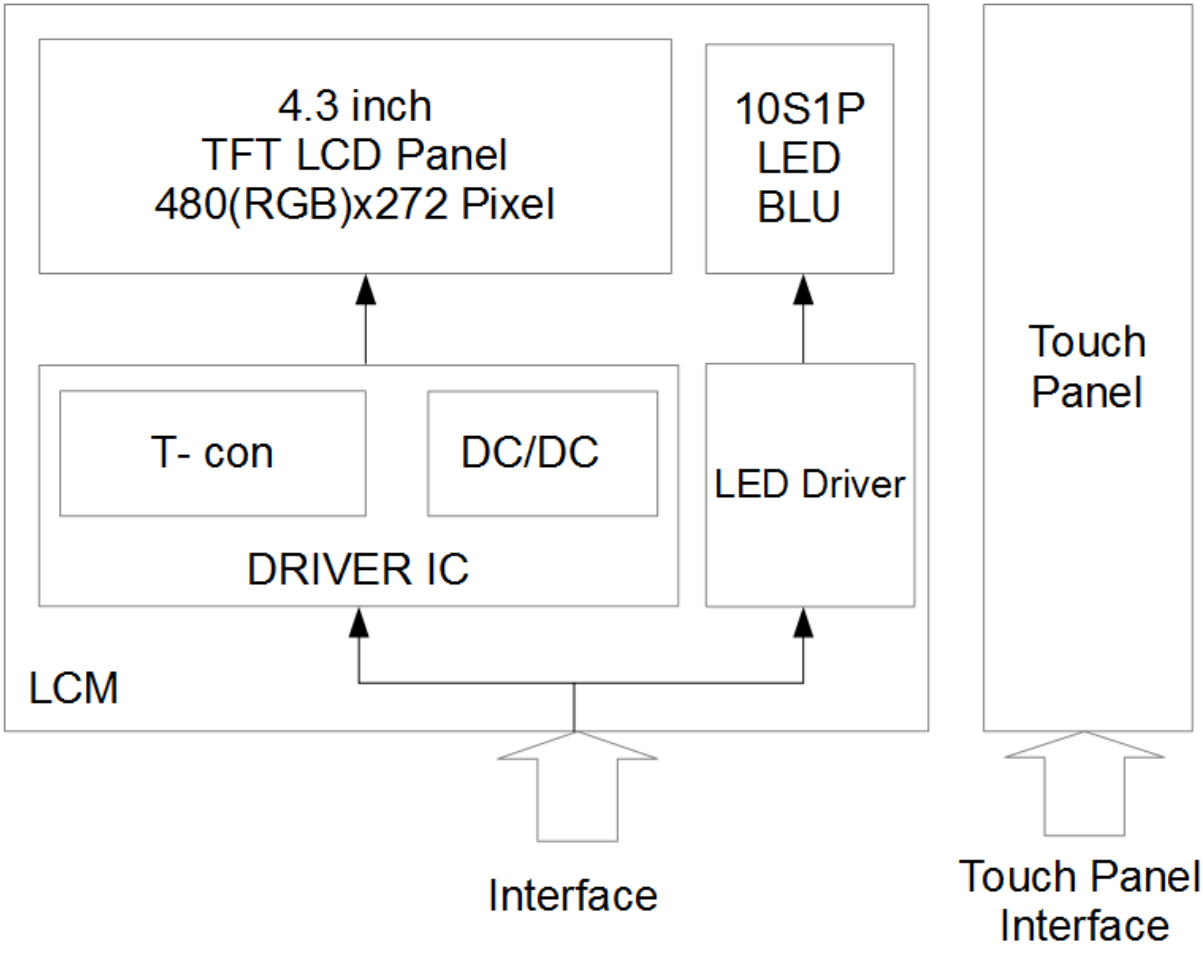
(Ta=25±2°C)

Item	Symbol	Value			Unit	Note
		Min.	Typ.	Max.		
Operating Voltage	V_{TP}	3.0	3.3	3.6	V	-
Power Supply Current	I_{TP}	-	12.5	17.5	mA	(1)
Input High Threshold Voltage	V_{IH}	$0.7V_{TP}$	-	V_{TP}	V	-
Input Low Threshold Voltage	V_{IL}	-0.3	-	$0.3V_{TP}$	V	-
Output High Threshold Voltage	V_{OH}	$0.7V_{TP}$	-	-	V	-
Output Low Threshold Voltage	V_{OL}	-	-	$0.3V_{TP}$	V	-
Power Consumption	P_L	-	41.25	57.75	mW	@3.3V
Report Rate	RR	-	60	-	Hz	-
Interface		I^2C				-
Function		Multi Touch				-

Note (1) This test condition is touched with 10 points.

9. Block Diagram

TFT-LCD Module with Backlight Unit



10. Input / Output Terminals Pin Assignment

10.1 TFT-LCD Module

Connector：CviLux CF25501D0R0-05-NH or equivalent

Pin No.	Symbol	I/O	Description
1	GND	I	Ground
2	VDD	I	Power supply
3	VDD	I	Power supply
4	VLED	I	Power of LED backlight
5	VLED	I	Power of LED backlight
6	PWM	I	Shutdown & Dimming control input for backlight. Do not allow this this pin to float. “Hi”=100%,”Low”=0%.
7	GND	I	Ground
8	R0	I	RED data (LSB)
9	R1	I	RED data
10	R2	I	RED data
11	R3	I	RED data
12	GND	I	Ground
13	R4	I	RED data
14	R5	I	RED data
15	R6	I	RED data
16	R7	I	RED data(MSB)
17	GND	I	Ground
18	G0	I	GREEN data(LSB)
19	G1	I	GREEN data
20	G2	I	GREEN data
21	G3	I	GREEN data
22	GND	I	Ground
23	G4	I	GREEN data
24	G5	I	GREEN data
25	G6	I	GREEN data
26	G7	I	GREEN data(MSB)
27	GND	I	Ground
28	B0	I	Blue data(LSB)
29	B1	I	Blue data
30	B2	I	Blue data

Pin No.	Symbol	I/O	Description
31	B3	I	Blue data
32	GND	I	Ground
33	B4	I	Blue data
34	B5	I	Blue data
35	B6	I	Blue data
36	B7	I	Blue data(MSB)
37	GND	I	Ground
38	HSYNC	I	Horizontal sync signal applied to the RGB interface, default is negative polarity. See Note 1
39	VSYNC	I	Vertical sync signal applied to the RGB interface, default is negative polarity. See Note 1
40	GND	I	Ground
41	DE	I	Input data enable control. See Note 1
42	GND	I	Ground
43	DCLK	I	Dot Clock See Note 1
44	GND	I	Ground
45	NC	-	Not connect
46	NC	-	Not connect
47	NC	-	Not connect
48	NC	-	Not connect
49	/RESET	I	Global Reset(Low Active)
50	GND	I	Ground

Note 1:

RGB Mode Selection Table	DCLK	HSYNC	VSYNC	DE
SYNC - DE Mode	Input	Input	Input	Input
SYNC Mode	Input	Input	Input	GND
DE Mode	Input	GND	GND	Input

Note: “Input” means these signals are driven by host side

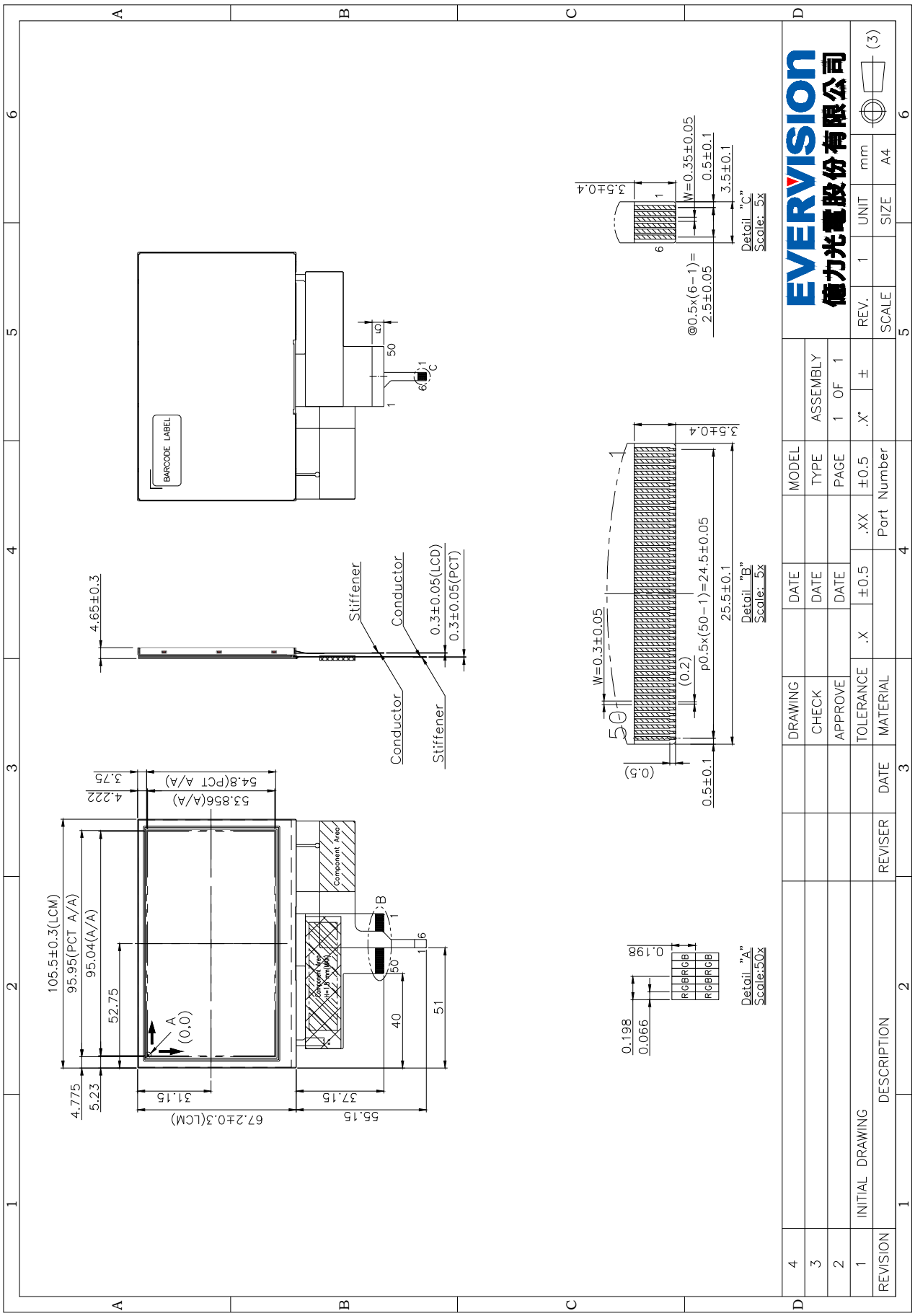
10.2 Projected Capacitive Touch

Connector: CVILUX CF25061D0R0-05-NH or equivalent

Pin No.	Symbol	I/O	Description
1	GND	I	System ground.
2	V_{TP}	I	Power supply.
3	SCL	I	I2C clock signal.
4	SDA	I/O	I2C data signal.
5	/INT	O	Interrupt signal, active low, asserted to request Host start a new transcation.
6	/RST	I	External reset signal, active low.

12. Optical Characteristics

The optical characteristics should be measured in a dark environment (≦ 1 lux) or equivalent state with the methods shown in Note (5).

Item		Symbol	Conditions	Min.	Typ.	Max.	Unit	Note
Contrast Ratio		CR	θ_X=0°, θ_Y =0° Viewing Normal Angle	700	（1000）	-	-	(2),(5)
Response Time		T_{R+} T_F		-	30	40	ms	(3)
Luminance（Center）		LC		700	（830）	-	cd/m^2	(4),(5)
Brightness uniformity		BUNI		70	（75）	-	%	(5),(6)
Color Chromaticity	Red	Rx		0.540	0.590	0.640	-	(1),(5)
		Ry		0.305	0.355	0.405	-	
	Green	Gx		0.325	0.375	0.425	-	
		Gy		0.520	0.570	0.620	-	
	Blue	Bx		0.095	0.145	0.195	-	
		By		0.065	0.115	0.165	-	
	White	Wx		0.280	0.330	0.380	-	
		Wy		0.290	0.340	0.390	-	
Viewing Angle	Horizontal	θ_X+	CR≥10	70	（80）	-	deg.	
		θ_X-		70	（80）	-		
	Vertical	θ_Y+		70	（80）	-		
		θ_Y-		70	（80）	-		

16.Outline Drawing