

Application

This specification is applied to the 15.6 inch FHD supported TFT-LCD module, and can display true 16.2M colors(6bits+FRC). The module is designed for OA, Car TV application and other electronic products which require flat panel display of digital signal interface. This module is composed of a 15.6" TFT-LCD panel, a driver circuit and backlight unit

Features

- FHD (1920×1080 pixels) resolution.
- 2ch LVDS interface
- LED driver circuit is built in this module.

General Specifications

Item	Specifications	Unit
Screen Size	15.6 (Diagonal)	inch
Display Format	1920RGB(H)×1080(V)	dot
Active Area	344.16(H)×193.59(V)	mm
Pixel Pitch	0.17925(H)×0.17925(V)	mm
Pixel Configuration	RGB Vertical Stripe	-
Display Mode	AAS Type / Transmissive Mode / Normally Black	-
Surface Treatment	Anti-Glare and Hard Coating(3H)	-
Viewing Direction	Full view angle	-
Outline Dimension	363.8(W)×215.9(H)×9.3(D)	mm
Weight	(1055)	g
RoHS Compliance	RoHS Compliance	-

Absolute Maximum Ratings

Absolute Ratings of Environment

Item	Symbol	Value		Unit	Note
		Min.	Max.		
Storage Temperature	T _{ST}	-40	+90	°C	(1)(2)
Operating Ambient Temperature	T _{OP}	-30	+85	°C	(1)(2)

Note1: Background color changes slightly depending on ambient temperature.

This phenomenon is reversible.

Note2: Please refer to item of RELIABILITY.

Electrical Absolute Ratings

TFT-LCD Module

(Ta=25±2°C)

Item	Symbol	Value		Unit	Note
		Min.	Max.		
Power Supply Voltage	LCD_VDD	-0.3	+3.6	V	(1)
Logic input voltage	V _{in}	-0.3	+4.0	V	(1)

BACKLIGHT CONVERTER

Item	Symbol	Value			Unit	Note
		Min.	Typ	Max.		
Converter Voltage	LED_Vcc	0	12.0	18.0	V	(1)(2)
Enable Voltage	LED_EN	0	3.3 / 5	7	V	Duty=100%
Backlight Adjust	LED_PWM	0	3.3 / 5	7	V	(1), (2) Pulse Width ≤ 10msec and Duty ≤ 10%

Note (1) Permanent damage to the device may occur if maximum values are exceeded. Function operation should be restricted to the conditions described under Normal Operating Conditions.

Note (2) Specified values are for input pin of LED light bar at Ta=25±2 °C



Electrical Characteristics

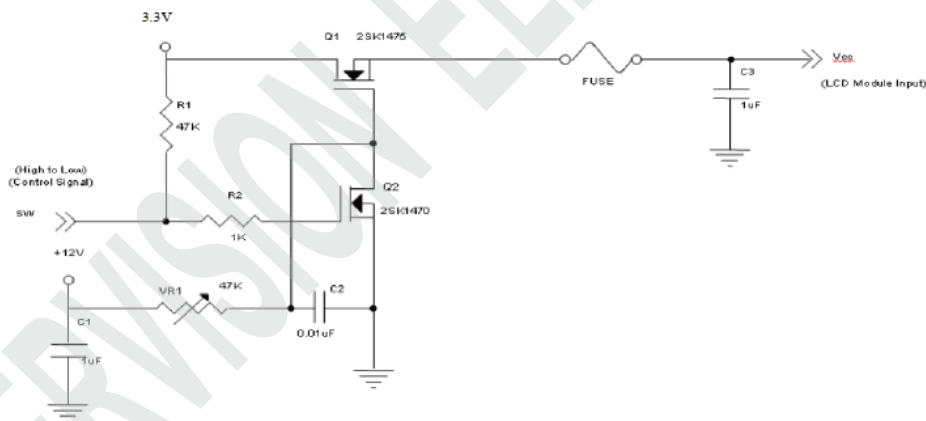
LCD ELETRONICS SPECIFICATION

(Ta=25±2°C)

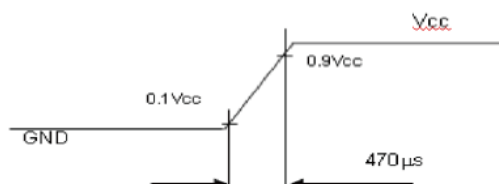
Parameter	Symbol	Value			Unit	Note
		Min.	Typ.	Max.		
Power Supply Voltage	LCD_VDD	3.0	3.3	3.6	V	-
Ripple Voltage	VRP	-	-	150	mV	-
Rush Current	IRUSH	-	-	3	A	(2)
Power Supply Current	White	-	1.22	1.5	A	(3)a
	Black		0.51	0.7	A	(3)b
	Vertical Stripe		0.82	1	A	(3)c
Power Consumption	PLCD	-	4	5	Watt	(4)
LVDS differential input voltage	Vid	200		600	mV	(5)
LVDS common input voltage	Vic	1.0	1.2	1.4	V	(5)
LVDS terminating resistor	RT	-	100	-	ohm	

Note (1) The ambient temperature is $T_a = 25 \pm 2^\circ\text{C}$.

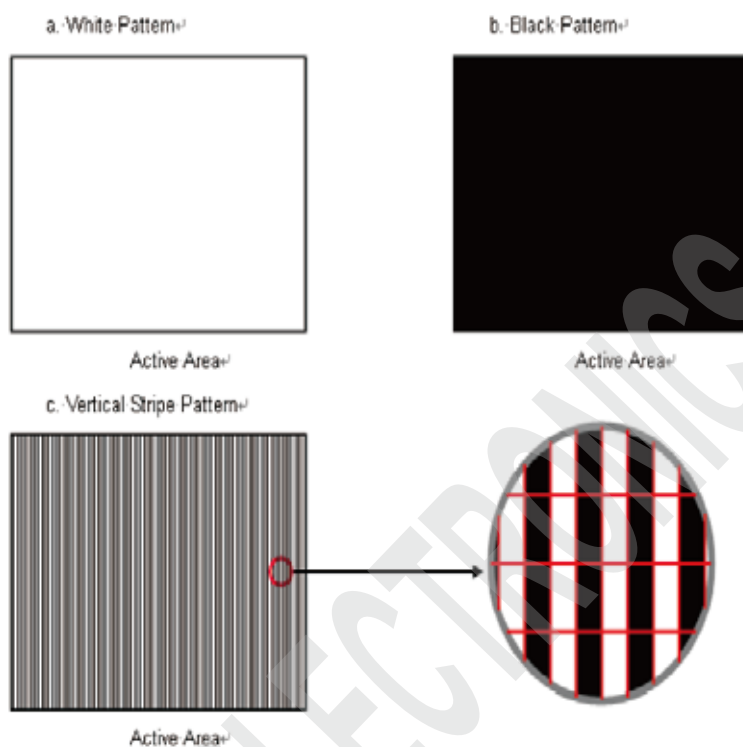
Note (2) Measurement Conditions:



Vcc rising time is 470μs

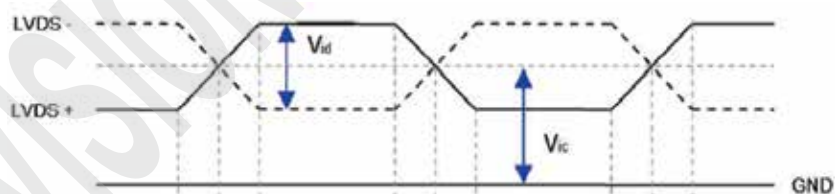


Note (3) The specified power supply current is under the conditions at $V_{CC} = 3.3\text{ V}$, $T_a = 25 \pm 2\text{ }^{\circ}\text{C}$, $F_r = 60\text{ Hz}$, whereas a power dissipation check pattern below is displayed



Note (4) The power consumption is specified at the pattern with the maximum current.

Note (5) VID waveform condition

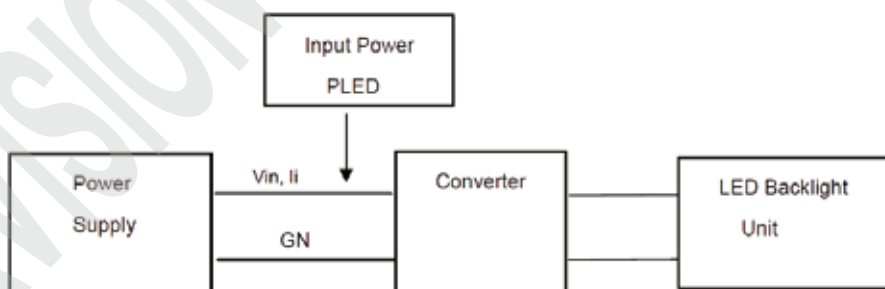


Backlight Unit

Parameter		Symbol	Value			Unit	Note
			Min.	Typ.	Max.		
Converter Power Supply Voltage		LED_Vcc	10.8	12.0	13.2	V	-
Converter Power Supply Current		I _i	0.8	1.0	1.2	A	@LED_Vin= 12V Duty=100%
Converter Input Rush Current		I _{irsh}	-	-	3	A	@LED_Vin rising = 1mS
Power Consumption		P _{LED}	-	12	-	W	@LED_Vin =12V Duty=100%
EN Control Level	Backlight on	LED_EN	2.0	5	5.5	V	
	Backlight off		0	0	0.8		
PWM Control Level	PWM High Level	LED_PWM	2.0	3.3	5.0	V	
	PWM Low Level		0	0	0.15		
PWM Control Duty Ratio			10		100	%	
PWM Control Frequency		f _{PWM}	190	200	20k	Hz	
LED Life Time		L _L	50,000	-	-	Hrs	

Note (1) LED light bar input voltage and current are measured by utilizing a true RMS multimeter as shown below:

Note (2) The lifetime of LED is estimated data and defined as the time when it continues to operate under the conditions at Ta = 25±2°C and Duty 100% until the brightness becomes ≤ 50% of its original value. Operating LED under high temperature environment will reduce life time and lead to color shift





Input / Output Terminals Pin Assignment

TFT-LCD Module

Pin No.	Symbol	Function
1	LED_Vcc	+12V Vi power supply
2	LED_Vcc	+12V Vi power supply
3	LED_Vcc	+12V Vi power supply
4	LED_Vcc	+12V Vi power supply
5	GND	Ground
6	GND	Ground
7	GND	Ground
8	GND	Ground
9	LED_EN	Enable pin
10	LED_PWM	Backlight Adjust
11	LCD_VDD	LCD logic and driver power 3.3V
12	LCD_VDD	LCD logic and driver power 3.3V
13	LCD_VDD	LCD logic and driver power 3.3V
14	NC	Not connection, this pin should be open
15	NC	Not connection, this pin should be open
16	NC	Not connection, this pin should be open
17	LCD GND	LCD logic and driver ground
18	RX00-	Negative LVDS differential data input. Channel O0 (odd)
19	RX00+	Positive LVDS differential data input. Channel O0 (odd)
20	RX01-	Negative LVDS differential data input. Channel O1 (odd)
21	RX01+	Positive LVDS differential data input. Channel O1 (odd)
22	RX02-	Negative LVDS differential data input. Channel O2 (odd)
23	RX02+	Positive LVDS differential data input. Channel O2 (odd)
24	LCD GND	LCD logic and driver ground
25	RXOC-	Negative LVDS differential clock input. (odd)
26	RXOC+	Positive LVDS differential clock input. (odd)
27	LCD GND	LCD logic and driver ground
28	RX03-	Negative LVDS differential data input. Channel O3(odd)
29	RX03+	Positive LVDS differential data input. Channel O3 (odd)
30	RXE0-	Negative LVDS differential data input. Channel E0 (even)

31	RXE0+	Positive LVDS differential data input. Channel E0 (even)
32	RXE1-	Negative LVDS differential data input. Channel E1 (even)
33	RXE1+	Positive LVDS differential data input. Channel E1 (even)
34	LCD GND	LCD logic and driver ground
35	RXE2-	Negative LVDS differential data input. Channel E2 (even)
36	RXE2+	Positive LVDS differential data input. Channel E2 (even)
37	RXEC-	Negative LVDS differential clock input. (even)
38	RXEC+	Positive LVDS differential clock input. (even)
39	RXE3-	Negative LVDS differential data input. Channel E3 (even)
40	RXE3+	Positive LVDS differential data input. Channel E3 (even)

Note (1) Connector Part No.: I-PEX 20455-040E-76 or equivalent.

Note (2) User's connector Part No.: I-PEX 20453-040T-03 or equivalent.

Outline Drawing

