

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 and used as the input devices for general electric appliances via both finger and Capacitive stylus pen.

Features

- FHD (1920×1080 pixels) resolution.
- HDMI Interface
- Projected Capacitive Touch
 - ☐ USB Interface
 - ☐ Multi Touch (Five points)
 - ☐ 4096 x 4096 resolution

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	Clear(7H)	-
Viewing Direction	Full view angle	-
Outline Dimension	363.8(W)×215.9(H)×20.9(D)	mm
Weight	(1550.8)	g
RoHS Compliance	RoHS Compliance	-

▲ Absolute Maximum Ratings

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}	-20	+70	°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.	Typ	Max.		
Power Supply Voltage	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

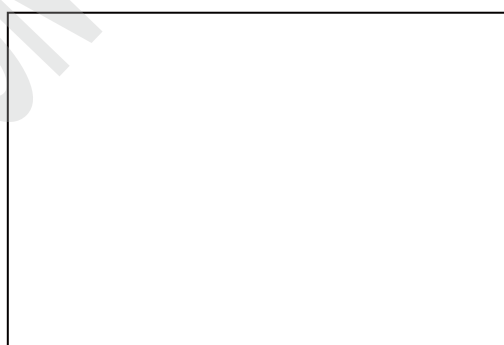
Electrical Characteristics TFT-LCD Module

(Ta=25±2°C)

Item		Symbol	Value			Unit	Note
			Min.	Typ.	Max.		
Power Supply Voltage		VCC	11.5	12.0	12.5	V	-
Power Supply Current		ICC	-	1340	1876	mA	(1)
VSYNC Frequency		F _V	-	60	-	Hz	-
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 Frequency		-	10		100%	%	-
PWM frequency		f _{PWM}	190	200	20K	Hz	-
LED Life Time(25°C)		-	50000	-	-	hr	(2)

Note (1) The specified power consumption is under the conditions at VCC=12 V,
F_V=60Hz, whereas a power dissipation check pattern below is displayed.

White Pattern / 255 Gray



Active Area

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

Projected Capacitive Touch

(Ta=25±2°C)

Item	Symbol	Value			Unit	Note
		Min.	Typ.	Max.		
Power Supply Voltage	V _{TP}	4.8	5.0	5.2	V	-
Power Supply Current	I _{TP}	-	34.5	48.3	mA	(1)
Output High Threshold Voltage	V _{OH}	2.8	-	-	V	-
Output Low Threshold Voltage	V _{OL}	-	-	0.8	V	-
Differential Input Sensitivity (D+)-(D-)	V _{DI}	0.2	-	-	V	-
Differential Input Common Mode Range	V _{CM}	0.8	-	2.5	V	
Power Consumption	P _L	-	172.5	241.5	mW	@5.0V
Report Rate	R _R	-	60	-	Hz	-
Interface		USB			-	
Function		Multi Touch			-	

Note (1) This test condition is touched with 5 points.



Input / Output Terminals Pin Assignment

TFT-LCD Module

Connector: HDMI Connector

No.	Symbol	I/O	Description
1	TMDS Data2+	I	Channel-2 positive receiver input – Positive side of channel-2 TMDS low-voltage signal differential input pair.
2	TMDS Data2 Shield	I	Ground
3	TMDS Data2–	I	Channel-2 negative receiver input – Negative side of channel-2 TMDS low-voltage signal differential input pair.
4	TMDS Data1+	I	Channel-1 positive receiver input – Positive side of channel-1 TMDS low-voltage signal differential input pair.
5	TMDS Data1 Shield	I	Ground
6	TMDS Data1–	I	Channel-1 negative receiver input – Negative side of channel-1 TMDS low-voltage signal differential input pair.
7	TMDS Data0+	I	Channel-0 positive receiver input – Positive side of channel-0. TMDS low-voltage signal differential input pair.
8	TMDS Data0 Shield	I	Ground
9	TMDS Data0–	I	Channel-0 negative receiver input – Negative side of channel-0. TMDS low-voltage signal differential input pair.
10	TMDS Clock+	I	Clock positive receiver input – Positive side of reference clock. TMDS low-voltage signal differential input pair
11	TMDS Clock Shield	I	Ground
12	TMDS Clock–	I	Clock negative receiver input – Negative side of reference clock. TMDS low-voltage signal differential input pair
13	N.C.	-	Not Connection
14	N.C.	-	Not Connection

No.	Symbol	I/O	Description
15	HDMI_DDC_SCL	I	Serial Clock
16	HDMI_DDC_SDA	I	Serial Data
17	N.C.	-	Not Connection
18	HDMI 5V Power	I	5V
19	HDMI_HPD	O	Hot Plug Detect

Connector

Connector: CI4412M2HR0-NH

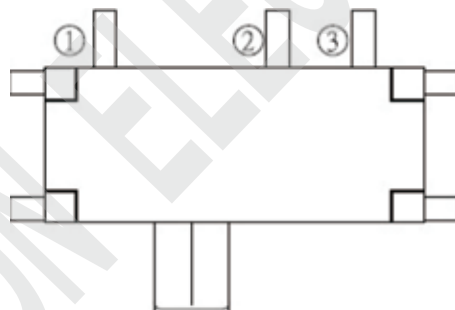
No.	Symbol	Functions
1	VCC	Power supply for LCM
2	VCC	Power supply for LCM
3	VCC	Power supply for LCM
4	VCC	Power supply for LCM
5	VCC	Power supply for LCM
6	LED_EN	Enable pin
7	LED_PWM	Backlight Adjust
8	GND	Ground
9	GND	Ground
10	GND	Ground
11	GND	Ground
12	GND	Ground

Connector: USB 2.0 Type A Connector

No.	Symbol
1	V _{TP}
2	D-
3	D+
4	GND

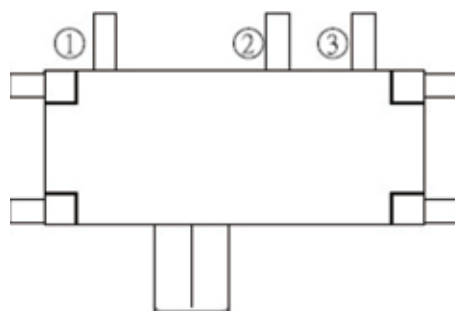
Slider Switch

Pin	Description	Note
1-2	LED_EN	Default
2-3	HDMI_EN	-



Slider Switch

Pin	Description	Note
1-2	LED_PWM	Default
2-3	HDMI_EN	-



Outline Drawing

