屏库:全球液晶屏交易中心



Issued Date: May. 12, 2006 Model No.: V201V1-P01



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TFT LCD Approval Specification

MODEL NO.:V201V1-P01

Customer:	
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Note:	

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Approval

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CHINEL OPTOELECTRONICS CORP. Issued Date: May. 12, 2006 Model No.: V201V1-P01 Approval

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Version	Date	Page (New)	Section	Description
Ver 2.0	May.12, 2006	All	All	Approval Specification was first issued.
		1		



1. GENERAL DESCRIPTION

1.1 OVERVIEW

V201V1-P01 is a 20-inch TFT LCD cell with driver ICs and a 50-pin-and-1ch-TTL interface. The product supports 640 x 480 VGA mode and can display true 0.26M colors (6-bit/color). The backlight unit is not built in.

1.2 Characteristics

CHARACTERISTICS ITEMS	SPECIFICATIONS
Screen Diagonal [in]	20.1



2. ABSOLUTE MAXIMUM RATINGS

2.1 ABSOLUTE RATINGS OF ENVIRONMENT (BASED ON CMO MODULE V201V1-T03)

Itom	Symbol	Va	Llpit	Noto		
item	Symbol	Min.	Max.	Unit	Note	
Storage Temperature	T _{ST}	-20	+60	°C	(1)	
Operating Ambient Temperature	T _{OP}	0	+50	°C	(1), (2)	

Note (1) Temperature and relative humidity range is shown in the figure below.

(a) 90 %RH Max. (Ta \leq 40 °C).

- (b) Wet-bulb temperature should be 39 °C Max. (Ta > 40 °C).
- (c) No condensation.

Note (2) The temperature of panel surface should be 0 °C Min. and 60 °C Max.



Relative Humidity (%RH)



2.2 ABSOLUTE RATINGS OF ENVIRONMENT (OPEN CELL)

High temperature or humidity may reduce the performance of panel. Please store LCD panel within the specified storage conditions.

Storage Condition: With packing.

Storage temperature range: 25±5 °C.

Storage humidity range: 50±10%RH.

Shelf life: 30days

2.3 ELECTRICAL ABSOLUTE RATINGS (OPEN CELL)

Itom	Symbol	Value	9	Linit	Note		
item	Symbol	Min	Max	Onit			
Power Supply Voltage	V _{cc}	-0.3	+6.0	V	(4)		
Logic Input Voltage	V _{IN}	-0.3	4.3	V	(1)		

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.



3. ELECTRICAL CHARACTERISTICS

3.1 TFT LCD OPEN CELL

TFT LCD OPEN CELL Ta = 25 ± 2 °C										
Darama	Symbol		Value		Lloit	Note				
Falalle	Symbol	Min.	Тур.	Max.	Unit					
Power Supply Voltage	Vcc	4.5	5.0	5.5	V	(1)				
Ripple Voltage	V _{RP}	-	100	-	mV	(2)				
Rush Current	I _{RUSH}	-	2.5	3	A					
	White		-	0.2	-	A				
Power Supply Current	Black	lcc	-	0.3	-	A	(3)			
	Vertical Stripe		-	0.26	-	A				
TTL input high threshold voltage		V _{IH}	2.3	-	3.3	V				
TTL input low threshold	voltage	V	0	_	1	V				

Note (1) The module should be always operated within above ranges.

Note (2) Measurement Conditions:



Vcc rising time is 470µs





- Note (3) The specified power supply current is under the conditions at Vcc = 5.0 V, Ta = 25 ± 2 °C, $f_v = 60$ Hz, whereas a power dissipation check pattern below is displayed.
 - a. White Pattern

b. Black Pattern



Active Area



4. BLOCK DIAGRAM

4.1 TFT LCD OPEN CELL





5. INPUT TERMINAL PIN ASSIGNMENT

5.1 TFT LCD MODULE

Pin assignment

Pin	Name	Description	Pin	Name	Description
1	NC		26	NC	
2	NC		27	GND	Ground
3	NC		28	G5	
4	GND	Ground	29	G4	Groop Data (C5:MSR)
5	GND	Ground	30	G3	Green Data (GS.MSB)
6	VCC		31	G2	
7	VCC	Power locut $(\pm 5.0)/$	32	GND	Ground
8	VCC	Fower input (+3.0V)	33	G1	Green Data
9	VCC		34	G0	Green Data
10	GND	Ground	35	NC	
11	NC		36	NC	
12	NC		37	GND	Ground
13	GND	Ground	38	B5	
14	DE	Data Enable	39	B4	Riuo Data (R5:MSR)
15	GND	Ground	40	B3	blue Data (DS.MSD)
16	DCLK	Dot Clock	41	B2	
17	GND	Ground	42	GND	Ground
18	R5		43	B1	Blue Data
19	R4	Rod Data (R5:MSR)	44	B0	Blue Data
20	R3	Red Data (RJ.WBB)	45	NC	
21	R2		46	NC	
22	GND	Ground	47	GND	Ground
23	R1	Red Data		GND	Ground
24	R0		49	NC	
25	NC		50	NC	

Note (1) Connector Part No.: GF058-50S-LSS-AF (LG) or compatible



5.2 COLOR DATA INPUT ASSIGNMENT

The brightness of each primary color (red, green and blue) is based on the 6-bit gray scale data input for the color. The higher the binary input, the brighter the color. The table below provides the assignment of color versus data input.

			Data Signal																
	Color			R	ed					Gre	een					Bl	ue		
	•	R5	R4	R3	R2	R1	R0	G5	G4	G3	G2	G1	G0	B5	B4	B3	B2	B1	B0
	Black	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Red	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0
	Green	0	0	0	0	0	0	1	1	1	1	1	1	0	0	0	0	0	0
Basic	Blue	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1
Colors	Cyan	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1	1	1	1
	Magenta	1	1	1	1	1	1	0	0	0	0	0	0	1	1	1	1	1	1
	Yellow	1	1	1	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0
	White	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	Red(0) / Dark	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Red(1)	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
	Red(2)	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
Gray	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
Scale	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
Of	Red(62)	1	1	1	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0
Red	Red(63)	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0
	Red(64)	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0
	Green(0) / Dark	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Green(1)	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0
Grav	Green(2)	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0
Scale	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
Ocale	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
Green	Green(62)	0	0	0	0	0	0	1	1	1	1	0	1	0	0	0	0	0	0
Oreen	Green(63)	0	0	0	0	0	0	1	1	1	1	1	0	0	0	0	0	0	0
	Green(64)	0	0	0	0	0	0	1	1	1	1	1	1	0	0	0	0	0	0
	Blue(0) / Dark	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Blue(1)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Grav	Blue(2)	0	0	0	0	0	:	0	0	0	0	0	:	0	0	0	0	1	0
Scale	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
Of	:	:	:	:	:	:	0	:	:	:	:	:	0	:	:	:	:	:	:
Blue	Blue(62)	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	0	1
Dide	Blue(63)	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1	0
	Blue(64)	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1

Note (1) 0: Low Level Voltage, 1: High Level Voltage



6. INTERFACE TIMING

6.1 INPUT SIGNAL TIMING SPECIFICATIONS

The input signal timing specifications are shown as the following table and timing diagram.

Signal	Item	Symbol	Min.	Тур.	Max.	Unit	Note
	Frequency	1/Tc	20	25	30	MHz	-
Clock	Input Cycle to Cycle jitter	Trcl	-		300	ps	-
	Frame Rate	Fr	50	60	70	Hz	-
Vertical Active Display Term	Total	Τv	500	525	550	Th	Tv=Tvd+Tvb
	Display	Tvd	480	480	480	Th	-
	Blank	Tvb	20	45	70	Th	-
	Total	Th	700	800	900	Tc	Th=Thd+Thb
Horizontal Active Display Term	Display	Thd	640	640	640	Tc	-
	Blank	Thb	60	160	260	Tc	-
Input data Tarm	Setup time	Ts	15			ns	
	Hold time	Тн	10			ns	
DE Torm	Setup time	TSDE	15			ns	
	Hold time	THDE	10			ns	

Note: Since this module is operated in DE only mode, Hsync and Vsync input signals should be set to low logic level or ground. Otherwise, this module would operate abnormally.



INPUT SIGNAL TIMING DIAGRAM





6.2 POWER ON/OFF SEQUENCE

To prevent a latch-up or DC operation of LCD module, the power on/off sequence should follow the conditions shown in the following diagram.





Note.

- (1) The supply voltage of the external system for the module input should be the same as the definition of Vcc.
- (2) Please apply the lamp voltage within the LCD operation range. When the backlight turns on before the LCD operation of the LCD turns off, the display may, instantly, function abnormally.
- (3) In case of vcc = off level, please keep the level of input signals on the low or keep a high impedance.
- (4) T4 should be measured after the module has been fully discharged between power on/off periods.
- (5) Interface signal shall not be kept at high impedance when the power is on.

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7. OPTICAL CHARACTERISTICS

7.1 TEST CONDITIONS

Item	Symbol	Value	Unit
Ambient Temperature	Та	25±2	С
Ambient Humidity	На	50±10	%RH
Supply Voltage	V _{cc}	5.0	V
Input Signal	According to typical v	alue in "3. ELECTRICAL	CHARACTERISTICS"
Inverter Current	L	6	mA
Inverter Driving Frequency	FL	55	KHz

7.2 OPTICAL SPECIFICATIONS

The relative measurement methods of optical characteristics are shown as below. The following items should be measured under the test conditions described in 7.1 and stable environment shown in Note (6).

Item		Symbol	Condition	Min.	Тур.	Max.	Unit	Note
	Pod	Rcx			0.655		-	
Red	Rcy	$\theta_x=0^\circ, \theta_Y=0^\circ$ Viewing Normal Angle	-	0.330	-	-	(0),(5)	
Color Chromaticity	Gcx			0.275		-		
	Gcy			0.593		-		
	Bcx			0.132		-		
	Blue	Всу	- Standard light source C		0.116		-	
	\//bito	Wcx			0.302		-	
	vvnite	Wcy			0.354		-	
Center Transmit	tance	Τ%	θ _x =0°, θ _Y =0°	-	7.2	-	%	(1), (7)
Contrast Ratio		CR	with CMO Module		600	-	-	(1), (3)
		T _R	θ _x =0°, θ _Y =0°	-	3	-	ms	
Response Time		T _F	with CMO Module@60Hz	-	5	-	ms	(4)
White Variation		δW	$\theta_x=0^\circ$, $\theta_Y=0^\circ$ with CMO Module	-	-	1.6	-	(1), (6)
	Harizontal	θ_x +		-	80	-		
	Horizoniai	θ _x -	CR≥10	-	80	-	Deg	(1), (2)
viewing Angle	Vortical	θ_{Y} +	with CMO Module	-	70	-	Deg.	
	vertical	θ _Y -		-	60	-		

Note (0) Light source is the standard light source "C" which is defined by CIE and driving voltages are based on suitable gamma voltages. The calculating method is as following :

- 1. Measure Module's and BLU's spectrums. White is without signal input and R, G, B are with signal input. BLU(for V201V1-T03) is supplied by CMO.
- 2. Calculate cell's spectrum.
- 3. Calculate cell's chromaticity by using the spectrum of standard light source "C"

Note (1) Light source is the BLU which is supplied by CMO and driving voltages are based on suitable gamma voltages.



Note (2) Definition of Viewing Angle ($\theta x, \theta y$):

Viewing angles are measured by EZ-Contrast 160R (Eldim)



Note (3) Definition of Contrast Ratio (CR):

The contrast ratio can be calculated by the following expression.

Contrast Ratio (CR) = L63 / L0

L63: Luminance of gray level 63

L 0: Luminance of gray level 0

CR = CR (1), where CR (X) is corresponding to the Contrast Ratio of the point X at the figure in Note (6).

Note (4) Definition of Response Time (T_R, T_F) :



Note (5) Measurement Setup:

The LCD module should be stabilized at given temperature for 30 minutes to avoid abrupt temperature change during measuring. In order to stabilize the luminance, the measurement should be executed after lighting Backlight for 30 minutes in a windless room.



Note (6) Definition of White Variation (δW):

Measure the luminance of gray level 63 at 5 points

δW = Maximum [L (1), L (2), L (3), L (4), L (5)] / Minimum [L (1), L (2), L (3), L (4), L (5)]







8.1 PACKING SPECIFICATIONS

- (1) 15 LCD TV Panels / 1 Box
- (2) Box dimensions : 638 (L) X 558 (W) X 375 (H)

Weight : approximately 16.5Kg (15 panels per box)

8.2 PACKING METHOD

Figures 8-1 and 8-2 are the packing method







Air Transportation

Corner Protector:L1000*50*50mm L1130*50*50mm Pallet:L1300*W1140*H140mm Pallet Stack:L1300*W1140*H1265mm Gross:210kg



Sea Transportation





Figure.8-2 packing method



9. DEFINITION OF LABELS

9.1 OPEN CELL LABEL

The barcode nameplate is pasted on each open cell as illustration for CMO internal control.



9.2 CARTON LABEL

The barcode nameplate is pasted on each box as illustration, and its definitions are as following explanation

PO.NO			
Part ID.			
Model Name	V201V1 -P01		
Carton ID		Quantitles_	15
	28A110164C2001		
	Made in 1	Faiwan	

- (a) Model Name: V201V1-P01
- (b) Carton ID: CMO internal control
- (c) Quantities: 15



10. PRECAUTIONS

10.1 ASSEMBLY AND HANDLING PRECAUTIONS

- (1) Do not apply rough force such as bending or twisting to the product during assembly.
- (2) To assemble backlight or install module into user's system can be only in clean working areas. The dust and oil may cause electrical short or worsen the polarizer.
- (3) It's not permitted to have pressure or impulse on the module because the LCD panel will be damaged.
- (4) Always follow the correct power sequence when the product is connecting and operating. This can prevent damage to the CMOS LSI chips during latch-up.
- (5) Do not pull the I/F connector in or out while the module is operating.
- (6) Use a soft dry cloth without chemicals for cleaning, because the surface of polarizer is very soft and easily scratched.
- (7) It is dangerous that moisture come into or contacted the product, because moisture may damage the product when it is operating.
- (8) High temperature or humidity may reduce the performance of module. Please store this product within the specified storage conditions.
- (9) When ambient temperature is lower than 10°C may reduce the display quality. For example, the response time will become slowly.

10.2 SAFETY PRECAUTIONS

- (1) If the liquid crystal material leaks from the panel, it should be kept away from the eyes or mouth. In case of contact with hands, skin or clothes, it has to be washed away thoroughly with soap.
- (2) After the product's end of life, it is not harmful in case of normal operation and storage.



11. Mechanical Drawing

