

Flat Panel Display solution powered by MSC



FPDS Customized Datasheet

FPDS-ADC072-323-BH1802-12

Datasheet

Revision 1.0
08/2011

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Revision History

Revision 1.0 Initial release / Preliminary



Instructions

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1. General Description

The FPDS-ADC072-323-BH1802-123D is an advanced TFT LCD Monitor Control Board. This design is suitable for video resolution up to UXGA @ 60Hz in all video modes, the full display area of the module is used.

Especially this design enables driving 3D Active Matrix LCD module with special video signals that modified for 3D effect.

The design is implemented as a single printed circuit board. Besides the main functionality for a high resolution color monitor to be operated in Analog, DVI,S-VHS, Composite and Component input.



2 Environmental Specification

2.1 Operating conditions

Item	Min.	Max.	Units	Note
Temperature	0	+50	°C	Ambient
Relative Humidity	20%	90%	RH	non condensation
Pressure	700	1060	hPa	

2.2 Shipment conditions

Item	Min.	Max.	Units	Note
Temperature	-20	+65	°C	Ambient
Relative Humidity	5%	90%	RH	non condensation
Pressure	500	1060	hPa	

2.3 Reliability Specifications

MTBF : more than 30,000 hours at 90% confidence level



3. Power and Input Signal

3.1 DC Input Power Requirements

Item		Description	Notes
Input	Typical	+12.0 VDC	
Voltage	Range	+11.2 V – 12.8 V DC	
Current overall	Max.	Less than 1.0 A	(board only)

3.2 Analog Input Signal

Item		Description	Notes
Analog	Video Signal	Signal Type	RGB analog
		Gain Level	0.714 V +/- 5%
		Input Impedance	75 Ω +/- 5% (terminated)
		Pixel Frequency	Max. 140MHz
		Resolution	Max. 1280 x 1024 / 75Hz
	Input Sync. Signal (Analog)	Type	H/V, separate only
		Gain Level	TTL Level (High ≥2.0V, Low ≤0.8V)
		Polarity	Positive or Negative
		Maximum Duty	25% Max
		Frequency Range	Horizontal 30 ~ 80 KHz Vertical 56 ~ 75 Hz
	Signal Connectors		15 pin D-Sub, angle type female



3.3 DVI Input Signal

Item		Description	Description
Digital	Video Signal	1) Signal type	TMDS data
		2) Gain level	3.3V±0.7V
		3) Pixel frequency	max. 140MHz
		4) Resolution	max. 1680 X 1050 /75Hz
	Signal Connectors	29 pin DVI-I, angel type, female	

3.4 CVBS and SVHS

Item	Description	Notes
Type	NTSC / PAL	
Output Level	1Vp-p (75Ω Load)	
Impedance	75Ω	
Diff. Amplification	10% max	
Diff. Phase	10 degree max	
Input connector (CVBS)	1RCA	(yellow video)
Input connector (S-VHS)	4P Din Jack	

3.5 Components

Item	Description	Notes
Type	NTSC / PAL and ATSC (up to 750p)	
Output Level	1Vp-p (75Ω Load)	
Impedance	75Ω	
Diff. Amplification	10% max	
Diff. Phase	10 degree max	
Input connector (CVBS)	3RCA (Green-Y, Blue-Pb, Red-Pr)	



4. User Control Functions

4.1 User Control

Item		Description	
1) Power Indicating	LED	Dark	Power off
		Green	Normal Mode
		Amber blinking	Check Signal Cable mode
		Red	Power saving mode
2) Power	Turn on / off the display unit		
3) Down	1. Move the cursor down		
	2. Decrease selected item		
4) Auto / Up	1. With OSD off, performs auto adjustment function for clear image		
	2. Move the cursor up		
	3. Increase the selected item		
5) Source / Select	1. With OSD off, select input function		
	2. Choose the highlighted function		
6) Menu / Exit	1. Access to OSD menu		
	2. Return to previous state		



4.2 OSD Menu Structure [Analog R/G/B]

	Main Item	Sub Item 1	Sub Item 2	Action	
Analog RGB	Color	Contrast		Adjust the value of contrast	
		Brightness		Adjust the value of brightness	
		Gamma		Select gamma table	
		Color Temp.		Adjust color temperature value	
		Color Adjust	Red		Adjust red color
			Green		Adjust green color
	Blue			Adjust blue color	
	Picture	H. Position		Adjust horizontal position of image	
		V. Position		Adjust vertical position of image	
		Phase		Adjust phase of image	
		Clock		Adjust clock of image	
		Sharpness		Adjust Sharpness of image	
	Function	Auto Adjust		Do tracking the image automatically	
		Auto Color		Do white color balance automatically	
		Preauto Time		Adjust time for starting preauto function	
	OSD Menu	Language	English		Select English
			French		Select French
			German		Select German
			Spanish		Select Spanish
			Italian		Select Italian
			Korean		Select Korean
		OSD.H. Pos		Adjust horizontal position of main menu	
		OSD V. Pos		Adjust vertical position of main menu	
		OSD Timer		Adjust on-time of main menu	
		Translucent		Adjust translucent of main menu	
	Misc.	Signal Source	Analog		Set input source to analog input
			DVI		Set input source to DVI input
			VIDEO		Set input source to CVBS
			S-VIDEO		Set input source to S-VHS
			Component		Set input source to YPbPr
		Mode		Select contrast mode	
		Reset		Initialize the value of all item	



4.3 OSD Menu Structure [Video / S-Video / Component]

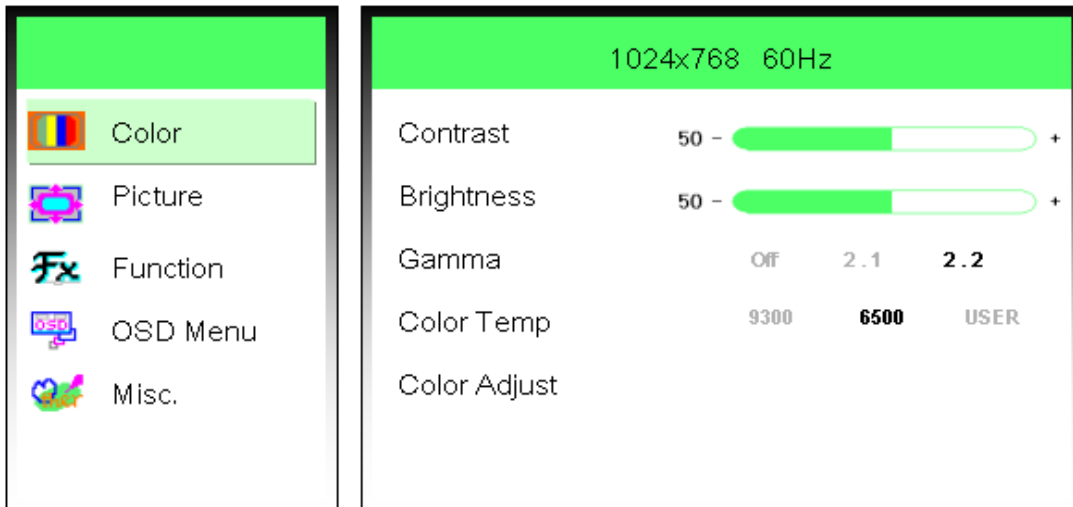
	Main Item	Sub Item 1	Sub Item 2	Action	
VIDEO/ S-VIDEO/ Component	Picture	Contrast		Adjust the value of contrast	
		Brightness		Adjust the value of brightness	
		Saturation		Adjust the value of saturation	
		Hue		Adjust the value of Hue	
		Sharpness		Adjust the value of sharpness	
	OSD Menu	Language	English		Select English
			French		Select French
			German		Select German
			Spanish		Select Spanish
			Italian		Select Italian
			Korean		Select Korean
		OSD.H. Pos		Adjust horizontal position of main menu	
		OSD V. Pos		Adjust vertical position of main menu	
		OSD Timer		Adjust on-time of main menu	
	Translucent		Adjust translucent of main menu		
	Misc.	Signal Source	Analog		Set input source to Analog input
			DVI		Set input source to DVI input
			VIDEO		Set input source to CVBS
			S-VIDEO		Set input source to S-VHS
			Component		Set input source to YPbPr
		Mode		Select contrast mode	
Reset			Initialize the value of all item		



4.4 OSD Process

4.4.1 Menu Key

If there is no main menu, main menu will show up, else main menu will be disappeared



4.4.2 Up Key / Down Key

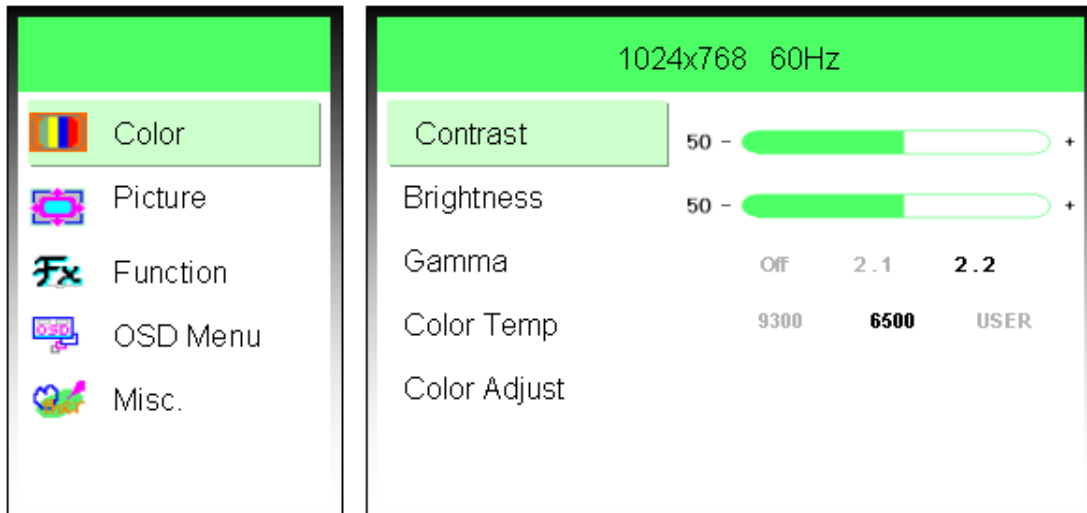
Main cursor will move up and down





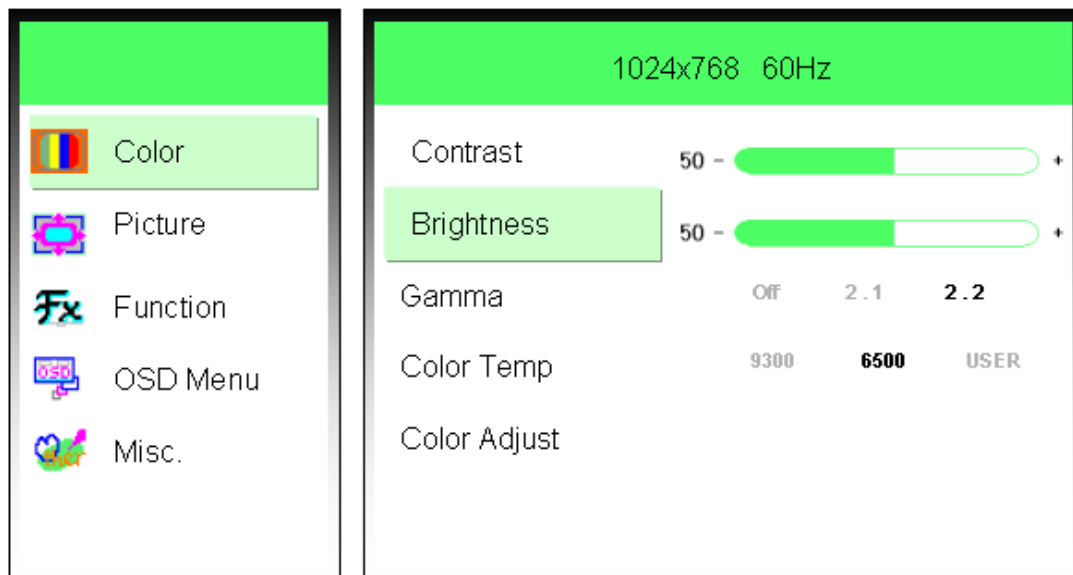
4.4.3 Select Key

Sub cursor will show up



4.4.4 Up Key / Down Key

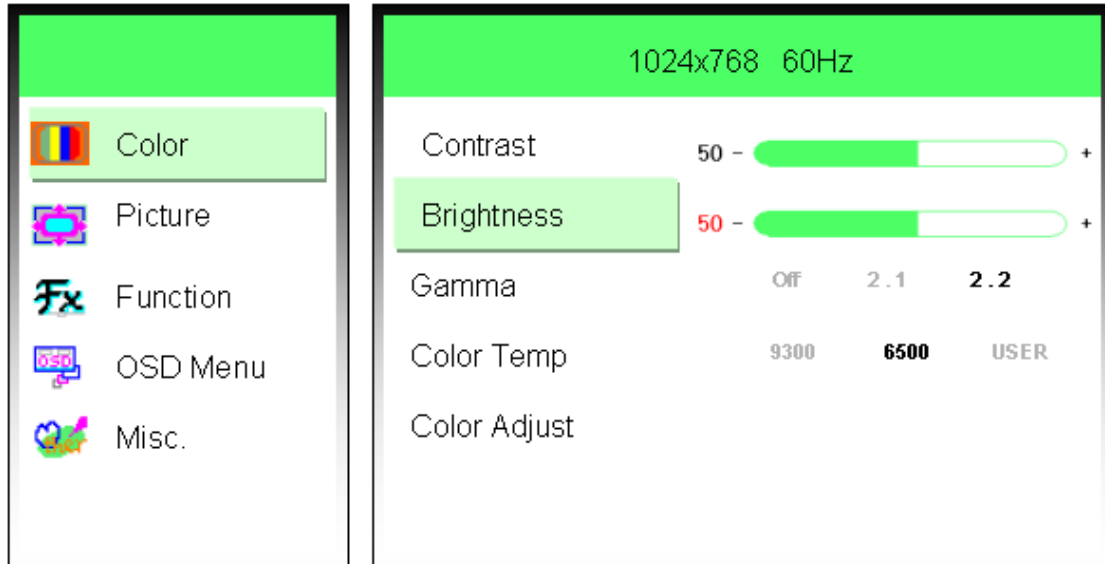
Sub cursor will move up and down





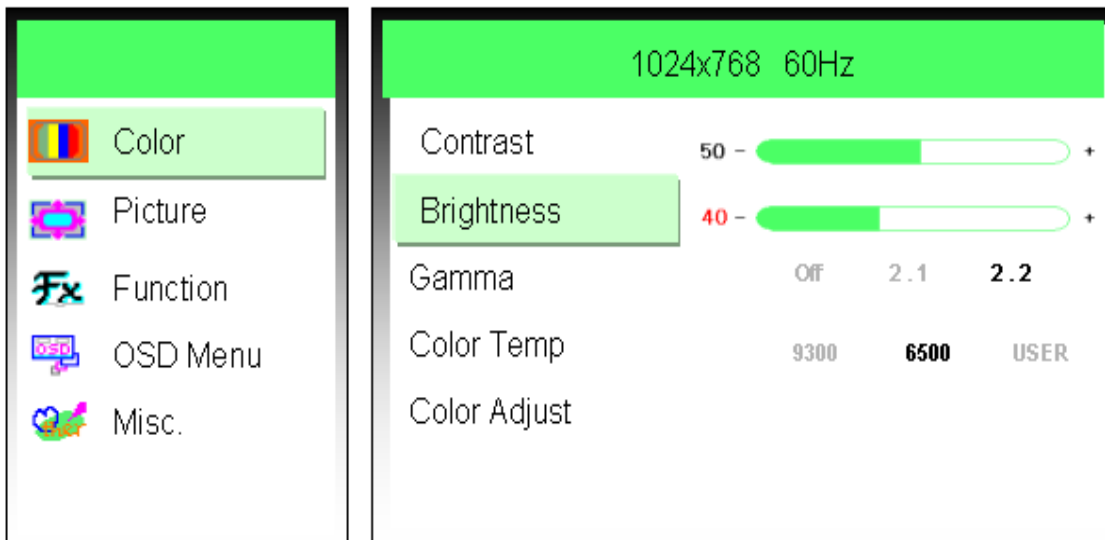
4.4.5 Select Key

Sub Item will be selected



4.4.6 Left Key / Right Key

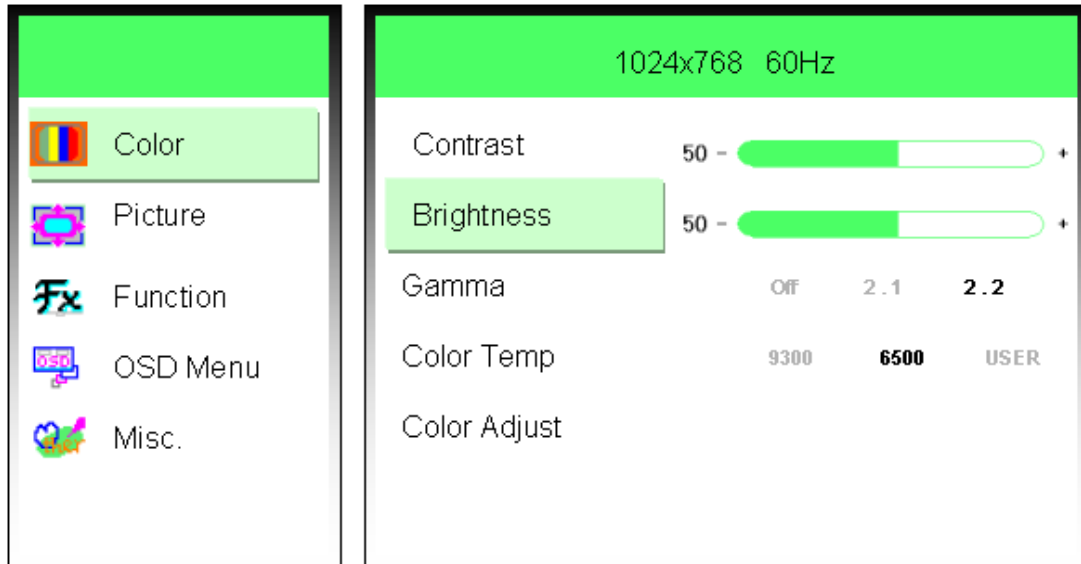
The value of item is adjusted





4.4.7 Menu Key

OSD Menu will go back to previous status

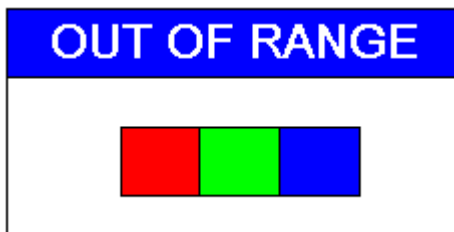




4.5 OSD Message

4.5.1 Out of Range

This message will show up when current input mode is out of range



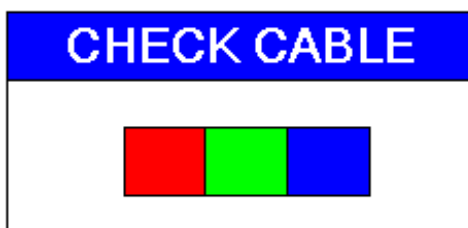
4.5.2 No Signal

This message will show up when there is no input signal



4.5.3 Check Cable

This message will show up when the signal cable is not connected





5. Electrical Characteristics

5.1 Operating Condition

Item	Description	Notes
1) Ambient Temperature	25°C + / - 5°C	
2) Brightness / Contrast	Control to maximum level	

5.2 Test Condition

Pos.	Item	Description
1.	Warm up time	≥30 min.
2.	AC supply voltage	12 V ±5% / 50/60 Hz
3.	Ambient temperature	25°C ±5°C
4.	Humidity	30% ~ 80%
5.	Display mode	1280 X 1024, 60Hz, Full white pattern
6.	Brightness Control	Full brightness (backlight dimming)
		Set to distinguishable lower grey scales (video offset)
7.	Contrast Control	Set to default (OSD max. level), which allows that the brightness two of 32 linear distributed grey scales (0-700mV) can be distinguished.
8.	Black level Control	Set to default (OSD max. level), which allows that the darkest two of 32 linear distributed grey scales (0-700mV) can be distinguished.
9.	Input Signal	700 mVpp Analog Signal
10.	External Controls	For picture position and dimension



5.3 Power Management

Item	Description	Notes	
1) Power On status	Normal Mode (Display mode)	Depend on Panel and Inverter	
	Power Saving Mode (standby, suspend, off)	Less than 1 W	Analog Signal
		Less than 3 W	DVI / Video Signal
2) Power Switch Off status	Less than 1 W	Analog Signal	
	Less than 3 W	DVI / Video Signal	

5.4 Power Management based the VESA DPMS Standard

State	Sync Input			LED	Power Consumption	
	H-sync	V- sync	Video		Analog	Digital
Normal	Active	Active	Active	Green	Depend on Panel and Inverter	
Stand by	Inactive	Active	Inactive	Red	Less than 1 W	Less than 3 W
Suspend	Active	Inactive	Inactive			
Off	Inactive	Inactive	Inactive			



6. Microprocessor

6.1 Input Signal Recognition

- 1) Determine the polarity of horizontal and vertical sync (positive or negative).
- 2) If the horizontal and vertical polarities are same and the detected frequencies are within the tolerance range (see below), the microprocessor recognizes it as the same signal and load saved data from user mode.
- 3) Horizontal frequency tolerance : ± 500 Hz
- 4) Vertical frequency tolerance : ± 0.1 Hz

6.2 Sync Range

- 1) If input signal goes off the limited range, "Out of range" will appear on the screen.
- 2) The limited range
 - $26\text{kHz} \leq \text{Horizontal frequency} \leq 80\text{kHz}$
 - $56\text{Hz} \leq \text{Vertical frequency} \leq 75\text{Hz}$
 - $20\text{MHz} \leq \text{Dot Clock} \leq 140\text{MHz}$

6.3 Check Cable

When the cable is not connected with monitor, Check Cable icon will appear on the screen.

6.4 Signal Recognition for Power Management

Power save mode (stand-by, suspend, power-off mode)

- 1) Horizontal frequency < 10kHz,
- 2) Vertical frequency < 40Hz maintain more than 10 seconds

6.5 Plug & Play

This model have Plug & play feature of DDC 1, DDC 2B. This function is operating when the monitor is connected to a system compatible with VESA DDC standard. The DDC information of this monitor is described on reference 2.



7. I/O Connectors

7.1 DC Power Supply [Internal CN1]

Connector: 20022WR-05 (YEONHO)

PIN	Symbol	Description
1	GND	Power Ground
2	GND	Power Ground
3	NC	Not Connected
4	+ 12 V DC	+ 12 V DC Power in
5	+ 12 V DC	+ 12 V DC Power in

7.2 OSD Connector [Internal CN9]

Connector : 12505WR-07 (YEONHO)

PIN	Symbol	Description
1	LED 1	
2	Key 1	
3	Key 2	
4	DC + 5V	
5	GND	
6	LED 2	
7	Remocon	(remote control)



7.3 Inverter [Internal CN10]

Connector: 12505WR-10 (YEONHO)

Pin	Symbol	Description
1	DC IN	12V DC
2	DC IN	12V DC
3	DC IN	12V DC
4	NC	
5	GND	GND
6	GND	GND
7	GND	GND
8	NC	
9	DIM Adjustment	Dim Adjustment
10	Inverter On/Off	Inverter ON / OFF

7.4 VGA Input Signal

RGB analog input Connector: D-SUB15 pin. Female

Pin	Symbol	Description
1	RED_IN	Analog Input Red
2	GREEN_IN	Analog Input Green
3	BLUE_IN	Analog Input Blue
4	N.C.	Not connected
5	GND	Ground
6	RED_GND	Analog Ground Red
7	GREEN_GND	Analog Ground Green
8	BLUE_GND	Analog Ground Blue
9	5V INPUT	5V DC Input
10	GND	Ground
11	N.C.	Not connected
12	IIC-DATA	I ² C Data
13	H-SYNC_IN	Horizontal sync.
14	V-SYNC_IN	Vertical sync.
15	IIC-CLK	I ² C Clock



7.5 DVI (DVI-D) Input Signal

Digital Input Connector: DVI Connector

PIN	Signal	Description
1	T.M.D.S Data 2-	
2	T.M.D.S Data 2+	
3	T.M.D.S Data 2/4 shield	
4	T.M.D.S Data 2/4 shield	
5	T.M.D.S Data 4+	
6	DDC Clock	
7	DDC Data	
8	Analog Vertical Sync.	
9	T.M.D.S Data 1-	
10	T.M.D.S Data 1+	
11	T.M.D.S Data 1/3 shield	
12	T.M.D.S Data 3-	
13	T.M.D.S Data 3+	
14	+ 5V DC Power	
15	Ground (for +5V DC)	
16	Hot Plug Detect	
17	T.M.D.S Data 0-	
18	T.M.D.S Data 0+	
19	T.M.D.S Data 0/5 shield	
20	T.M.D.S Data 5-	
21	T.M.D.S Data 5+	
22	T.M.D.S Clock shield	
23	T.M.D.S Clock+	
24	T.M.D.S Clock+	



7.6 CVBS INPUT

Connector: 1x RCA (Yellow-Video)

PIN	Symbol	Description
1	CVBS In	CVBS Signal
2	GND	GND

7.7 SVHS INPUT

MINI DIN 4PIN

PIN	Symbol	Description
1	S-VHS	S-Video (S-VHS) Signal
2	GND	Ground
3	NC	Not Connected
4	NC	Not Connected

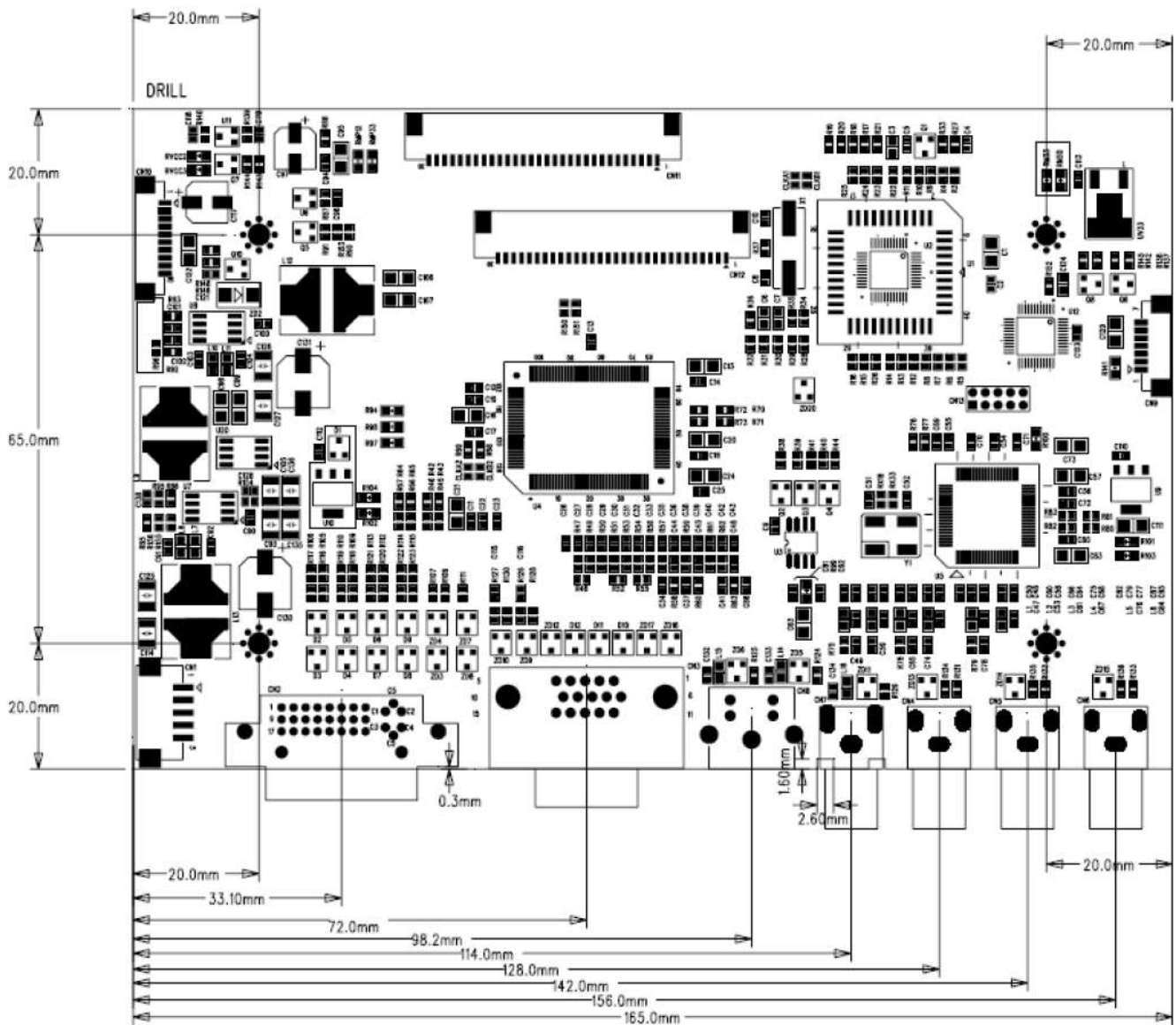


7.8 LVDS Connector [Internal CN11]

Pin	Symbol	Description
1	DC IN	
2	DC IN	
3	DC IN	
4	NC	
5	NC	
6	NC	
7	GND	
8	REX3+	
9	REX3-	
10	REXC+	
11	REXC-	
12	RXE2+	
13	RXE2-	
14	GND	
15	RXE1+	
16	RXE1-	
17	GND	
18	RXE0+	
19	RXE0-	
20	RXO3+	
21	RXO3-	
22	RXOC+	
23	RXOC-	
24	GND	
25	RXO2+	
26	RXO2-	
27	RXO1+	
28	RXO1-	
29	RXO0+	
30	RXO0-	



8. Mechanical Specification





9. Yellowpage PCB Supplier

ZPMV8.E301151 - Wiring, Printed Certified for Canada - Component 페이지 1 / 1

UL Online Certifications Directory

ZPMV8.E301151 Wiring, Printed Certified for Canada - Component



Page Bottom

Wiring, Printed Certified for Canada - Component

See General Information for Wiring, Printed Certified for Canada - Component

MS HITECH CO LTD E301151
223-637 SEOKNAM 2-DONG
SEO-GU, INCHEON 404-825 REPUBLIC OF KOREA

Type	Cond Width			SS/ DS	Max		Flame	UL796	Meets	C	
	Min	Edge	Thk		Area	Solder					Oper
	mm(in)	mm(in)	mic(mil)		Diam	Limits					Temp
Multilayer printed wiring boards.											
1	0.06 (0.002)	0.06 (0.002)	17 (0.67) Int:34	DS	30.0 (1.2)	260	10	120	V-0	All	4
Single layer printed wiring boards.											
2	0.06 (0.002)	0.06 (0.002)	17 (0.67)	DS	30.0 (1.2)	260	10	120	V-0	All	4

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<http://database.ul.com/cgi-bin/XYV/template/LISEXT/1FRAME/showp...> 2006-09-14



10.

10.1 Datasheet Connector Yeonho 12505WR-10 / 7 [CN10 / CN9]

1.25mm

(0.049") PITCH CONNECTOR

Wire-to-Board Wafer

12505WR Series	
SMT	
Right Angle	

Material

UNO	DESCRIPTION	ITEM NO.	MATERIAL
1	WAFER	12505WR	PAET of PA46, UL 94V Grade
2	PIN	12505PR	Phosphor Bronze & Tin Plated
3	HOOK	20015LR	Brass & Tin Plated

Available Pin

PARTS NO.	A	B	C
12505WR-02A00	7.25	3.05	1.25
12505WR-03A00	8.50	4.30	2.50
12505WR-04A00	9.75	5.55	3.75
12505WR-05A00	11.00	6.80	5.00
12505WR-06A00	12.25	8.05	6.25
12505WR-07A00	13.50	9.30	7.50
12505WR-08A00	14.75	10.55	8.75
12505WR-09A00	16.00	11.80	10.00
12505WR-10A00	17.25	13.05	11.25
12505WR-11A00	18.50	14.30	12.50
12505WR-12A00	19.75	15.55	13.75
12505WR-13A00	21.00	16.80	15.00
12505WR-14A00	22.25	18.05	16.25
12505WR-15A00	23.50	19.30	17.50

PCB LAYOUT

PCB ASSEMBLY

Specification

ITEM	SPEC
Voltage Rating	AC/DC 125V
Current Rating	AC/DC 1A
Operating Temperature	-25°C ~ +85°C
Contact Resistance	30mΩ MAX
Withstanding Voltage	AC250V/1min
Insulation Resistance	100MΩ MIN
Applicable Wire	-
Applicable P.C.B	0.8~1.5mm
Applicable FPC/FFC	-
Solder Height	0.15mm
Crimp Tensile Strength	-
UL FILE NO	E108706



10.2 Datasheet Connector Yeonho 12507WR-30 [CN11]

1.25mm

(0.049") PITCH CONNECTOR

WNO	DESCRIPTION	TITLE	MATERIAL
1	WAFER	12507WR	PAET or PA46, UL 94V Grade
2	PIN	12507PR	Phosphor Bronze & Tin plated
3	HOOK	12507LR	Brass & Tin plated

Wire-to-Board Wafer

12507WR Series	
SMT	Right Angle

Material

WNO	DESCRIPTION	TITLE	MATERIAL
1	WAFER	12507WR	PAET or PA46, UL 94V Grade
2	PIN	12507PR	Phosphor Bronze & Tin plated
3	HOOK	12507LR	Brass & Tin plated

Available Pin

PARTS NO.	A	B	C
12507WR-20A00	29.95	25.40	23.18
12507WR-25A00	36.20	31.85	30.06
12507WR-30A00	42.45	38.10	36.25

PCB LAYOUT

PCB ASSEMBLY

Specification

ITEM	SPEC
Voltage Rating	AC/DC 125V
Current Rating	AC/DC 1A
Operating Temperature	-25°C ~ +85°C
Contact Resistance	30mΩ MAX
Withstanding Voltage	AC250V/1min
Insulation Resistance	100MΩ MIN
Applicable Wire	-
Applicable P.C.B	0.8~1.6mm
Applicable FPC/FFC	-
Solder Height	0.15mm
Crimp Tensile Strength	-
UL FILE NO	-



10.3 Datasheet Connector Yeonho 2002WR-05 [CN1]

2.00mm

(0.079") PITCH CONNECTOR

<i>Wire-to-Board Wafer</i>	2002WR Series
	SMT
	Right Angle

Material			
INO	DESCRIPTION	TITLE	MATERIAL
1	WAFER	2002WR	PA6T or PA46, UL 94V Grade
2	PIN		Brass & Tin Plated
3	HOOK	2001SLR	Brass & Tin Plated

Available Pin			
PARTS NO.	A	B	C
2002WR-03A00	8.0	4.75	2.0
2002WR-03A00	10.0	6.75	4.0
2002WR-04A00	12.0	8.75	6.0
2002WR-05A00	14.0	10.75	8.0
2002WR-06A00	16.0	12.75	10.0
2002WR-07A00	18.0	14.75	12.0
2002WR-08A00	20.0	16.75	14.0
2002WR-09A00	22.0	18.75	16.0
2002WR-10A00	24.0	20.75	18.0
2002WR-11A00	26.0	22.75	20.0
2002WR-12A00	28.0	24.75	22.0
2002WR-13A00	30.0	26.75	24.0
2002WR-14A00	32.0	28.75	26.0
2002WR-15A00	34.0	30.75	28.0

Specification	
ITEM	SPEC
Voltage Rating	AC/DC 125V
Current Rating	AC/DC 2A
Operating Temperature	-25 °C ~ +85 °C
Contact Resistance	30mΩ MAX
Withstanding Voltage	AC1000V/1min
Insulation Resistance	1000MΩ MIN
Applicable Wire	-
Applicable P.C.B	0.8-1.6mm
Applicable FPC/FFC	-
Solder Height	0.15mm
Crimp Tensile Strength	-
UL FILE NO	-

PCB LAYOUT

PCB ASSY



11. Technical Support Services Worldwide Web Site

Internet users can obtain technical support and product information along with news and much more from the MSC Vertriebs GmbH Worldwide Web Site, 24 hours a day, seven days a week. The MSC Vertriebs GmbH Worldwide Web Site is frequently updated.

Visit this site often to obtain the most up-to-date information on MSC Vertriebs GmbH products.

The MSC Vertriebs GmbH have following Web Site. The URLs are:

Technical Suite for FPDS Flat Panel Display Solution:

<http://www.msc-ge.com>

<http://www.msc.de>



12. Sales Office and Contact

For all FPDS Flat Panel Design Solution contact:

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Fax: +49(0)7249/910-387
Email: gr@msc-ge.com
WEB: <http://www.msc-ge.com>

For more Sales-office in Germany or European, please contact our Internet-Suite under:

<http://www.msc-ge.com>
<http://www.msc.de>



A. Appendix

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