Product specifications contained herein may be changed without prior notice. It is therefore advisable to contact Purdy Electronics before proceeding with the design of equipment incorporating this product.

AND035VX-UHB-LED

Ultra High Bright 3.5" TFT LCD
LCD Color Module

The AND035VX-UHB-LED is a compact full color TFT LCD module, that is suitable for security, video games, door phones, video phones, portable TV and instrument displays and other electronic products which require high quality flat panel displays. This device consists of an amorphous silicon TFT LCD panel with LED B/L that has 640 x 480 pixels on a 3.5 inch diagonal screen.

Features

- Rugged 800 nit ultra bright LED backlight
- Amorphous silicon TFT LCD panel with LED B/L
- Module with resistive type touch panel (optional)
- Applications daylight readable / night vision camera
- Pixel in stripe configuration
- High Resolution: 262,144 Dots (640 x 480)
- Optimum viewing direction: 6 o'clock
- Auto-detect input signal when power on
- Input Signal: D-Sub BGA signal, dual composite video channels & S-Video
- Operating Temp: 0ºC ~ 60ºC; Storage Temp: -20ºC ~ 80ºC
- **RoHS complliant**

Mechanical Characteristics

Item	Standard Value	Unit
Screen size	3.5 inch (diagonal)	inch
Display Format	640 x (R, G, B) x 480	dot
Display Colors	262,144	–
Active Area	72 (W) x 52.56 (H)	mm
Pixel Pitch	0.1125 (W) x 0.1095 (H)	mm
Pixel Configuration	Stripe	–
Outline Dimensions	84.25 (W) x 65.4 (H) x 4.45 (D) (Typ.)	mm
Weight	52 ± 5	g
Surface Treatment	AG	–
Surface Treatment of Touch Panel	3H	–

Absolute Maximum Ratings: GND = 0V, Ta = 25ºC

Item	Symbol	Conditions	Absolute Maximum Rating		Unit
			Min.	Max.	
Supply Voltage	V_{DD1}	—	-0.3	2	V
	V_{CC}	—	-0.3	5	
	V_{DD2}	—	-0.5	12.0	
	V_{GG}	—	-0.3	40.0	
	V_{GH} - V_{GL}	—	—	40.0	
	V_{EE}	—	-20	0.3	
Operating Temperature (Contrast, response time, other display optical characters are Ta = +25)	T_{OP}	—	0	+60	° C
Storage Temperature	T_{STG}	—	-20	+80	° C

Power Consumption (Ta = 25ºC) **Backlight Connector: JST BHR-03VS-1**

Item	Symbol	Conditions	Specifications		Units
			Typ.	Max.	Units
Supply Current for Gate Driver (Hi Level)	I_{GG}	V_{GG} = +17V	0.12	0.15	mA
Supply Current for Gate Driver (Low Level)	I_{EE}	V_{EE} = -10V	0.15	0.19	mA
Supply Current for Source Driver (Digital)	I_{DD1}	V_{DD1} = +3.3V	4.8	8.0	mA
Supply Current for Source Driver (Analog)	I_{DD2}	V_{DD2} = +10V	16.0	30.0	mA
Supply Current for Gate Driver (Digital)	I_{CC}	V_{CC} = +3.3V	0.17	0.21	mA
LCD Panel Power Consumption	—	—	180	332	mW

Recommended Operating Conditions (VSS1 = VSS2 = GND = 0V, Ta = 25 ºC)

Item	Symbol	Specifications			Units
		Min.	Typ.	Max.	
Supply Voltage for Source Driver	V_{DD1}	3.0	3.3	3.6	V
	V_{DD2}	9.5	10	10.5	
Supply Voltage for Gate Driver	AV_{DD}	+4.5	+5.0	+5.5	
	V_{GH}	+14.5	+15.0	+15.5	
	V_{EE}	-15.5	-15.0	-14.5	
Data Input Voltage	V_{IH}	0.8 V_{DD1}	–	V_{DD1}	V_{P-P}
	V_{IL}	0	–	0.2 V_{DD1}	V

Recommended Driving Conditions for LED Backlight (GND = 0V, Ta = 25 ºC)

Item	Symbol	Specifications			Units	Remarks
		Min.	Typ.	Max.		
Supply Voltage for LED Backlight	V_{LED}	9	12	13	V	I_L = 20mA
Supply Current of LED Backlight	I_{LED1}	—	20	—	mA	Note 1
	I_{LED2}	—	20	—	mA	Note 1
Backlight Power Consumption	P_{LED}	720	960	1040	mW	Note 2

Note 1: LED B/L applied information, please refer to appendix at the end.
Note 2: $P_{LED} = V_{LED} * I_{LED1} + V_{LED} * I_{LED2}$

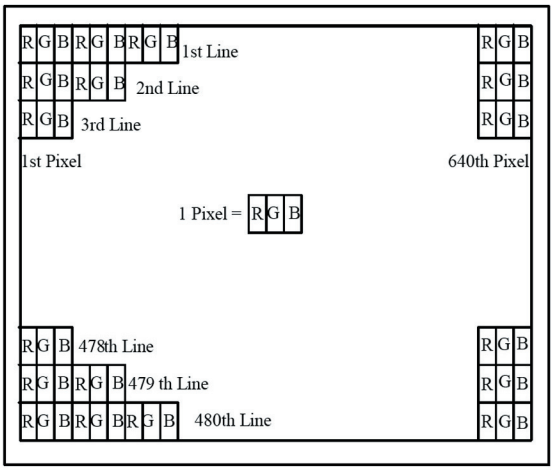
Optical Specifications (Ta = 25 ºC)

Item		Symbol	Remarks	Min.	Specifications Typ.	Max.	Units
Viewing Angle	Horizontal	θ	CR ≥ 10	± 45	± 50	–	deg
	Vertical	θ (to 12 o'clock)		10	15	–	
		θ (to 6 o'clock)		30	35	–	
Contrast Ratio Luminance when LCD is white Luminance when LCD i black		CR	At optimized viewing angle	200	400	–	–
Response Time	Rise	Tr	θ = 0º	–	15	30	ms
	Fall	Tf	θ = 0º	–	25	50	
Brightness		LUM	θ = 0º	4	1300	–	cd/m^2
Uniformity		U	θ = 0º	70	75	–	%
Cross Talk		–	θ = 0º	–	–	3	%
White Chhromaticity		X	θ = 0º	0.28	0.31	0.34	–
		Y		0.30	0.33	0.36	
Lamp Life Time	Ta = 25 ºC	–	decay to 75%	–	20,000	–	hrs

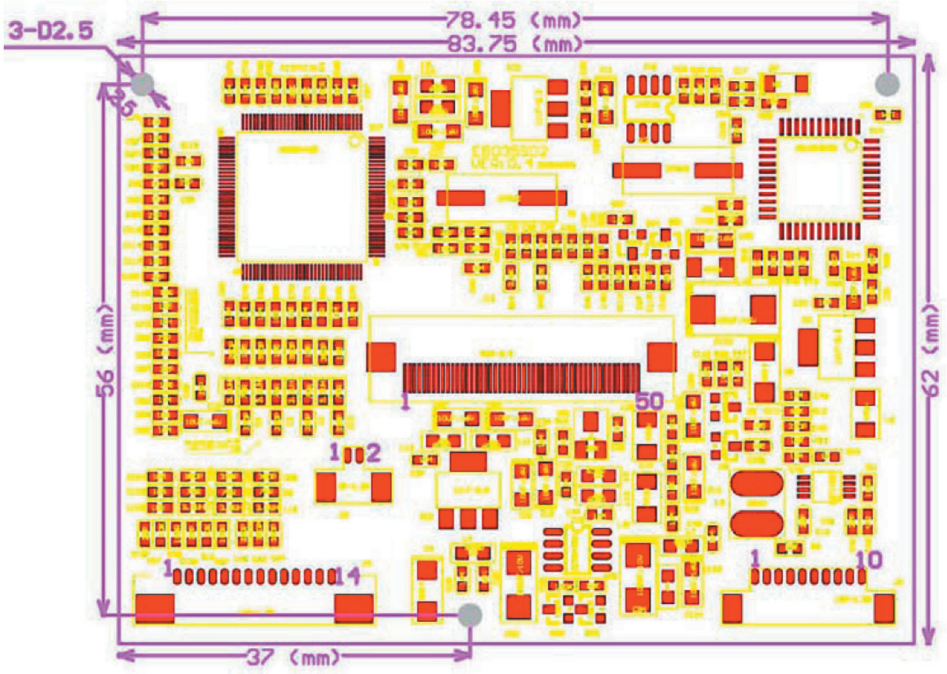
Electronic Characteristics

Symbol	I/O	Conditions	Min.	Typ.	Max.	Unit
Vin	I	DC (+)	4.8	5	5.2	V
Iin	I	DC (+5V)	400	450	500	mA
Pin	I		–	2.25	–	W

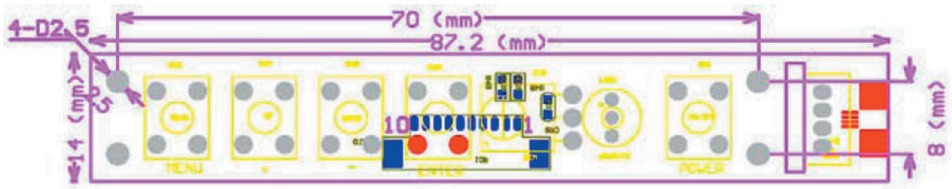
Pixel Arrangement (The LCD module pixel arrangement is stripe.)



Driver Board Outline Drawing

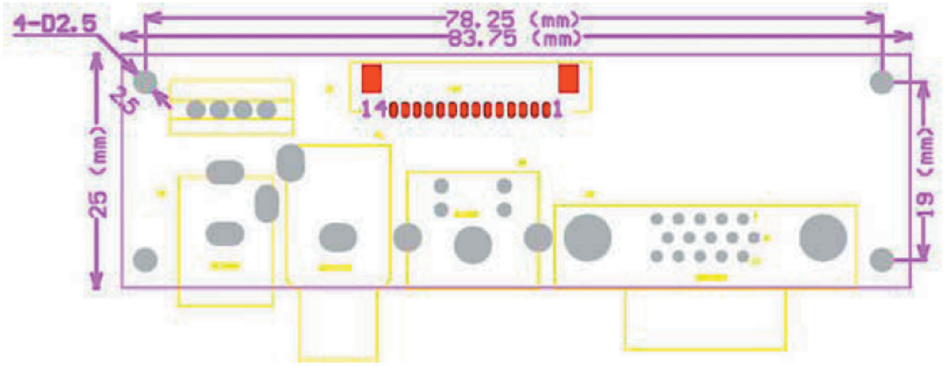


Keyboard Outline Drawing (Optional)



Description:
Outline: 87.2 x 14 x 12.7 mm
Top Layer High (Max): 8 mm
Bottom Layer High (Max): 3.5 mm
Board Thickness: 1.2 mm
Four Screw Holes: ϕ 2.5 mm

Demo Kit Outline Drawing (Optional)



Description:
Outline: 83.75 x 25 x 19.7 mm
Top Layer High (Max): 15 mm
Bottom Layer High (Max): 3.5 mm
Board Thickness: 1.2 mm
Four Screw Holes: ϕ 2.5 mm

Timing Parameters - AC Electrical Characteristics (VCC = VDD1 = 3.3V, VDD2 = 10V, GND = VSS1 = VSS2 = 0V, Ta = 25ºC)

Item	Symbol	Min.	Typ.	Max.	Unit
CLK Frequency	F_{CLK}	–	25	40	MHz
CLK Pulse Width	T_{CPH}	25	–	–	ns
Data Set-up Time	T_{SU}	4	–	–	ns
Data Hold Time	T_{HD}	2	–	–	ns
Propagation Delay of DIO2/1	T_{PHL}	6	10	15	ns
Time that the last data to LD	T_{LD}	1	–	–	T_{CPH}
Pulse Width of LD	T_{WLD}	2	–	–	T_{CPH}
Time that LD to DIO1/2	T_{LDS}	5	–	–	T_{CPH}
POL Set-up Time	T_{PSU}	6	–	–	ns
POL Hold Time	T_{PHD}	6	–	–	ns
OE Pulse Width	T_{OEV}	1	–	–	ls
CKV Pulse Width	T_{CKV}	500	–	–	ns
STV Set-up Time	T_{SUV}	400	–	–	ns
STV Hold Time	T_{HDV}	400	–	–	ns
Horizontal Display Period	T_{HDP}	–	640	–	T_{CPH}
Horizontal Period Timing Range	T_{HP}	–	800	–	T_{CPH}
Horizontal Lines Per Field	T_V	520	525	640	T_{HP}
Vertical Display Timing Range	T_{DV}	–	480	–	T_{HP}

Input/Output Terminals
J12: Output to Panel Signal Terminal (50FPC)
J4: Outside Signal Input Terminal (14 pin)
J5: Control Signal Input Terminal (10 pin)
J3: Video 2 Input Terminal (2 pin) (Optional)
J4: Outside Signal Input Terminal
Connector: Molex 53261-1471 or compatible

Pin No.	Symbol	Function	Input/Output	Remarks
1	GND	Ground	I	–
2	VSYNC	VSYNC input for RGB input	I	–
3	HSYNC	HSYNC input for RGB input	I	–
4	GND	Ground	I	–
5	B	Video BLUE input	I	–
6	G	Video GREEN input	I	–
7	R	Video RED input	I	–
8	GND	Ground	I	–
9	S-C	S-video Chroma input	I	–
10	S-Y	S-video luma input	I	–
11	VIDEO1	Composite Video 1	I	–
12	GND	Ground	I	–
13	GND	Ground	I	–
14	VCC	5V	I	4.8V - 5.2V

J5: Control Signal Input/Output Terminal
Connector: Molex 53261-1071 or compatible

Pin No.	Symbol	Function	Input/Output	Remarks
1	LED	Red Lamp	O	–
2	LED	Green Lamp	O	–
3	SENSOR	Remote Sensor	I	–
4	GND	Ground	I	–
5	3.3V	+3.3V	O	–
6	ON/OFF	Power On/Off	I	–
7	MENU	Menu	I	–
8	DOWN	Down	I	–
9	UP	Up	I	–
10	ENTER	Enter	I	–

J5: Control Signal Input/Output Terminal
Connector: Molex 53261-1071 or compatible

Pin No.	Symbol	Function	Input/Output	Remarks
1	GND	Ground	I	–
2	VIDEO2	Composite Video 2	I	–

Dimensional Outline: