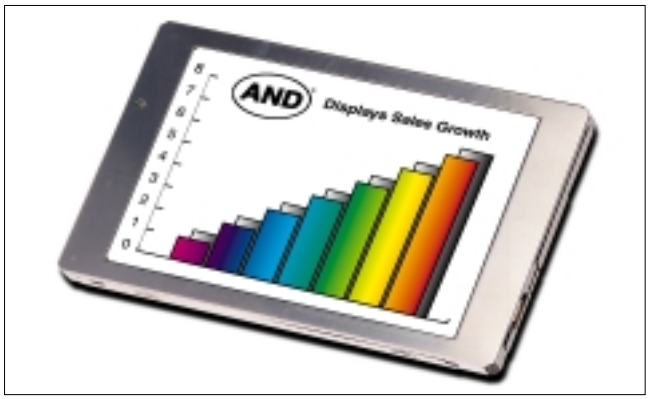


AND64C401V-HB

6.4" VGA
Color TFT LCD Module

The AND64C401V-HB is a compact full color amorphous silicon TFT LCD module, that is suitable for applications such as computers, industrial, and test equipment. This device consists of a twisted nematic (TN) liquid crystal cell, that incorporates a TFT-array that has 640 x 480 pixels on a 6.4 inch diagonal screen, X and Y drivers, an LSI controller, and a built-in CCFL backlight and backlight inverter.

Features

- High aperture ratio
- High brightness
- Wide view angle
- High contrast ratio
- SIngle 5V input for LCD
- Built-in Inverter (+12 VDC)
- Thin and light weight
- High image quality
- Digital input

Mechanical Characteristics

Item	Specification	Unit
Screen Size	6.4 inch (17 cm) diagonal	inch
Outline Dimensions	168.9 (W) x 120.0 (H) x 13.0 (D)	mm
Active Area	129.60 x 97.44	mm
Input Signal	6-bit Digital	
Pixel Number (RGB trio)	640 (W) x 480 (H)	–
Sub Pixel No.	1920 (W) x 480 (H)	–
Sub Pixel Arrangement	Stripe	–
Pixel Pitch	0.203 (W) x 0.203 (H)	mm
Weight	320	g

Absolute Maximum Rating

Item	Symbol	Conditions	Absolute Maximum Rating		Unit
			Min.	Max.	
V_{CC} SupplyVoltage	V_{CC}	Ta-25°C	0.0	6.0	V
Input Signals Voltage	Vsig	Ta-25°C	-0.3	V_{CC}+0.3	V
Operating Temperature	Top	–	-10	+60	°C
Storage Temperature	Tstg	–	-30	+80	°C
Humidity (No condensation of water)	–	≤40°C	–	95%	RH

Electrical Specification

Item	Symbol	Conditions	Specifications			Units
			Min.	Typ.	Max.	
Supply Voltage	V_{CC}	Ta=25°C	4.75	5.0	5.5	V
Current Dissipation	I_{CC}	Ta=25°C	–	400	600	mA
Supply Input Ripple Voltage	V_{CCRP}	Ta=25°C	–	–	0.1	Vp-p
Input Signals Voltage (High)	V_{IH}	Ta=25°C	2.6	–	–	V
Input Signals Voltage (Low)	V_{IL}	Ta=25°C	–	–	0.5	V
Input Signals Current (High)	I_{IH}	Ta=25°C	–	–	100	µA
Input Signals Current (Low)	I_{IL}	Ta=25°C	–	–	100	µA

(Ta = RT)

Power Consumption

Parameters	Symbol	Specifications		Unit	Remark
		Typ.	Max.		
+5V Current Dissipation	I_{CC}	500	600	mA	–
Input Signals Current (High)	I_{IH}	–	100	µA	V_{IH}=+5
Input Signals Current (Low)	I_{IL}	–	100	µA	V_{IL}=0V
LCD Panel Power Consumption		2.5		W	–
Backlight Power Consumption		6.0		W	V_{in}=12
Total Power Consumption		8.5		W	–

Optical Specification

Item		Symbol	Conditions	Specifications			Unit
				Min.	Typ.	Max.	
Luminance		LUM		300	350	–	cd/m^2
Contrast Ratio		CR	Luminance when LCD is White / Luminance when LCD is Black	100	–	–	–
Reflectance		R		–	6.0	–	%
Viewing Angle	Horizontal	Rt	CR≥10	50	–	–	deg
		Lt		50	–		
	Vertical	U		15	–	–	2
		D		35	–	–	
Lamp Life	+25°C	Time		10,000	–	–	hr.
	-30°C	Time		2,000	–	–	

Interface Pin Assignment

Pin No.	Symbol	Function
1	CLK	Clock signal for sampling image digital data
2	Hsync	Horizontal synchronous signal
3	Vsync	Vertical synchronous signal
4	GND	Ground (0V)
5	R0	Red Image data signal (LSB)
6	R1	Red Image data signal
7	R2	Red Image data signal
8	R3	Red Image data signal
9	R4	Red Image data signal
10	R5	Red Image data signal (MSB)
11	GND	Ground (0V)
12	G0	Green Image data signal (LSB)
13	G1	Green Image data signal
14	G2	Green Image data signal
15	G3	Green Image data signal

Pin No.	Symbol	Function
16	G4	Green Image data signal
17	G5	Green Image data signal (MSB)
18	GND	Ground (0V)
19	B0	Blue Image data signal (LSB)
20	B1	Blue Image data signal
21	B2	Blue Image data signal
22	B3	Blue Image data signal
23	B4	Blue Image data signal
24	B5	Blue Image data signal (MSB)
25	GND	Ground (0V)
26	DENB	Signal to select the horizontal display position
27	VCC	DC +5.0V power supply
28	VCC	DC +5.0V power supply
29	R/L	Horizontal image shift-direction select signal
30	U/D	Vertical image shift-direction select signal

Backlight Driving

Pin No.	Symbol	Description
1, 2	Vin	8.0V~18.0V (+12VDC typical)
3	Vadj	Brightness Control (0.2V~2.0V)

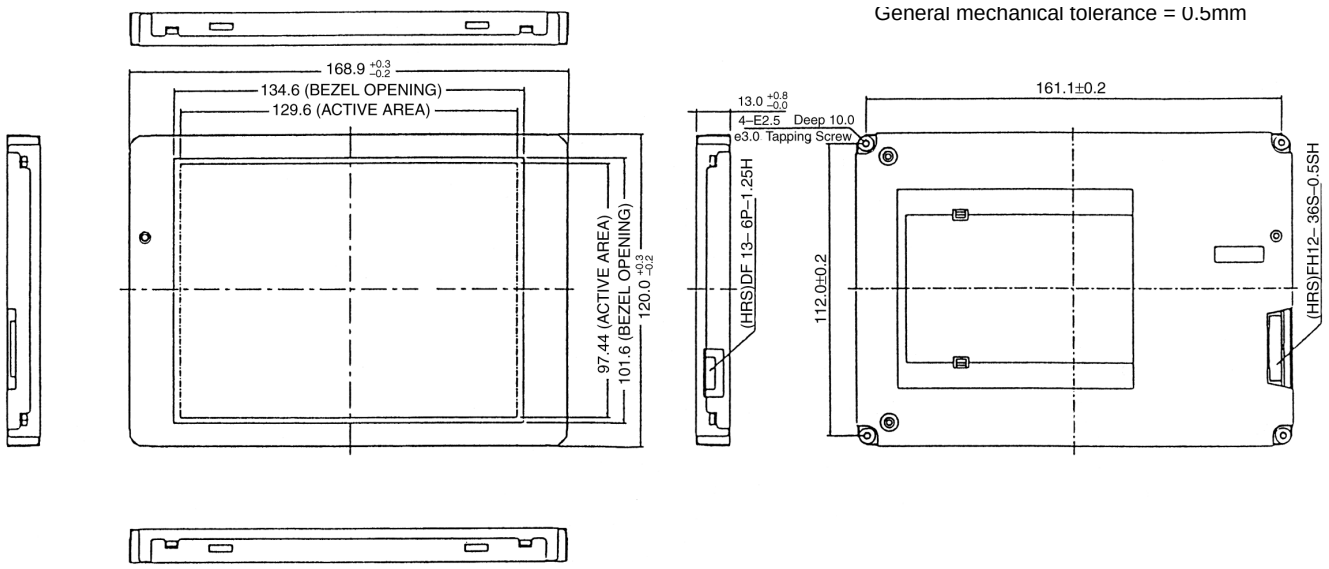
Pin No.	Symbol	Description
4, 5	GND	Ground
6	ENABLE	5V(ON), GND(OFF)

Input/Output Connector

(A) LCD module connector
Molex 52437-3091
Down Connector
Pin No.: 30
Pitch: 0.5 mm

(B) Backlight connector
HRS DF 13-6P-1.25H
Pin No.: 6
Pitch: 1.25 mm

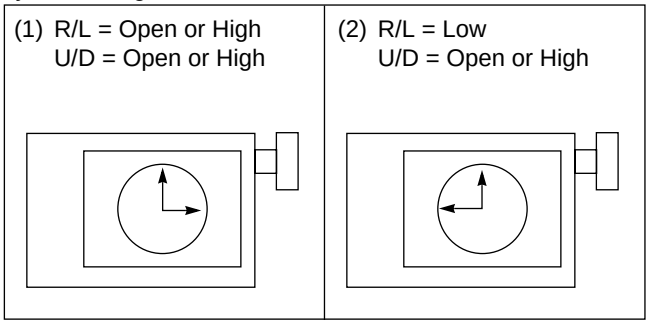
Dimensional Outline



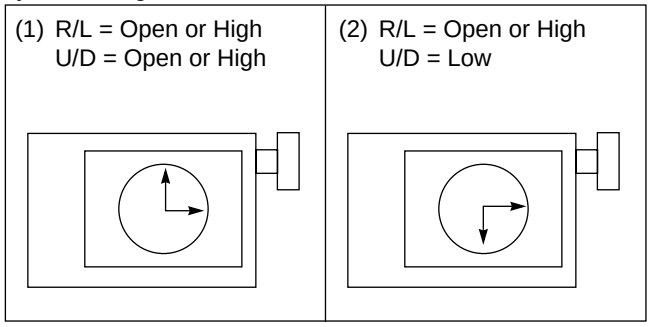
The TFT-LCD module is compatible with four kinds of VGA timing. They are VGA-480, VGA-400, VGA-350 and freedom mode. The polarization of Hsync and Vsync determine the timing.

	VGA-480	VGA-400	VGA-350	Freedom Mode
Hsync Polarization	Negative	Negative	Positive	Positive
Vsync Polarization	Negative	Positive	Negative	Positive

R/L is the Right/Left shift signal. The default value of the system is High.



U/D is the Up/Down shift signal. The default value of the system is High.



Input/Output Signal Timing Chart

Parameters		Symbol	Format	Min	Typ	Max	Unit
Clock	Frequency	Fc=1/Tc	All	600	25.175		MHz
	High Time	Tckh	All	10			ns
	Low Time	Tckl	All	10			ns

Parameters		Symbol	Format	Min	Typ	Max	Unit
Hsync	Periodic = Line	Thp	All		31.778		µs
					800	1024	clock
	Pulse Width	Thpw	All	2	96	200	clock
	Back Porch	Thbp	All	2	48	64	clock
Vsync	Periodic = Frame	Typ	VGA-480	515	525	1024	line
			VGA-400	447	449	1024	line
			VGA-350	447	449	1024	line
			Freedom Mode			1024	line
	Pulse Width	Typw	All	1	2		line
	Back Porch	Tybp	All	1		64	line
Data	Setup Time	Tds	All	10			ns
	Hold Time	Tdh	All	10			ns
DENB	Periodic = Line	Tep	All		800	1024	clock
	Pulse Width (H)	Tepw	All	2	640	800	clock
	Display Line No (V)	Tvd	VGA-480	4870	480		line
			VGA-400	400	400		line
			VGA-350	350	350		line
			Freedom Mode		480		line
Horizontal Display Periodic		Thd	All	640	640	640	clock
Hsync-CLK Phase Difference		Thc	All	10		Tc-10	ns
Vsync-Hsync Phase Difference		Tvh	All	1		Thp-1	clock

AND64C401V-HB Block Diagram