

1. GENERAL SPECIFICATION

1.1 Description

The G035ACA585A0 (GA3041 V00) is a color active matrix Thin Film Transistor (TFT) Liquid Crystal Display (LCD) that uses amorphous silicon(a-Si) TFT as a switching device. This model is composed of a single 3.5 inches transmissive type main TFT-LCD panel. The resolution of the panel is 320RGBx480 pixels and can display up to 16.7M color.

1.2 Feature

- TN type for main TFT-LCD panel
- Structure COG+FPC+BL+RTP
- Full, Normal (Still), Partial, Sleep mode are available

1.3 General Specification

No.	Item	Specification	Unit	Remark
1	LCD Size	3.5	inch	-
2	Panel Type	a-Si TFT active matrix	-	-
3	Resolution	320x (RGB) x480	pixel	-
4	Display Mode	Normally White, Transmissive	-	-
5	Display Number of Colors	16.7M	-	-
6	Viewing Direction	12 o'clock	-	Note
7	Contrast Ratio	500(Typ)	-	-
8	Luminance	200(Typ)	cd/m ²	-
9	Module Size	55.66(W) x85.04(L) x 3.6(T)	mm	Note
10	Active Area	48.96(W) x 73.44(L)	mm	Note
11	Pixel Pitch	0.153(W) x 0.153(L)	mm	-
12	Driver IC	ILI9488	-	-
13	Driver IC RAM Size	2764.8K	bit	-
14	Light Source	6 LEDs White	-	-
15	Interface	RGB	-	-
16	Operating Temperature	-20~70	°C	-
17	Storage Temperature	-30~80	°C	-

Note: Please refer to the mechanical drawing.

3.ELECTRICAL SPECIFICATION**3.1 ABSOLUTE MAXIMUM RATINGS**

ITEM	SYMBOL	CONDITION	STANDARD VALUE			UNIT
			MIN	TYP	MAX	
Power Supply for Analog	VCC	Ta=25 °C	-0.3	-	5.5	V
Power Supply for Digital IO	IOVCC	Ta=25 °C	-0.3	-	3.5	V

Note: Permanent damage to the device may occur if maximum values are exceeded or reverse voltage is applied.

3.2. DC Characteristics

ITEM	SYMBOL	CONDITION	STANDARD VALUE			UNIT
			MIN	TYP	MAX	
Power Supply for Analog	VDD	Ta=25 °C	2.5	2.8	3.5	V
Power Supply for Digital IO	IOVDD	Ta=25 °C	1.65	1.8	3.3	V
Input Signal "H" Level	V _{IH}	-	0.7IOVDD	-	IOVDD	V
Input Signal "L" Level	V _{IL}	-	0	-	0.3IOVDD	V
Output Signal "H" Level	V _{OH}	I _{OH} =-1.0mA	0.8IOVDD	-	IOVDD	V
Output Signal "L" Level	V _{OL}	I _{OL} =1.0mA	0	-	0.2IOVDD	V
Frame Frequency	FRAME	-	50	70	80	Hz

Note: To prevent IC latch up or DC operation in LCD panel, the power on/off sequence should follow the driver IC specification.

4. OPTICAL CHARACTERISTICS

(T_a=+25°C, V_{CI}=+2.85V IOVCC=+1.8V, I_B=20mA)

Item	Symbol	Condition	Specification			Unit	Remark
			Min.	Typ.	Max.		
Response time (By Quick)	Tr+Tf	θ= 0°	-	20	40	ms	Note 5
Contrast ratio	CR	θ= 0°	-	500	-		Note 2,6
Viewing angle	Top	CR ≧ 10	-	60	-	deg.	Note 2,6,7
	Bottom	CR ≧ 10	-	60	-		
	Left	CR ≧ 10	-	70	-		
	Right	CR ≧ 10	-	70	-		
Color chromaticity (CF only with ITO, light source is C light, CIE 1931)	Wx	θ= 0°	0.292	0.307	0.322		Note 3
	Wy		0.312	0.327	0.342		
	Rx		0.609	0.624	0.639		
	Ry		0.316	0.331	0.346		
	Gx		0.281	0.296	0.311		
	Gy		0.562	0.577	0.592		
	Bx		0.128	0.143	0.158		
	By		0.094	0.109	0.124		
NTSC			57%	60%	-		Note 3
Cross talk	Ct		-	-	2%		Note 9
Transmittance	Trans		-	5.50%	-		Note 4

Note 1: Ambient temperature = 25° C.

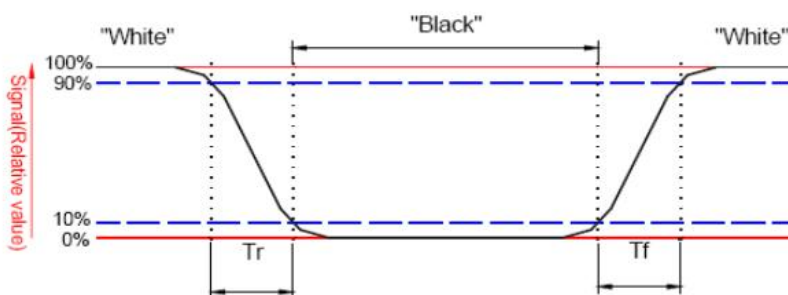
Note 2: To be measured with a viewing cone of 2° by Topcon luminance meter BM-5A.

Note 3: To be measured with Otsuta chromaticity meter LCF-2100M, CF only measure under C light simulation.

Note 4: CTC shipping status is cell without polarizer. Transmittance of Specification is cell with polarizer. The tolerance of Transmittance is ±10%.

Note 5: Definition of response time:

The output signals of TRD-100 are measured when the input signals are changed to “White” (falling time) and from “White” to “Black” (rising time), respectively. The interval is between the 10% and 90% of amplitudes. Refer to figure as below.

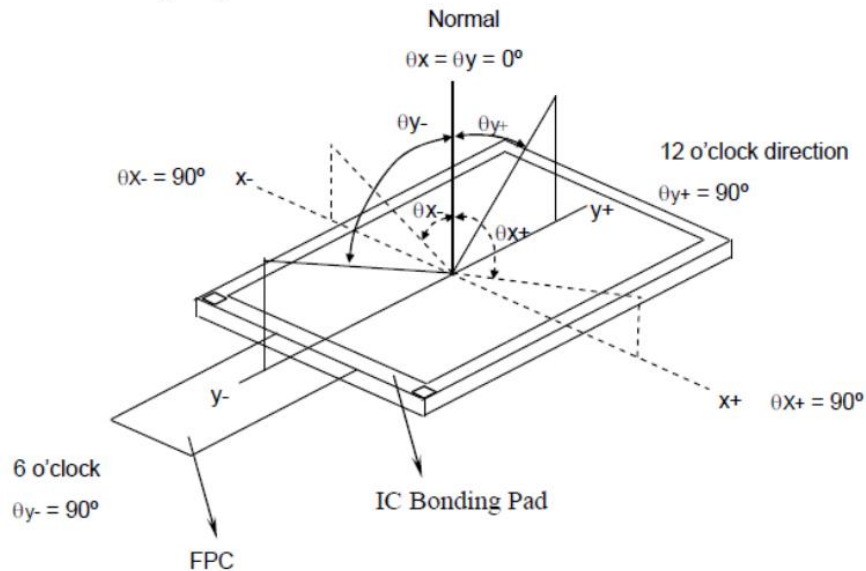


Note 6: Definition of contrast ratio:

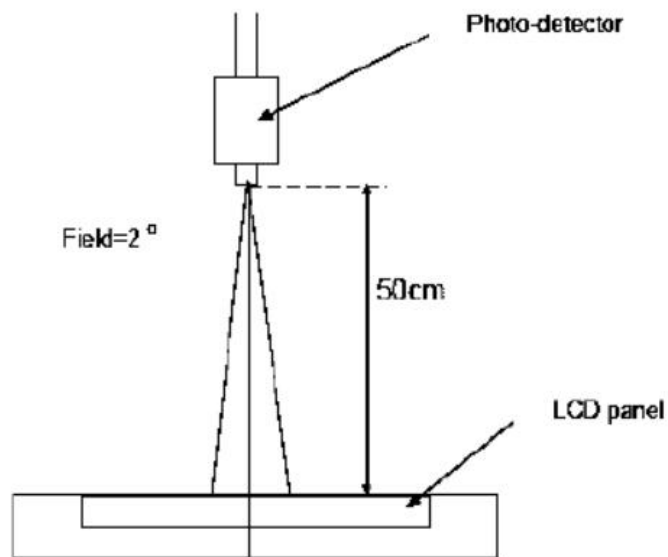
Contrast ratio is calculated by the following formula.

$$\text{Contrast ratio (CR)} = \frac{\text{Brightness on the "white" state}}{\text{Brightness on the "black" state}}$$

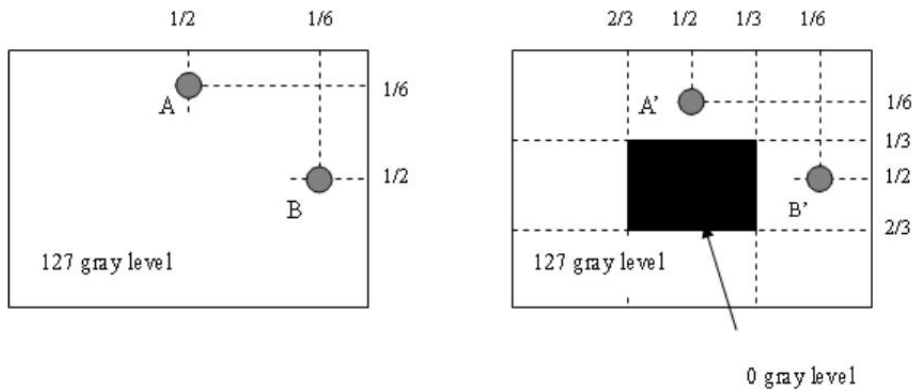
Note 7: Definition of viewing angle



Note 8: Optical characteristic measurement setup.



Note 9:



| LA-LA' | / LA x 100%= 2% max., LA and LA' are brightness at location A and A'.
 | LB-LB' | / LB x 100%= 2% max., LB and LB' are brightness at location B and B'.

5.RELIABILITY TESTS

ITEM	CONDITION	CRITERION
Operating Temperature Test	High Temperature: +70 °C, 48hrs	No defects in display and operational functions
	Low Temperature: -20 °C, 48 hrs	
Storage Temperature Test	High Temperature: +70 °C, 48 hrs	No defects in display and operational functions
	Low Temperature: -30 °C, 48hrs	
Humidity Endurance Test	40 °C±3°C , 95%±3%RH, 48 hrs	No defects in display and operational functions
Thermal Shock Test	-30 °C (30mins)~ +70 °C (30mins) 14 cycles	No defects in display and operational functions
Vibration Resistance Test	Operating Time: thirty minutes exposure for each direction (X,Y,Z) Sweep Frequency:10~55Hz (1 min) Amplitude: 1.5mm	No defects in display and operational functions
Mechanical Shock	Height :76cm (Weight ≤9.5kg); 61cm(9.5<Weight ≤ 18.6kg) 1 corner, 3 edges, 6 surfaces	No defects in display and operational functions
Electro Static Discharge	± 4KV, Human BodyMode,150pF/330Ω; ± 8KV,Air Mode,150pF/330Ω	No defects in display and operational functions

NOTE:

- 1) The samples must be free from defect before test, must be restored at room condition at least for 2 hours after reliability test before any inspection.
- 2) Before test the function of TP, the sample must be placed in room temperature for 24hrs after RA test.