Product Specification

Product Name : 5” LCD Capacitive Touch Screen

Model Name : DBT050BIV50R5C1

Description : 5" 800×480 Black Panel Display

Date:2023-03-31

Version:1.0

PREPARED BY	CHECKED BY	APPROVALED BY

Revision History

REV.	ECN NO.	DESCRIPTION OF CHANGES	DATE	PREPARED
P0	-	Initial Release		

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1.0 GENERAL DESCRIPTION

1.1 Introduction

DBT050BIV50R5C1 is a black panel display. It is composed of a TFT-LCD panel, driver IC, FPC, a back light, touch panel, driver board unit. The 5.0" display area contains 800 x 480 pixels and can display up to 16.7M colors. This product accords with RoHS environmental criterion.

Item	Contents	Unit	Note
LCD Type	Normally Black,Transmissive		
Display color	16.7M		1
Viewing Direction	ALL	O' Clock	
Operating temperature	-20~+70	℃	
Storage temperature	-30~+80	℃	
Module size	134.01(W)×91.40(H)	mm	2
Active Area(W×H)	108.00(W)×61.80(H)	mm	
Number of Dots	800×RGB×480	dots	
Backlight	18LED	FCS	
Data Transfer	RGB/MCU interface	-	

Note 1: Color tune is slightly changed by temperature and driving voltage.
Note 2: Without FPC and Solder.

1.2 Features

- High PPI
- Fast response time
- High luminance, low reflection and wide viewing angle
- RoHS、Halogen Free Compliant

1.3 Application

3D printer, Automobile etc.

2.0 LCD Interface Signals

No.	Symbol	Function	Remarks
1-2	VLEDA	Power for LED backlight(anode)	
3-4	VLEDK	Power for LED backlight(cathode)	
5	GND	Power Ground	
6	NC	No connection	
7	VDD	Power supply	
8	NC	No connection	
9	DE	Data enable pin	
10	VS	Frame sync signal	

11	HS	Line sync signal	
12	B7	Blue data bus	
13	B6	Blue data bus	
14	B5	Blue data bus	
15	B4	Blue data bus	
16	B3	Blue data bus	
17	B2	Blue data bus	
18	B1	Blue data bus	
19	B0	Blue data bus	
20	G7	Green data bus	
21	G6	Green data bus	
22	G5	Green data bus	
23	G4	Green data bus	
24	G3	Green data bus	
25	G2	Green data bus	
26	G1	Green data bus	
27	G0	Green data bus	
28	R7	Red data bus	
29	R6	Red data bus	
30	R5	Red data bus	
31	R4	Red data bus	

32	R3	Red data bus	
33	R2	Red data bus	
34	R1	Red data bus	
35	R0	Red data bus	
36	GND	Ground.	
37	DCLK	Data clock	
38	GND	Ground.	
39	L/R	Right/Left sequence control of source driver	
40	U/D	Gate driver Up/Down scan control of gate driver	
41	NC	No connection	
42	NC	No connection	
43	NC	No connection	
44	RESET	Reset the display	
45	NC	No connection	
46	GND	Ground	
47	XR	RTP control pin	
48	YD	RTP control pin	
49	XL	RTP control pin	
50	YU	RTP control pin	

3.0 Driver board output Interface Signals

No.	Symbol
1	EXT +5V
2	GND
3	FSMC D0
4	FSMC D1
5	FSMC D2
6	FSMC D3
7	FSMC D4
8	FSMC D5
9	FSMC D6
10	FSMC D7
11	FSMC D8
12	FSMC D9
13	FSMC D10
14	FSMC D11
15	FSMC D12
16	FSMC D13
17	FSMC D14
18	FSMC D15

19	FSMC NOE
20	FSMC NWE
21	FSMC A18
22	FSMC NEI
23	RESRT
24	INT
25	T PEN
26	T BUSY
27	T CS
28	T SCK
29	CT SCL/T MOSI
30	CT SDA/T MISO

4.0 Environmental Absolute Maximum Ratings

Item	**Storage**		**Operating**		**Note**
	MIN.	MAX.	MIN.	MAX.	
Ambient Temperature	-30℃	80℃	-20℃	70℃	1,2
Humidity	-	-	-	-	3

1. The response time will become lower when operated at low temperature.

2. Background color changes slightly depending on ambient temperature.

The phenomenon is reversible.

3. Ta<=40℃:85%RH MAX.

Ta>=40℃:Absolute humidity must be lower than the humidity of 85%RH at 40℃.

5.0 Optical Characteristics

Item	Symbol		Condition	Min.	Typ.	Max.	Unit	Note
Brightness	Bp		θ=0° Φ=0°	-	600	-	Cd/m²	1
Uniformity	⊿Bp			75	80	-	%	1,2
Viewing Angle	3:00		Cr≥10	70	80	-	Deg	3
	6:00			70	80	-		
	9:00			70	80	-		
	12:00			70	80	-		
Contrast Ratio	Cr		θ=0° Φ=0°	600	800		-	4
Response Time	T_r+T_f				30	40	ms	5
Color of CIE Coordinate	W	x	θ=0° Φ=0°	0.27	0.32	0.37	-	1,6
		y		0.29	0.34	0.39	-	
		Y		-	-	-		
	R	x					-	
		y					-	
		Y		-	-	-		
	G	x					-	
		y					-	
		Y		-	-	-		
	B	x					-	
		y					-	
		Y		-	-	-		
NTSC Ratio	S			-	60	-	%	

Note：The parameter is slightly changed by temperature, driving voltage and materiel

Note 1: The data are measured after LEDs are turned on for 5 minutes. LCM displays full white.

The brightness is the average value of 9 measured spots. Measurement equipment PR-705 (Φ8mm)

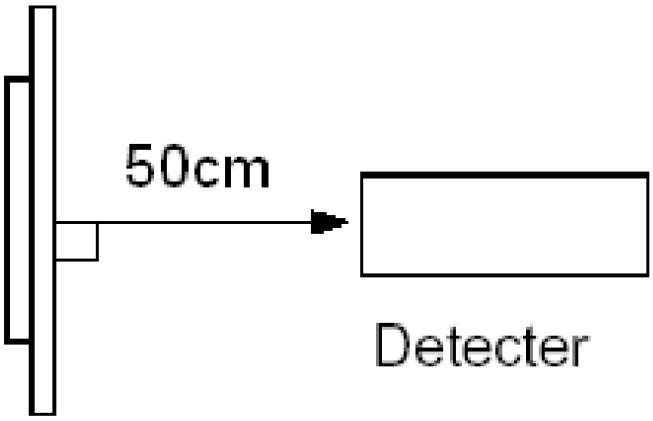
Measuring condition:

- Measuring surroundings: Dark room.

- Measuring temperature: Ta=25℃.

- Adjust operating voltage to get optimum contrast at the center of the display.

Measured value at the center point of LCD panel after more than 5 minutes while backlight turning on.

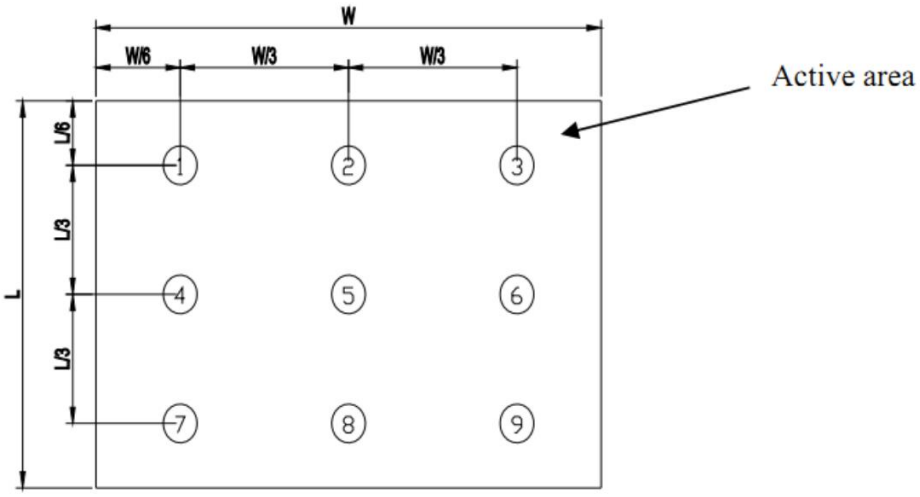


Note 2: The luminance uniformity is calculated by using following formula.

⊿Bp = Bp (Min.) / Bp (Max.)×100 (%)

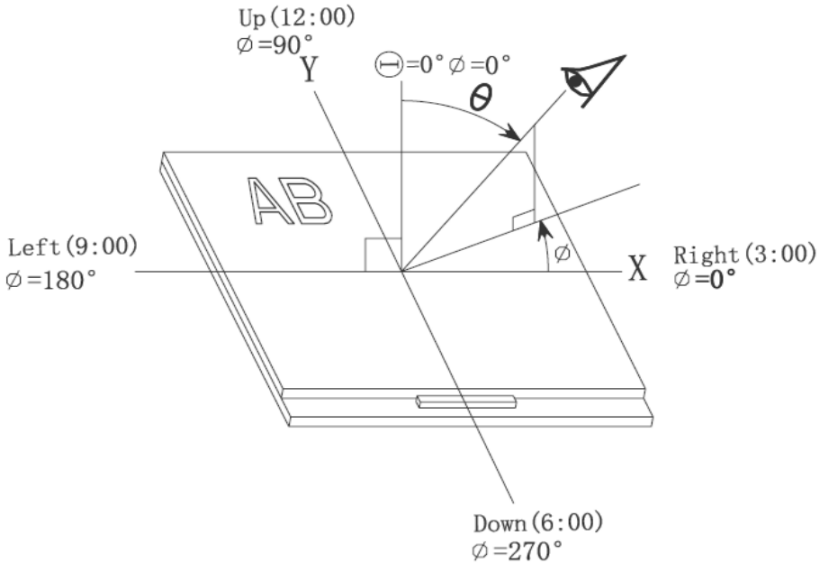
Bp (Max.) = Maximum brightness in 9 measured spots

Bp (Min.) = Minimum brightness in 9 measured spots

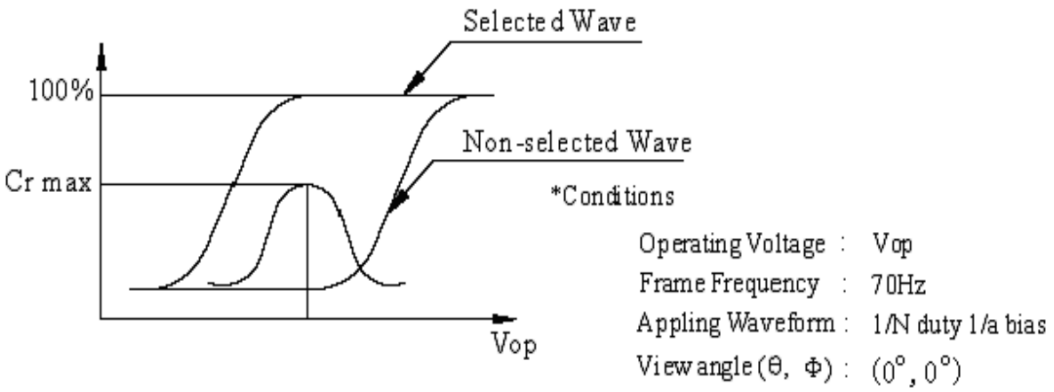


Note 3: The definition of viewing angle:

Refer to the graph below marked by θ and Φ



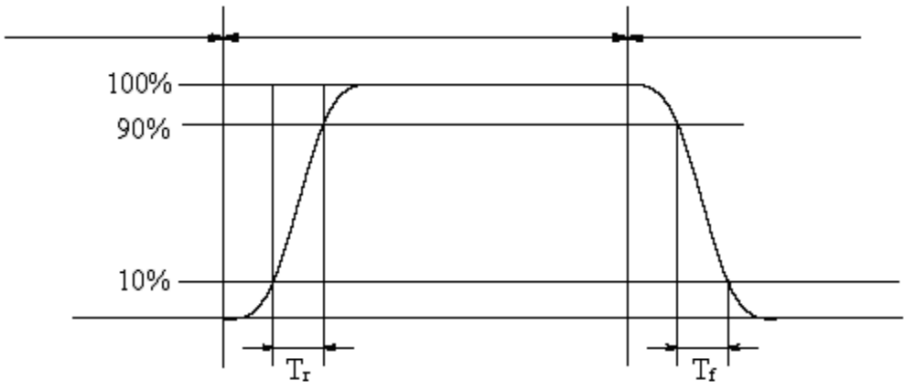
Note 4: Definition of contrast ratio.(Test LCD using DMS501)



$$Contrast\ ratio(Cr) = \frac{Brightness\ of\ selected\ dots}{Brightness\ of\ non-selected\ dots}$$

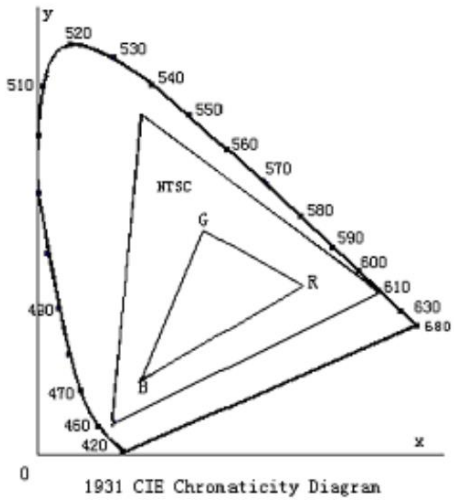
Note 5: Definition of Response time. (Test LCD using DMS501):

The output signals of photo detector are measured when the input signals are changed from "black" to "white" (falling time) and from "white" to "black" (rising time), respectively. The response time is defined as the time interval between the 10% and 90% of amplitudes. Refer to figure as below.



The definition of response time

Note 6: Definition of Color of CIE Coordinate and NTSC Ratio.

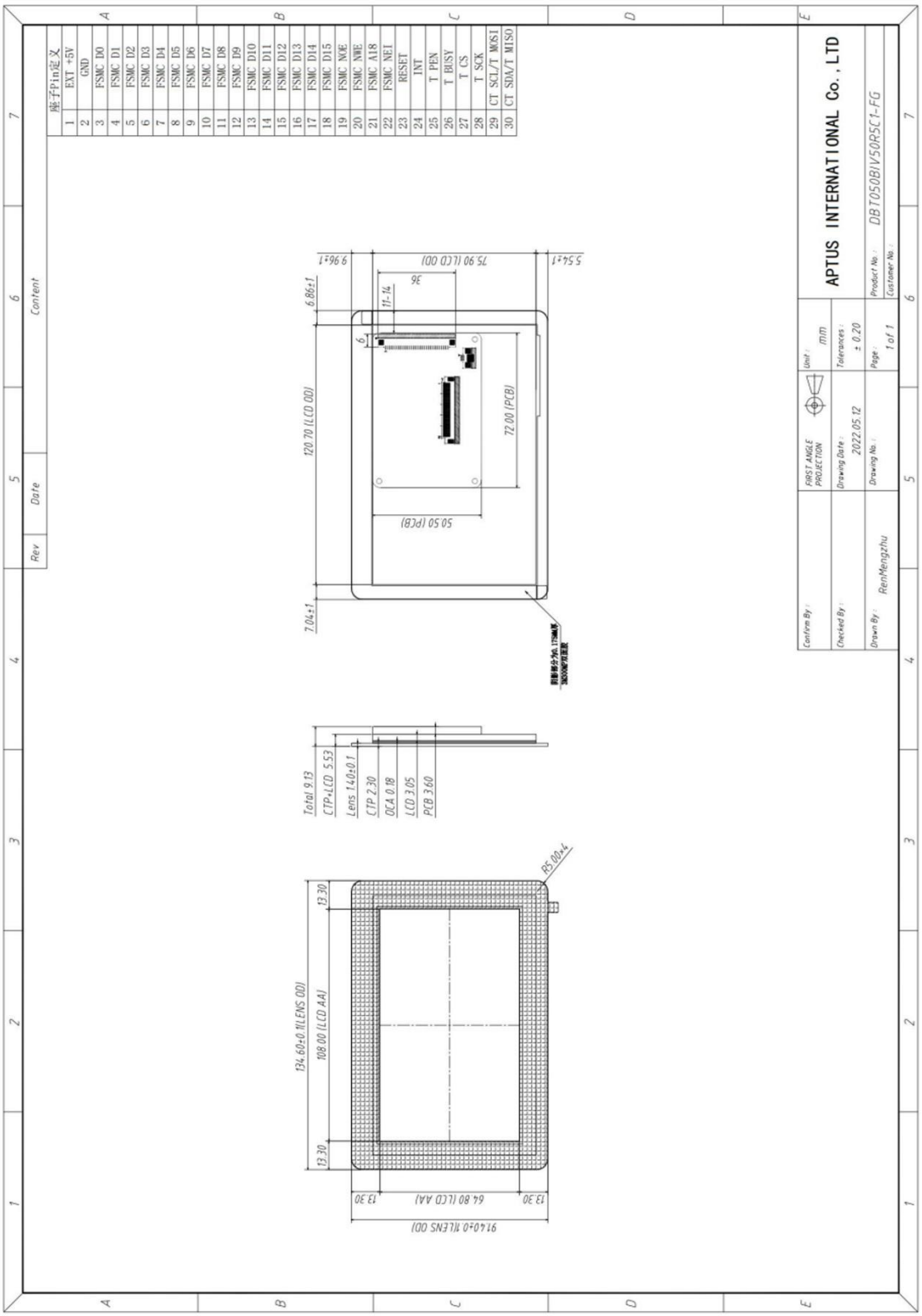


1931 CIE Chromaticity Diagram

Color gamut:

$$S = \frac{\text{area of RGB triangle}}{\text{area of NTSC triangle}} \times 100\%$$

6.0 Drawing


座子Pin定义
1 EXT +5V
2 GND
3 FSMC D0
4 FSMC D1
5 FSMC D2
6 FSMC D3
7 FSMC D4
8 FSMC D5
9 FSMC D6
10 FSMC D7
11 FSMC D8
12 FSMC D9
13 FSMC D10
14 FSMC D11
15 FSMC D12
16 FSMC D13
17 FSMC D14
18 FSMC D15
19 FSMC NOE
20 FSMC NWE
21 FSMC A18
22 FSMC NE1
23 RESET
24 INT
25 T PEN
26 T BUSY
27 T CS
28 T SCK
29 CT SCL/T MOSI
30 CT SDA/T MISO
APTUS INTERNATIONAL Co., LTD
DBT050BIV50R5C1-FG
Total 9.13
CTP+LCD 5.53
Lens 1.40±0.1
CTP 2.30
OCA 0.18
LCD 3.05
PCB 3.60
R5.00±4
134.60±0.1(LENS OD)
108.00 (LCD AA)
91.40±0.1(LENS OD)
64.80 (LCD AA)
75.90 (LCD OD)
120.70 (LCD OD)
72.00 (PCB)
50.50 (PCB)

7.0 HANDLING & CAUTIONS

(1) Cautions when taking out the module

- Pick the pouch only, when taking out module from a shipping package.

(2) Cautions for handling the module

- As the electrostatic discharges may break the LCD module, handle the LCD module

with care. Peel a protection sheet off from the LCD panel surface as slowly as possible.

- As the LCD panel and back light element are made from fragile glass material, impulse and pressure to the LCD module should be avoided.

- As the surface of the LCD is very soft and easily scratched, use a soft dry cloth without chemicals for cleaning.

- Do not pull the interface connector in or out while the LCD module is operating.

- Put the module display side down on a flat horizontal plane.

- Handle connectors and cables with care.

(3) Cautions for the operation

- When the module is operating, do not lose Power, DSI signals. If any one of these

signals is lost, the LCD panel would be damaged.

- Obey the supply voltage sequence. If wrong sequence is applied, the module would be damaged.

(4) Cautions for the atmosphere

- Dew drop atmosphere should be avoided.

- Do not store and/or operate the LCD module in a high temperature and/or humidity

atmosphere. Storage in an electro-conductive polymer packing pouch and under relatively low temperature atmosphere is recommended.

(5) Cautions for the module characteristics

- Do not apply fixed pattern data signal to the LCD module at product aging.

- Applying fixed pattern for a long time may cause image sticking.

(6) Other cautions

- Do not disassemble and/or re-assemble LCD module.

- Do not re-adjust variable resistor or switch etc.

- When returning the module for repair or etc., Please pack the module not to be broken.

- We recommend to use the original shipping packages.