

TFT 1/4-VGA - 5.7"

320x3x240

Stand 3.2007



Dimension 111x160x9 mm

FEATURES

- * 320xRGBx240 DOTS
- * DIGITAL 24 BIT RGB
- * WHITE LED BACKLIGHT
- * T_{OP.} -20..+70°C, T_{STOR.} -30..+80°C
- * SINGLE SUPPLY +3.3V, typ. 75mA + max. 200mA/6.8V FOR BACKLIGHT
- * NO ADDITIONAL POWER SUPPLIES REQUIRED
- * OPTIONALLY WITH ANALOGUE TOUCH PANEL (4-WIRE)

ORDERING CODE

5.7" TFT 320x3x240, WHITE LED BACKLIGHT
WITH TOUCH PANEL, 4-WIRE ANALOGUE
FLEX CABLE (94/102mm) PLUS 40-PIN ZIFF CONNECTOR (BOTTOM)

EA P320X-57ALW
EA P320X-57ALWTP
EA KF40-W1

**ELECTRONIC
ASSEMBLY**
making things easy

1. SPECIFICATIONS

1.1 Features

LCM

Item	Standard Value
Display Type	320(R · G · B) * 240 Dots
LCD Type	Normally white , Transmissive type
Screen size(inch)	5.7 inch
Viewing Direction	6 O'clock
Color configuration	RGB-Strip
Backlight Type	LED
Interface	Digital 24-bits RGB
ROHS	THIS PRODUCT CONFORMS THE ROHS

LCM Weight : 40 g

1.2 Mechanical Specifications

Item	Standard Value	Unit
Outline Dimension	159.4 (W) * 111.0 (L) * 9.0 (H)(Max)	mm

LCM

Item	Standard Value	Unit
Active Area	115.2 (W) * 86.4 (L)	mm
Pixel Size	0.36 (W) * 0.36 (L)	mm

Note : For detailed information please refer to LCM drawing

1.3 Absolute Maximum Ratings

Module

Item	Symbol	Condition	Min.	Max.	Unit
System Power Supply Voltage	VDD	AVSS=0	-0.3	7.0	V
	VCC	GND=0	-0.3	7.0	
	VGH	GND=0	-0.3	32.0	
	VGL	GND=0	-22.0	0.3	
	VGH-VGL	GND=0	-0.3	45.0	
Input Voltage	V _i	-	-0.3	VDD+0.3	V
	V _I	-	-0.3	VCC+0.3	V
Operating Temperature	T _{OP}	-	-20	70	°C
Storage Temperature	T _{ST}	-	-30	80	°C

1.4 DC Electrical Characteristics

Module

Gnd = 0V , Ta = 25°C

Item	Symbol	Condition	Min.	Typ.	Max.	Unit
Analog Supply Voltage	VDD	-	3.0	3.3	3.6	V
Analog Operation Current	IDD	VDD = 3.3V Pattern=full display	-	75	-	mA
		VDD = 3.3V Pattern= black *1		75	125	
Gate On Power	V _{GH}	-	-	15	-	V
Gate Off Power	V _{GL}	-	-	-10	-	V
V _{COM} High Voltage	V _{COMH}	-	2.5	-	4.0	V
V _{COM} Low Voltage	V _{COML}	-	-2	-	0	V
Frame frequency	f _{Frame}	-	-	60	90	Hz
Dot Data Clock	DCLK	-	-	-	6.4	MHz
Power consumption	P _{LCD}	-	-	248	450	mW

Note1:Maximum current display

1.5 Optical Characteristics

TFT LCD panel

Ta=25°C

Item	Symbol	Condition	Min.	Typ.	Max.	unit	-	
Response time	Rise	Tr	-	15	30	ms	Note2	
	Fall	Tf	-	35	50			
Color of CIE Coordinate*1	White	X	Ta = 25°C θX, θY = 0°	0.277	0.327	0.377	-	-
		Y		0.289	0.339	0.389		
	Red	X		0.579	0.629	0.679		
		Y		0.311	0.361	0.411		
	Green	X		0.299	0.349	0.399		
		Y		0.524	0.574	0.624		
	Blue	X		0.093	0.143	0.193		
		Y		0.040	0.090	0.140		
Viewing angle	Top	θY+	CR ≥ 10	-	50	-	deg.	Note1
	Bottom	θY-		-	45	-		
	Left	θX-		-	50	-		
	Right	θX+		-	50	-		
Contrast ratio	CR	Ta = 25°C	150	250	-	-	Note3	
Average Brightness Pattern=white display (With LCD)*1	IV	IF= 200mA	320	380	-	cd/m ²		
Uniformity (With LCD)*2	△B	IF= 200mA	70	-	-	%		

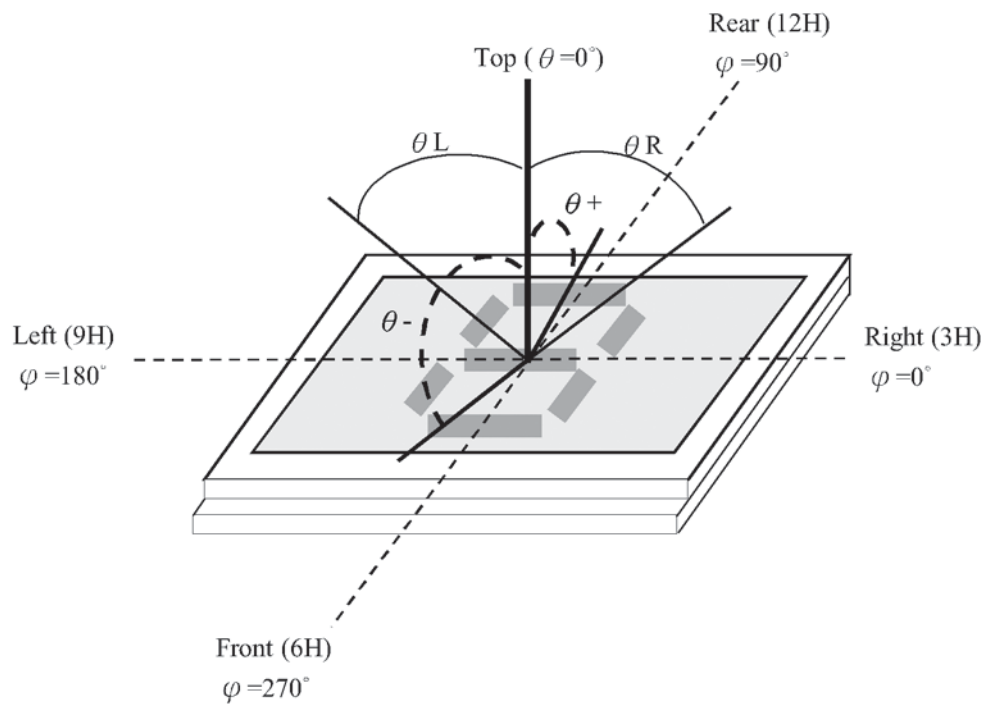
*1 : This value will be changed while mass production.

*2 : $\Delta B = B(\min) / B(\max)$

Note 1.

Optical characteristics-2

Viewing angle

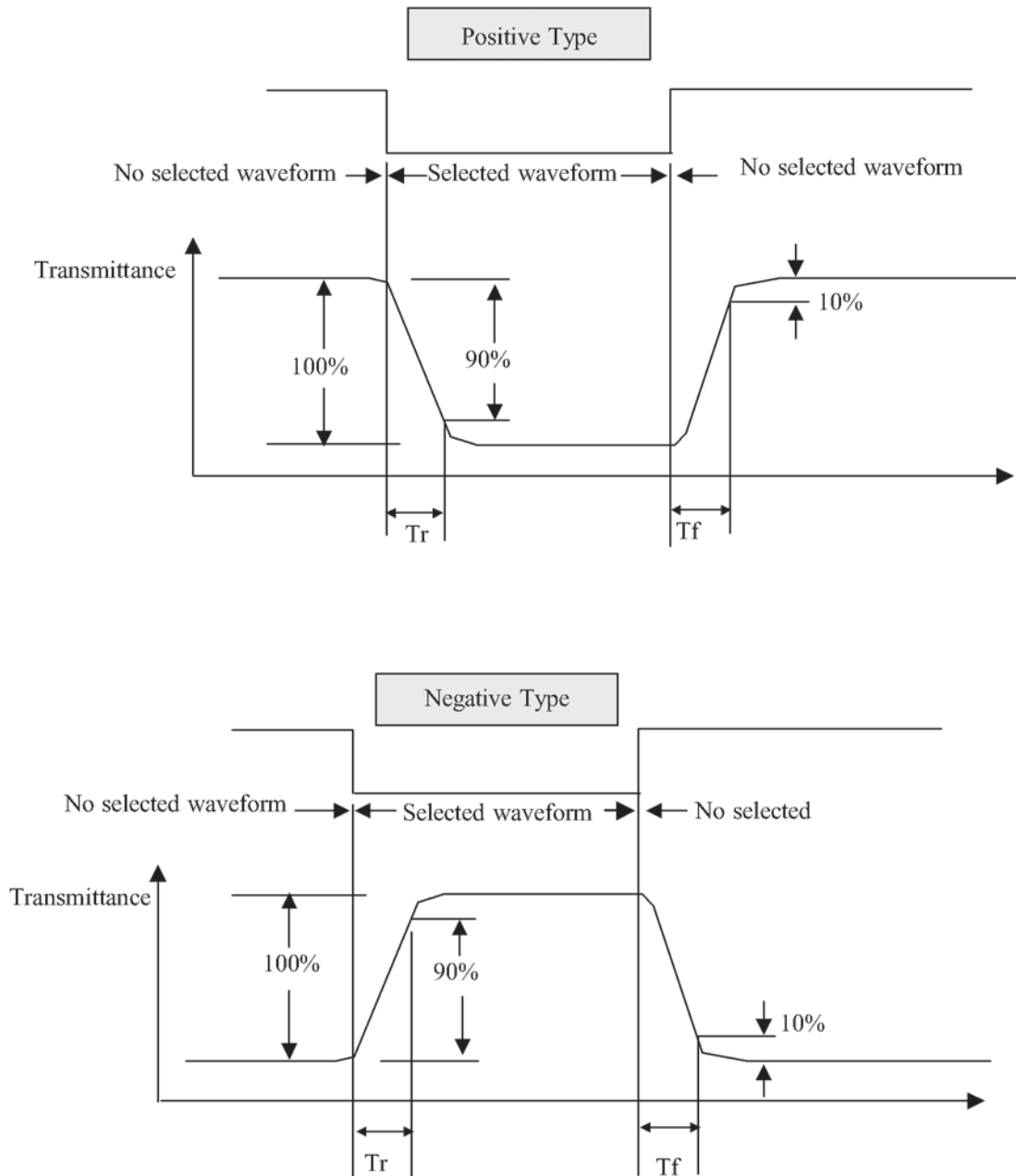


Viewing angle

Note 2.

Optical characteristics-3

Fig.2 Definition of response time



Electrical characteristics-2

- 2 Drive waveform

V_{op} : Drive voltage

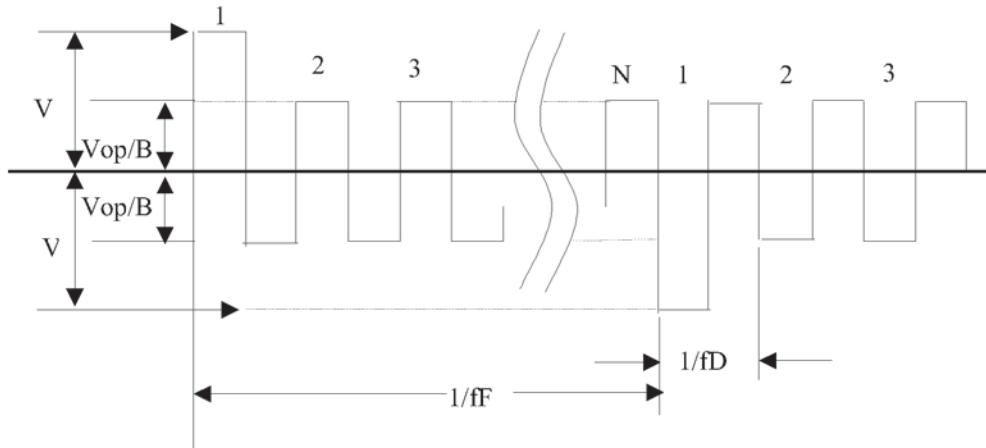
f_F : Frame frequency

$1/B$: Bias

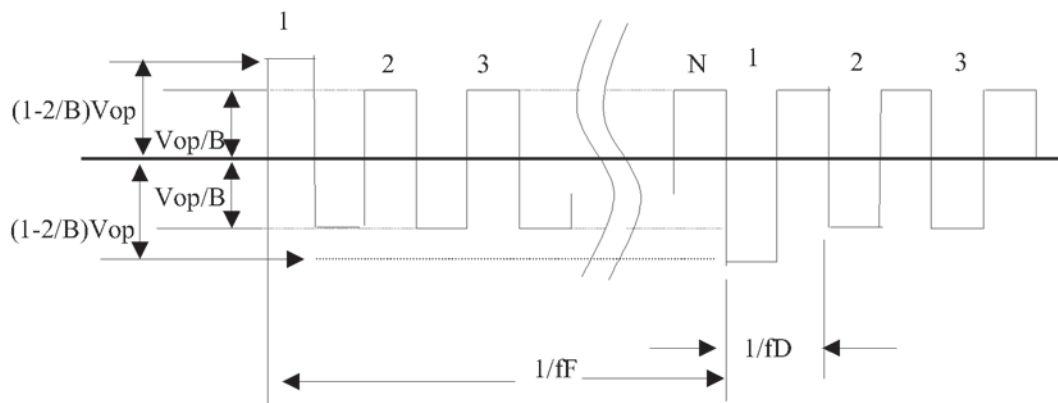
f_D : Drive frequency

N : Duty

(1) Selected waveform



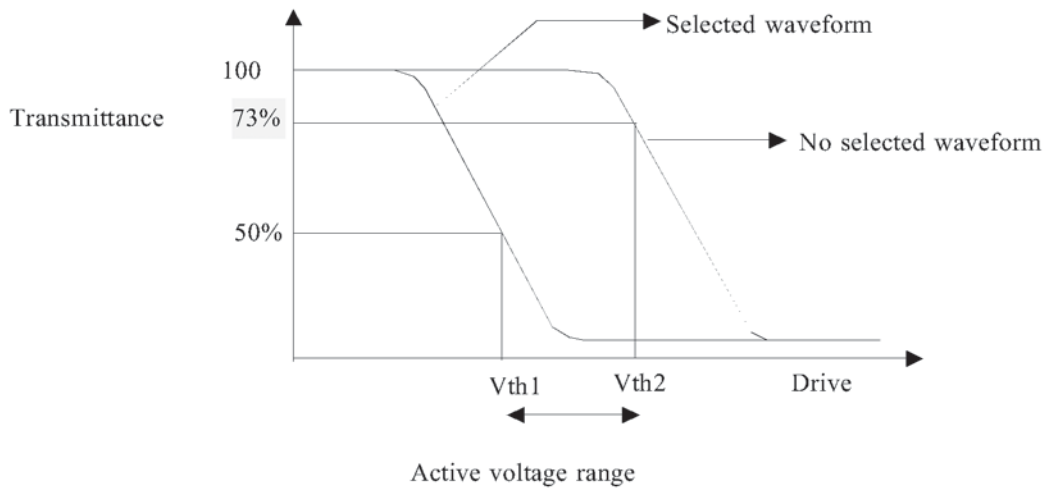
(2) Non- Selected waveform



Note:

Frame frequency is defined as follows: Common side supply
voltage peak - to - peak / 2 = 1 period

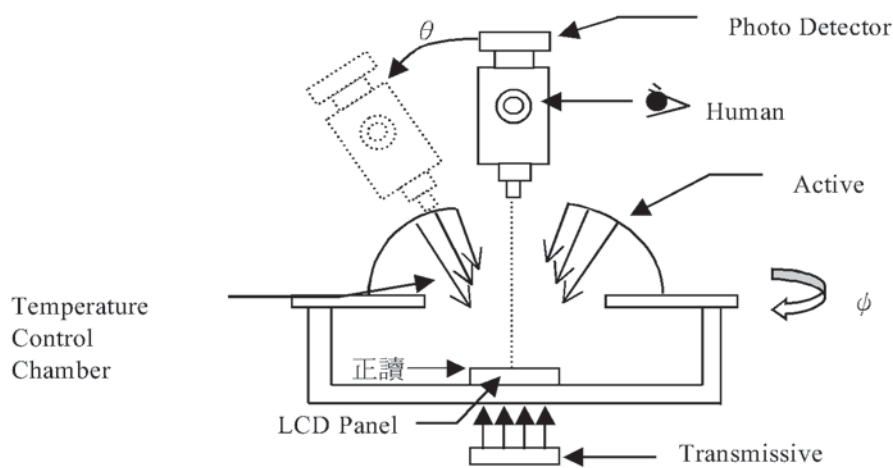
Note 3. : Definition of Vth



	Vth1	Vth2
View direction	10°	40°
Drive waveform	(Selected waveform)	(No selected waveform)
Transmittance	50%	73%

※1 Contrast ratio
= (Brightness in OFF state) / (Brightness in ON state)

Outline of Electro-Optical Characteristics Measuring System



Measuring System: Autronic DMS-803

1.6 Backlight Characteristics

LCD Module with LED Backlight

Maximum Ratings

Item	Symbol	Conditions	Min.	Max.	Unit
Reverse Voltage	VR	Ta =25°C	-	10	V
Power Dissipation	PO	Ta =25°C	-	1040	mW

Electrical / Optical Characteristics

Item	Symbol	Conditions	Min.	Typ.	Max.	Unit
Forward Voltage	VF	IF= 200 mA	6.0	6.8	8.6	V
Forward Current	IF	Ta =25°C	-	-	200	mA

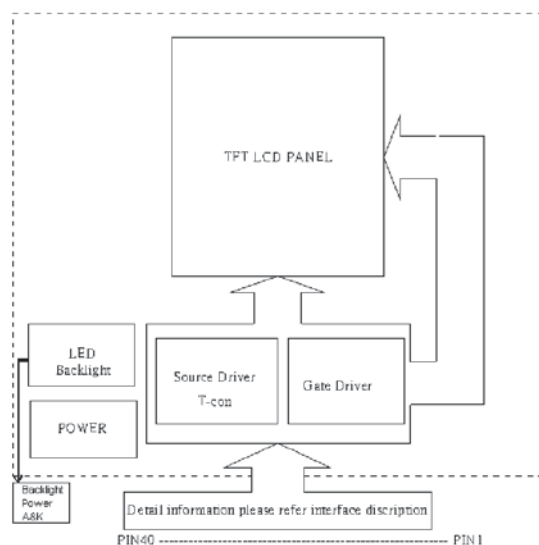
2. MODULE STRUCTURE

2.1 Counter Drawing

2.1.1 LCM Mechanical Diagram

* See Appendix

2.1.2 Block Diagram



2.2 Interface Pin Description

Pin No.	Symbol	Function
1	VDD	Analog power.
2	VDD	
3	VDD	
4	VDD	
5	VSYNC	Vertical sync input
6	ENB	Data enable control
7	VSS	Ground
8	DCLK	Dot data clock
9	VSS	Ground
10	HSYNC	Horizontal sync input
11	B7	data bit b7
12	B6	data bit b6
13	B5	data bit b5
14	B4	data bit b4
15	B3	data bit b3
16	B2	data bit b2
17	B1	data bit b1
18	B0	data bit b0
19	G7	data bit g7
20	G6	data bit g6
21	G5	data bit g5
22	G4	data bit g4
23	G3	data bit g3
24	G2	data bit g2
25	G1	data bit g1
26	G0	data bit g0

Interface Pin Description(CONT.)

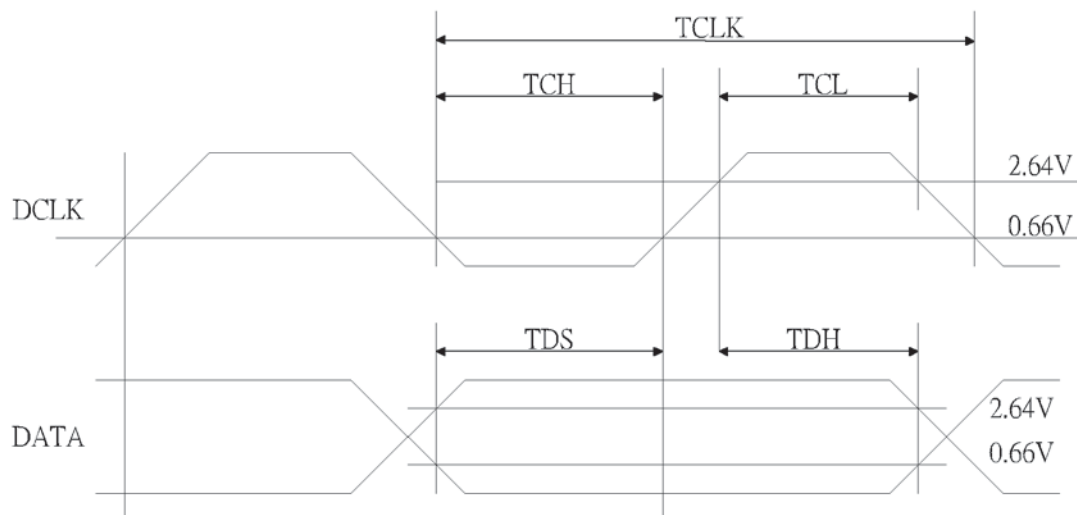
27	R7	data bit r7
28	R6	data bit r6
29	R5	data bit r5
30	R4	data bit r4
31	R3	data bit r3
32	R2	data bit r2
33	R1	data bit r1
34	R0	data bit r0
35	VSS	Ground
36	VSS	Ground
37	NC	No use.
38	NC	No use.
39	NC	No use.
40	NC	No use.

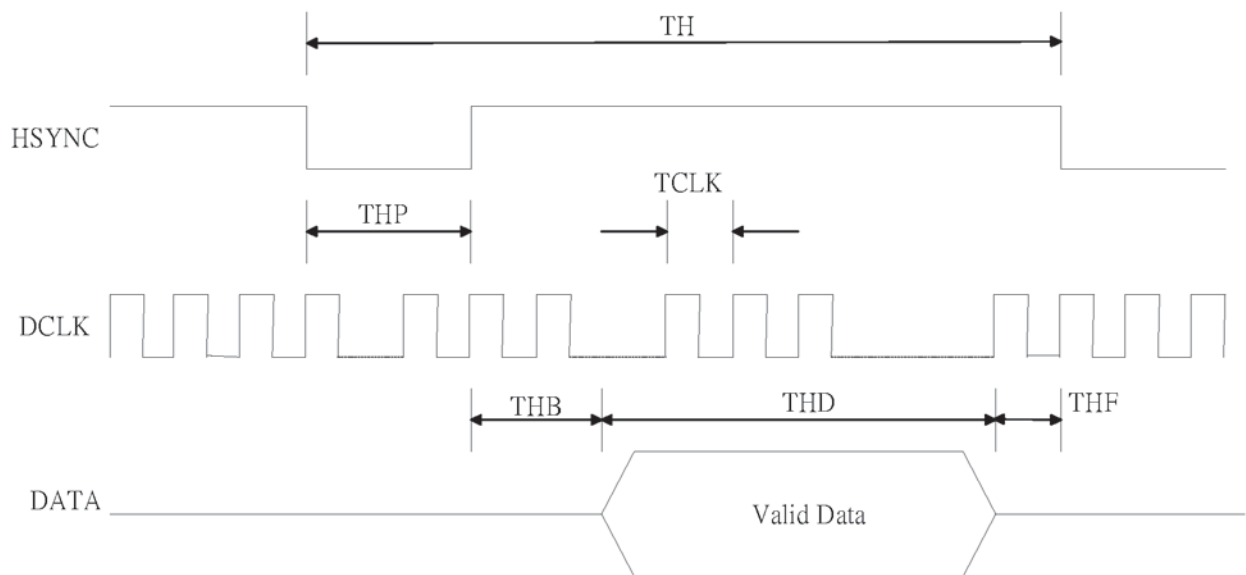
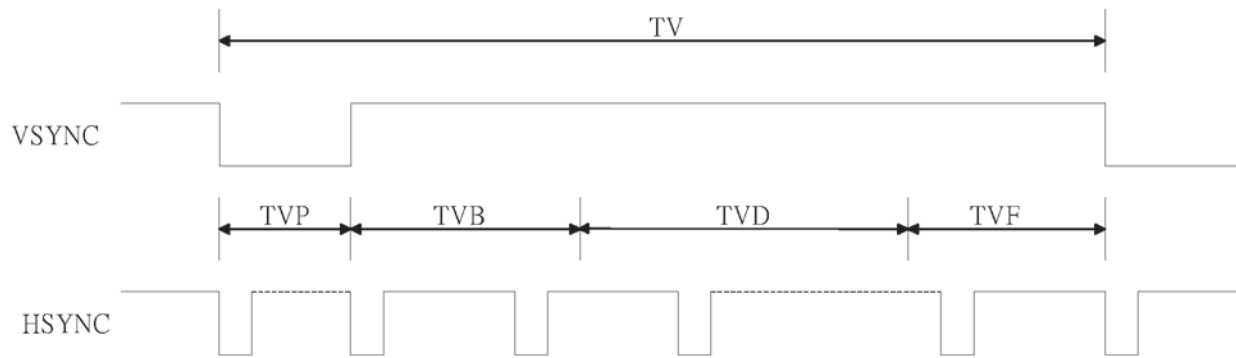
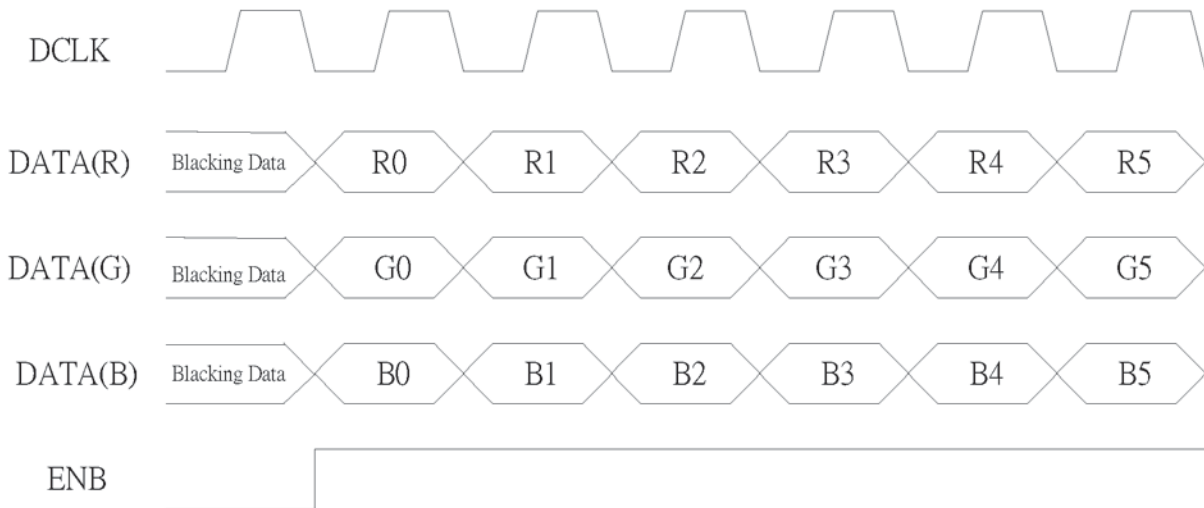
Backlight Pin Description

1	A	Power supply for LED Backlight anode input.
2	NC	No use.
3	K	Power supply for LED Backlight cathode input.

2.3 Timing Characteristics

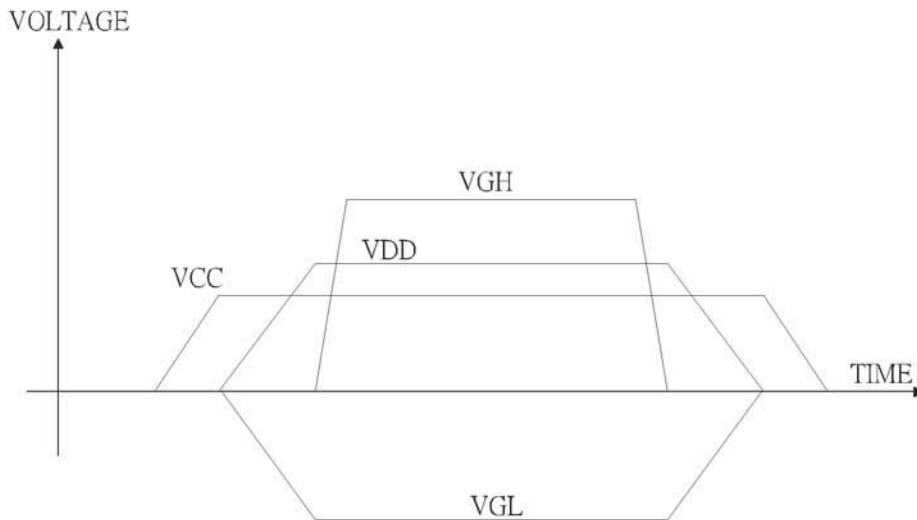
Signal	Item	Symbol	Min.	Typ.	Max.	Unit	
Dclk	Frequency	Dclk		6.4		MHz	
	High Time	Tch		78		ns	
	Low Time	Tcl		78		ns	
Data	Setup Time	Tds	12			ns	
	Hold Time	Tdh	12			ns	
Hsync	Period	TH		408		DCLK	
	Pulse Width	Thp		30		DCLK	
	Back-Porch	Thb		38		DCLK	
	Display Period	Thd		320		DCLK	
	Front-Porch	Thf		20		DCLK	
Vsync	Period	NTSC	Tv	262.5		TH	
		PAL		312.5			
	Pulse Width		Tvp	1	3	5	TH
	Back-Porch	NTSC	Tvb	15		TH	
		PAL		23			
	Display Period		Tvd		240		TH
	Front-Porch	NTSC	Tvf	4.5		TH	
		PAL		46.5			





2.5 Power Sequence

The LCD panel adopts high voltage driver ICs , so it could be permanently damaged if a wrong power on/off sequence is used, When powering on the LCD , VCC should go up firstly, and then turn on VGL and VDD , and finally VGH , Turn off the LCD panel with reversed order or shut off all the power supplies simultaneously.



3.0 OPTINAL TOUCH PANEL

Optionally TFT display is equipped with an analogue touch panel. technology is resistive.

3.1 Pinout and specification

Technische Daten				
Spezifikation	min	typ	max	Einheit
Top-Bottom	170		250	Ω
Left-Right	95		175	Ω
Spannung	3		12	V
Schaltstrom	5		25	mA
Betätigungskraft	45		65	g
Kontaktprellen	5		10	ms
Betriebstemperatur	-20		+60	°C
Lagertemperatur	-20		+70	°C
Transmission	75		85	%
Lebensdauer	100000			Schaltspiele

Touch Panel		
Pin	Symbol	Function
1	T	Top
2	L	Left
3	B	Bottom
4	R	Right

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