DATASHEET

4/19/2013

Fema Part Number

GM320240V-57-TTX2NLW-T	
Description	5.7″ Full Color TFT Display
	320x240 Resolution
	Brightness = 260 nits (Typical)
	Integrated Resistive Touch Panel

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1. BASIC SPECIFICATION

1.1 Mechanical specifications

Items	Nominal Dimension	Unit
Active screen size	5.7” diagonal	-
Dot Matrix	320 x RGB x 240	Pixel
Module Size (W x H x T)	144.0 x 104.6 x 14.7	mm.
Active Area (W x H)	115.2 x 86.4	mm.
Dot Pitch (W x H)	0.36 x 0.36	mm.
Color depth	262K	color
Interface	Parallel 18-bit RGB	-
Driving IC Package	COG	-
Module weight	241 (Typ)	g

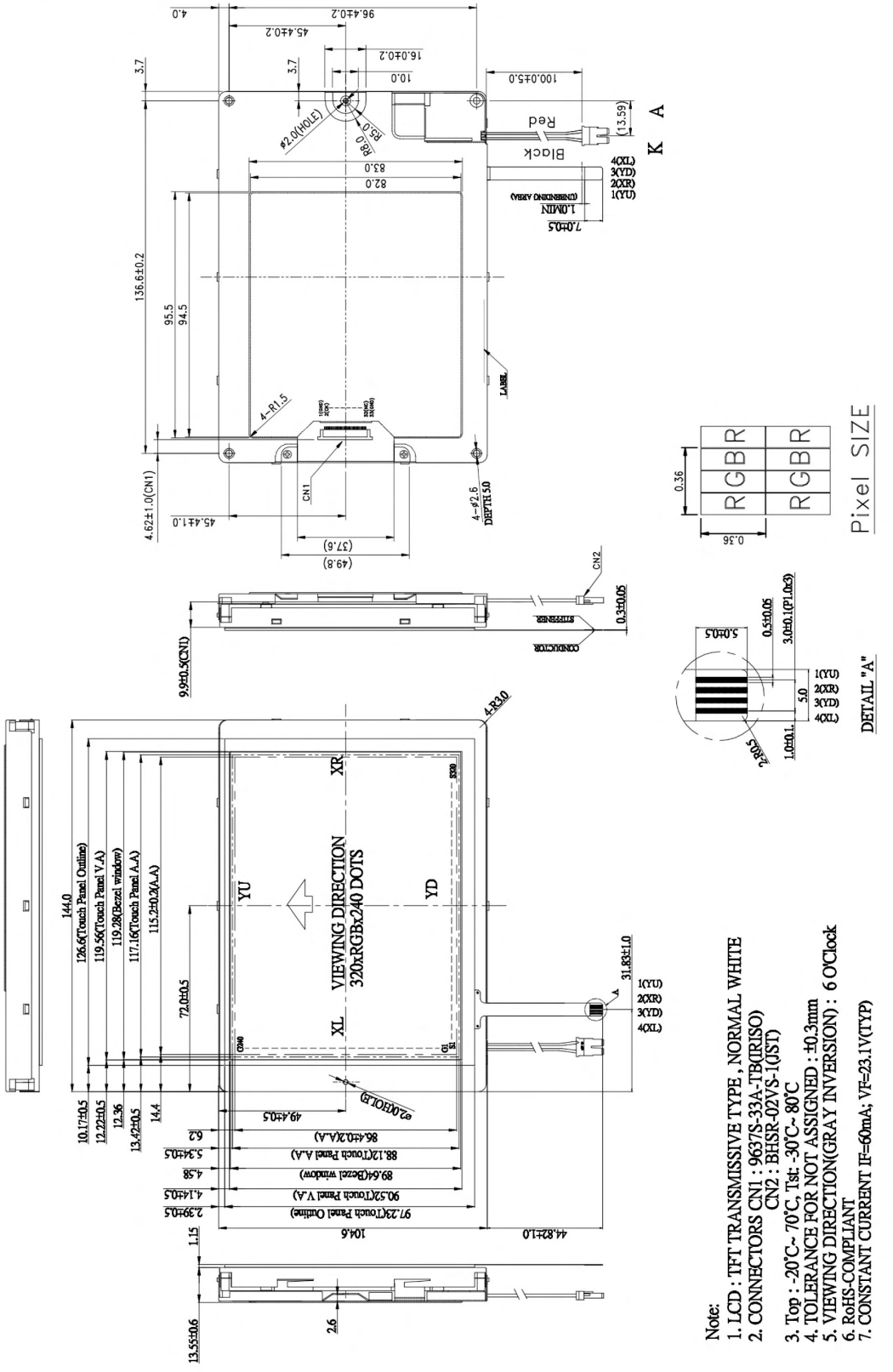
1.2 Display specification

Display	Descriptions	Note
LCD Type	a-Si TFT	-
LCD Mode	TN / Normal white	-
Polarizer Mode	Transmissive	-
Polarizer Surface	Normal	-
Pixel arrangement	RGB-stripe	-
Backlight Type	LED	-
Viewing Direction(Gray inversion	6 O'clock Direction	1

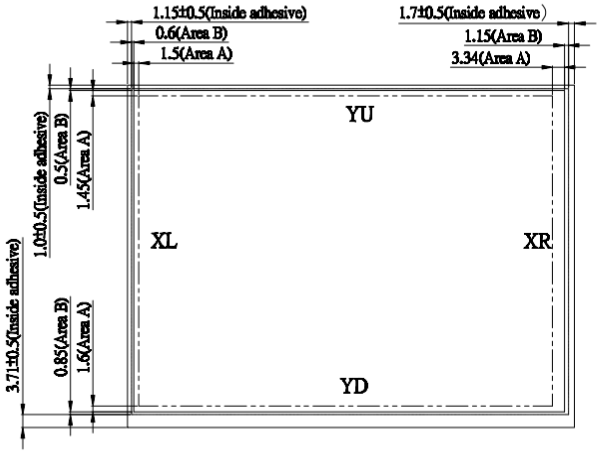
* Color tone is slightly changed by temperature and driving voltage.

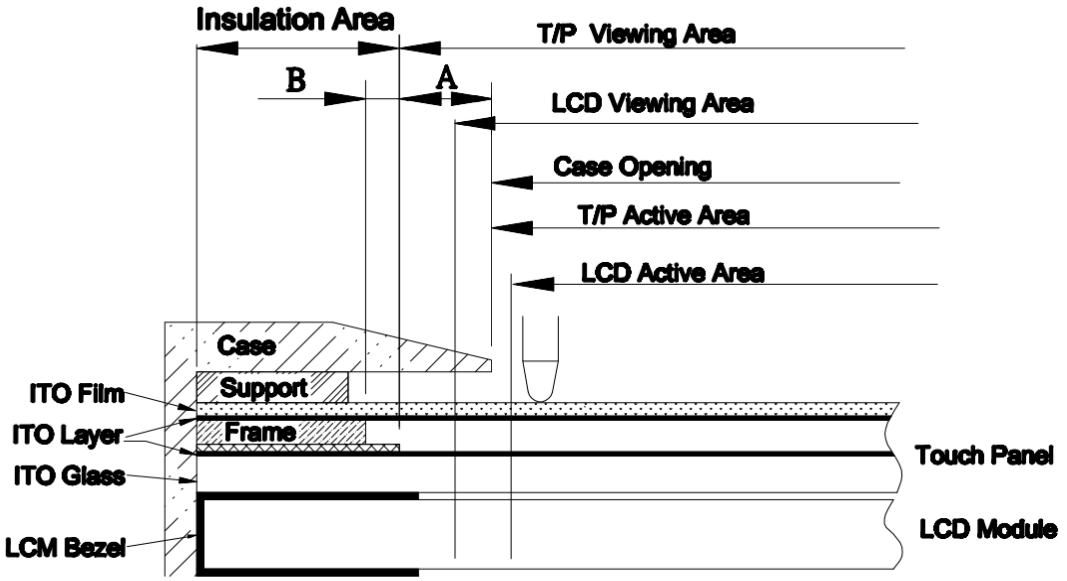
Note 1：The viewing direction defined in this specification is according to the rubbing direction of its TFT surface treatment by the TFT glass manufacturer. The grayscale inversion is at this direction as well. However, the optimal viewing direction for human view is normally where the color does NOT change to grayscale inversion, and this would be the opposite site of the specified viewing direction in this specification. In any case we advise customers to judge by themselves, and be aware of this phenomenon.

1.3 Outline dimension



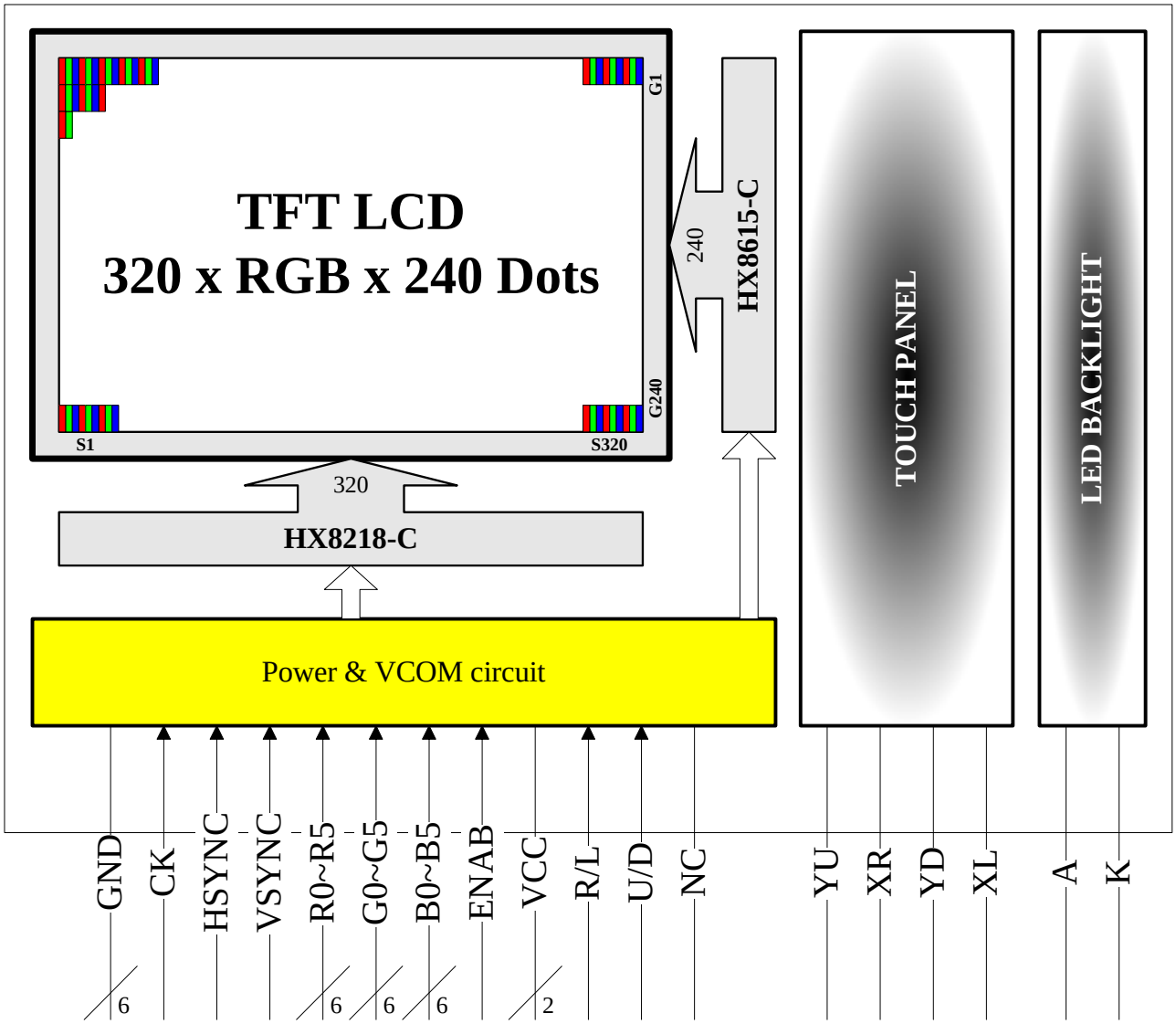
Attention for Assembly and Operation





(1) T/P Active Area : Means T/P guaranteed active area , where the feature and function of the T/P can be assured.
(2) Area A : Where the T/P can be operated but the feature and function are not guaranteed.
(3) Area B : This area is prohibited to contact , it is easy to hurt the ITO film and lose function once be touched .
(4) a. Customer should design the "Support " in between the case and T/P ,with sufficient thickness to ensure once the case was deformed or pressed unintendedly , the T/P can still work normally .
b. Support need to be designed within the frame size.
c. We suggest to the support thickness as 0.5mm , but customer should adapt suitable thickness according to the case deformation.
(5) The best design of customer's case opening is suggest ed to cover the LCD Viewing area and aligned with the T/P Active Area ,or in between the dimension of LCD Viewing area and T/P Active Area . But once if the LCD Viewing area was smaller than T/P Active Area ,then the case opening should be aligned with LCD Viewing area .
(6) Never use double sided tape or glue in between the support the ITO film , it will cause harm to ITO film or seperate the T/P with the ITO film.

1.4 Block diagram:



1.5 Interface pin :

Pin No.	Pin Symbol	I/O	Description
1	GND	P	Ground. (0V)
2	CK	I	Clock signal for sampling each data signal.
3	Hsync	I	Horizontal synchronous signal (Negative)
4	Vsync	I	Vertical synchronous signal (Negative)
5	GND	P	Ground. (0V)
6-11	R0-R5	I	RED data signal.
12	GND	P	Ground. (0V)
13-18	G0-G5	I	GREEN data signal.
19	GND	I	Ground. (0V)
20-25	B0-B5	I	BLUE data signal.
26	GND	I	Ground. (0V)
27	ENAB	I	Signal to settle the horizontal display position (Positive).
28,29	VCC	P	+3.3V power supply.
30	R/L	I	Horizontal display mode select signal L: Normal, H: Left / Right reverse mode.
31	U/D	I	Vertical display mode select signal H: Normal, L: Up / Down reverse mode.
*32	NC	-	No connect.
33	GND	P	Ground. (0V)

*This pin doesn't support the V/Q mode as the NO.32 pin of SHARP spec.

1	YU	-	Touch screen.
2	XR	-	Touch screen.
3	YD	-	Touch screen.
4	XL	-	Touch screen.

1	LED_K	P	Ground pin for backlight.
2	LED_A	P	Power supply input pin for backlight.

2. ELECTRICAL CHARACTERISTICS

2.1 Absolute Maximum Ratings

Items	Symbol	Min.	Max.	Unit
Power supply voltage	VCC	-0.3	7.0	V
Input voltage	Vin	-0.3	VCC+0.3	V
Operate temperature range	TOP	-20	70	℃
Storage temperature range	TST	-30	80	℃

2.2 DC Characteristics

T_a= 25℃

Items	Symbol	Min.	Typ.	Max.	Unit	Condition
Supply voltage	V_{CC}	3.0	3.3	3.6	V	-
Input Voltage	V_{IL}	0	-	$0.3V_{CC}$	V	L level
	V_{IH}	$0.7V_{CC}$	-	V_{CC}	V	H level
Current consumption	I_{CC}	-	-	80	mA	Note 1

*Note1 :

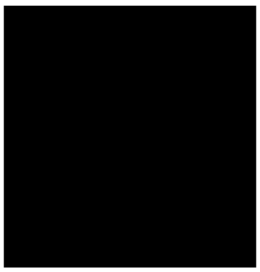
Measuring Condition:

Standard Value MAX.

Ta = 25℃

VCC -GND = 3.3V

Display Pattern



0 gray black pattern

2.2.1 Back-light Characteristics

PARAMETER	SYMBOL	MIN	TYP	MAX	Unit	Test Condition	NOTE
Supply Current	If	-	-	60	mA	Ta=25℃	-
Supply Voltage	Vf	-	23.1	-	V	Ta=25℃	-
Half-Life Time	Lf	-	50000	-	hrs	Ta=25℃	1

Note 1 ： The “ Half-Life Time ”is defined as the module brightness decrease to 50% original brightness. Base on Ta 25±2℃ , 60±10% RH condition.

2.3 AC Characteristics

Digital Parallel RGB interface

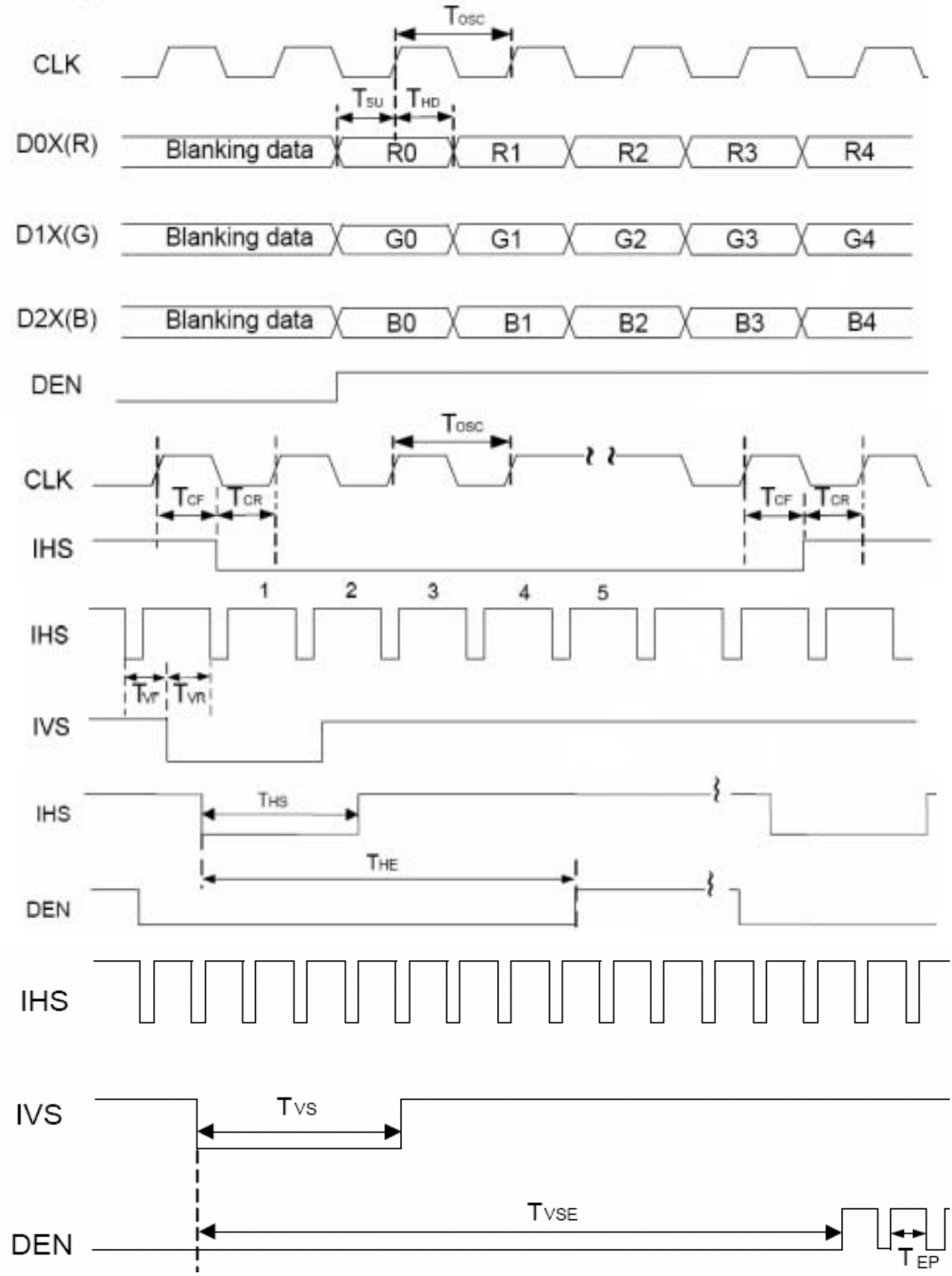
PARAMETER		Symbol	Spec.			Unit
			Min.	Typ.	Max.	
CLK period		T_{OSC}	-	156	-	ns
Data setup time		T_{SU}	12	-	-	ns
Data hold time		T_{HD}	12	-	-	ns
IHS period		T_H	-	408	-	T_{OSC}
IHS pulse width		T_{HS}	5	30	-	T_{OSC}
IHS setup time		T_{Cr}	12	-	-	ns
IHS hold time		T_{Cf}	12	-	-	ns
IVS pulse width		T_{VS}	1	3	5	T_H
IVS setup time		T_{Vr}	12	-	-	ns
IVS hold time		T_{Vf}	12	-	-	ns
IVS-DEN time	NTSC	T_{VSE}	-	18	-	T_H
	PAL	T_{VSE}	-	26	-	T_H
IHS-DEN time		T_{HE}	36	68	88	T_{OSC}
DEN pulse width		T_{EP}	-	320	-	T_{OSC}
IVS period	NTSC	-	-	262.5	-	T_H
	PAL	-	-	312.5	-	T_H

Note: When SYNC mode is used, 1st data start from 68th CLK after IHS falling.

Note：CLK = CK、IHS = Hsync、IVS = Vsync、DEN = ENAB

2.4 Interface Timing Chart

- Digital Parallel RGB



2-5 Touch Panel Specifications

Display	Descriptions	Note
Type	4-wires Analog Resistive Touch Panel	-
Structure	ITO Film：T=0.188mm	-
	ITO Glass：T=0.7mm	-
Surface Hardness	≧ 3H	3H pencil, pressure 500g/45° (JIS-K5600)
Input mode	Stylus or Finger	-
Operating Force	> 80gf	Stylus R0.8mm (Active Area toward inner 2mm)
Connector Type	FPC	-

2-5-1 Electric Characteristics

Items	Descriptions	Note
Linearity	X-axis≦1.5%	Active Area toward inner 2mm
	Y-axis≦1.5%	
Terminal Resistance	X-axis：350　950Ω	-
	Y-axis：100~700Ω	-

3. OPTICAL CHARACTERISTICS

3.1 Characteristics

Electrical and Optical Characteristics

No.	Item		symbol	temp.	Min.	Typ.	Max.	Unit	Note
1	Response Time		Tr	25 ℃	-	15	30	ms	2
			Tf	25 ℃	-	35	50		
2	Viewing Angle	Hor.	Θ_{2+}	0°	60	75	-	degree	3
			Θ_{2-}	180°	60	75	-		
		Ver.	Θ_{1+}	270°	45	50	-		
			Θ_{1-}	90°	60	75	-		
3	Contrast Ratio		Cr	25 ℃	150	250	-	-	4
4	Red x-code		Rx	25 ℃	0.58	0.63	0.68	-	5
	Red y-code		Ry		0.31	0.36	0.41		
	Green x-code		Gx		0.28	0.33	0.38		
	Green y-code		Gy		0.55	0.60	0.65		
	Blue x-code		Bx		0.09	0.14	0.19		
	Blue y-code		By		0.06	0.11	0.16		
	White x-code		Wx		0.27	0.32	0.37		
	White y-code		Wy		0.31	0.36	0.41		
	Brightness		Y		240	260	-	cd/m^2	
5	Brightness Uniformity			25 ℃	80	-	-	%	6

4. RELIABILITY :

Item No	Items	Condition
1	High temperature operating	70 °C , 200 hours
2	Low temperature operating	-20 °C , 200 hours
3	High temperature storage	80 °C , 200 hours
4	Low temperature storage	-30 °C , 200 hours
5	High temperature & humidity storage	60°C, 90%RH, 100 hours
6	Thermal Shock storage	-30°C, 30min.<=> 80°C, 30min. 10 Cycles
7	Vibration test	10 => 55 =>10 => 55 => 10 Hz , within 1 minute Amplitude : 1.5mm. 15 minutes for each Direction (X,Y,Z)
8	Drop test	Packed, 100CM free fall, 6 sides, 1 corner, 3edges
9	Life time	50,000 hours 25°C , 60%RH , specification condition driving

* One single product test for only one item.

* Judgment after test : keep in room temperature for more than 2 hours.

- Current consumption < 2 times of initial value
- Contrast > 1/2 initial value
- Function : work normally