

This product is under development and
specifications are subject to change.

Specifications for

Blanview TFT-LCD Monitor (TENTATIVE)

(5.7" VGA 640 x RGB x 480 Landscape)

Version 0.0

(Please be sure to check the specifications latest version.)

MODEL COM57T5N07RSC

Customer's Approval

Signature:

Name:

Section:

Title:

Date:

ORTUSTECH

TOPPAN PRINTING CO.,LTD.
Electronics Division
Ortus Subdivision

Approved by

Checked by

Prepared by

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1. Application

This Specification is applicable to 144mm (5.7 inch) TFT-LCD monitor for non-military use.

- ◎ TOPPAN PRINTING makes no warranty or assume no liability that use of this Product and/or any information including drawings in this Specification by Purchaser is not infringing any patent or other intellectual property rights owned by third parties, and TOPPAN PRINTING shall not grant to Purchaser any right to use any patent or other intellectual property rights owned by third parties. Since this Specification contains TOPPAN PRINTING's confidential information and copy right, Purchaser shall use them with high degree of care to prevent any unauthorized use, disclosure, duplication, publication or dissemination of TOPPAN PRINTING's confidential information and copy right.
- ◎ If Purchaser intends to use this Products for an application which requires higher level of reliability and/or safety in functionality and/or accuracy such as transport equipment (aircraft, train, automobile, etc.), disaster-prevention/security equipment or various safety equipment, Purchaser shall consult TOPPAN PRINTING on such use in advance.
- ◎ This Product shall not be used for application which requires extremely higher level of reliability and/or safety such as aerospace equipment, telecommunication equipment for trunk lines, control equipment for nuclear facilities or life-support medical equipment.
- ◎ It must be noted as an mechanical design manner, especial attention in housing design to prevent arcuation/flexure or caused by stress to the LCD module shall be considered.
- ◎ TOPPAN PRINTING assumes no liability for any damage resulting from misuse, abuse, and/or miss-operation of the Product deviating from the operating conditions and precautions described in the Specification.
- ◎ TOPPAN PRINTING is not responsible for any nonconformities and defects that are not specified in this specifications.
- ◎ If any issue arises as to information provided in this Specification or any other information, TOPPAN PRINTING and Purchaser shall discuss them in good faith and seek solution.
- ◎ TOPPAN PRINTING assumes no liability for defects such as electrostatic discharge failure occurred during peeling off the protective film or Purchaser's assembly process.
- ◎ This Product is compatible for RoHS(2.0) directive.

Object substance	Maximum content [ppm]
Cadmium and its compound	100
Hexavalent Chromium Compound	1000
Lead & Lead compound	1000
Mercury & Mercury compound	1000
Polybrominated biphenyl series (PBB series)	1000
Polybrominated biphenyl ether series (PBDE series)	1000
Bis(2-ethylhexyl)phthalate series(DEHP series)	1000
Butyl benzyl phthalate series(BBP series)	1000
Dibutyl phthalate series(DBP series)	1000
Diisobutyl phthalate series(DIBP series)	1000

2.Overview

This Specification is applicable to 144mm (5.7 inch) TFT-LCD monitor for non-military use.

3.Features

Item	method
Display Mode	Transmissive Type
	TFT LCD, Negative
Display Format	RGB Stripe type
Color	262 K color
Interface	RGB data bus, 18bits Parallel data
Viewing Direction	Full view
Backlight type / color	LED / white
NTSC ratio	(50%)

4.Mechanical specificalion

Item	specificalion	unit	Remark
Display Size	5.7	Inch	
Dimensional outline	127.20 (W) × 100.40 (H) × 5.70 (D)	mm	Excluding FPC
Resolution	640 × (R,G,B) × 480	dot	
Aspect	4 : 3	--	
Active area	115.20 (W) × 86.40 (H)	mm	
Pixel pitch	0.18 (W) × 0.18 (H)	mm	
weight	TBD	g	Inculding FPD

6. Serial № print (S-print)

6.1 Display Items

TBD

6.2 Location of Serial № print (S-print)
Refer to 5. "Outward Form".

6.3 Others

Please note that it is likely to disappear with an organic solvent about the Serial print.

7. Maximum ratings

GND= 0 V

Items	Symbol	Condition	MIN	MAX	unit	Remark
Power Voltage for LCM	VDD	-	-0.3	3.96	V	
Operating Temperature	Top	-	-20	70	° C	Ambient temperature
Storage Temperature	Tst	-	-30	80	° C	Ambient temperature
Humidity	Hst	-	Non condensing in an environmental moisture at or less than 40 ° C90%RH.			

8. Electrical characteristics

(Unless otherwise noted, Ta=25 ° C,VDD=3.3V,GND=0V)

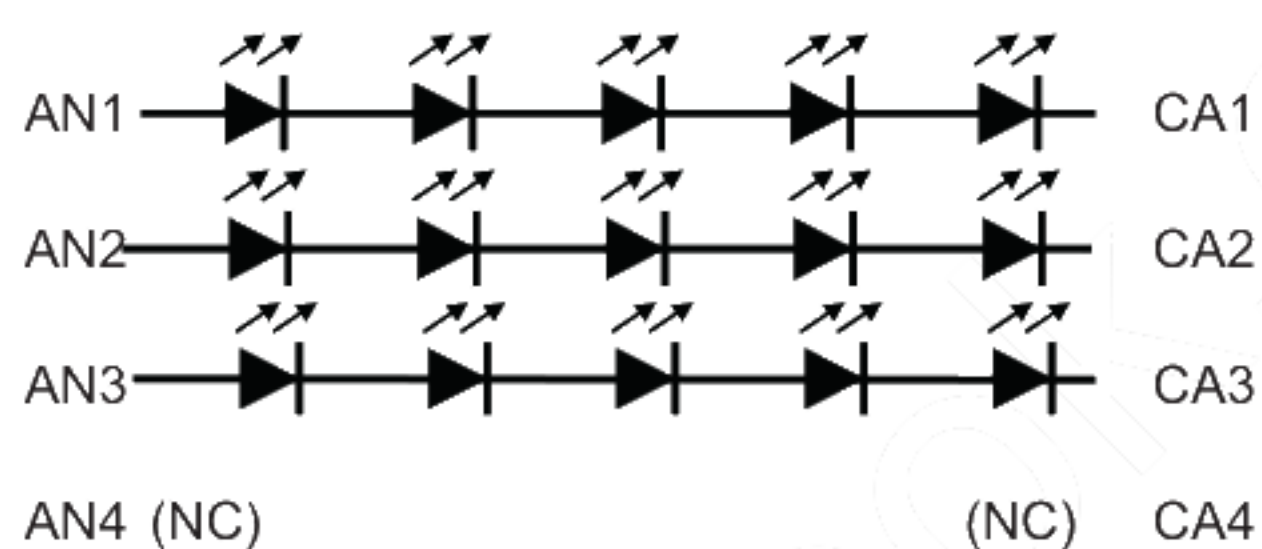
Items	Symbol	MIN	TYP	MAX	unit	Remark
Power Voltage for LCM	VDD	3.2	3.3	3.4	V	
Output signal high voltage	VOH	VDD-0.4	-	-	V	
Output signal low voltage	VOL	GND	-	GND+0.4	V	
Input signal high voltage	VIH	0.7*VDD	-	VDD+0.3	V	
Input signal low voltage	VIL	GND	-	0.3*VDD	V	
Power Consumption	IDD	-	-	TBD	mA	

9. Backlight Characteristics

Items	Symbol	MIN	TYP	MAX	nuit	Remark
Power Consumption	PLED	562.5	-	686.25	mW	
LED Current	IL	-	15	TBD	mA	Note
LED Voltage	VL	12.5	-	15.25	V	

Note: Using constant current driving this backlight unit.

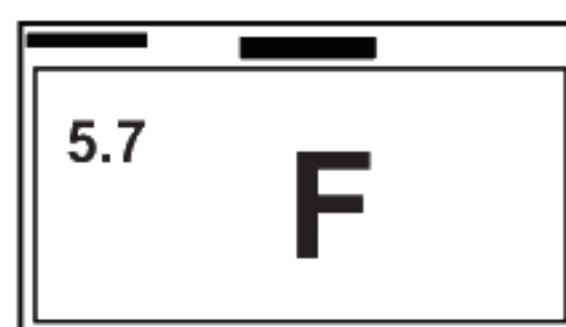
AN1-CA1, AN2-CA2, AN3-CA3 It becomes the current between each row.



10. PIN Description

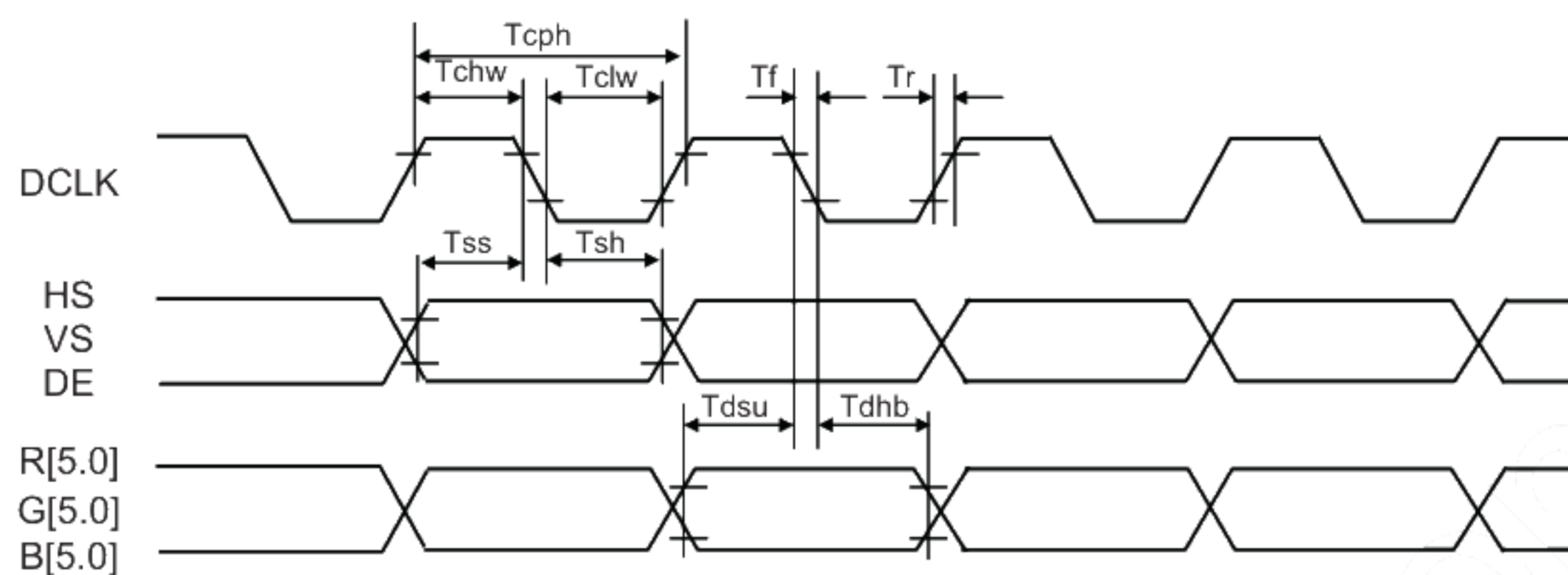
No.	Pin Name	I/O	Pin Function	Remarks
1	GND	P	Power ground for LCM	
2	CK	I	Clock input pins for TTL mode. Data latching at falling edge.	DCLK
3	HSYNC	I	Horizontal sync signal for TTL mode. Low active.	HS
4	VSYNC	I	Vertical sync signal for TTL mode. Low active.	VS
5	GND	P	Power ground for LCM	
6	R0	I	Red data input for TTL mode.(LSB)	
7	R1	I	Red data input for TTL mode.	
8	R2	I	Red data input for TTL mode.	
9	R3	I	Red data input for TTL mode.	
10	R4	I	Red data input for TTL mode.	
11	R5	I	Red data input for TTL mode.(MSB)	
12	GND	P	Power ground for LCM	
13	G0	I	Green data input for TTL mode.(LSB)	
14	G1	I	Green data input for TTL mode.	
15	G2	I	Green data input for TTL mode.	
16	G3	I	Green data input for TTL mode.	
17	G4	I	Green data input for TTL mode.	
18	G5	I	Green data input for TTL mode.(MSB)	
19	GND	P	Power ground for LCM	
20	B0	I	Blue data input for TTL mode.(LSB)	
21	B1	I	Blue data input for TTL mode.	
22	B2	I	Blue data input for TTL mode.	
23	B3	I	Blue data input for TTL mode.	
24	B4	I	Blue data input for TTL mode.	
25	B5	I	Blue data input for TTL mode.(MSB)	
26	GND(TEST)	I	Enable built-in self test (BIST) function. Please connect it to GND.	
27	ENAB	I	Data enable signal for TTL mode. High polarity.	DE
28	VDD	P	Power supply for LCM. 3.3V typical.	
29	VDD	P	Power supply for LCM. 3.3V typical.	
30	R/L	I	Horizontal flippad (Right/Left) signal L : Nomal display H : horizontally flipped display	Note
31	U/D	I	Vertical flippad (Up/Down) signal L : Vertical flipped display H : Nomal display	
32	NC	NC	NC PIN	
33	CA1	P	Power supply for backlight cathode 1	
34	CA2	P	Power supply for backlight cathode 2	
35	CA3	P	Power supply for backlight cathode 3	
36	CA4	-	NC PIN	
37	AN1	P	Power supply for backlight anode 1	
38	AN2	P	Power supply for backlight anode 2	
39	AN3	P	Power supply for backlight anode 3	
40	AN4	-	NC PIN	

Note: The following status will be displayed normally. (R / L = L, U / D = H)



11. AC Characteristics

11.1 Clock/Data input timing waveform



TTL input timing

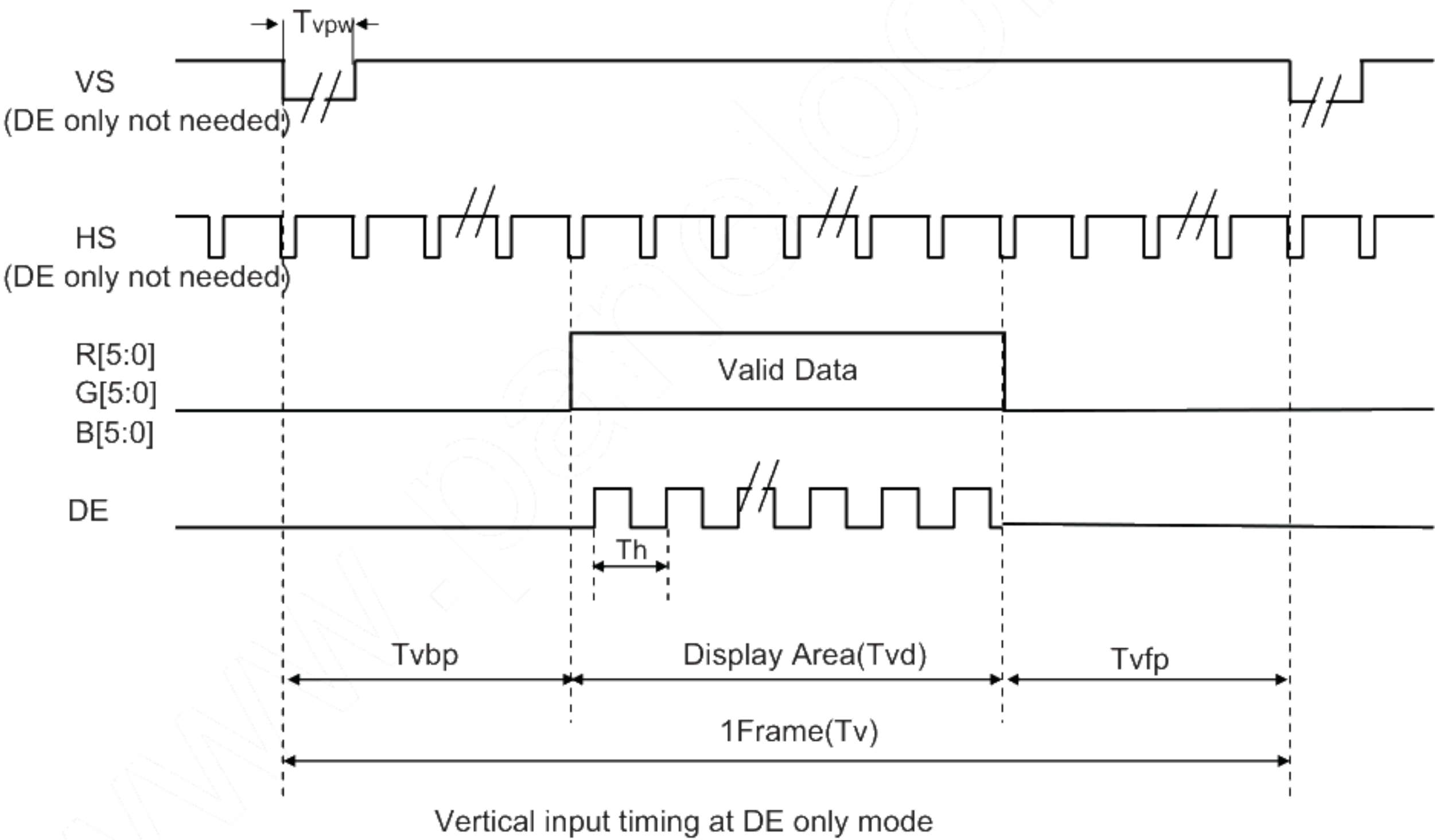
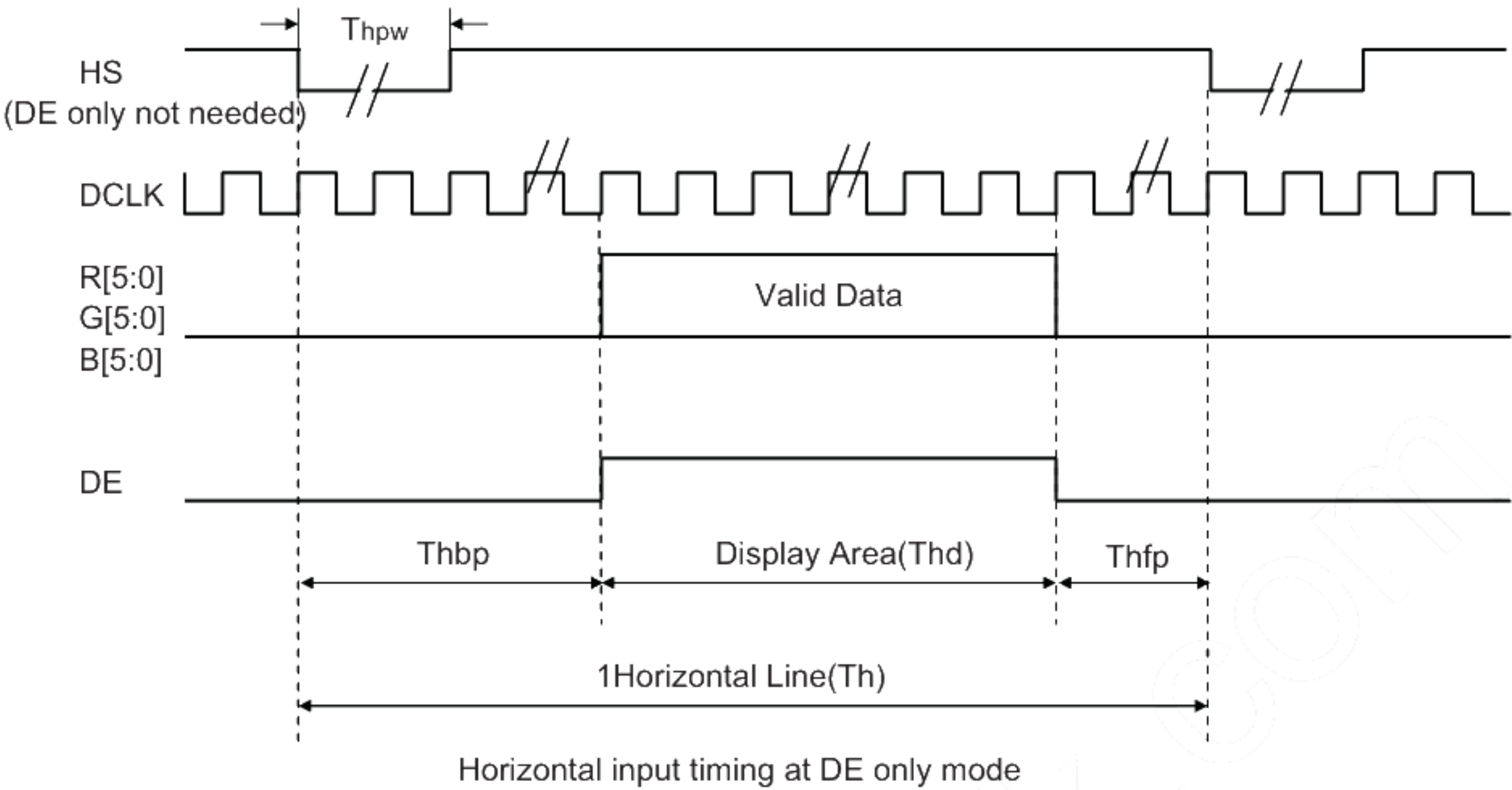
※ Specified by VIL (30%) and VIH (70%) of each signal.

11.2 AC timing characteristics

(Unless otherwise noted, $T_a=25^{\circ}\text{C}$, $V_{DD}=3.3\text{V}$, $GND=0\text{V}$)

Items	Symbol	MIN	TYP	MAX	unit	Remark
DCLK period	T_{cph}	(39.4)	-	-	ns	
DCLK clock high width	T_{chw}	6	-	-	ns	
DCLK clock low width	T_{clw}	6	-	-	ns	
VS setup time	T_{ss}	5	-	-	ns	
VS hold time	T_{sh}	5	-	-	ns	
HS setup time	T_{ss}	5	-	-	ns	
HS hold time	T_{sh}	5	-	-	ns	
DE setup time	T_{ss}	5	-	-	ns	
DE hold time	T_{sh}	5	-	-	ns	
Data setup tme	T_{dsu}	5	-	-	ns	
Data hold time	T_{dhd}	5	-	-	ns	
Input signal rising time	T_r	-	-	10	ns	
Input signal falling time	T_f	-	-	10	ns	

11.3 TTL Input timing at DE mode

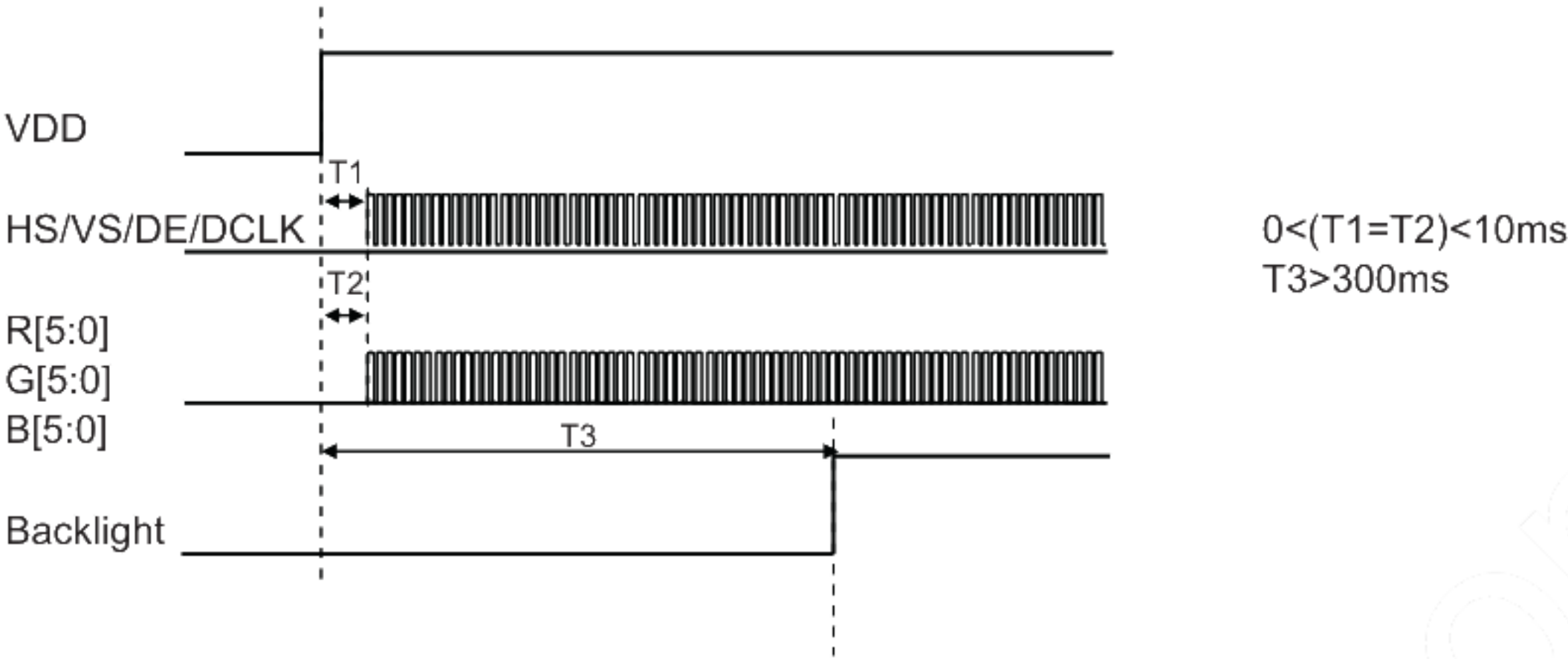


11.4 DE only mode input timing chart

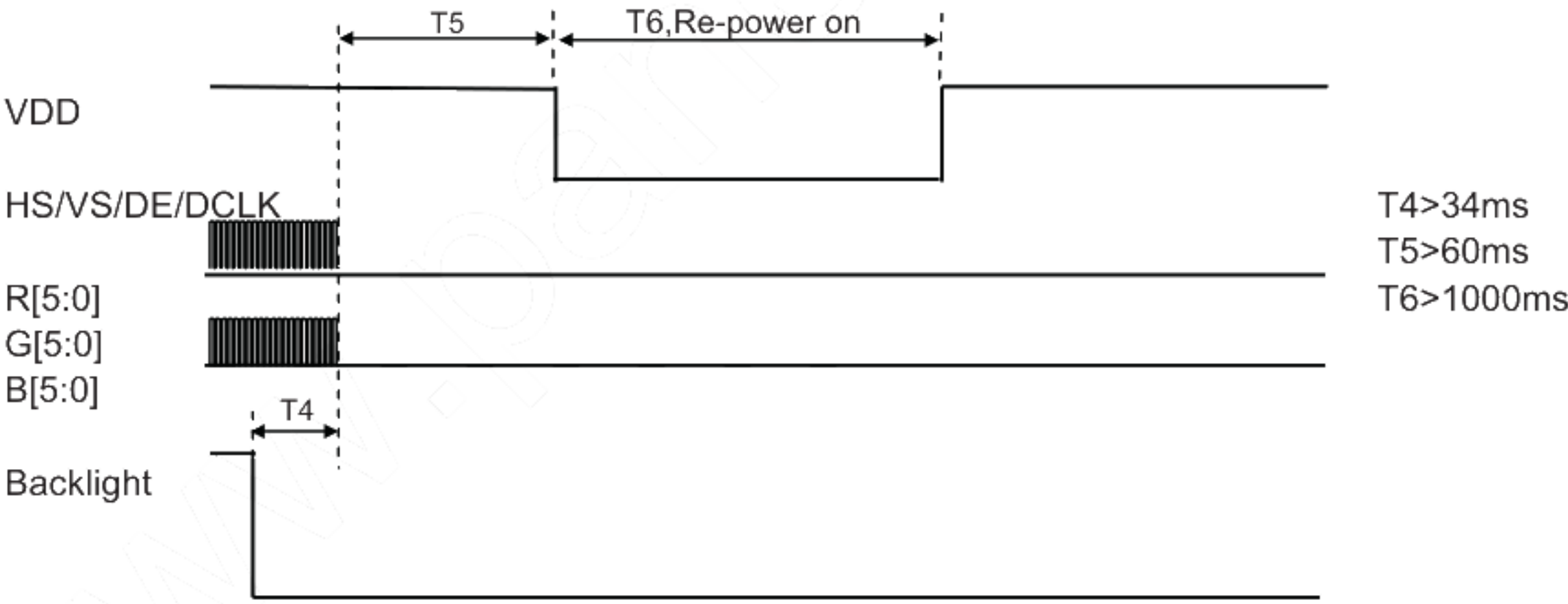
Items	Symbol	MIN	TYP	MAX	unit	Remarks
DCLK frequency	FDCLK	20.5	22.2	25.4	MHz	
Horizontal valid data	Thd	640			DCLK	
1 horizontal line	Th	696	700	736	DCLK	
Horizontal pulse width	Thpw	TBD	TBD	TBD	DCLK	
Horizontal back porch period	Thbp	TBD	TBD	TBD	DCLK	
Horizontal front porch period	Thfp	TBD	TBD	TBD	DCLK	
Vertical valid data	Tvd	480			HS	
1 vertical field	Tv	490	528	736	HS	
Vertical pulse width	Tvpw	TBD	TBD	TBD	HS	
Vertical back porch period	Tvbp	TBD	TBD	TBD	HS	
Vertical front porch period	Tvfp	TBD	TBD	TBD	HS	

12. Power on/off Sequence

12.1 Power ON Sequence



12.2 Power OFF Sequence



13. Characteristics

13.1 Optical Characteristics

< Measurement Condition >

Measuring instruments: BM-5(TOPCON), LCD7200(OTSUKA ELECTRONICS),
EZcontrast160D(ELDIM)

Driving condition: VDD = 3.3V, GND = 0V
Optimized VCOMDC

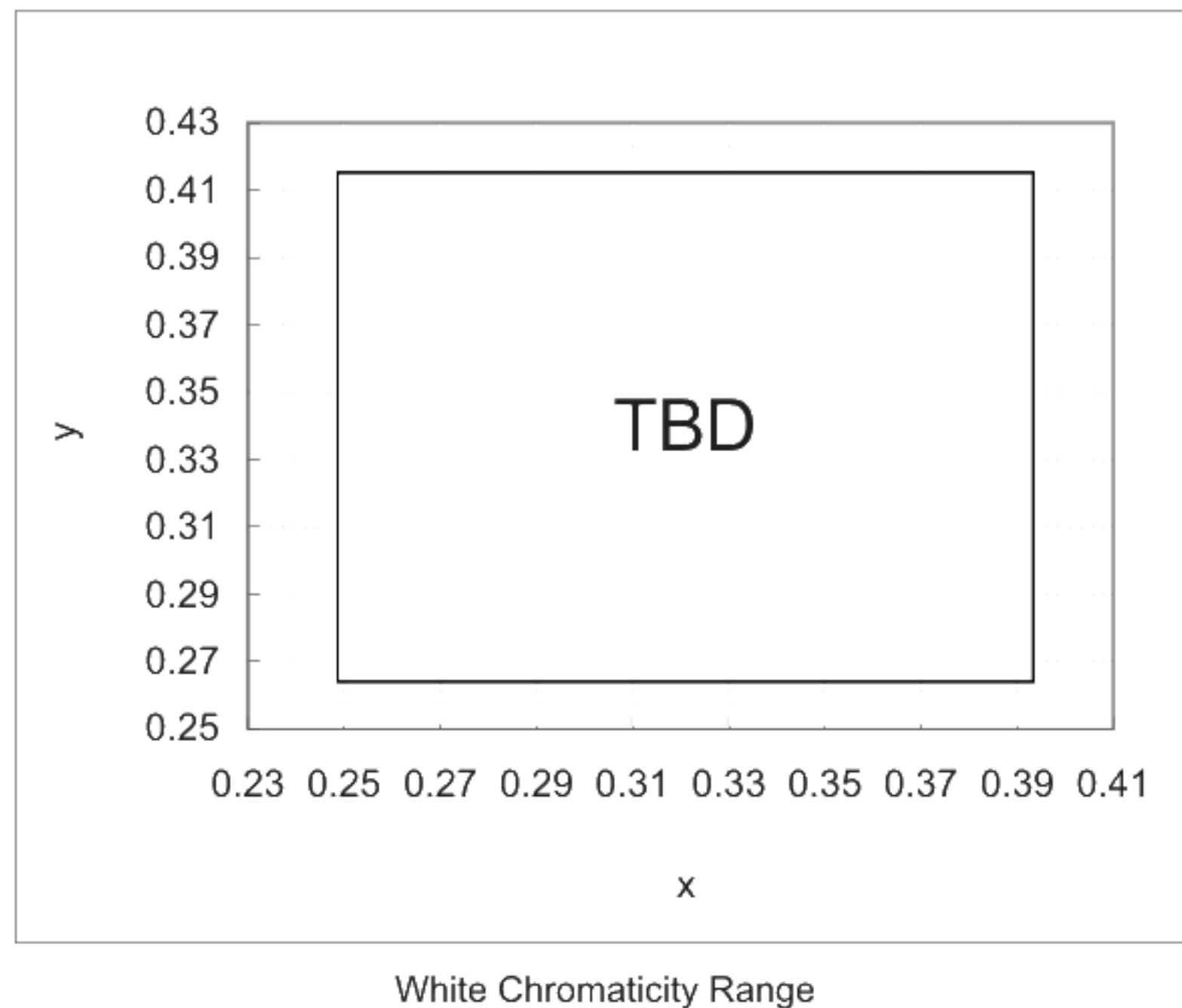
Backlight: IL=(15)mA
AN1-CA1, AN2-CA2, AN3-CA3 It becomes the current between each row.

Measured temperature: Ta=25° C

Item		Symbol	Condition	MIN	TYP	MAX	Unit	Note No.	Remark
Response time	Rise time + Fall time	TON + TOFF	[Data]= 00h → FFh	—	(30)	(40)	ms	1	※
	Contrast ratio	CR	[Data]= FFh / 00h	TBD	(1000)	—		2	
Viewing angle	Left	θL	[Data]= FFh / 00h CR ≥ 10	—	(80)	—	deg	3	※
	Right	θR		—	(80)	—	deg		
	Up	φU		—	(80)	—	deg		
	Down	φD		—	(80)	—	deg		
White Chromaticity		x y	[Data]=FFh	White chromaticity range				4	
Center brightness			[Data]=FFh	TBD	500	—	cd/m ²	5	
Brightness distribution			[Data]=FFh	TBD	—	—	%	6	
Burn-in		TBD						7	

* Note number 1 to 7: Refer to the APPENDIX of "Reference Method for Measuring Optical Characteristics".

※ Measured in the form of LCD module.



【White Chromaticity Range】

x	y

13.2 Temperature Characteristics

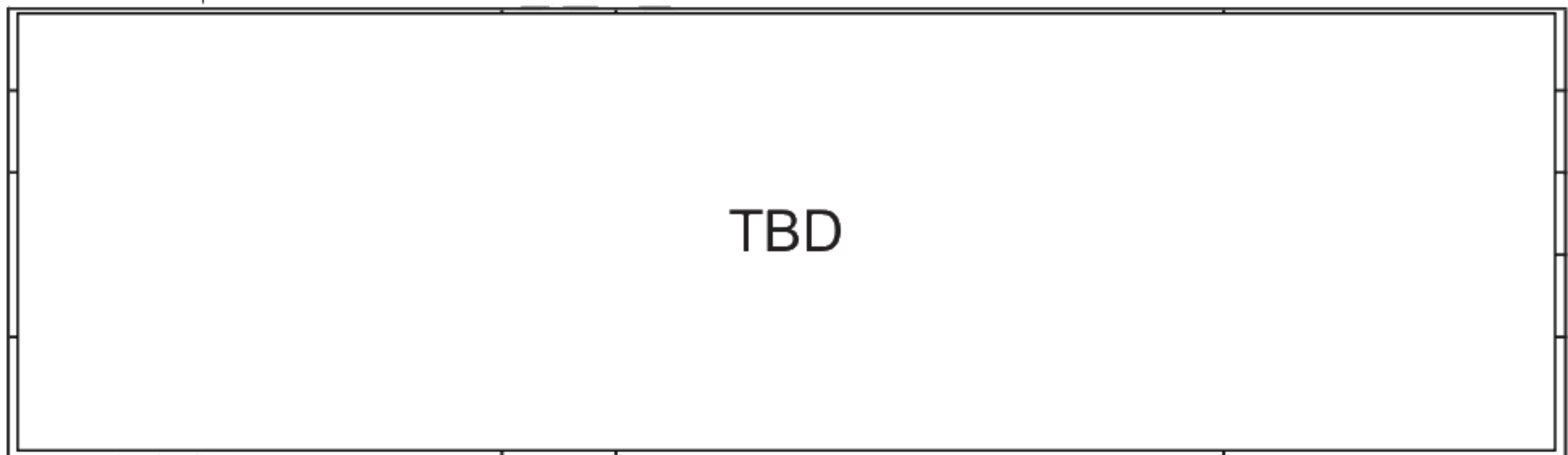
< Measurement Condition >

Measuring instruments: BM-5(TOPCON), LCD7200(OTSUKA ELECTRONICS),
EZcontrast160D(ELDIM)

Driving condition: VDD = 3.3V, GND = 0V
Optimized VCOMDC

Backlight: IL=(15)mA
AN1-CA1, AN2-CA2, AN3-CA3 It becomes the current between each row.

Measured temperature: Ta=25° C



※ Measured in the form of LCD module.

14. Criteria of Judgment

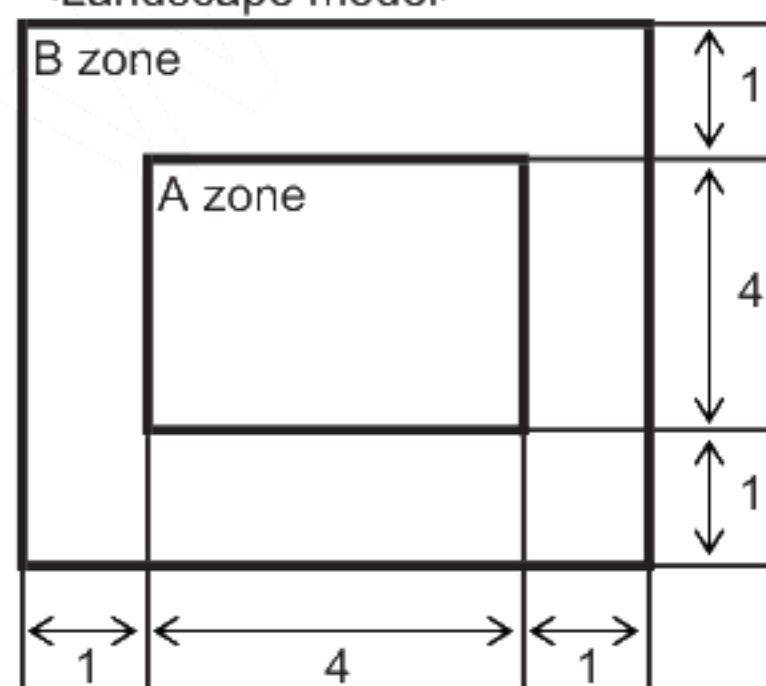
14.1 Defective Display and Screen Quality

TBD

Table 1

Area	High bright dot	Low bright dot	Dark dot	Total	Criteria
A	0	2	2	3	Permissible distance between same color bright dots (includes neighboring dots): 3 mm or more
B	2	4	4	6	Permissible distance between same color high bright dots (includes neighboring dots): 5 mm or more
Total	2	4	4	7	Two connecting bright/dark point count as one.

<Landscape model>



Division of A and B areas

B area: Active area

Dimensional ratio between A and B areas: 1: 4: 1 (Refer to the left figure)

14.2 Screen and Other Appearance

TBD

15. Reliability Test

Test item		Test condition	number of failures /number of examinations
Durability test	High temperature storage	Ta=80° C (240)hrs	TBD
	Low temperature storage	Ta=-30° C (240)hrs	TBD
	High temperature & high humidity storage	Ta=60° C, RH=90% (240)hrs non condensing ※	TBD
	High temperature operation	Tp=70° C (240)hrs	TBD
	Low temperature operation	Tp=-20° C (240)hrs	TBD
	High temp & humid operation	Tp=40° C, RH=90% (240)hrs non condensing ※	TBD
	Thermal shock storage	-30←→80° C(30min/30min) (100)cycles	TBD
	Temperature and humidity cycle storage	MIL-STD-202F-106D (10)cycles	TBD
Mechanical environmental test	Surface discharge test (Non operation)	TBD	TBD
	Vibration test	Total amplitude 1.5mm, f=10~55Hz, X,Y,Z directions for each 2 hours	TBD

Note: Ta=ambient temperature Tp=Panel temperature

※ The profile of high temperature/humidity storage and High Temperature/humidity operation (Pure water of over 10MΩ·cm shall be used.)

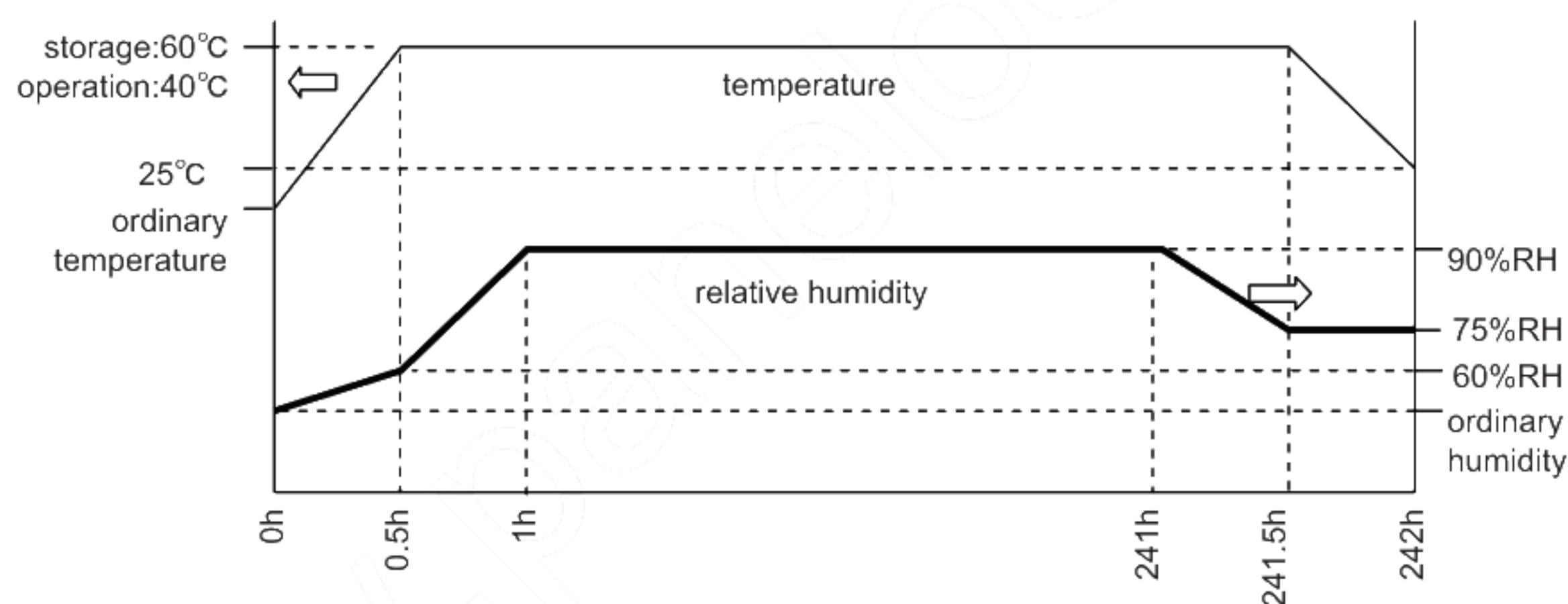


Table2.Reliability Criteria

The parameters should be measured after leaving the monitor at the ordinary temperature for 24 hours or more after the test completion.

item	Standard	Remarks
Display quality	No visible abnormality shall be seen.	
Contrast ratio	200 or more	

16. Packing Specifications

TBD

17. Handling Instruction

17.1 Cautions for Handling LCD panels

**Caution**

- (1) Do not make an impact on the LCD panel glass because it may break and you may get injured from it.
- (2) If the glass breaks, do not touch it with bare hands.
(Fragment of broken glass may stick you or you cut yourself on it.)
- (3) If you get injured, receive adequate first aid and consult a medical doctor.
- (4) Do not let liquid crystal get into your mouth.
(If the LCD panel glass breaks, try not let liquid crystal get into your mouth even toxic property of liquid crystal has not been confirmed.)
- (5) If liquid crystal adheres, rinse it out thoroughly.
(If liquid crystal adheres to your cloth or skin, wipe it off with rubbing alcohol or wash it thoroughly with soap. If liquid crystal gets into eyes, rinse it with clean water for at least 15 minutes and consult an eye doctor.)
- (6) If you scrap this products, follow a disposal standard of industrial waste that is legally valid in the community, country or territory where you reside.
- (7) Do not connect or disconnect this product while its application products is powered on.
- (8) Do not attempt to disassemble or modify this product as it is precision component.
- (9) If a part of soldering part has been exposed, and avoid contact (short-circuit) with a metallic part of the case etc. about FPC of this model, please.
Please insulate it with the insulating tape etc. if necessary.
The defective operation is caused, and there is a possibility to generation of heat and the ignition.
- (10) Since excess current protection circuit is not built in this TFT module, there is the possibility that LCD module or peripheral circuit become feverish and burned in case abnormal operation is generated.
We recommend you to add excess current protection circuit to power supply.
- (11) The devices on the FPC are damageable to electrostatic discharge, because the terminals of the devices are exposed.
Wear grounded wrist-straps and use electrostatic neutralization blowers to prevent static charge and discharge when handling the TFT monitors.
Designate an appropriate operating area, and set equipment, tools, and machines properly when handling this product.

**Caution**

This mark is used to indicate a precaution or an instruction which, if not correctly observed, may result in bodily injury, or material damages alone.

17.2 Precautions for Handling

- 1) Wear finger tips at incoming inspection and for handling the TFT monitors to keep display quality and keep the working area clean.
Do not touch the surface of the monitor as it is easily scratched.
- 2) Wear grounded wrist-straps and use electrostatic neutralization blowers to prevent static charge and discharge when handling the TFT monitors as the LED in this TFT monitors is damageable to electrostatic discharge.
Designate an appropriate operating area, and set equipment, tools, and machines properly when handling this product.
- 3) Avoid strong mechanical shock including knocking, hitting or dropping to the TFT monitors for protecting their glass parts. Do not use the TFT monitors that have been experienced dropping or strong mechanical shock.
- 4) Do not use or storage the TFT monitors at high temperature and high humidity environment. Particularly, never use or storage the TFT monitors at a location where condensation builds up.
- 5) Avoid using and storing TFT monitors at a location where they are exposed to direct sunlight or ultraviolet rays to prevent the LCD panels from deterioration by ultraviolet rays.
- 6) Do not stain or damage the contacts of the FPC cable .
FPC cable needs to be inserted until it can reach to the end of connector slot.
During insertion, make sure to keep the cable in a horizontal position to avoid an oblique insertion.
Otherwise, it may cause poor contact or deteriorate reliability of the FPC cable.
- 7) Peel off the protective film on the TFT monitors during mounting process.
Refer to the section 17.5 on how to peel off the protective film.
We are not responsible for electrostatic discharge failures or other defects occur when peeling off the protective film.

17.3 Precautions for Operation

- 1) Since this TFT monitors are not equipped with light shielding for the driver IC, do not expose the driver IC to strong lights during operation as it may cause functional failures.
- 2) In case of powering up or powering off this LCD module, be sure to comply the sequence as instructed in this specification.
- 3) Do not operate the TFT monitors in the strong magnetic field. It may break the TFT monitors.
- 4) Do not display a fixed image on the screen for a long time.
Use a screen-saver or other measures to avoid a fixed image displayed on the screen for a long time.
Otherwise, it may cause burn-in image on the screen due the characteristics of liquid crystal.

17.4 Storage Condition for Shipping Cartons

Storage environment

- Temperature 0 to 40° C
- Humidity 60%RH or less
No-condensing occurs under low temperature with high humidity condition.
- Atmosphere No poisonous gas that can erode electronic components and/or wiring materials should be detected.
- Time period 1 year
- Unpacking To prevent damages caused by static electricity, anti-static precautionary measures (e.g. earthing, anti-static mat) should be implemented.
- Maximum piling up TBD

17.5 Precautions for Peeling off the Protective film

The followings work environment and work method are recommended to prevent the TFT monitors from static damage or adhesion of dust when peeling off the protective films.

A) Work Environment

- a) Humidity: 50 to 70 %RH, Temperature 15 to 27 ° C
- b) Operators should wear conductive shoes, conductive clothes, conductive finger tips and grounded wrist-straps. Anti-static treatment should be implemented to work area's floor.
- c) Use a room shielded against outside dust with sticky floor mat laid at the entrance to eliminate dirt.

TBD

17.6 Warranty

TOPPAN PRINTING is only liable to defective goods which is stored and used under the condition complying with this specifications and returned within 1 (one) year.

Warranty caused by manufacturing defect shall be conducted by replacement of goods or refundment at unit price.

APPENDIX

Reference Method for Measuring Optical Characteristics and Performance

TBD

2. Test Method

Notice	Item	Test method	Measuring instrument	Remark
1	Response time	TBD	LCD7200	Black display [Data]=00h White display [Data]=FFh TON Rise time TOFF Fall time
2	Contrast ratio		BM-5 LCD7200	
3	Viewing angle Horizontal θ Vertical ϕ		EZcontrast160D	
4	White chromaticity		BM-5	
5	Burn-in			At optimized VCOMDC
6	Center brightness		BM-5	
7	Brightness distribution		BM-5	