



March 9, 2026

To: KII Display Distributors

Notice of Product ECN – T-55787GD104J-LW-ALN

Thank you very much for your continuous support of Kyocera Display products. Due to capacity constraints at our Kyocera production facility, we have made the decision to utilize a partner array to help ensure lead time consistency and long-term availability.

Thank you for your understanding.

1. Product Effected:

- T-55787GD104J-LW-ALN

2. New Product Information:

Changing over to the new array will result in slight changes to the specification of this part. We have created a comparison file to help customers understand the differences between the current part and the new replacement part. The following will be the replacement part number for the outgoing product.

- T-55787GD104J-LW-ALN ➔ TCG104SVLEPVNN-AN41

3. Schedule:

- Last Time Buy Date: July 24, 2026
- Last Time Ship Date: January 29, 2027
- Mass production start: To Be Advised

We apologize for the inconvenience and appreciate your understanding.

Regards,

Kyocera Display

10.4inch SVGA TFT Change

T-55787GD104J-LW-ALN(TCG104SVLQJPNN-AN41)

March 3, 2026

Product Engineering Department
Display Division
Corporate Automotive System Group

Approved	Checked	Prepared
I. Kawajiri	Y. Hata	K. Komurasaki

About the specifications of Renewal products



		T-55787GD104J-LW-ALN [Current product]	TCG104SVLEPVNN-AN41 [After changes]
TFT array		Kyocera	Partner
Liquid crystal material		B	CHANGE
Polarizer		D	NO CHANGE
Driver IC		E	CHANGE
PCB	Substrate	G	CHANGE
	Assembly	Kyocera China factory(SKC)	NO CHANGE
	Components	Components change according to TFT change	
	Resin Coating	Humiseal	NO CHANGE
	Connector	FI-X30SSLA-HF(JAE)	NO CHANGE
FPC		I	CHANGE
Backlight		K	NO CHANGE
Backend process		Kyocera Thailand factory(KTC)	Kyocera China factory(SKC)
COO		Thailand	Taiwan,China

The next pages describe the influence on the characteristics.

Impact on the values stated in the specifications

		T-55787GD104J-LW-ALN [Current product]	TCG104SVLEPVNN-AN41 [After changes]
Product Specifications	Polarizer	Anti-Glare treatment	NO CHANGE
	Interface	LVDS	NO CHANGE
	Outline dimensions	230(W)x180.2(H)x10.5(D) mm	NO CHANGE
	Base color	Normally Black	NO CHANGE
	Operating temperature	-30~80°C	NO CHANGE
	Storage temperature	-30~80°C	NO CHANGE
	Supply voltage (LCD)	Typ. 3.3V	NO CHANGE
	Current consumption (LCD)	Typ. 250mA	Typ. 340mA
	Supply voltage (LED)	Typ. 12.0V	NO CHANGE
	Current consumption (LED)	Typ. 570mA	NO CHANGE
	Operating life time	Typ. 70,000hr (D _{PWM} =100%, Ta=25°C)	NO CHANGE

Above value is tentative. Please confirm to the specifications for the final value.

Impact on the values stated in the specifications

(Ta=25°C)			T-55787GD104J-LW-ALN [Current product]	TCG104SVLEPVNN-AN41 [After changes]
Optical characteristics	Response time	Rise	Typ. 18ms	NO CHANGE
		Down	Typ. 12ms	NO CHANGE
	Brightness(D _{PWM} =100%, Center)		Typ. 1,200cd/m ²	NO CHANGE
	Contrast ratio		Typ. 750	NO CHANGE
	Viewing angle range CR>10	UPPER	Typ. 85deg	NO CHANGE
		LOWER	Typ. 85deg	NO CHANGE
		LEFT	Typ. 85deg	NO CHANGE
		RIGHT	Typ. 85deg	NO CHANGE
	Chromaticity coordinates	Red	0.600±0.050, 0.350±0.050	0.615±0.050, 0.340±0.050
		Green	0.335±0.050, 0.570±0.050	0.340±0.050, 0.565±0.050
		Blue	0.150±0.050, 0.120±0.050	0.155±0.050, 0.140±0.050
		White	0.320±0.050, 0.345±0.050	0.330±0.050, 0.365±0.050

Above value is tentative. Please confirm to the specifications for the final value.

Item	Test condition	Criteria	N	Result
High temp. operation	80°C/Dry/500Hr	Function/display image: No abnormality is confirmed Current consumption: No abnormality is confirmed	3	Pass
High temp. humidity operation	40°C/90%RH/500Hr		3	Pass
Low temp. operation	-30°C/Dry/500Hr		3	Pass
Temp. cycle	-30°C↔80°C/240Cycle		3	Pass
Vibration	2G/10~100Hz/↔5min Sine wave/X,Y,Z/2Hr for each axis	Function/display image: No abnormality is confirmed	2	Pass
Shock	50G/11msec/half-sine wave ±X,±Y,±Z/3 time for each axis		2	Pass

There were no problems in the reliability test.



KYOCERA Corporation

SPEC for Mass Production

Spec No.	TQ3C-8EAF0-E1YAH144-00
Date	January 20, 2026

TYPE : TCG104SVLEPVNN-AN41

<10.4 inch SVGA transmissive color TFT with LED backlight
and constant current circuit for LED backlight>

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KYOCERA CORPORATION

This specification is subject to change without notice.
Consult Kyocera before ordering.

Original Issue Date	Designed by: Engineering dept.			Confirmed by: QA dept.
	Prepared	Checked	Approved	Approved
January 20, 2026	<i>Y. Yamazaki</i>	<i>Y. Hata</i>	<i>I. Kawajiri</i>	<i>T. Sawada</i>

Spec No.	Part No.	Page
TQ3C-8EAF0-E1YAH144-00	TCG104SVLEPVNN-AN41	-

Warning

1. This Kyocera LCD module has been specifically designed for use only in electronic devices and industrial machines in the area of audio control, office automation, industrial control, home appliances, etc. The module should not be used in applications where the highest level of safety and reliability are required and module failure or malfunction of such module results in physical harm or loss of life, as well as enormous damage or loss. Such fields of applications include, without limitation, medical, aerospace, communications infrastructure, atomic energy control. Kyocera expressly disclaims any and all liability resulting in any way to the use of the module in such applications.
2. Customer agrees to indemnify, defend and hold Kyocera harmless from and against any and all actions, claims, damages, liabilities, awards, costs, and expenses, including legal expenses, resulting from or arising out of Customer's use, or sale for use, or Kyocera modules in applications.

Caution

1. Kyocera shall have the right, which Customer hereby acknowledges, to immediately scrap or destroy tooling for Kyocera modules for which no Purchase Orders have been received from the Customer in a two-year period.
2. Please note that we may not be able to respond to new environmental regulations after receiving the final mass production order for this product.

Spec No. TQ3C-8EAF0-E1YAH144-00	Part No. TCG104SVLEPVNN-AN41	Page -
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Revision record

Date		Designed by : Engineering dept.			Confirmed by : QA dept.
		Prepared	Checked	Approved	Approved
Rev. No.	Date	Page	Descriptions		

1. Application

This document defines the specification of TCG104SVLEPVNN-AN41. (RoHS Compliant)

2. Construction and outline

LCD	: Transmissive color dot matrix type TFT
Backlight system	: LED
Polarizer	: Anti-Glare treatment
Interface	: LVDS
Additional circuit	: Timing controller, Power supply (3.3V input) with Constant current circuit for LED Backlight (12V input)
Resin Coating	: ARBROWN HumiSeal (Type:1B73)
Coating Area	: PCB (Connector part, Land part, Variable Resistance part and their Surrounding Area are excluded)

3. Mechanical specifications

Item	Specification	Unit
Outline dimensions 1)	230(W) × 180.2(H) × 10.5(D)	mm
Active area	211.2(W) × 158.4(H) (26.4cm/10.4 inch(Diagonal))	mm
Dot format	800 × (R,G,B)(W) × 600(H)	dot
Dot pitch	0.088(W) × 0.264(H)	mm
Base color 2)	Normally Black	-
Mass	475	g

- 1) Projection not included. Please refer to outline for details.
- 2) Due to the characteristics of the LCD material, the color varies with environmental temperature.

4. Absolute maximum ratings

4-1. Electrical absolute maximum ratings

Item		Symbol	Min.	Max.	Unit
Supply voltage(+3.3V)		V _{DD}	-0.3	4.0	V
Supply voltage(+12V)		V _{IN}	-0.3	14.0	V
Input signal voltage	RxINi+, RxINi- (i=0,1,2,3) 1)	V _{I1}	-0.3	2.8	V
	CK IN+, CK IN- 1)	V _{I2}	-0.3	2.8	V
	SELLVDS	V _{I3}	-0.3	V _{DD} +0.5	V
	BLBRT, BLEN	V _{I4}	-0.3	V _{IN}	V

- 1) V_{DD} must be supplied correctly within the range described in 5-1.

4-2. Environmental absolute maximum ratings

Item	Symbol	Min.	Max.	Unit
Operating temperature 1) 2)	T _{OP}	-30	80	°C
Storage temperature 3)	T _{STO}	-30	80	°C
Operating humidity 4)	H _{OP}	10	5)	%RH
Storage humidity 4)	H _{STO}	10	5)	%RH
Vibration	-	6)	6)	-
Shock	-	7)	7)	-

- 1) Operating temperature range defines the operation only and the contrast, response time and other display optical characteristics are set at Ta (Ambient Temperature) =25°C.
- 2) Panel surface temperature (all the surface)
- 3) Ta= -30°C<48h , Ta=80°C<168h
Store LCD at normal temperature/humidity. Keep them free from vibration and shock.
An LCD that is kept at a low or a high temperature for a long time can be defective due to other conditions, even if the low or high temperature satisfies the standard.
(Please refer to “Precautions for Use” for details.)
- 4) Non-condensing
- 5) Ta≤40°C, 85%RH Max.
Ta>40°C, Absolute humidity shall be less than 85%RH at 40°C.
- 6)

Frequency	10~55 Hz	Acceleration value (0.3~9 m/s ²)
Vibration width	0.15mm	
Interval	10-55-10 Hz	1 minute

2 hours in each direction X, Y, Z (6 hours total)

EIAJ ED-2531

- 7) Acceleration: 490 m/s², Pulse width: 11 ms
3 times in each direction: ±X, ±Y, ±Z
EIAJ ED-2531

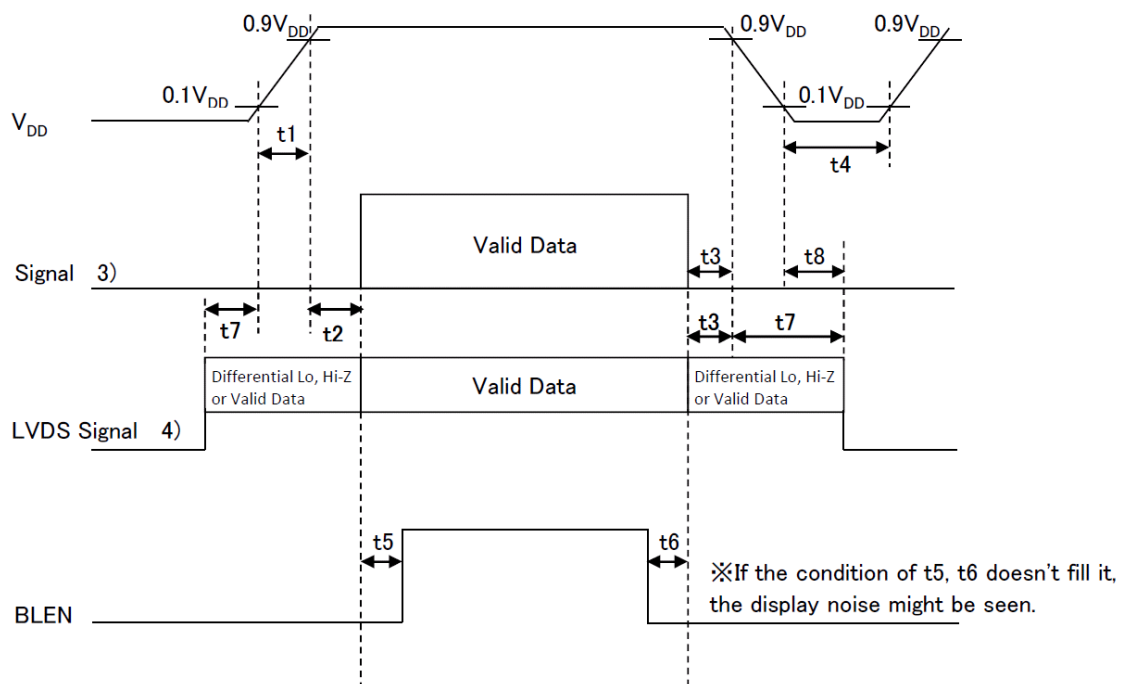
5. Electrical characteristics

5-1. LCD

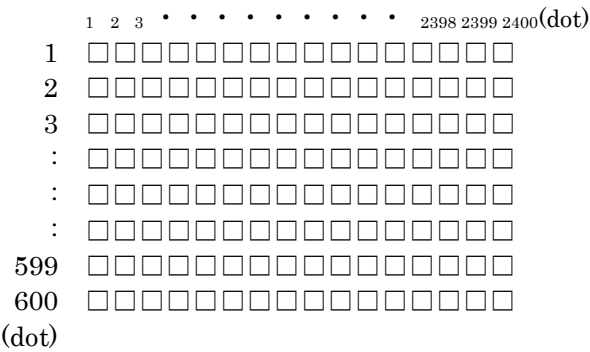
Ta=-30~80°C

Item	Symbol	Condition	Min.	Typ.	Max.	Unit
Supply voltage 1)	V _{DD}	-	3.0	3.3	3.6	V
Current consumption	I _{DD}	2)	-	340	440	mA
Permissive input ripple voltage	V _{RP}	V _{DD} =3.3V	-	-	100	mVp-p
Input signal voltage 3)	V _{IL}	"Low" level	0	-	0.8	V
	V _{IH}	"High" level	2.0	-	V _{DD}	V
Input leak current 3)	I _{OL}	V _{I3} =0V	-10	-	10	μA
	I _{OH}	V _{I3} =3.3V	-	-	400	μA
LVDS Input voltage 4)	V _L	-	0	-	1.9	V
Differential input voltage 4)	V _{ID}	-	100	-	600	mV
Differential input threshold voltage 4) 5)	V _{TL}	"Low" level	V _{CM} -100	-	-	mV
	V _{TH}	"High" level	-	-	V _{CM} +100	mV
Terminator	R ₁	-	-	100	-	Ω
V _{DD} -turn-on conditions 1) 6)	t1	-	0.1	-	10	ms
	t2	-	0	-	-	ms
	t3	-	0	-	-	ms
	t4	-	1.0	-	-	s
	t5	-	200	-	-	ms
	t6	-	200	-	-	ms
	t7	-	0	-	10	s
	t8	-	0	-	-	ms

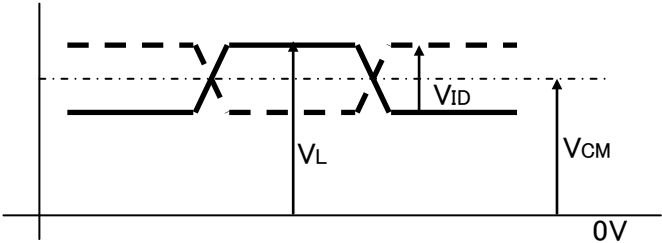
1) V_{DD}-turn-on conditions



2) Display pattern:
 $V_{DD}=3.3V$, $T_a=25^{\circ}C$



- 3) Input signal: SELLVDS
- 4) Input signal: RxIN3+, RxIN3-, RxIN2+, RxIN2-, RxIN1+, RxIN1-, RxIN0+, RxIN0-, CK IN+, CK IN-



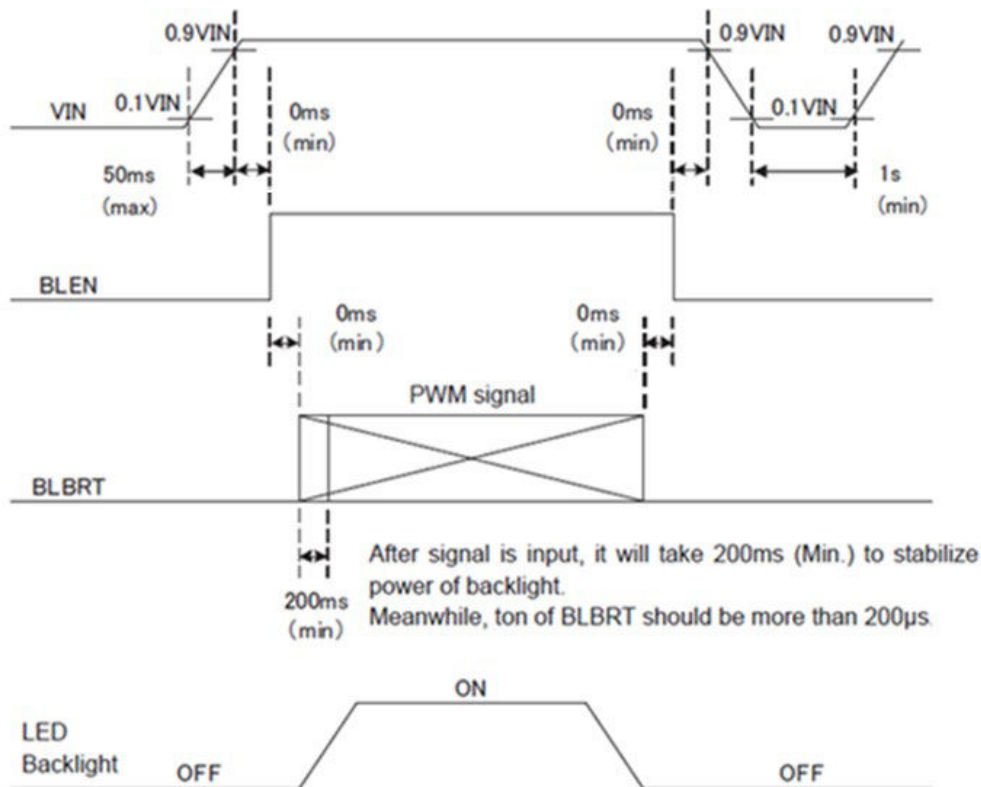
- 5) V_{CM} : LVDS Common mode voltage ($V_{CM}=1.25V$)
- 6) Please power on LVDS transmitter at the same time as VDD, or LVDS transmitter should be powered on first.

5-2. Constant current circuit for LED Backlight

$T_a = -30 \sim 80^\circ\text{C}$

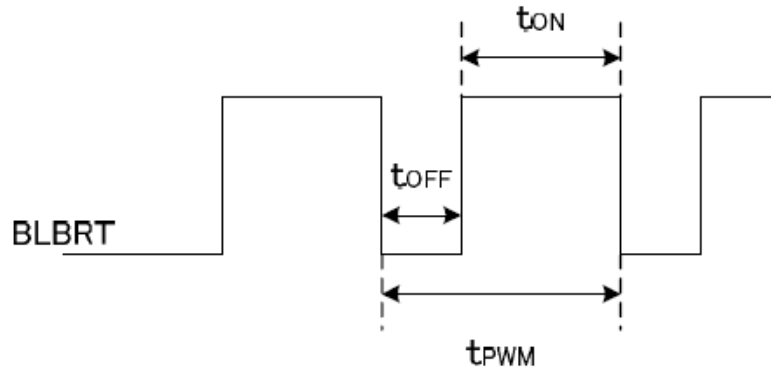
Item	Symbol	Condition	Min.	Typ.	Max.	Unit
Supply voltage 1)	V_{IN}	-	10.8	12.0	13.2	V
Current consumption	I_{IN}	2)	-	570	740	mA
Permissive input ripple voltage	V_{RP_BL}	$V_{IN}=12.0\text{V}$	-	-	100	mVp-p
BLBRT Input signal voltage	V_{IL_BLBRT}	"Low" level	0	-	0.8	V
	V_{IH_BLBRT}	"High" level	2.3	-	V_{IN}	V
BLBRT Input pull-down resistance	R_{IN_BLBRT}	-	50	150	250	k Ω
BLEN Input signal voltage	V_{IL_BLEN}	"Low" level	0	-	0.8	V
	V_{IH_BLEN}	"High" level	2.3	-	V_{IN}	V
BLEN Input pull-down resistance	R_{IN_BLEN}	-	50	150	250	k Ω
PWM Frequency 3)	f_{PWM}	-	200	-	10k	Hz
PWM Duty ratio 3)	D_{PWM}	$f_{PWM}=200\text{Hz}$	1	-	100	%
		$f_{PWM}=2\text{kHz}$	10	-	100	%
		$f_{PWM}=10\text{kHz}$	50	-	100	%
Operating life time 4) 5)	T	Temp.=25°C	-	70,000	-	h

1) V_{IN} -turn-on conditions



2) $V_{IN}=12\text{V}$, $T_a=25^\circ\text{C}$, $D_{PWM}=100\%$

3) PWM timing diagram



Please do not set t_{OFF} with $0 \mu s < t_{OFF} < 1 \mu s$.

In case of lower frequency, the deterioration of the display quality, flicker etc., may occur.

- 4) When brightness decrease 50% of minimum brightness.
The average life of a LED will decrease when the LCD is operating at higher temperatures.
- 5) Life time is estimated data. (Condition: $D_{PWM}=100\%$, Temp. $=25^{\circ}\text{C}$ in chamber).

6. Optical characteristics

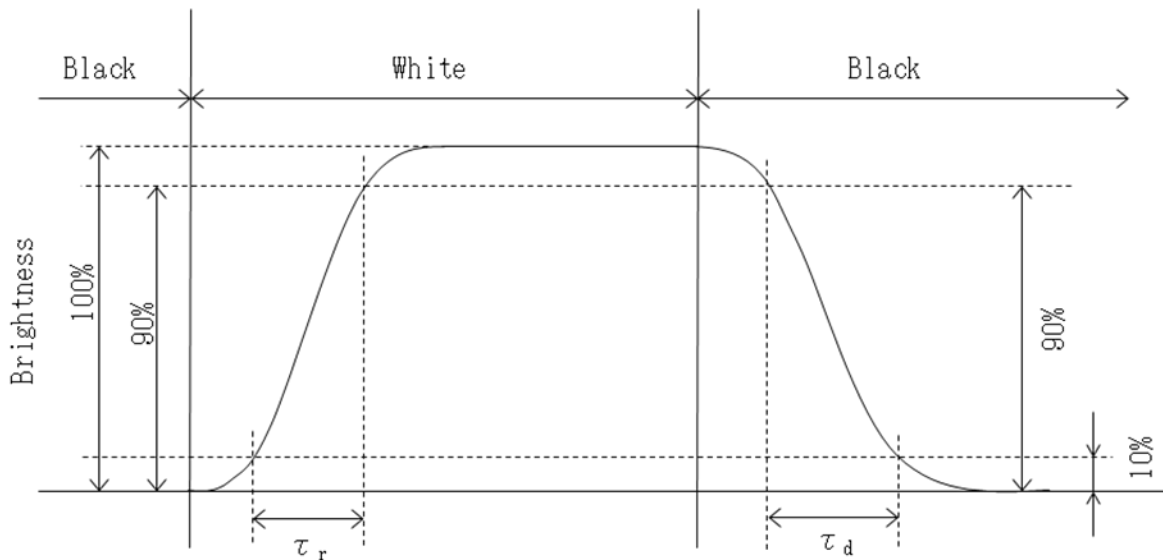
Measuring spot= ϕ 6.0mm, Ta=25°C

Item		Symbol	Condition	Min.	Typ.	Max.	Unit
Response time	Rise	τ_r	$\theta = \phi = 0^\circ$	-	18	-	ms
	Down	τ_d	$\theta = \phi = 0^\circ$	-	12	-	ms
Viewing angle range		θ UPPER	$CR \geq 10$	-	85	-	deg.
		θ LOWER		-	85	-	
		ϕ LEFT		-	85	-	deg.
		ϕ RIGHT		-	85	-	
Contrast ratio		CR	$\theta = \phi = 0^\circ$	500	750	-	-
Brightness		L	DPWM=100%	840	1200	-	cd/m ²
Chromaticity coordinates	Red	x	$\theta = \phi = 0^\circ$	0.565	0.615	0.665	-
		y		0.290	0.340	0.390	
	Green	x	$\theta = \phi = 0^\circ$	0.290	0.340	0.390	
		y		0.515	0.565	0.615	
	Blue	x	$\theta = \phi = 0^\circ$	0.105	0.155	0.205	
		y		0.090	0.140	0.190	
	White	x	$\theta = \phi = 0^\circ$	0.280	0.330	0.380	
		y		0.315	0.365	0.415	

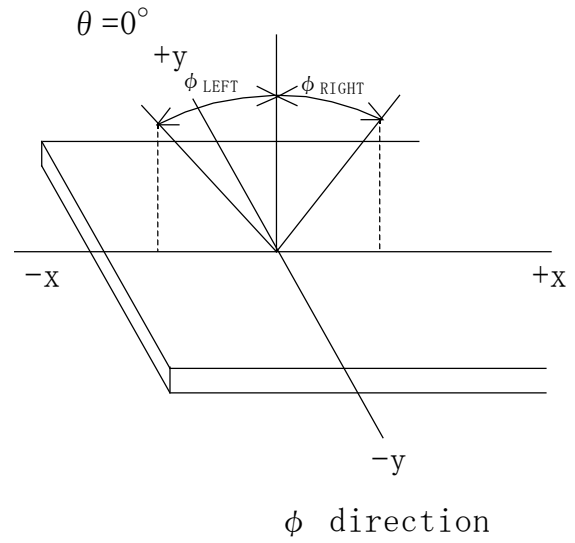
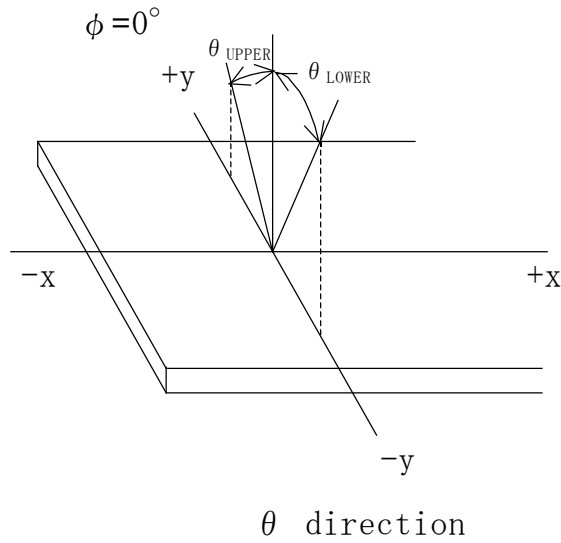
6-1. Definition of contrast ratio

$$CR(\text{Contrast ratio}) = \frac{\text{Brightness with all pixels "White"}}{\text{Brightness with all pixels "Black"}}$$

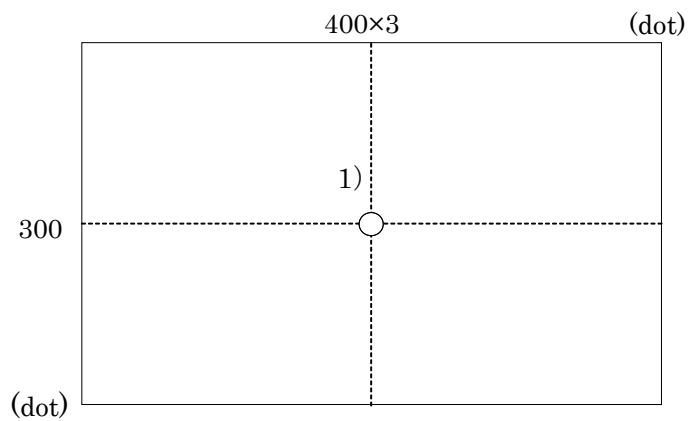
6-2. Definition of response time



6-3. Definition of viewing angle



6-4. Brightness measuring point



- 1) Rating is defined as the white brightness at center of display screen.
- 2) 5 minutes after LED is turned on. ($T_a=25^{\circ}\text{C}$)

7. Interface signals

7-1. LCD

No.	Symbol	Description	Note
1	GND	GND	
2	SELLVDS	Mode select signal (LVDS Data mapping)	
3	GND	GND	
4	GND	GND	
5	RxIN3+	LVDS receiver signal CH3(+)	LVDS
6	RxIN3-	LVDS receiver signal CH3(-)	LVDS
7	GND	GND	
8	CK IN+	LVDS receiver signal CK(+)	LVDS
9	CK IN-	LVDS receiver signal CK(-)	LVDS
10	GND	GND	
11	RxIN2+	LVDS receiver signal CH2(+)	LVDS
12	RxIN2-	LVDS receiver signal CH2(-)	LVDS
13	GND	GND	
14	RxIN1+	LVDS receiver signal CH1(+)	LVDS
15	RxIN1-	LVDS receiver signal CH1(-)	LVDS
16	GND	GND	
17	RxIN0+	LVDS receiver signal CH0(+)	LVDS
18	RxIN0-	LVDS receiver signal CH0(-)	LVDS
19	GND	GND	
20	GND	GND	
21	V _{DD}	+3.3V power supply	
22	V _{DD}	+3.3V power supply	
23	GND	GND	
24	BLBRT	PWM signal (Brightness adjustment)	
25	BLEN	ON/OFF terminal voltage	
26	GND	GND	
27	V _{IN}	+12V power supply	
28	V _{IN}	+12V power supply	
29	V _{IN}	+12V power supply	
30	GND	GND	

LCD connector (CN1) : FI-X30SSLA-HF (JAE)

*This connector has 32pins and pin No.1 and No.32 connect to GND.

Above interface signal table specifies 30pins assigned from pin No.2 to No.31.

Matching connector (CN1) : FI-X30HL (JAE)
: FI-X30C-NPB (JAE)

LVDS receiver : Embedded in ASIC

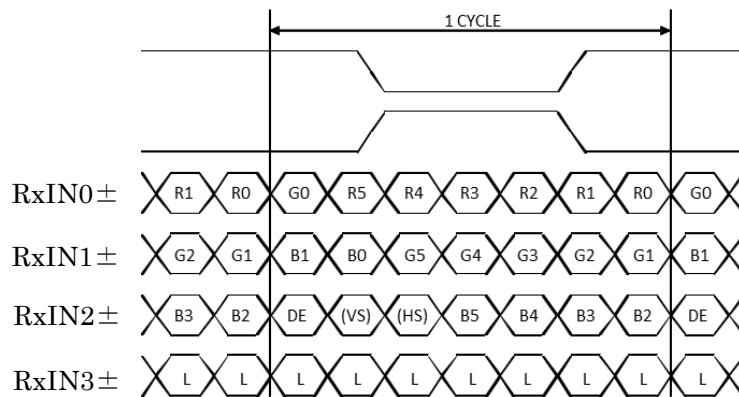
Matching LVDS transmitter : THC63LVDM83D (THine Electronics) or compatible

7-2. Data mapping (6bit RGB input)

1) Location of SELLVDS (THC63LVDM83D (THine Electronics) or compatible)

Transmitter		2Pin SELLVDS	
Pin No.	Data	= L(GND) or OPEN	= H(3.3V)
51	TA0	—	R0(LSB)
52	TA1	—	R1
54	TA2	—	R2
55	TA3	—	R3
56	TA4	—	R4
3	TA5	—	R5(MSB)
4	TA6	—	G0(LSB)
6	TB0	—	G1
7	TB1	—	G2
11	TB2	—	G3
12	TB3	—	G4
14	TB4	—	G5(MSB)
15	TB5	—	B0(LSB)
19	TB6	—	B1
20	TC0	—	B2
22	TC1	—	B3
23	TC2	—	B4
24	TC3	—	B5(MSB)
27	TC4	—	(HS)
28	TC5	—	(VS)
30	TC6	—	DE
50	TD0	—	GND
2	TD1	—	GND
8	TD2	—	GND
10	TD3	—	GND
16	TD4	—	GND
18	TD5	—	GND
25	TD6	—	GND

SELLVDS=H (3.3V)



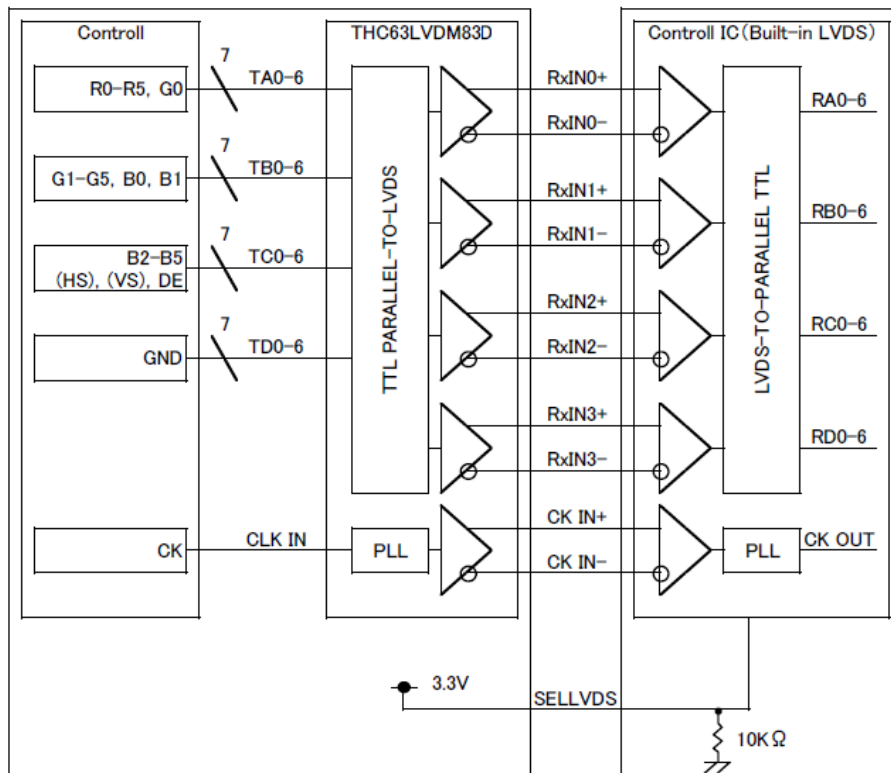
DE : DATA ENABLE

HS : H_{SYNC}

VS : V_{SYNC}

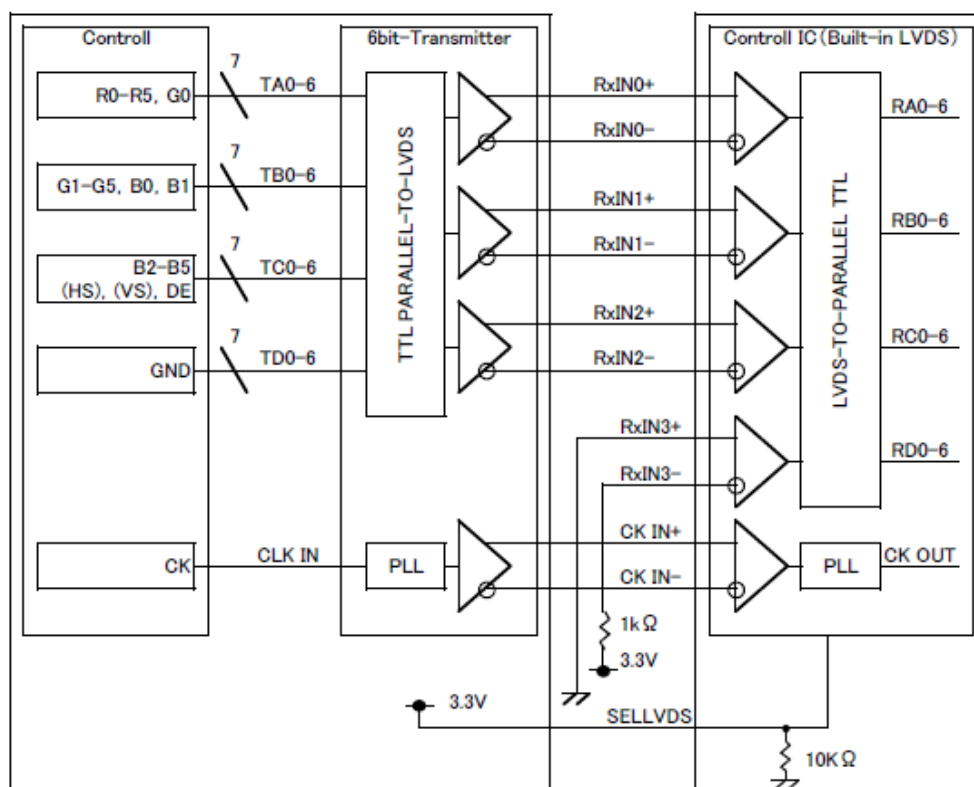
2) Block diagram

SELLVDS=H(3.3V)



*SELLVDS signal line has 10 k Ω pulldown resistor.

When using “6-bit Transmitter”, please connect the unused channel of the control IC receiver as described in the diagram below.

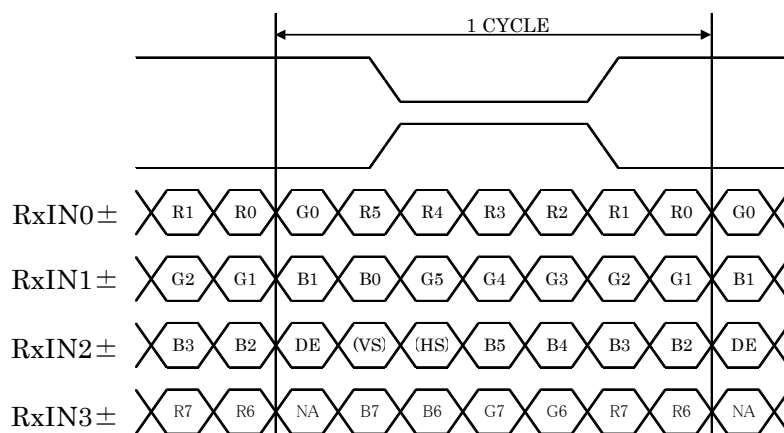


7-3. Data mapping (8bit RGB input)

1) Location of SELLVDS (THC63LVDM83D (THine Electronics) or compatible)

Transmitter		2Pin SELLVDS	
Pin No.	Data	= L(GND) or OPEN	= H(3.3V)
51	TA0	R0(LSB)	R2
52	TA1	R1	R3
54	TA2	R2	R4
55	TA3	R3	R5
56	TA4	R4	R6
3	TA5	R5	R7(MSB)
4	TA6	G0(LSB)	G2
6	TB0	G1	G3
7	TB1	G2	G4
11	TB2	G3	G5
12	TB3	G4	G6
14	TB4	G5	G7(MSB)
15	TB5	B0(LSB)	B2
19	TB6	B1	B3
20	TC0	B2	B4
22	TC1	B3	B5
23	TC2	B4	B6
24	TC3	B5	B7(MSB)
27	TC4	(HS)	(HS)
28	TC5	(VS)	(VS)
30	TC6	DE	DE
50	TD0	R6	R0(LSB)
2	TD1	R7(MSB)	R1
8	TD2	G6	G0(LSB)
10	TD3	G7(MSB)	G1
16	TD4	B6	B0(LSB)
18	TD5	B7(MSB)	B1
25	TD6	(NA)	(NA)

SELLVDS=L(GND) or OPEN

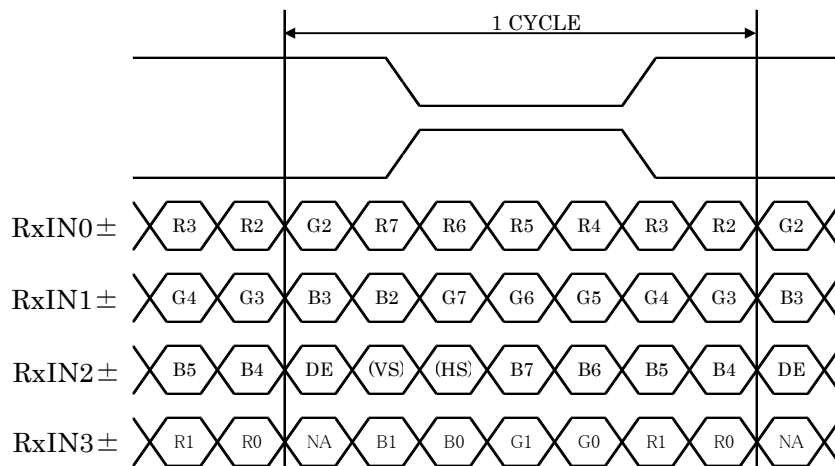


DE : DATA ENABLE

HS : H_{SYNC}

VS : V_{SYNC}

SELLVDS=H (3.3V)



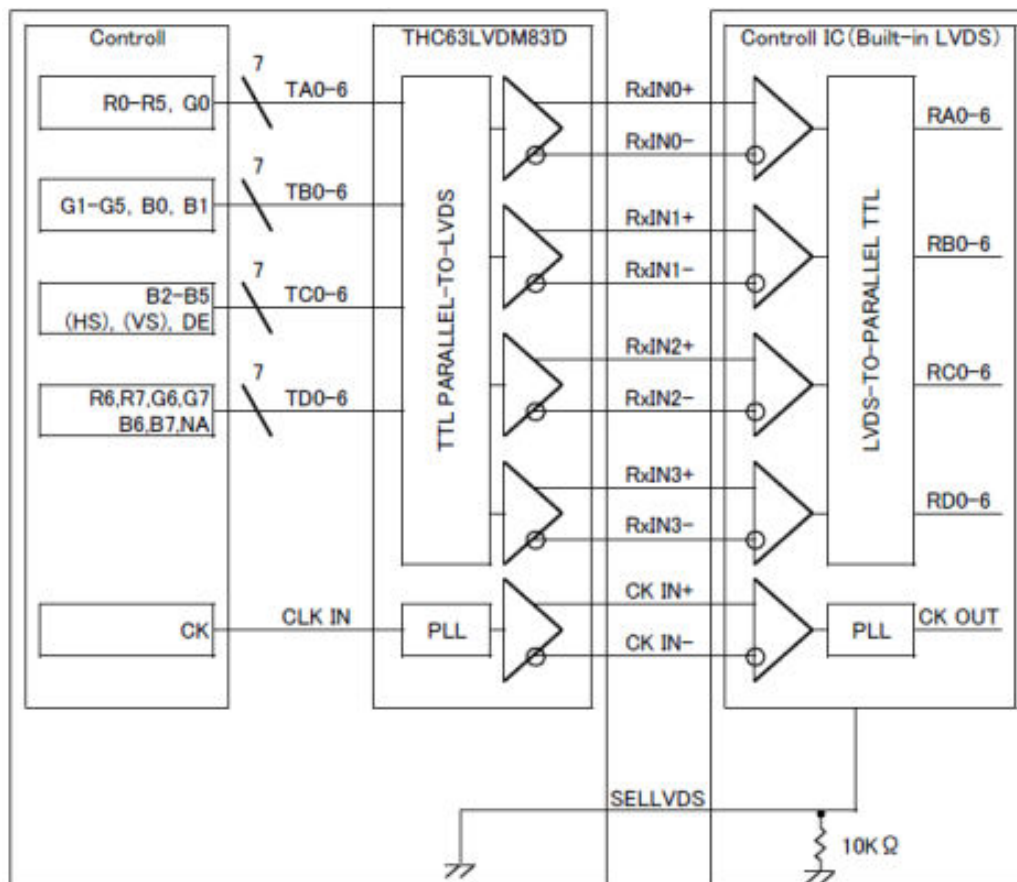
DE : DATA ENABLE

HS : H_{SYNC}

VS : V_{SYNC}

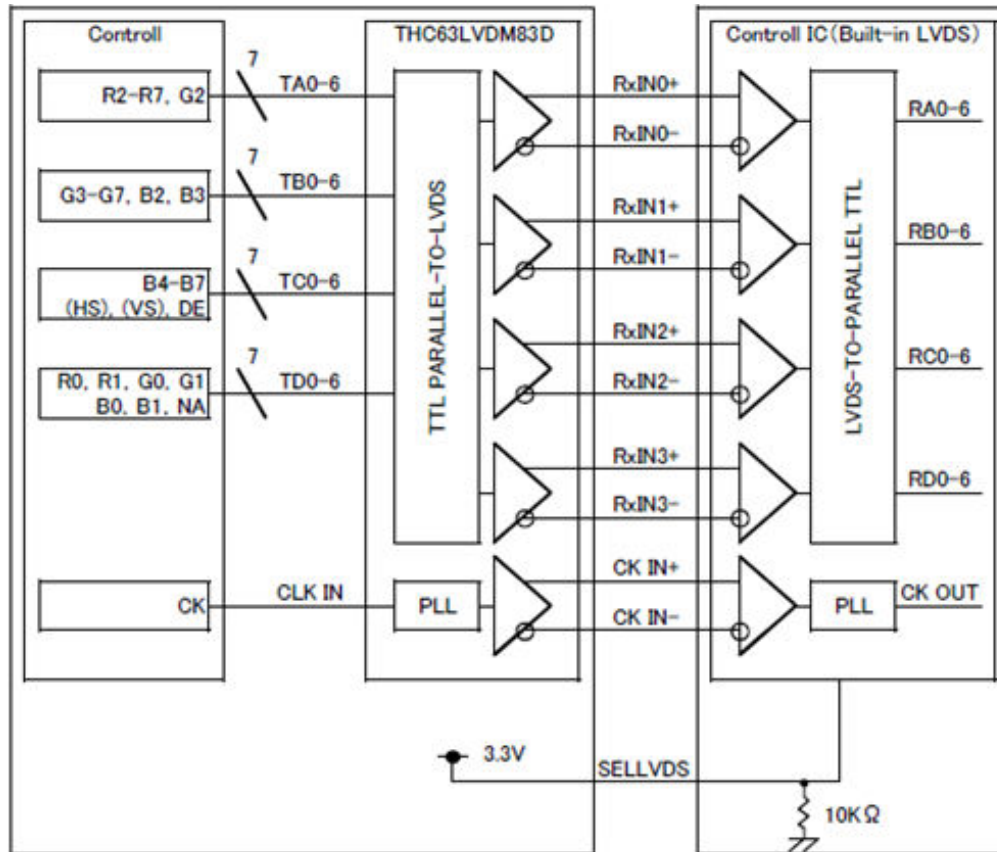
2) Block diagram

SELLVDS=L(GND) or OPEN



*SELLVDS signal line has 10 kΩ pulldown resistor.

SELLVDS=H (3.3V)



*SELLVDS signal line has 10 k Ω pulldown resistor.

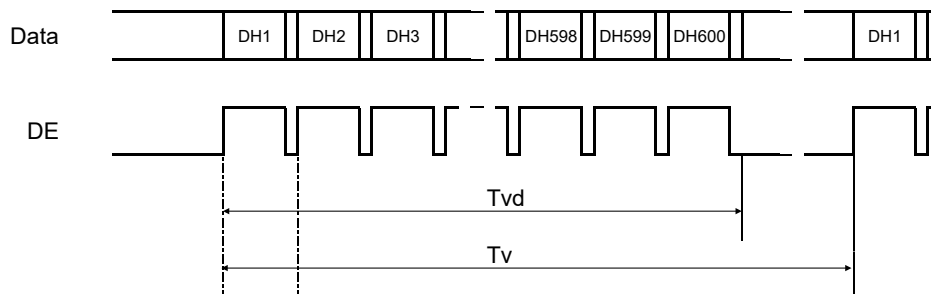
8. Input timing characteristics

8-1. Timing characteristics

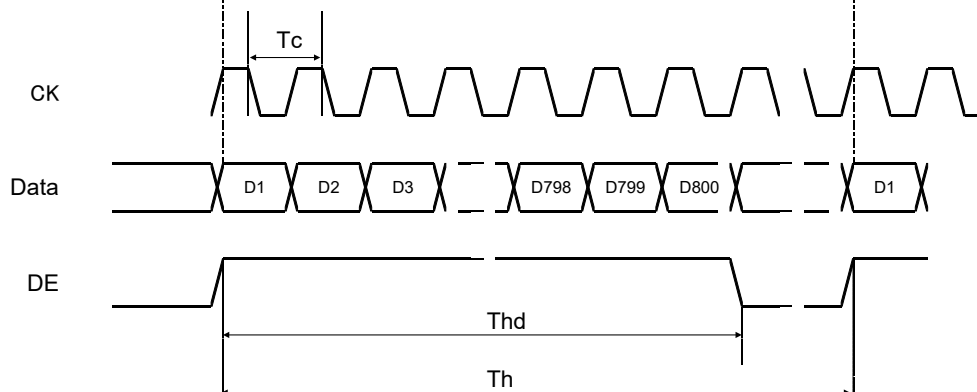
	Item	Symbol	Min.	Typ.	Max.	Unit	Note
Clock (CK)	Frequency	1/Tc	30	40	48	MHz	1)
Enable signal (DE)	Horizontal Period	Th	860	1056	1395	Tc	
			24.0	26.4	-	μs	2)
	Horizontal display period	Thd	800			Tc	
	Vertical Period	Tv	610	628	1024	Th	
	Vertical display period	Tvd	600			Th	
Refresh rate		fv	50	60	70	Hz	3)

- 1) If the display is used under the condition which is out of specifications such as higher clock frequency than specified value, there is a possibility phenomenon such as display error including white display, malfunction and no image may occur. Please use the display under the conditions written in the specification.
- 2) Please set a clock frequency, a vertical dormant period, and the horizontal dormant period so that the Horizontal Period should not reach less than Min. value.
- 3) If the refresh rate reach less than Min. value, the deterioration of the display quality, flicker etc., may occur. ($fv=1/Tv$)

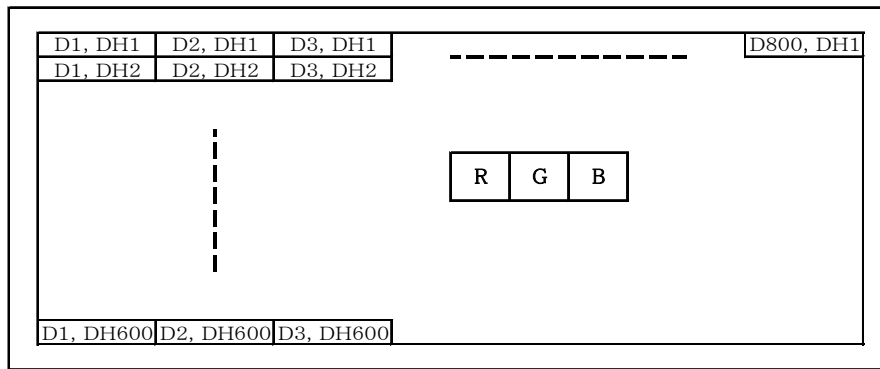
Vertical Timing Diagram



Horizontal Timing Diagram

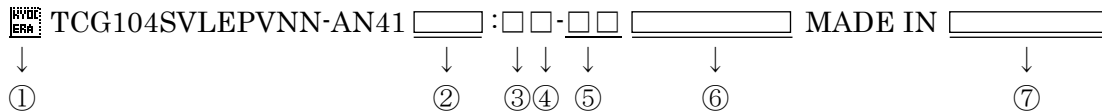


8-2. Input data signals and display position on the screen



9. Lot number identification

The lot number shall be indicated on the back of the backlight case of each LCD.



No.① – No.⑦ above indicate

- ① Data matrix (For internal control purpose only)
- ② Internal reference number (Printed as necessary)
- ③ Year code (The last digit of the year)
- ④ Month code
- ⑤ Day code
- ⑥ Serial number
- ⑦ Country of origin

④ Month code

Month	Jan.	Feb.	Mar.	Apr.	May	Jun.
Code	1	2	3	4	5	6

Month	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.
Code	7	8	9	X	Y	Z

10. Warranty

10-1. Incoming inspection

Please inspect the LCD within one month after your receipt.

10-2. Production warranty

Kyocera warrants its LCD's for a period of 12 months from the ship date. Kyocera shall, by mutual agreement, replace or re-work defective LCD's that are shown to be Kyocera's responsibility.

11. Precautions for use

11-1. Installation of the LCD

- 1) Please ground either of the mounting (screw) holes of LCD, in order to stabilize brightness and display quality.
- 2) A transparent protection plate shall be added to protect the LCD and its polarizer.
- 3) The LCD shall be installed so that there is no pressure on the LSI chips.
- 4) Since this product is wide viewing product, occurrence level of in-plane unevenness by the external stress is different compared to current normal viewing product. So there is a possibility that in-plane unevenness will be occurred by over twist, strain giving by attaching to LCD, and over pressure to touch panel. Please be careful of stress when designing the housing.
- 5) A transparent protection sheet is attached to the polarizer. Please remove the protection film slowly before use, paying attention to static electricity.

11-2. Static electricity

- 1) Since CMOS ICs are mounted directly onto the LCD glass, protection from static electricity is required.
- 2) Workers should use body grounding. Operator should wear ground straps.

11-3. LCD operation

- 1) The LCD shall be operated within the limits specified. Operation at values outside of these limits may shorten life, and/or harm display images.
- 2) Please select the best display pattern based on your evaluation because flicker, lines or nonuniformity or unevenness can be visible depending on display patterns.

11-4. Storage

- 1) The LCD shall be stored within the temperature and humidity limits specified.
Store in a dark area, and protect the LCD from direct sunlight or fluorescent light.
- 2) Always store the LCD so that it is free from external pressure onto it.

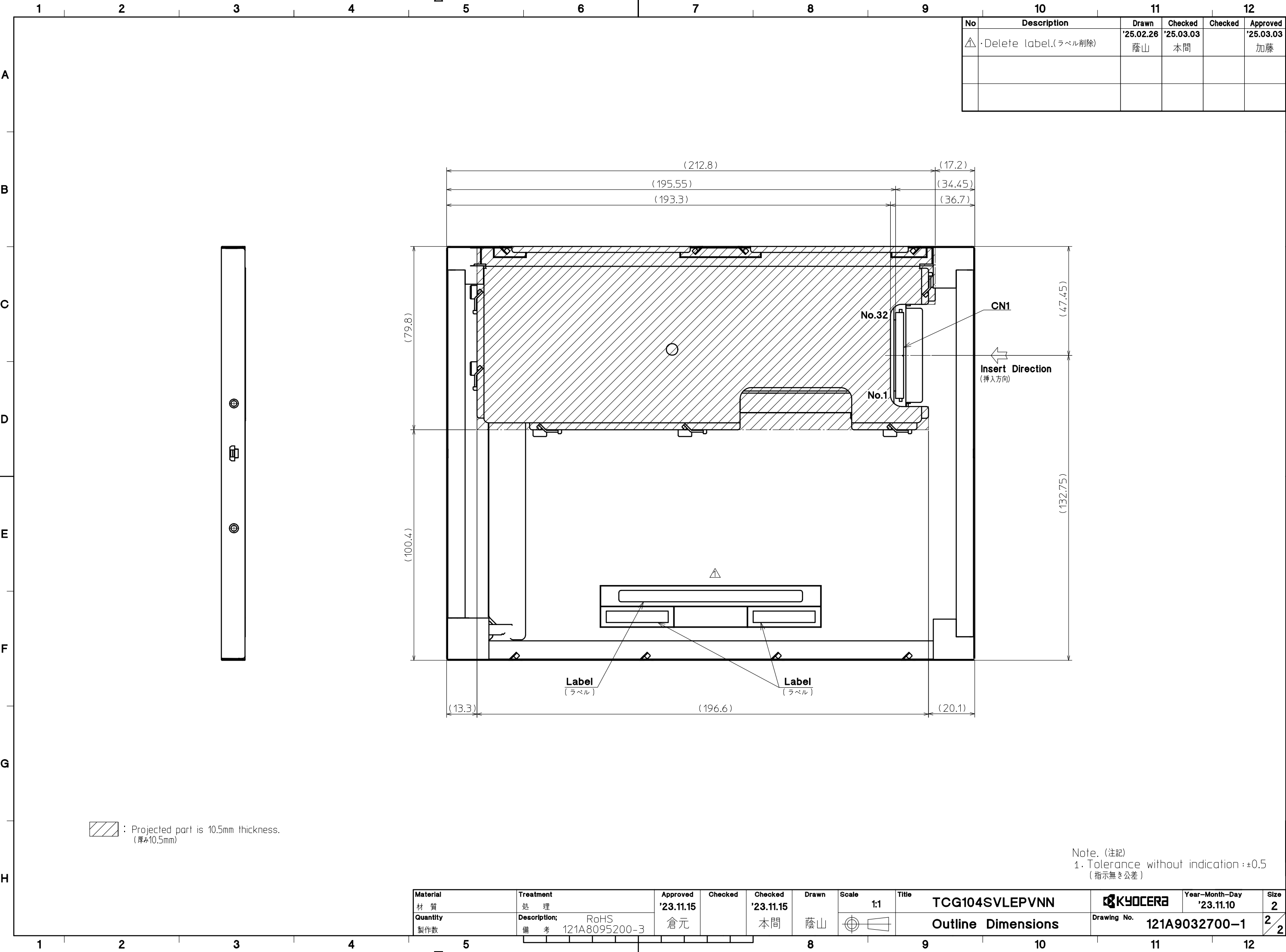
11-5. Usage

- 1) **DO NOT** store in a high humidity environment for extended periods. Polarizer degradation bubbles, and/or peeling off of the polarizer may result.
- 2) The front polarizer is easily scratched or damaged. Prevent touching it with any hard material, and from being pushed or rubbed.
- 3) The LCD screen may be cleaned by wiping the screen surface with a soft cloth or cotton pad using a little Ethanol.
- 4) Water may cause damage or discoloration of the polarizer. Clean condensation or moisture from any source immediately.
- 5) Always keep the LCD free from condensation during testing. Condensation may permanently spot or stain the polarizer.
- 6) Do not disassemble LCD because it will result in damage.
- 7) This Kyocera display LCD has been specifically designed for use in general electronic devices, but not for use in a special environment such as usage in an active gas. Hence, when the LCD is supposed to be used in a special environment, evaluate the LCD thoroughly beforehand and do not expose the LCD to chemicals such as an active gas.
- 8) Please do not use solid-base image pattern for long hours because a temporary afterimage may appear. We recommend using screen saver etc. in cases where a solid-base image pattern must be used.
- 9) Liquid crystal may leak when the LCD is broken. Be careful not to let the fluid go into your eyes and mouth. In the case the fluid touches your body; rinse it off right away with water and soap.

12. Reliability test data

Test item	Test condition	Test time	Judgement
High temp. atmosphere	80°C	240h	Display function : No defect Display quality : No defect Current consumption : No defect
Low temp. atmosphere	-30°C	240h	Display function : No defect Display quality : No defect Current consumption : No defect
High temp. humidity atmosphere	40°C 90% RH	240h	Display function : No defect Display quality : No defect Current consumption : No defect
Temp. cycle	-30°C 0.5h R.T. 0.5h 80°C 0.5h	10cycles	Display function : No defect Display quality : No defect Current consumption : No defect
High temp. operation	80°C	500h	Display function : No defect Display quality : No defect Current consumption : No defect

- 1) Each test item uses a test LCD only once. The tested LCD is not used in any other tests.
- 2) The LCD is tested in circumstances in which there is no condensation.
- 3) The reliability test is not an out-going inspection.
- 4) The result of the reliability test is for your reference purpose only.
The reliability test is conducted only to examine the LCD's capability.



Spec No.	TQ3C-8EAF0-E2YAH144-00
Date	January 20, 2026

KYOCERA INSPECTION STANDARD

TYPE : TCG104SVLEPVNN-AN41

KYOCERA CORPORATION

Original Issue Date	Designed by: Engineering dept.			Confirmed by: QA dept.
	Prepared	Checked	Approved	Approved
January 20, 2026	<i>Y. Yamazaki</i>	<i>Y. Hata</i>	<i>I. Kawajiri</i>	<i>T. Sawada</i>

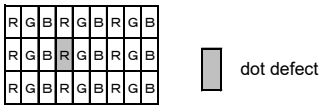
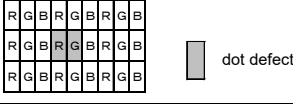
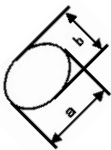
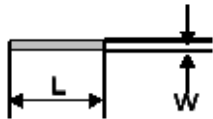
Spec No.	Part No.	Page
TQ3C-8EAF0-E2YAH144-00	TCG104SVLEPVNN-AN41	-

Revision record

Date		Designed by : Engineering dept.			Confirmed by : QA dept.
		Prepared	Checked	Approved	Approved
Rev. No.	Date	Page	Descriptions		

Visuals specification

1) Note

	Note		
General	1. Customer identified anomalies not defined within this inspection standard shall be reviewed by Kyocera, and an additional standard shall be determined by mutual consent. 2. This inspection standard about the image quality shall be applied to any defect within the active area and shall not be applicable to outside of the area. 3. Inspection conditions Luminance: 500 Lux min. Inspection distance (H1): 300 mm Distance between LCD panel surface and ND filter (H2): $0 < H2 < 30$ mm *ND filters are placed parallel to the LCD panel. Temperature: $25 \pm 5^{\circ}\text{C}$ Direction: Directly above		
Definition of inspection item	Dot defect	Bright dot defect	The dot is constantly “on” when power applied to the LCD, even when all “Black” data sent to the screen. Inspection tool: 5% Transparency neutral density filter. Count dot: If the dot is visible through the filter. Don't count dot: If the dot is not visible through the filter. 
		Black dot defect (including circular ones)	The dot is constantly “off” when power applied to the LCD, even when all “White” data sent to the screen. Similar size compared to bright dot. Circular black dots shall be evaluated according to the criteria for circular white dots and circular black dots.
		White dot (Circular/foreign particle)	Pixel works electrically, however, circular/foreign particle makes dot appear to be “on” even when all “Black” data is sent to the screen.
		Adjacent dot	Adjacent dot defect is defined as two or more bright dot defects or black dot defects. 
	External inspection	Bubble, Scratch, Foreign particle (Polarizer, Cell, Backlight)	Visible operating (all pixels “Black” or “White”) and non operating.
		Appearance inspection	Does not satisfy the value at the spec.
Definition of size	Definition of circle size  a: major axis, b: minor axis $d = (a + b) / 2$ Definition of linear size 		

Classification		Inspection item		Judgement standard																		
Defect (in LCD glass)	Single dot	Bright dot defect		Acceptable number : 4 Bright dot spacing : 5 mm or more																		
		Black dot defect		Acceptable number : 5 Black dot spacing : 5 mm or more																		
	Adjacent dot	2 dots	Bright dot defect	Acceptable number : 2																		
			Black dot defect	Acceptable number : 3																		
		3 or more dots		Acceptable number : 0																		
	Total dot defects		Acceptable number : 5 Max																			
	Others	Circular white dots and circular black dots		<table><tr><th>Size (mm)</th><th>Acceptable number</th></tr><tr><td>$d \leq 0.2$</td><td>(Neglected)</td></tr><tr><td>$0.2 < d \leq 0.4$</td><td>5</td></tr><tr><td>$0.4 < d \leq 0.5$</td><td>3</td></tr><tr><td>$0.5 < d$</td><td>0</td></tr></table>			Size (mm)	Acceptable number	$d \leq 0.2$	(Neglected)	$0.2 < d \leq 0.4$	5	$0.4 < d \leq 0.5$	3	$0.5 < d$	0						
				Size (mm)	Acceptable number																	
$d \leq 0.2$				(Neglected)																		
$0.2 < d \leq 0.4$				5																		
$0.4 < d \leq 0.5$				3																		
$0.5 < d$	0																					
External inspection (Defect on Polarizer or between Polarizer and LCD glass)	Polarizer (Scratch)	<table><tr><th>Width (mm)</th><th>Length (mm)</th><th>Acceptable number</th></tr><tr><td>$W \leq 0.1$</td><td>—</td><td>(Neglected)</td></tr><tr><td rowspan="2">$0.1 < W \leq 0.3$</td><td>$L \leq 5.0$</td><td>(Neglected)</td></tr><tr><td>$5.0 < L$</td><td>0</td></tr><tr><td>$0.3 < W$</td><td>—</td><td>0</td></tr></table>				Width (mm)	Length (mm)	Acceptable number	$W \leq 0.1$	—	(Neglected)	$0.1 < W \leq 0.3$	$L \leq 5.0$	(Neglected)	$5.0 < L$	0	$0.3 < W$	—	0			
		Width (mm)	Length (mm)	Acceptable number																		
		$W \leq 0.1$	—	(Neglected)																		
		$0.1 < W \leq 0.3$	$L \leq 5.0$	(Neglected)																		
			$5.0 < L$	0																		
	$0.3 < W$	—	0																			
	Polarizer (Bubble)	<table><tr><th>Size (mm)</th><th>Acceptable number</th></tr><tr><td>$d \leq 0.2$</td><td>(Neglected)</td></tr><tr><td>$0.2 < d \leq 0.3$</td><td>5</td></tr><tr><td>$0.3 < d \leq 0.5$</td><td>3</td></tr><tr><td>$0.5 < d$</td><td>0</td></tr></table>				Size (mm)	Acceptable number	$d \leq 0.2$	(Neglected)	$0.2 < d \leq 0.3$	5	$0.3 < d \leq 0.5$	3	$0.5 < d$	0							
		Size (mm)	Acceptable number																			
		$d \leq 0.2$	(Neglected)																			
		$0.2 < d \leq 0.3$	5																			
		$0.3 < d \leq 0.5$	3																			
	$0.5 < d$	0																				
	Foreign particle (Circular shape)	<table><tr><th>Size (mm)</th><th>Acceptable number</th></tr><tr><td>$d \leq 0.2$</td><td>(Neglected)</td></tr><tr><td>$0.2 < d \leq 0.4$</td><td>5</td></tr><tr><td>$0.4 < d \leq 0.5$</td><td>3</td></tr><tr><td>$0.5 < d$</td><td>0</td></tr></table>				Size (mm)	Acceptable number	$d \leq 0.2$	(Neglected)	$0.2 < d \leq 0.4$	5	$0.4 < d \leq 0.5$	3	$0.5 < d$	0							
		Size (mm)	Acceptable number																			
		$d \leq 0.2$	(Neglected)																			
		$0.2 < d \leq 0.4$	5																			
		$0.4 < d \leq 0.5$	3																			
	$0.5 < d$	0																				
	Foreign particle (Linear shape) Scratch	<table><tr><th>Width (mm)</th><th>Length (mm)</th><th>Acceptable number</th></tr><tr><td>$W \leq 0.03$</td><td>—</td><td>(Neglected)</td></tr><tr><td rowspan="2">$0.03 < W \leq 0.1$</td><td>$L \leq 2.0$</td><td>(Neglected)</td></tr><tr><td>$2.0 < L \leq 4.0$</td><td>3</td></tr><tr><td></td><td>$4.0 < L$</td><td>0</td></tr><tr><td>$0.1 < W$</td><td>—</td><td>(According to circular shape)</td></tr></table>				Width (mm)	Length (mm)	Acceptable number	$W \leq 0.03$	—	(Neglected)	$0.03 < W \leq 0.1$	$L \leq 2.0$	(Neglected)	$2.0 < L \leq 4.0$	3		$4.0 < L$	0	$0.1 < W$	—	(According to circular shape)
		Width (mm)	Length (mm)	Acceptable number																		
		$W \leq 0.03$	—	(Neglected)																		
		$0.03 < W \leq 0.1$	$L \leq 2.0$	(Neglected)																		
			$2.0 < L \leq 4.0$	3																		
		$4.0 < L$	0																			
$0.1 < W$	—	(According to circular shape)																				
Color variation (Mura)	Not visible through 5% ND filter.																					