SAMSUNG MOBILE DISPLAY

LEAD-FREE

Date : Sep. 14 '09

Specification for Approval

Product Name : Standard-350WV

Model Name : AMS353FD0X-0

Description : 3.5" Visual WVGA 480x800 16M Color

Proposed by			Customer's Approval
Designed	**Checked**	**Approved**	
M. H. LEE **Sep. 14 '2009**			

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Also, contents in this document are subject to change after prior notice to the customer.

Revision History

Date	Rev. No.	Contents	Remark
Sep. 14 '09	0.0	- Initial issue	-

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1. Scope

This Specification defines general provisions as well as inspection standards for AMOLED module supplied by SAMSUNG SMD Co., LTD., If the event of unforeseen problems or unspecified items occurs, we naturally shall negotiate and agree to solution with customer.

2. Warranty

Basically, warranty term is **15 months** of reliability characteristics of quality level after the outgoing date in SAMSUNG SMD Co., LTD., and SAMSUNG SMD Co., LTD., could compensate for defectives which happens within warranty term under condition that the products should be stored or be used as specified under normal condition within the contents of specification. Otherwise, it is impossible to compensate for defectives when they happens by customer's mistake such as careless handing or circuit change, etc.
And after 15 months of warranty term, all replacements for defectives will be charged.

This Specification stipulates the final and comprehensive requirements for the respective products hereof. Beyond this Specification, it is responsibility of the customer to explicitly disclose any additional requirements, information or reservations regarding these requirements to Samsung SMD prior to implementation, where any and all disclosures of the customer shall be with an authorized representative of Samsung SMD in writing. Samsung SMD shall not be responsible for safety, performance, functionality, compatibility of the system with which the Samsung SMD-supplied components are integrated unless such features have been expressly communicated and described in the Specification.

SAMSUNG SMD MAKES NO GUARANTY OR WARRANTY, EXPRESS OR IMPLIED INCLUDING BUT NOT LIMITED TO MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE, TO ANY PARTY.

Moreover, any party should do their own due diligence regarding these requirements prior to implementation.

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3. Features

1) Display Color : 16M_Color (RGB)
2) Display Format : 3.5" Visual WVGA 480 x 800 (240 RGBG x 800)
3) Interface : RGB-24bits, SPI-3 line
4) Driver IC : TL2796 By TOMATO LSI
5) Polarizer : Hard Coating Polarizer (2H)

4. Mechanical Specification

Item	Specifications	Unit
Outline dimension (Glass thickness)	50.98(W) x 86.10(H) x 1.57(T) (0.4t)	mm
Number of dots	240(W) x R(B)GB(R)G x 800(H)	Dots
Active area	46.08(W) x 76.80(H)	mm
Diagonal Inch	3.53	inch
Pixel pitch(RG or BG)	0.096(W) x 0.096(H)	mm

5. Maximum Rating

Item		Symbol	Min.	Max.	Unit	Note
Supply voltage	Logic	VCI	-0.3	3.6	V	(1),(2)
		IOVCC	-0.3	3.6	V	(1),(2)
	Power	VBAT	0.3	6.0	V	(1),(2)
Input voltage		Vin	-0.5	IOVCC+0.5	V	(2)
Operating temperature		Top	-20	70	℃	-
Humidity		Hop	10	95	%(RH)	-
Storage temperature		Tstg	-30	85	℃	-
Humidity		Hstg	10	95	%(RH)	

Note 1) VCI, IOVCC, VBAT should satisfy the below condition of
VBAT > VCI, IOVCC > VSS (GND).

Note 2) If the supplied voltage exceeds the maximum limitation, LSI can be damaged permanently. Therefore, while operating, it is recommend to use LSI within the maximum electrical limitation. If not, LSI can cause decreased reliability or operational problems.

Note 3) Wet Bulb Temperature should not exceed 29 at most and not have any dew condensation.

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6. Electrical Characteristics

- Test Conditions : IOVCC=2.8V, VCI=2.8V, Vbat=3.8V, VSS=0V, Tamb=25℃ unless otherwise specified.

Item		Symbol	Condition	Min.	Typ.	Max.	Unit
Supply voltage	Logic	IOVCC	-	1.65	1.8	3.3	V
		VCI	-	2.5	2.8	3.3	
	Power	VBat	-	2.5	3.8	4.5	
Input Voltage	"H" level	VIH	-	0.8*IOVCC	-	IOVCC	V
	"L" level	VIL	-	-0.2	-	0.2*IOVCC	
Output Voltage	"H" level	VOH	IOH = -0.1mA IOL = 0.1mA	0.8*IOVCC	-	IOVCC	V
	"L" level	VOL		-0.2	-	0.2*IOVCC	
Leakage Current	Input	ILI	Vin=IOVCC or VSS	-1.0	-	1.0	uA
	Output	ILO		-3.0	-	3.0	uA
Supply Current	EL Power ($300cd/m^2$, full white)	IBAT	VBAT=3.8V	-	T.B.D	T.B.D	mA
Driver IC Current Consumption		IOVCC	IOVCC =VCI=2.8V	-	-	1	mA
		IVCI		-	-	20	mA
		Istby (VBAT =3.8V)	IOVCC =VCI=2.8V	-	-	200	uA

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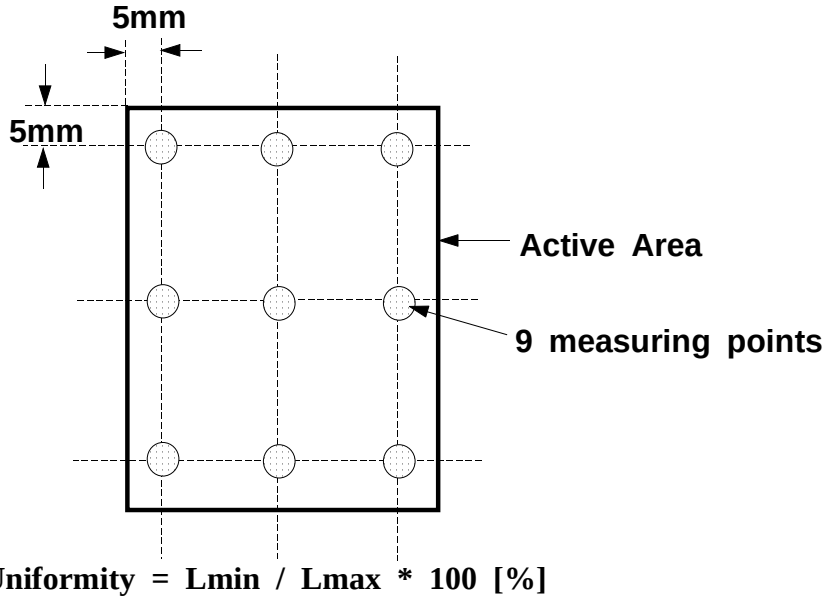
7. Electro-optical characteristics

Item		Symbol	Temp	Condition	Min.	Typ.	Max.	Unit	Note
Brightness			25℃	Normal (White Mode)	240	300	360	cd/m^2	Center brightness
Uniformity			25℃	Normal (White Mode)	82	90	-	%	(1)
Contrast ratio		K	25℃	Φ=0˚,θ=0˚	2,000		-	-	(1),(2)
Color of CIE coordinate	White	x	25℃	Φ=0° θ=0°	0.280	0.300	0.320	-	(1),(2),(3)
		y			0.290	0.310	0.330	-	
	Red	x			0.625	0.675	0.725	-	
		y			0.275	0.325	0.375	-	
	Green	x			0.170	0.220	0.270	-	
		y			0.675	0.725	0.775	-	
	Blue	x			0.095	0.145	0.195	-	
		y			0.005	0.055	0.105	-	
Color Gamut			25℃	vs. NTSC	-	105	-	%	
Life Time(5)			25℃	50% Brightness drop @250cd/m^2, Full White	-	30,000	-	Hr	(4)

Note1) Uniformity Measuring Point



Uniformity = Lmin / Lmax * 100 [%]

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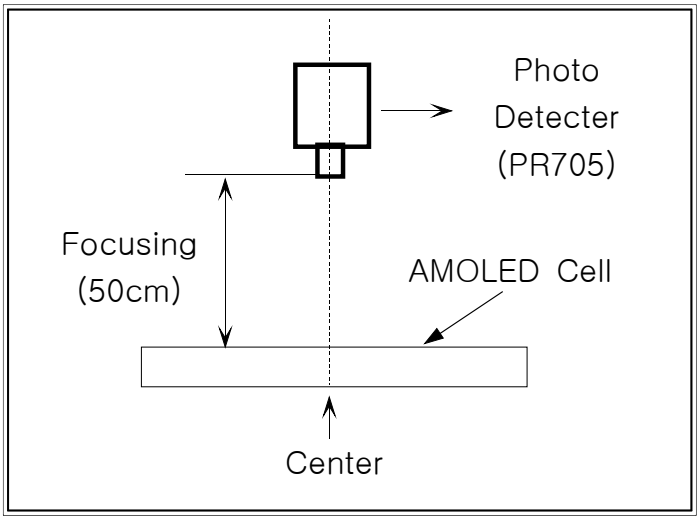
Note 2) Definition of contrast ratio (K)

$$\text{Contrast Ratio(K)} = \frac{\text{Brightness of selected dot (White patterned area) at } 300\text{cd/m}^2}{\text{Brightness of non-selected dot (Black patterned area) at } 300\text{cd/m}^2}$$

Note 3) Optical measuring system : temperature regulated chamber



Note 4) Life Time

The elapsed time that the full white brightness decreases to the half of initial value.

8. Input/Output Terminal Assignment

8-1. I/O Connection

No.	I/O	Symbol	Function
1	Power	GND	Ground Terminal
2	Power	VBAT	DC-DC IC Input voltage
3	Power	VBAT	DC-DC IC Input voltage
4	Power	VBAT	DC-DC IC Input voltage
5	I	SDO	Serial data output pin
6	Power	VDD3	Data I/O(Logic) power supply
7	I	RESETB	Reset Signal (0: reset, 1: normal operation)
8	Power	GND	Ground Terminal
9	I	SCL	Serial data transfer clock input pin
10	I	CSB	Chip select signal input (Low Active)
11	I	SDI	Serial data input pin
12	I	ENABLE	Data enable signal pin for RGB I/F
13	I	DOTCLK	Dot clock signal of the RGB I/F
14	I	HSYNC	Horizontal sync signal of the RGB I/F
15	I	VSYNC	Vertical sync signal of the RGB I/F
16	Power	GND	Ground Terminal
17	Power	GND	Ground Terminal
18	I/O	D0	Unidirectional Data Bus
19	I/O	D1	Unidirectional Data Bus
20	I/O	D2	Unidirectional Data Bus
21	I/O	D3	Unidirectional Data Bus
22	I/O	D4	Unidirectional Data Bus
23	I/O	D5	Unidirectional Data Bus
24	I/O	D6	Unidirectional Data Bus
25	I/O	D7	Unidirectional Data Bus
26	I/O	D8	Unidirectional Data Bus
27	I/O	D9	Unidirectional Data Bus
28	I/O	D10	Unidirectional Data Bus
29	I/O	D11	Unidirectional Data Bus
30	I/O	D12	Unidirectional Data Bus
31	I/O	D13	Unidirectional Data Bus
32	I/O	D14	Unidirectional Data Bus
33	I/O	D15	Unidirectional Data Bus
34	I/O	D16	Unidirectional Data Bus
35	I/O	D17	Unidirectional Data Bus
36	I/O	D18	Unidirectional Data Bus
37	I/O	D19	Unidirectional Data Bus
38	I/O	D20	Unidirectional Data Bus
39	I/O	D21	Unidirectional Data Bus
40	I/O	D22	Unidirectional Data Bus
41	I/O	D23	Unidirectional Data Bus
42	Power	GND	Ground Terminal
43	Power	VCI	Internal power for RAM (Analog)
44	-	MTP_VPP2	Connection to VCI when it is not EEPROM write program mode.
45	-	MTP_VPP1	Connection to GND when it is not EEPROM write program mode.

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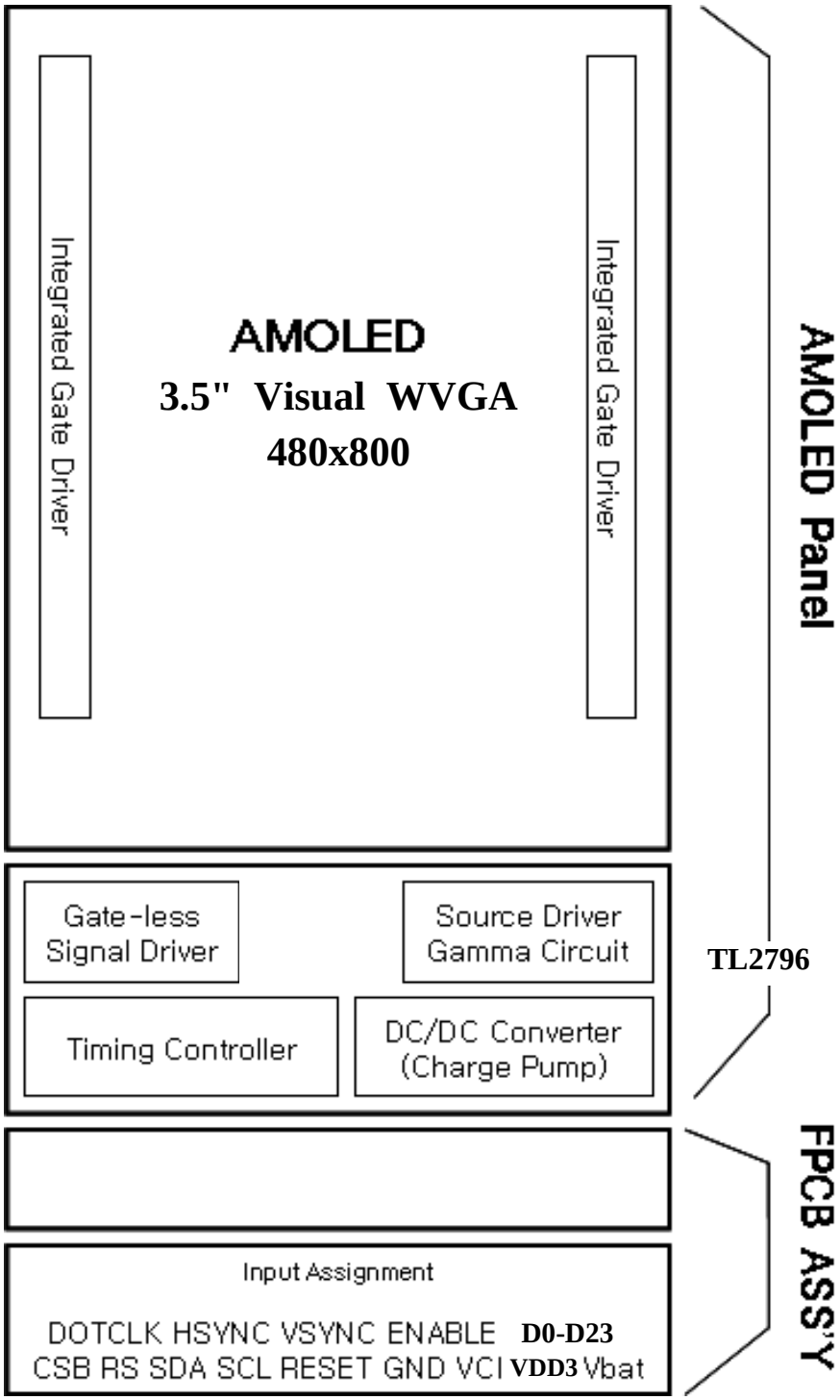
8-2. Circuit block diagram (Module)



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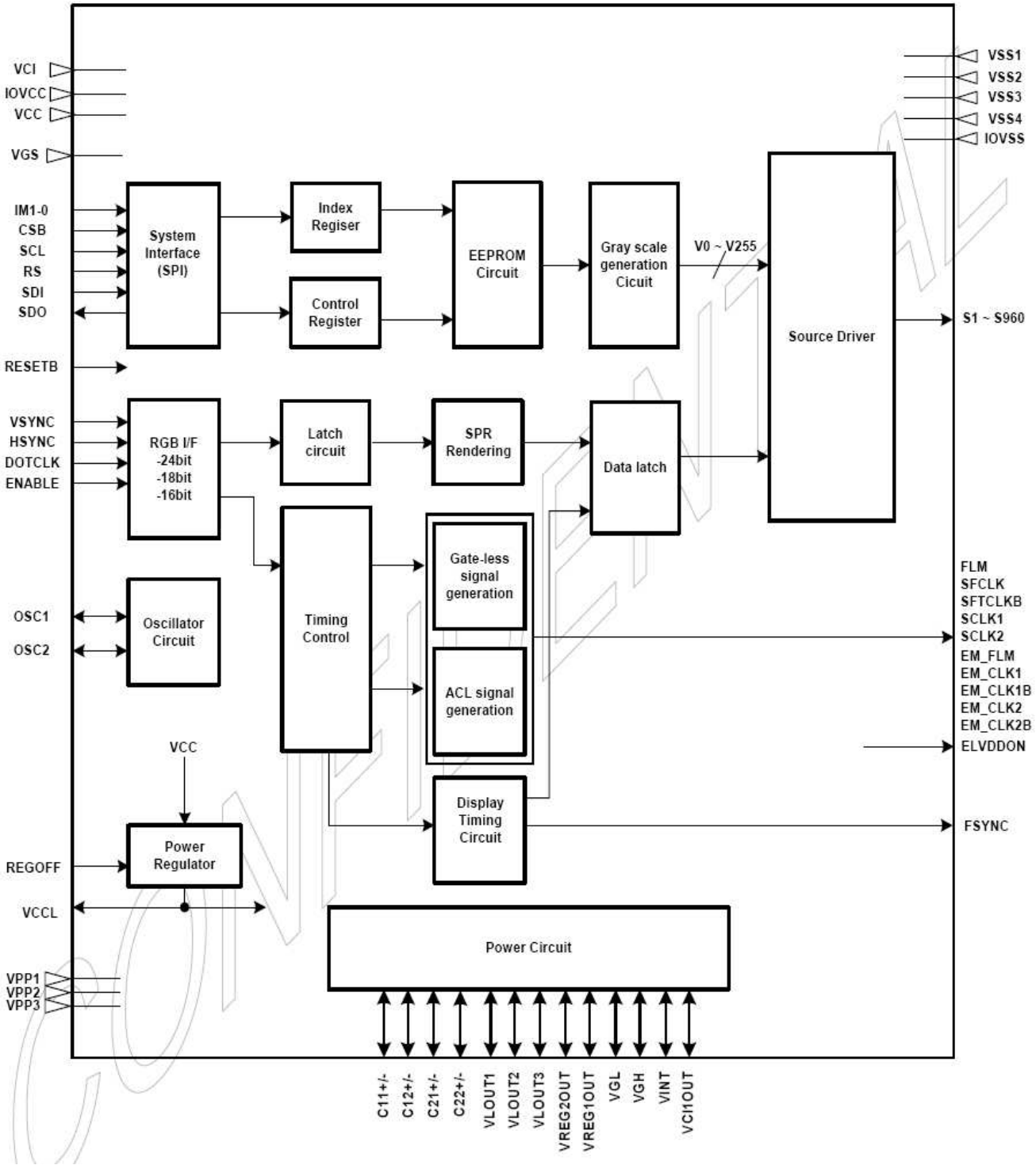
8-3. Circuit block diagram (IC)



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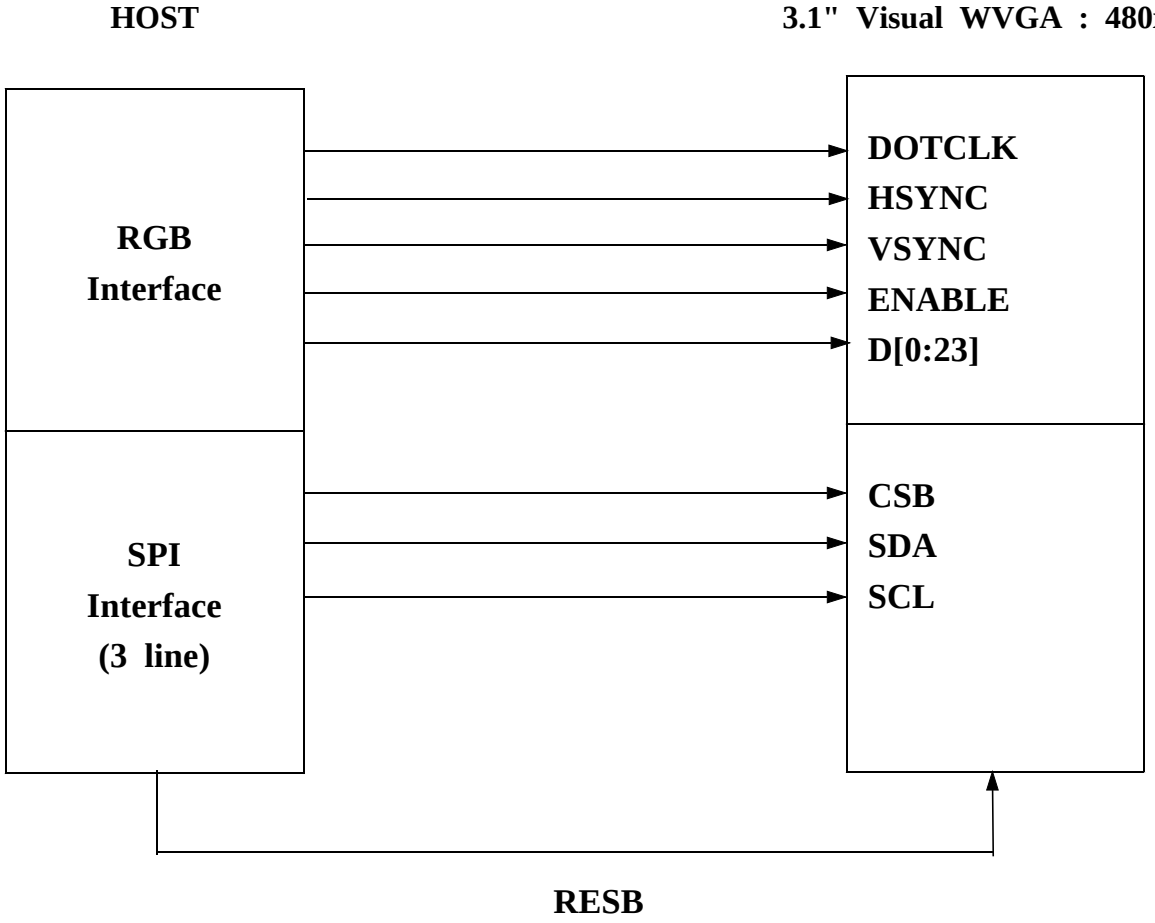
8-4. RGB Interface



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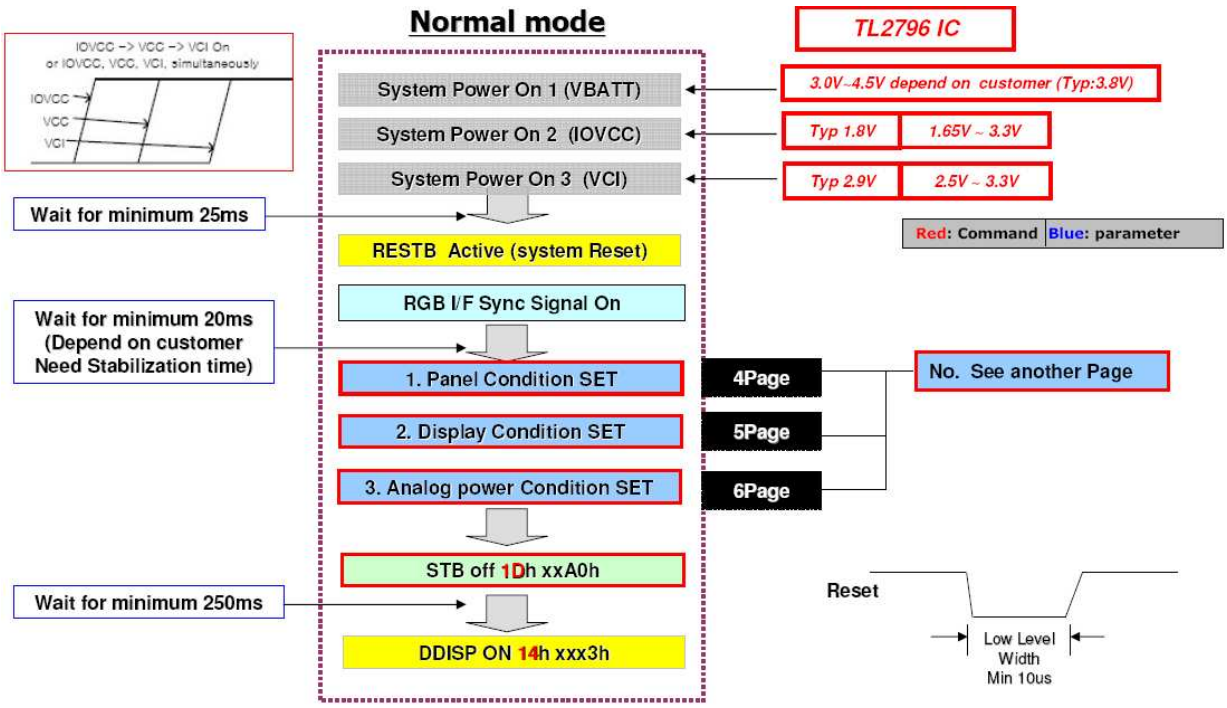
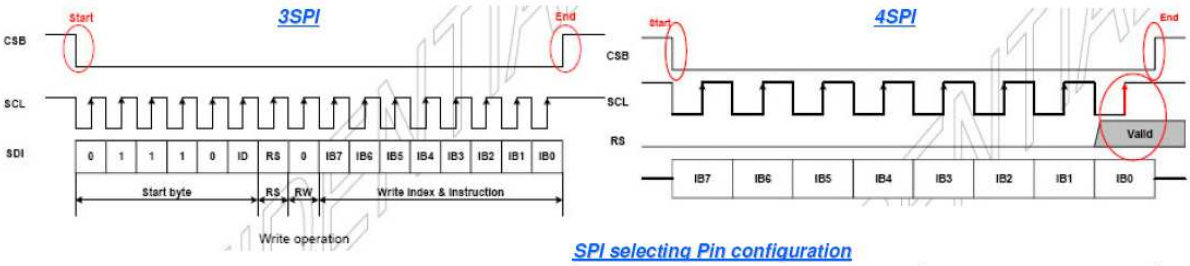
9. Recommended Operating Sequence

9-1 Normal mode(Power ON sequence)



9-2 RGB Interface

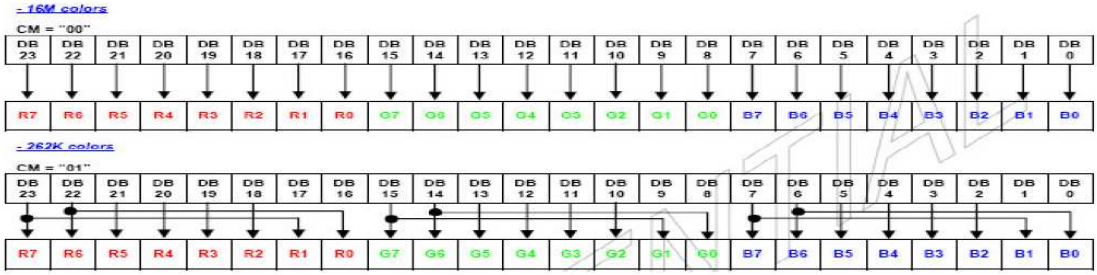
Instruction format



SPI selecting Pin configuration

IM1	IM0/ID	SPI mode
GND	I/D	3-Pin Serial Peripheral Interface
IOVCC	GND	4-Pin Serial Peripheral Interface

image data format



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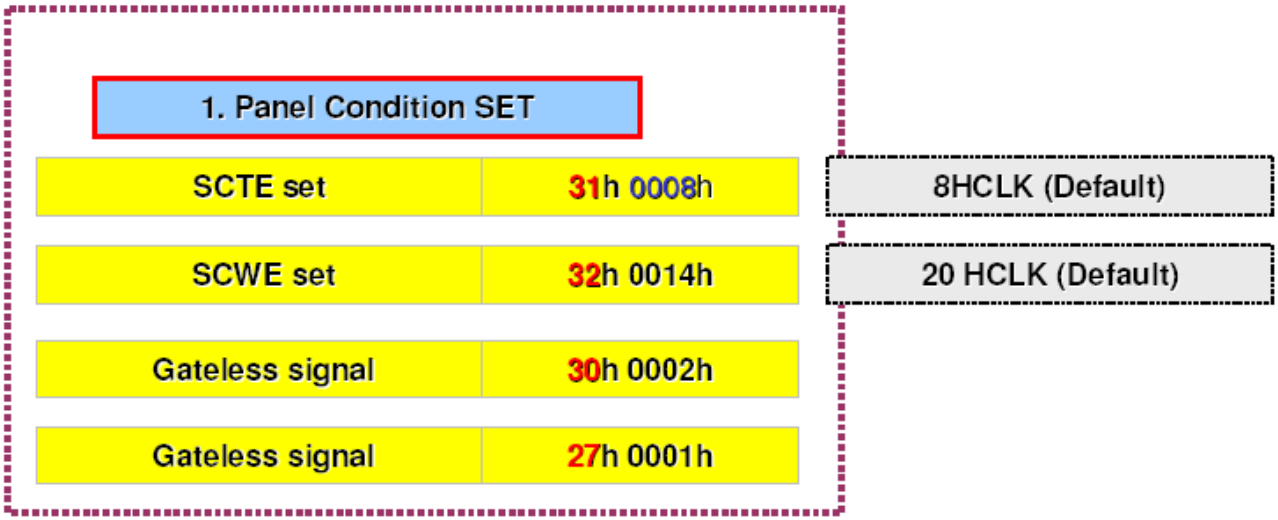
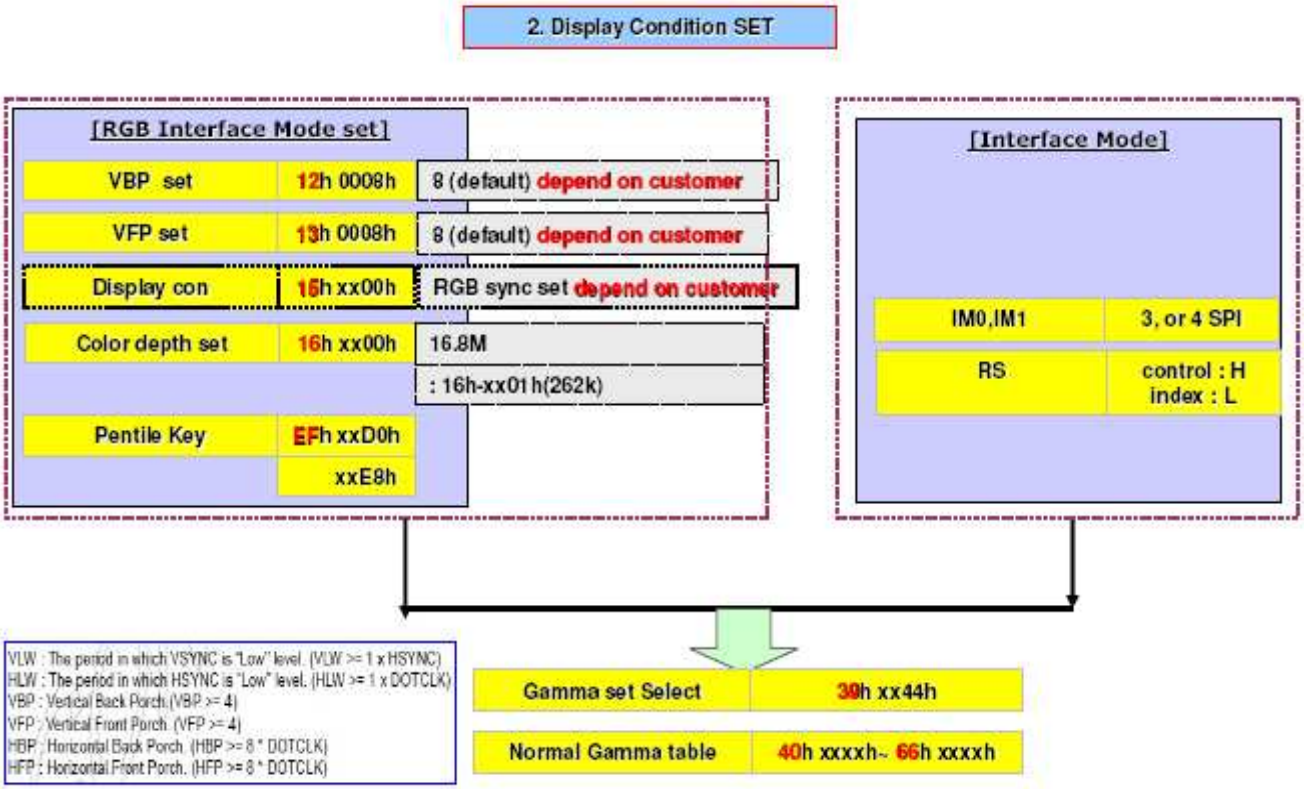
9-3 Panel Condition Set(LTPS)



9-4 Display Condition Set



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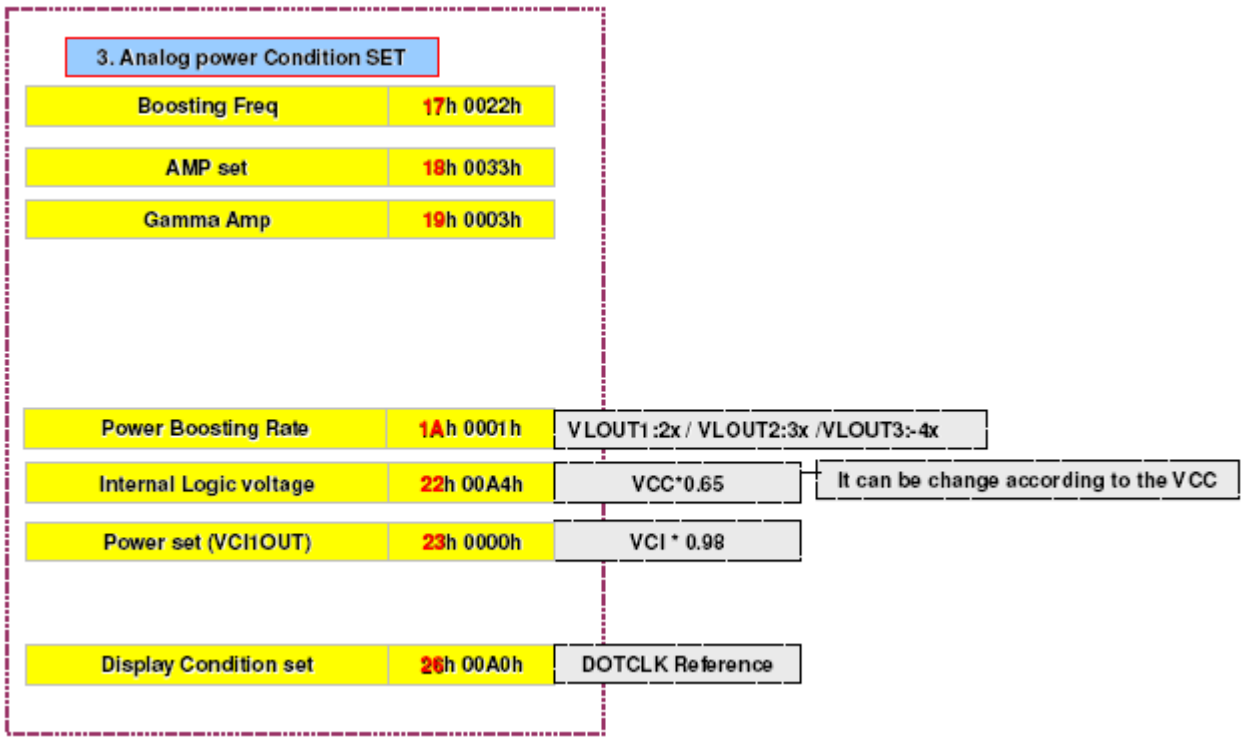
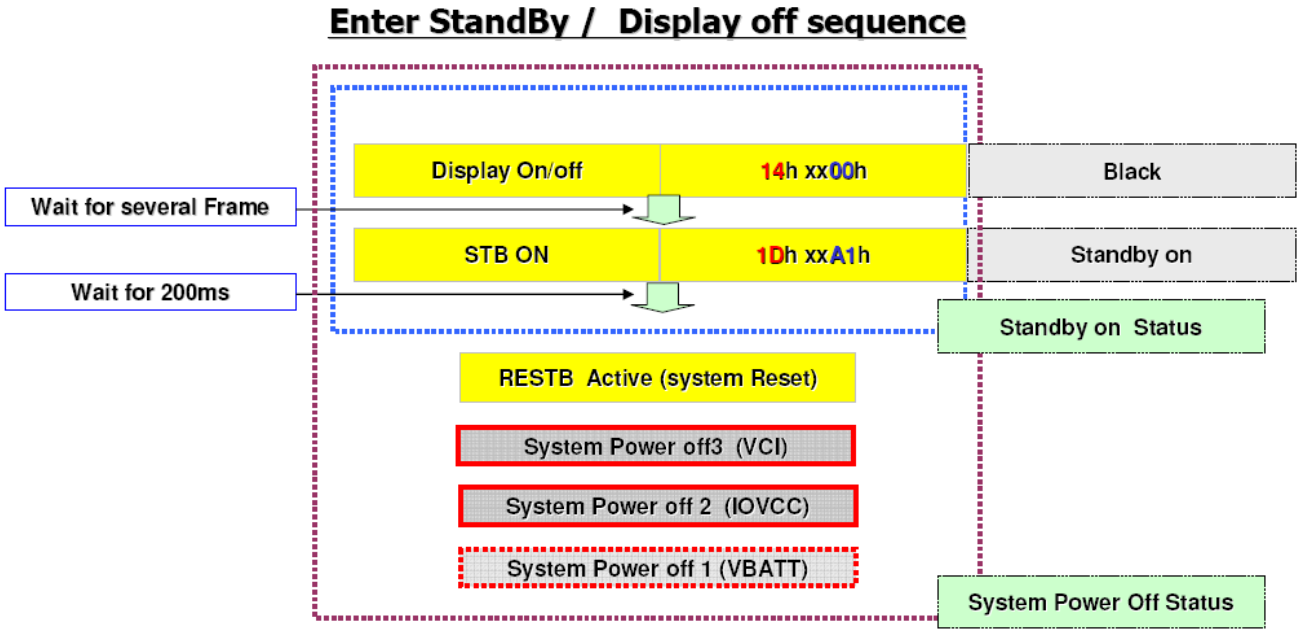
9-5 Analog Power Condition Set



9-6 Power OFF sequence(display off sequence)



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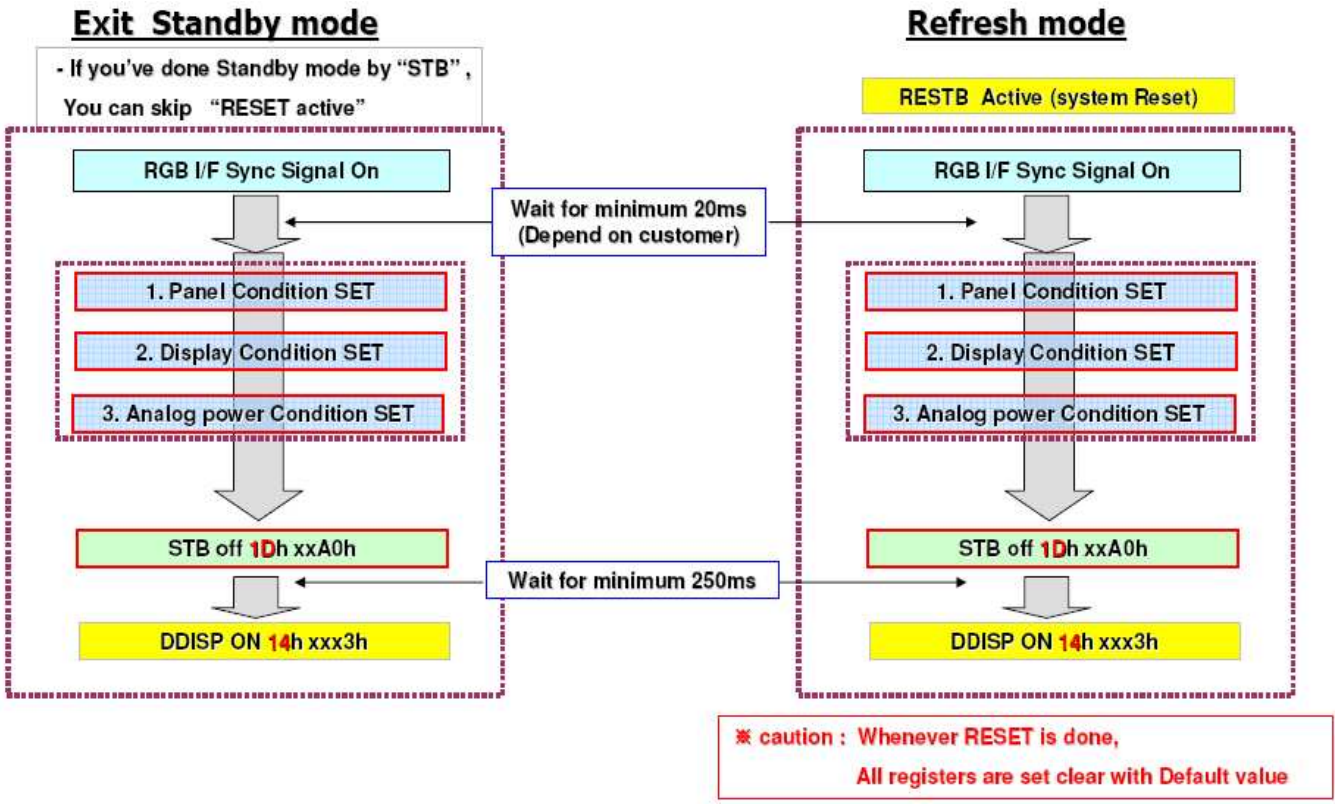
9-7 Exit Standby mode



9-8 Gamma Values

T.B.D

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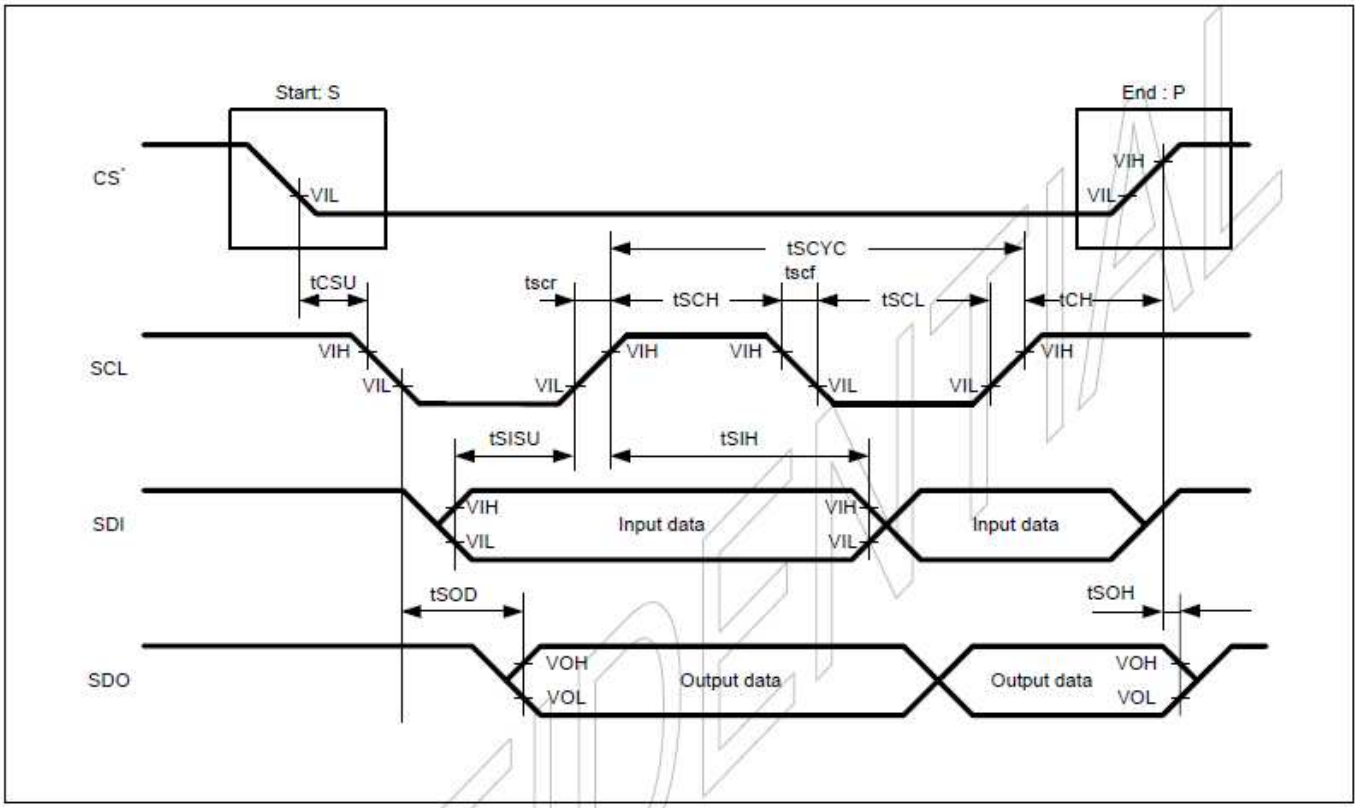
10. AC Characteristics

10-1 Clock synchronous serial interface timing characteristics



IOVCC=1.65 to 3.3V, VCC= 2.4 to 3.3V operation

Item	Symbol	Min.	Typ.	Max.	Unit
Write (received)	tSCYC	100	-	-	ns
Read (transmitted)	tSCYC	350	-	-	ns
Write (received)	tSCH	40	-	-	ns
Read (transmitted)	tSCH	150	-	-	ns
Write (received)	tSCL	40	-	-	ns
Read (transmitted)	tSCL	150	-	-	ns
Serial clock rise/fall time	tSCr, tSCf	-	-	20	ns
Chip select set up time	tCSU	20	-	-	ns
Chip select hold time	tCH	60	-	-	ns
Serial input data set up time	tSISU	30	-	-	ns
Serial input data hold time	tSIH	30	-	-	ns
Serial output data delay time	tSOD	-	-	130	ns
Serial output data hold time	tSOH	5	-	-	ns

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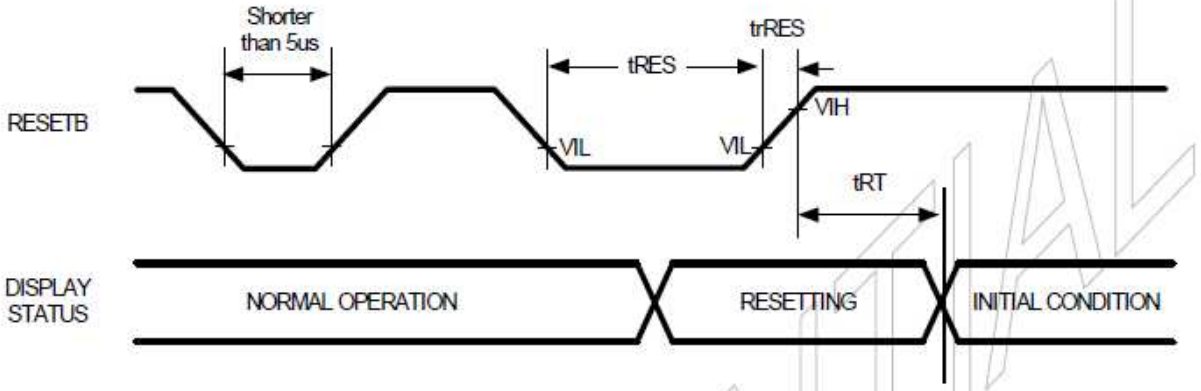
10-2 Reset Timing Characteristics



IOVCC=1.65 to 3.3V, VCC= 2.4 to 3.3V operation

Item	Symbol	Unit	Min.	Typ.	Max.
Reset low-level width	tRES	us	10	-	-
Reset rise time	trRES	us	-	-	2
Reset cancel	tRT	ms			1

Reset description

RESETB Pulse	Action
Shorter than 5us	Reset rejected
Longer than 10us	Reset
Between 5 ~ 10us	Reset starts

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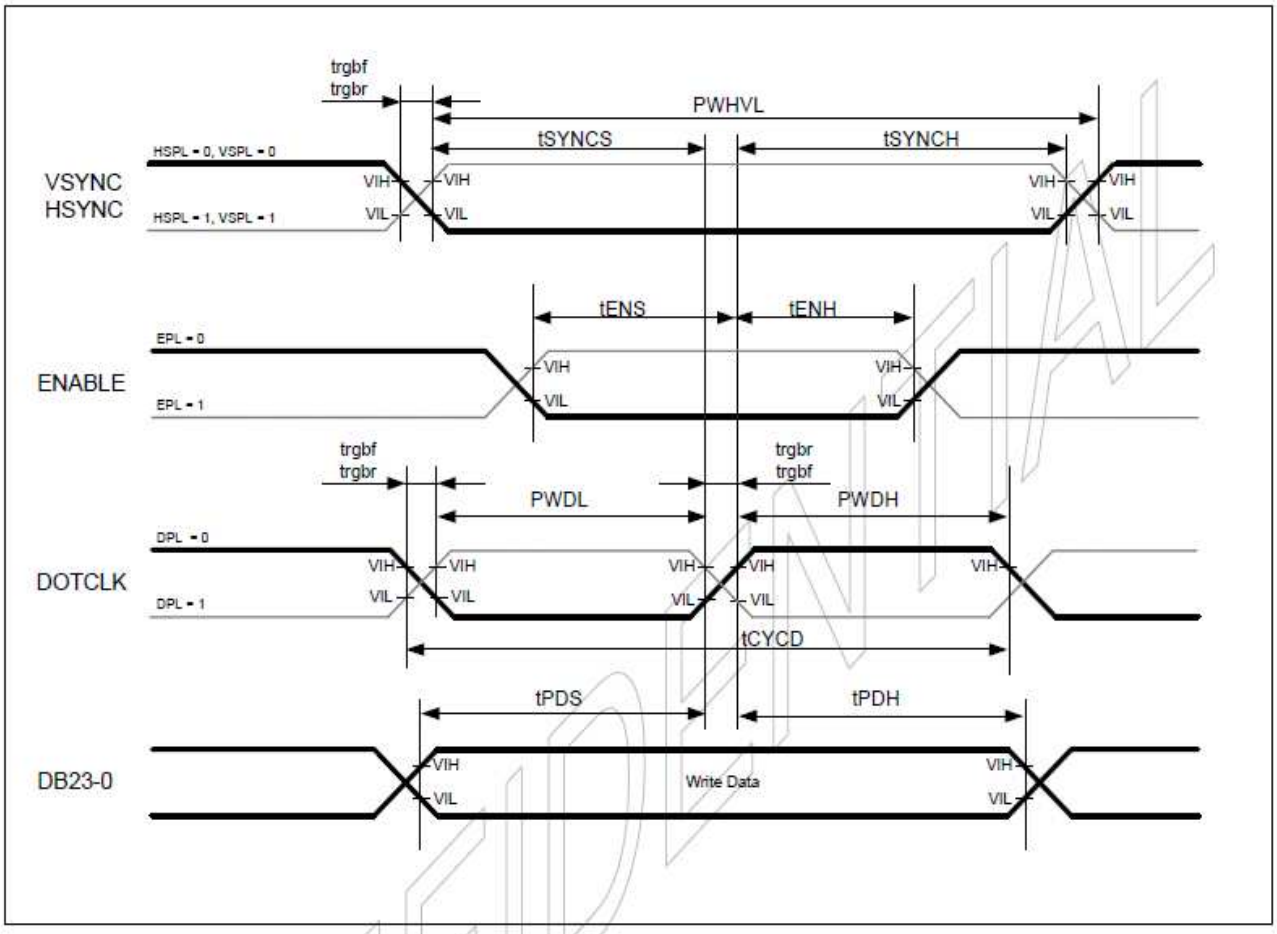
10-3 RGB Interface Timing Characteristics



RGB interface(16/18/24-bit), IOVCC=1.65 to 3.3V, VCC= 2.4 to 3.3V operation

Item	Symbol	Min.	Typ.	Max.	Unit
VSYNC / HSYNC "Low" level pulse width	PWHVL	1	-	-	DOTCLK
VSYNC / HSYNC set up time	tSYNCS	10	-	-	ns
VSYNC / HSYNC hold time	tSYNCH	10	-	-	ns
ENABLE set up time	tENS	10	-	-	ns
ENABLE hold time	tENH	10	-	-	ns
DOTCLK "Low" level pulse width	PWDL	10	-	-	ns
DOTCLK "High" level pulse width	PWDH	10	-	-	ns
DOTCLK cycle time	tCYCD	30	-	-	ns
Data set up time	tPDS	7	-	-	ns
Data hold time	tPDH	7	-	-	ns
DOTCLK, VSYNC, HSYNC rising, falling time	trgbr, trgbf	-	-	15	ns

Note 1) Above AC characteristics condition is in case of VCCL >= 1.8V irrespective of VCC.

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11. Quality Level

11-1. Environment Condition

The environmental conditions for inspection shall be as follows.

① Temperature & Humidity

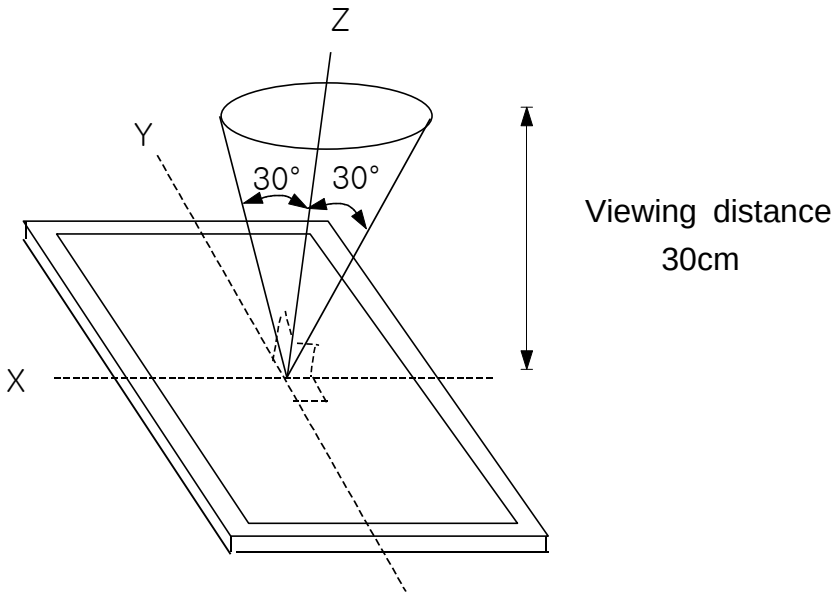
Room temperature : 22 ± 3℃

Humidity : 65 ± 20%RH

② Viewing distance : 30cm

Viewing angle(tolerance) : ± 30°

③ Visual Inspection Condition : 200cd/m^2 , 150± 50 lux



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11-2. Sampling Procedures for each item's acceptance table

Defect type	Sampling Procedures	AQL
Major Defect	MIL-STD-105D Inspection level Ⅰ normal inspection single sample inspection	0.65
Minor Defect	MIL-STD-105D Inspection level Ⅰ normal inspection single sample inspection	0.65

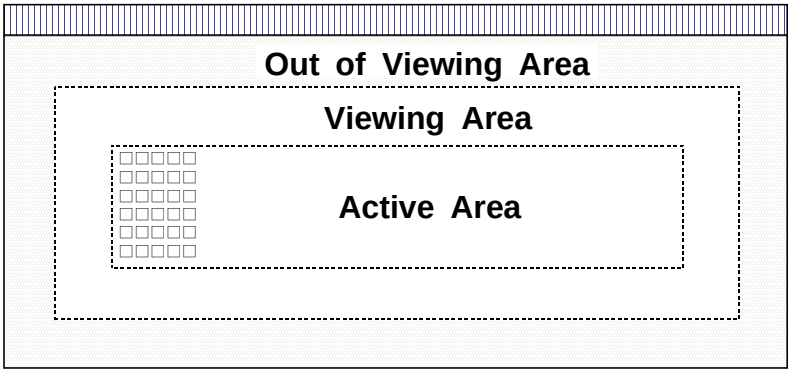
① Major defect

A major defect refers to a defect which may substantially degrade usability for product applications.

② Minor defect

A minor defects refers to a defect which is not considered to substantially degrade product application,or a defect which deviates from existing standards almost unrelated to the effective use of the product or its operation.

③ Defect application zone : Active Area + Viewing Area



Defect in "Out of View Area" Zone should not be judged.

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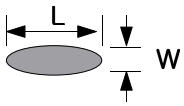
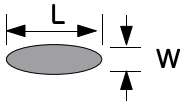
11-3. Inspection Item

<table>
<tr><th>No.</th><th>Item</th><th>Criterion for Defects</th><th>Defect Type</th></tr>
<tr><td>1</td><td>No Display</td><td>disallowance</td><td>Major</td></tr>
<tr><td>2</td><td>Irregular operating</td><td>disallowance</td><td>Major</td></tr>
<tr><td>3</td><td>Line defect</td><td>disallowance (Vertical line/ Horizontal line / Periodical line)</td><td>Major</td></tr>
<tr><td>4</td><td>Foreign material
 

Ø=(L+W)/2</td><td><table><tr><th>Size Ø (mm)</th><th>Acceptable number</th></tr><tr><td>Ø ≤ 0.1</td><td>Ignore</td></tr><tr><td>0.1 < Ø ≤0.20</td><td>1</td></tr><tr><td>0.20 < Ø</td><td>0</td></tr></table></td><td>Minor</td></tr>
<tr><td>5</td><td>Dark Dot/Bright Dot</td><td><table><tr><th>Defect mode</th><th>Acceptable number</th></tr><tr><td>Bright dot</td><td>0</td></tr><tr><td>Dark dot</td><td>2</td></tr><tr><td>Total dot defect</td><td>2</td></tr></table></td><td>Minor</td></tr>
<tr><td>6</td><td>Polarizer dent/bubble
 

Ø=(L+W)/2</td><td><table><tr><th>Size Ø (mm)</th><th>Acceptable number</th></tr><tr><td>Ø ≤ 0.1</td><td>Ignore</td></tr><tr><td>0.1 < Ø ≤0.3</td><td>3</td></tr><tr><td>0.3 < Ø</td><td>0</td></tr></table></td><td>Minor</td></tr>
<tr><td>7</td><td>Scratch on Polarizer (Line shape)

</td><td><table><tr><th>Width (㎜)</th><th>Length (㎜)</th><th>Acceptable number</th></tr><tr><td>W≤0.05</td><td>Ignore</td><td>Ignore</td></tr><tr><td>0.05 < W≤0.08</td><td>1.0 < L≤5.0</td><td>1</td></tr></table></td><td>Minor</td></tr>
</table>

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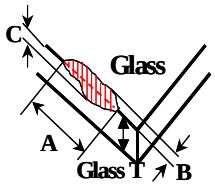
■ Inspection criterion (Continued)

<table>
<tr><td>8</td><td>Glass side/coner Crack
 
</td><td><table>
<tr><th>Item</th><th>Size</th></tr>
<tr><td>A</td><td>MAX 5.0mm</td></tr>
<tr><td>B</td><td>MAX 0.5mm</td></tr>
<tr><td>C</td><td>≤t (t: Thickness of glass)</td></tr>
</table></td><td>Minor</td></tr>
<tr><td>9</td><td>Glass crack (Progressive)</td><td>disallowance</td><td>Major</td></tr>
<tr><td>10</td><td>Surface Stain</td><td>Stain which can not clean on the display surface by using soft cloth and wiping gently.</td><td>Minor</td></tr>
</table>

※ Visual Inspection Condition ; 250cd/m^2 , 150± 50 lux
※ If not issued from the customer site or not described above , SMD follows internal guide line.

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12. Reliability

12-1 Items of reliability

: All test result of items should be judged in 2 hours recovery time at room temperature.

: All environmental operating reliability Item do test rolling pattern as below.

[Note] Brightness condition : 250cd/m^2

No	Item	Condition	Criterion
1	High Temperature Operating	70℃ 72hrs	After testing,cosmetic and electrical defects should not happen. (spec in)
2	Low Temperature Operating	-30℃ 72hrs	
3	High Temperature Storage	85℃ 72hrs	
4	Low Temperature Storage	-40℃ 72hrs	
5	Thermal Shock	- 40℃ ↔ 85℃ 72hrs	
6	Temperature Humidity Cycle	-10 ~ 65℃, 90~95% 72hrs	
7	Static Electricity	150pF 330Ω	- (Note1) After testing,cosmetic and electrical defects should not happen.
8	Static push	30N / Center point, 2mm/min	After testing,cosmetic and electrical defects should not happen.
9	4 point bending	5mm/min	B10 over 100MPa (face up/down)
10	Peel strength	50mm/min	MIN 5N/cm↑
11	Module combined (Height storage/Packing vibration/Packing drop)	0.5atm 2hr / 1.047Grms / Z axis(60min)_X,Y axis (30min) / 1corner, 3edge, 6face	After testing,cosmetic and electrical defects should not happen.

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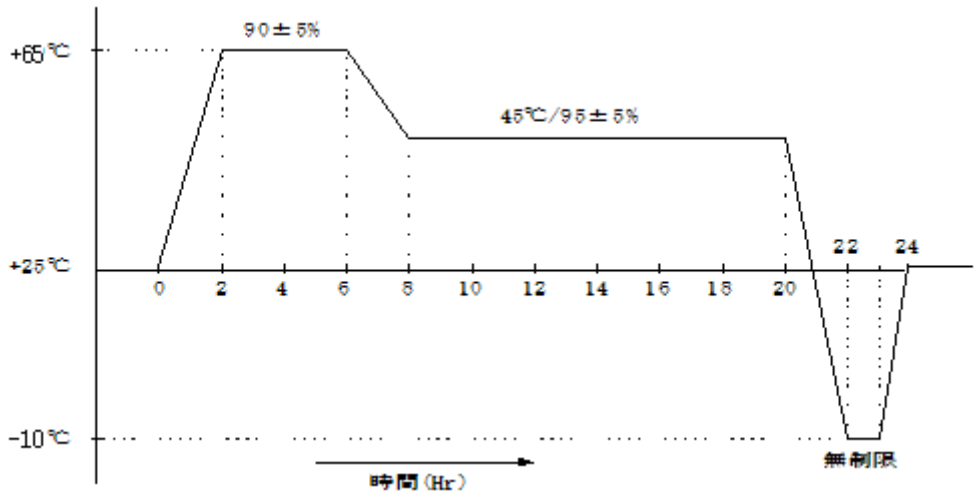
Note 1 Temperature Humidity Cycle Test



Note 2 ESD

In case of malfunction defect caused by ESD damage,if it would be recovered 새 normal state after resetting,it would be judged as a good part.

13. Handling Precautions

13-1. Mounting Method

The AMOLED panel of SAMSUNG SMD CO.,LTD. module consists of two slim glasses with polarizer which can easily get damaged. Since the module is constructed as to be fixed by utilizing fitting holes in the printed circuit board. Extreme care should be used when handling the AMOLED modules.

13-2. Caution of AMOLED Handling and Cleaning

When cleaning the display surface, use soft cloth solvent as recommended below and wipe gently.

◎ Isopropyl alcohol
◎ Ethyl alcohol
◎ Trichlorotriflorothane

Do not wipe the display surface with dry or hard materials that will damage the polarizer surface. Do not use the following solvent.

◎ Water
◎ Ketone
◎ Aromatics

Do not wipe ITO pad area with the dry or hard materials that will damage the ITO patterns.
Do not use the following solvent on the pad and prevent it from being contaminated.

◎ HCFC
◎ Soldering flux
◎ Chlorine(Cl), Sulfur(S)
◎ Spittle, FingerprintIf

If the product is not wrapped with a desiccant added pad, ITO pattern can be damaged by corrosion. SAMSUNG SMD CO,.LDT. suggests wrapping a product with adesiccant unless customers particularly indicate that they do not want it. In case ITO pattern corrodes due to the usage of chlorine, sulfur or customer's mishandling of the product, the responsibility lies with the customer.

13-3. Caution Against Static Charge

For AMOLED module, use C-MOS LSI drivers, therefore we recommend that you ;
Connect any unused input terminal to Vdd or Vss, do not input any signals before power is turned on, and ground your body, work/assembly areas, assembly equipment to protect against static electricity. It could occur static electricity when taping off the film which protects AMOLED.
Against static charge, you should make sure that the product is safe or not by experiment in advance.

13-4. Packing

◎ The packing principle is that AMOLED module should keep its packing condition at the time of delivery. When storing the AMOLED after unpacking, note the followings.
◎ AMOLED module is consisted of GLASS and assemblies. It should avoid pressure, strong impact, and being dropped from a height.

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◎ To prevent modules from degradation, do not operate or store them in a place where they are directly exposed to sunlight or high temperature/humidity.

13-5. Caution for Operation

◎ If you do not follow normal POWER ON , OFF sequence or abnormal operating, then AMOLED module can be damaged electro-optically and does not recover.

◎ Response time may extremely delay at a temperature lower than operating range, AMOLED does not normally operate at a high temperature. But this may recover at a proper temperature.

◎ When you set optimal operating voltage to AMOLED module, you can see the optimal contrast of AMOLED. So, add voltage controllable function at SET Module.

◎ AMOLED module may not display normally when twisting power or pressing power is added. Therefore you should secure AMOLED module maximum thickness at set assembly not to have any pressure affect AMOLED module.

◎ Electro-chemical reaction may occur when there is humidity on pad, therefore, you should use AMOLED Module below maximum operating humidity.

◎ AMOLED Module Power Vdd should be designed to protect surge current at SET Module.

◎ You should not damage connector and cable for AMOLED module assembly by force folding or by applying extreme power.

◎ AMOLED may not display normally when it is interfered by surrounding elements, therefore you should consider setting design not to damage AMOLED module by surrounding elements.

◎ To satisfy EMI standards, you should plan your design after considering emitting energy.

◎ We can not guarantee display characteristics outside viewing area, therefore your set window should be fixed into viewing area.

◎ Image-sticking may occur if AMOLED displays same image for a long time, so you need to make a change for AMOLED.

13-6. Storage

◎ Place in a dark place where neither exposure to direct sunlight or any fluorescent light is permitted and keep at room temperature & room humidity.

◎ Store with no contact with polarizer surface.
[It is recommended to store them as they have been contained in the inner container when we delivered them.]

13-7. Safety Precautions

◎ Disassembly or modification may cause electric shock, damages to sensitive part inside of the AMOLED module, dust adhesion, or scratches on the display part.

◎ In the event that the contents of AMOLED module are on skin, wipe them with a paper towel or gauge and wash the part well, and receive medical attention if necessary.

◎ Do not use the AMOLED module for the special purpose besides display units.

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◎ Be careful of the glass chips that may cause injury to fingers of skin, when the display part is broken.

13-8. Precautions before Use

You should discuss the following case with SAMSUNG SMD CO., LTD.

◎ in case of any questions about contents of this "Specification For Approval".

◎ in case of occurring new problems not mentioned at this "Specification For Approval".

◎ in case of your request about income inspection specification change.

◎ in case of occurring new problem at your driving test.

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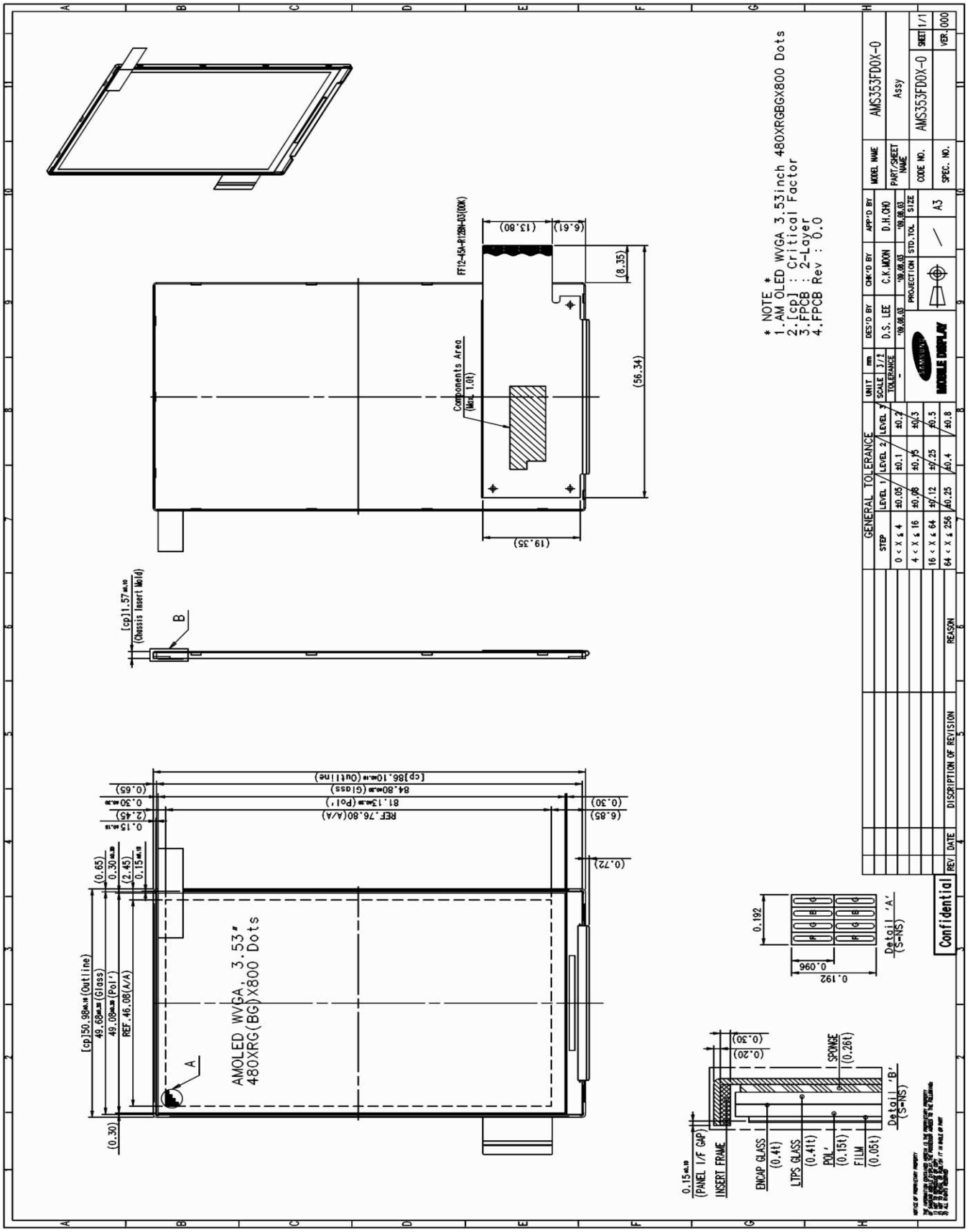
14. Drawing

14-1. Product Drawing



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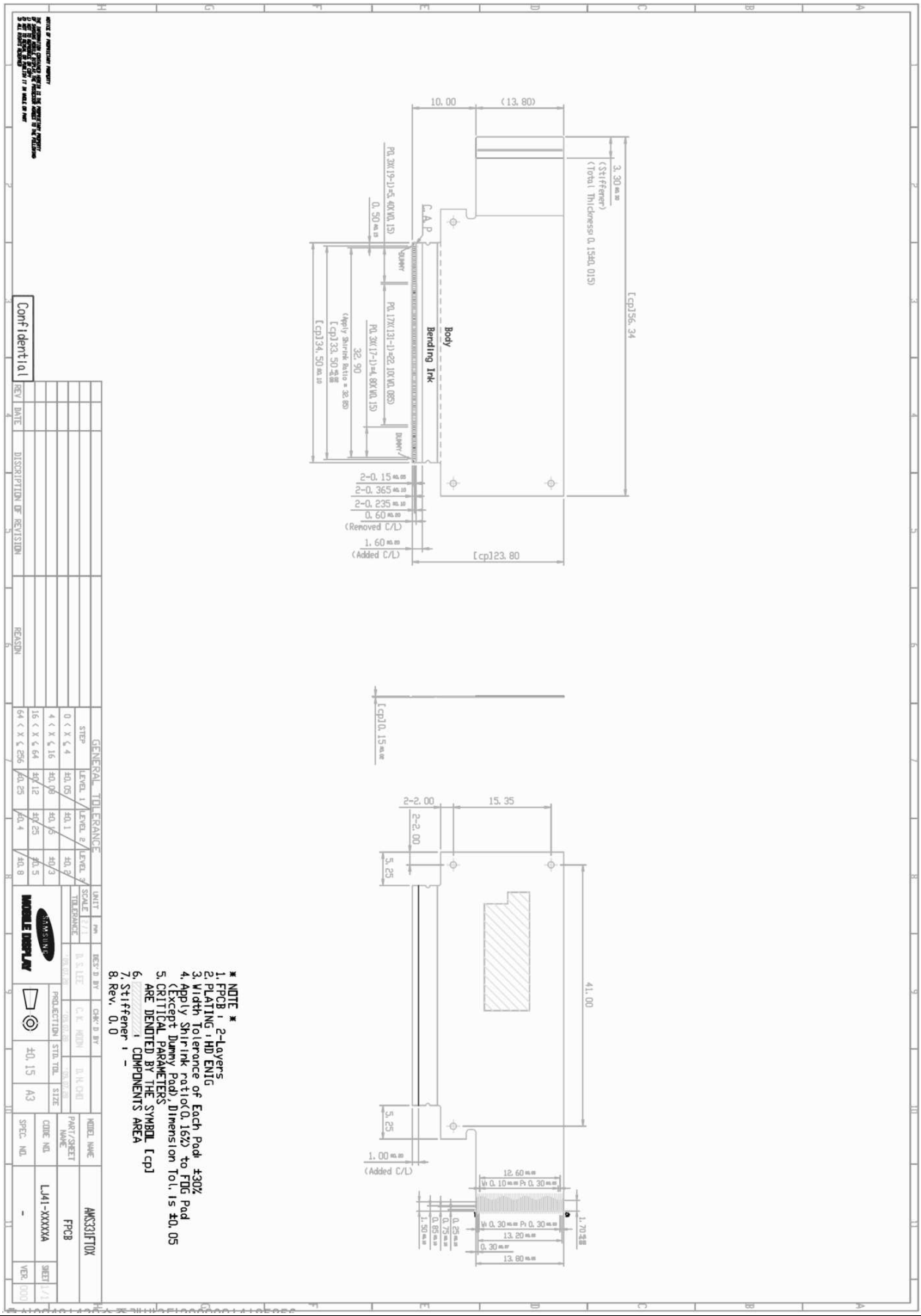
14-2. FPCB Drawing



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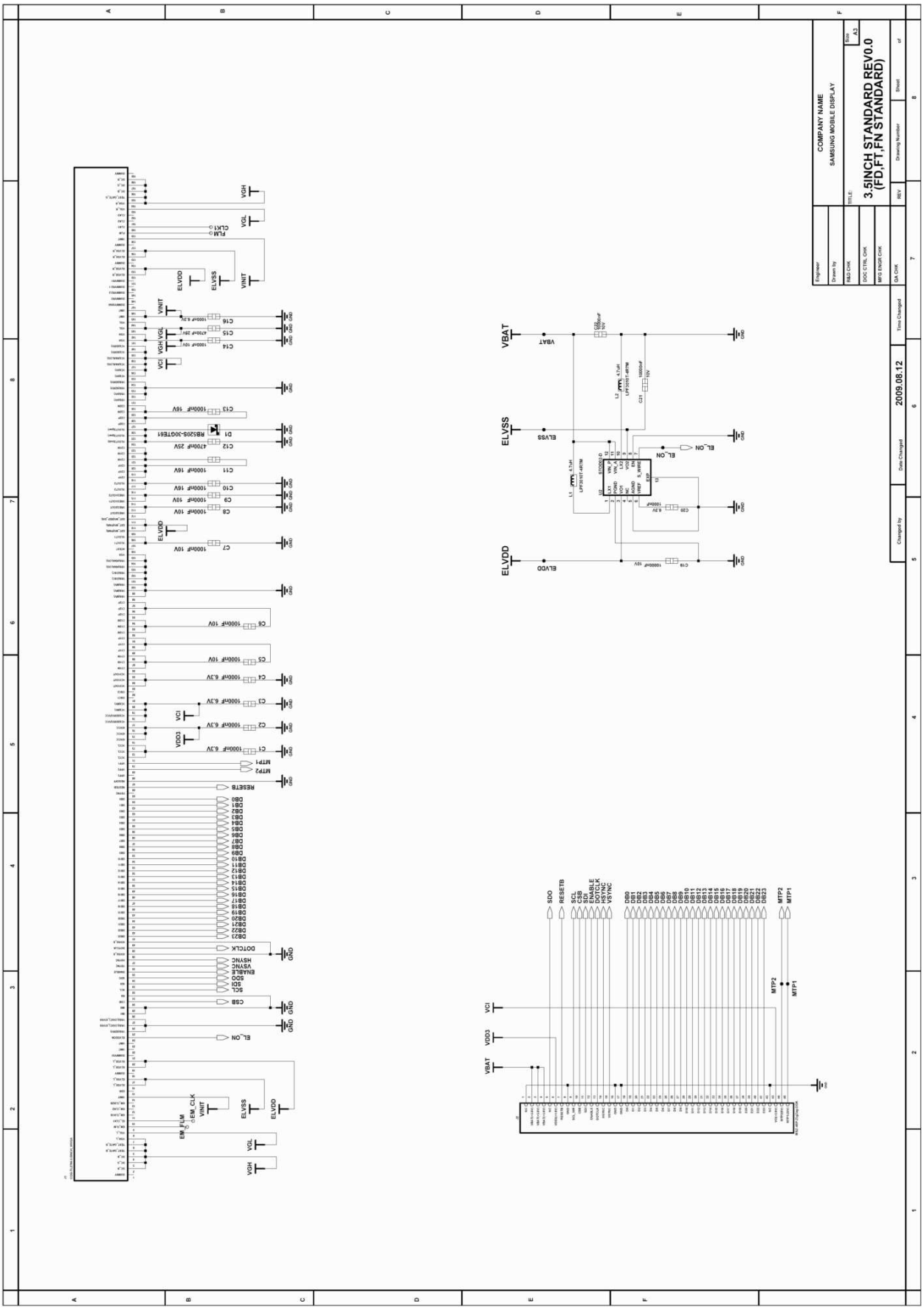
14-2-1. Schematic Diagram



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14-2-2. Electronic Part List

PLACEMENT SPECIFICATION	DESIGNED	APPROVED
	C.S.SON 2009.08.12	H.S.PARK 2009.08.12

2. PART LIST

NO	CATEGORY	REFERENCE	SPECIFICATION	MAKER	자재코드	REMARK
1	DIODE-SCHOTTKY	D1	RB520S-30GTE61,30V,200mA,SOD-523	ROHM	0404-001344	
2	C-CER,CHIP	C10 , C11 , C13	1000nF, 10%, 16V, X5R, 1005	Note #1	2203-006841	
3	C-CER,CHIP	C1 ~ C4 , C16 , C20	1000nF, 10%, 6.3V, X5R, 1005	Note #1	2203-006399	
4	C-CER,CHIP	C5 ~ C9 , C14	1000nF, 10%, 10V, X5R, 1005	Note #1	2203-006562	
5	C-CER,CHIP	C19 , C21 , C22	10000nF, 10%, 10V, X5R, 2012(0.95T)	Note #2	2203-006837	
6	IC-DC/DC CONVERTER	U2	STOD02-D, DFN, 12P	ST Micro	1203-005271	
7	C-CER,CHIP	C12 , C15	4700nF, 10%, 25V, X5R, 2012(0.95T)	Note #1	2203-006885	
8	INDUCTOR-SMD	L1 , L2	LPF3010T-4R7M, 4.7uH, 20%, 2828	ABCO	2703-002653	
9	Ziff Connector PAD	J2	45pin ZIGZAG pad_FF12-45A-R12BN-D3	-	-	
10	FPCB - MAIN	-	2L , STD MFPCB REV0.0	SI-FLEX	LJ41-0XXXXA	

3. Notes

* SOLDER CREAM: SENJU (M706-GRN360-K2-V)
* Note #1 : SEM , AVX/KYOCERA , MURATA , TAIYO YUDEN , TDK
* Note #2 : SEM , AVX/KYOCERA , TAIYO YUDEN , TDK

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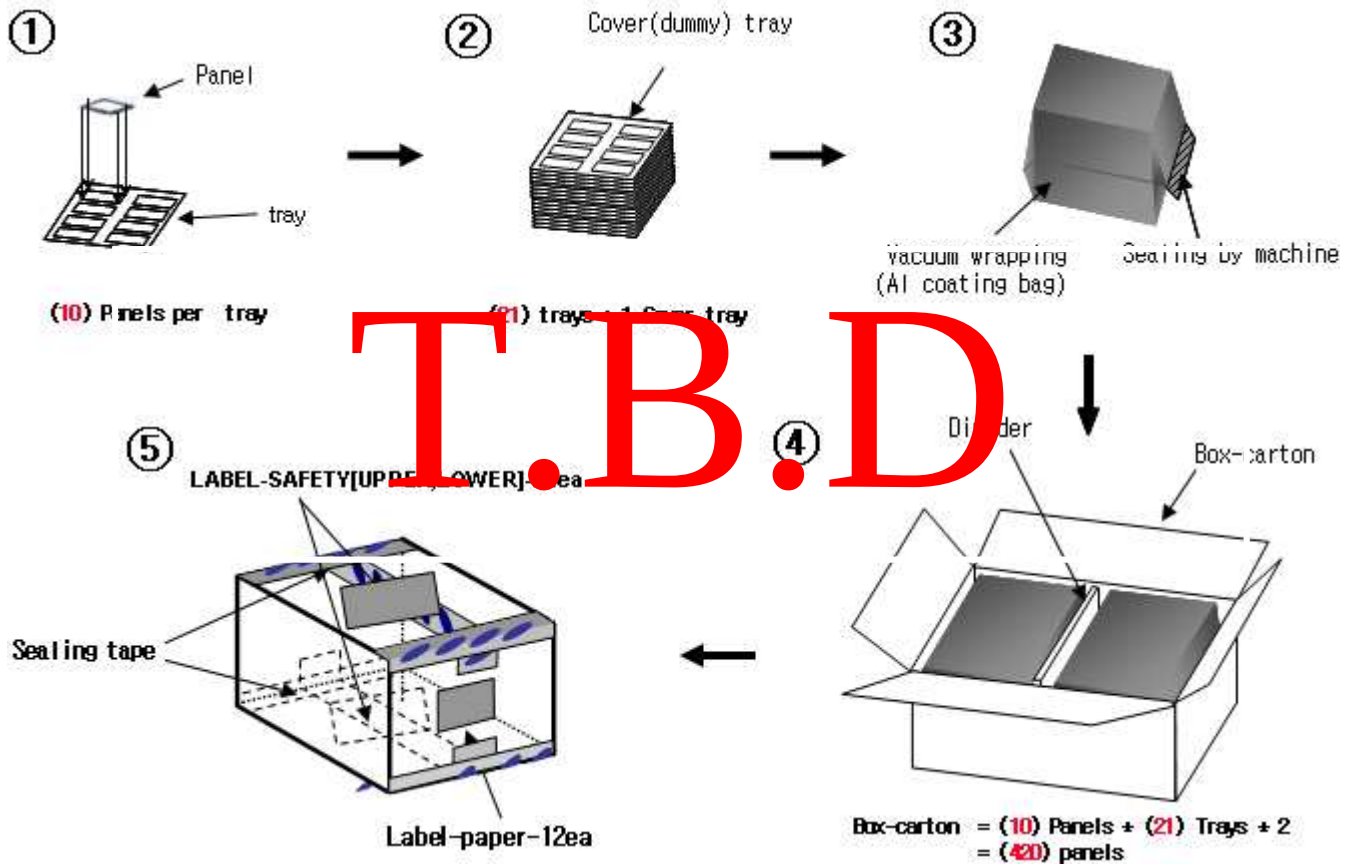
ASSY' CODE : LJ94-0XXXXA	PRODUCT NO : STD 3.1" 3.3" 3.5"	REV 0.0	PAGE: 1/1

14-3. Packing specification

14-3-1. Packing a Carton Box (C-Type)

Part	Code	Quantity	Module (Panel)
Tray	T.B.D	T.B.D * 2	T.B.D / Tray
Cover Tray	T.B.D	2 EA	0 / Tray
Packing-Bag	6902-001053	2 EA	T.B.D/ Bag
Divider	LJ69-02093A	1 EA	-
Box-Carton	LJ69-02107A	1 EA	T.B.D / Box-Carton



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Note

(1) Total : Box-carton approx. : (T.B.D)kg

(2) Size :583(W) x 388(D) x 210(H)

(3) Place the panels in the tray facing up direction.

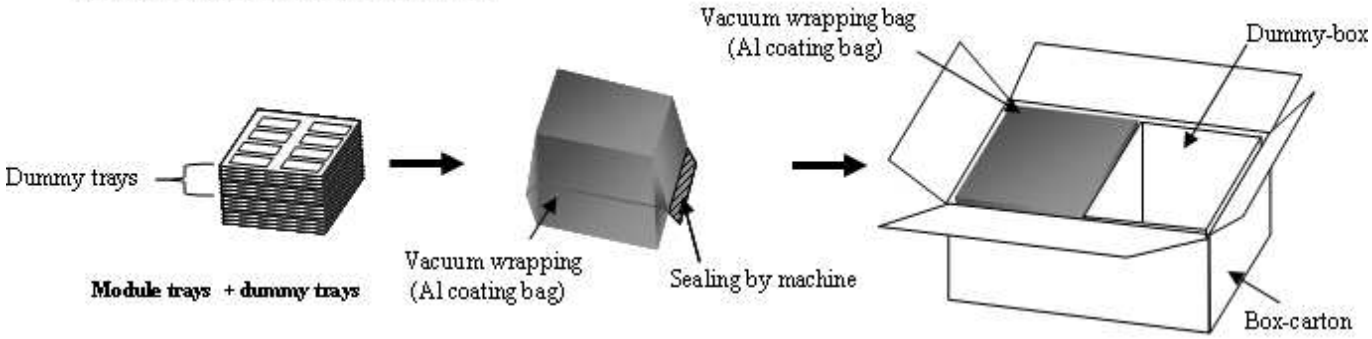
(4) Stack the trays and cover (dummy) tray.

(5) Wrap the Al coating bag by vacuum sealing machine.

(6) Put the bags in the box-carton with divider.

(7) Seal the box-carton and affix the label-safety.

※ Packing spec. for small quantities



Note

(1) When package quantity is small, panels containing trays are stacked the bottom, and dummy trays are stacked at the top of package, then wrap the Al coating bag by vacuum sealing machine

(2) When only one tray bag (Vacuum wrapping bag) is available, dummy box is inserted into the vacant space

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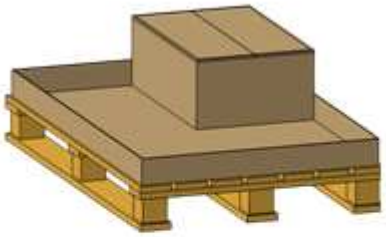
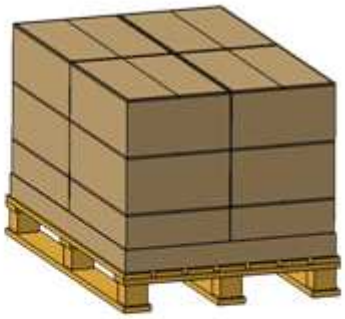
14-3-2. Packing a Pallet Box

Part	Quantity
Pallet	1 EA
Sleeve Bottom	1 EA
Sleeve Box	1 EA
Sleeve Cap	1 EA

①

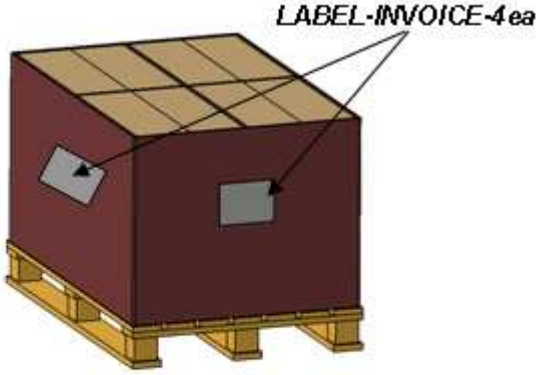


- Load sleeve bottom on a pallet



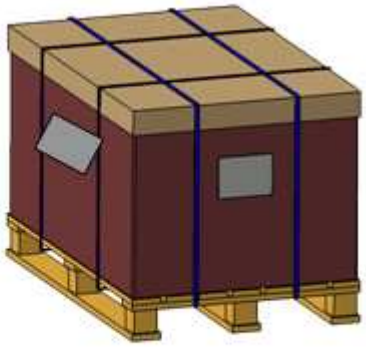
- Load 12EA carton boxes

③



- Cover a packing box

④



- Cover a sleeve cap
- Taping and Warping
- Label-Invoice 4EA
- Label-safety 24EA

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14-3-3. Packing tray drawing

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15. Hazardous material report

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