



Preliminary Product Specification

Module name: C0283QGLD-T

Issue date: 2008/12/03

Version: 2.2

Customer		
Approved by Customer		
Approved by CMEL		
PD Division	ENG Division	QA Dept

Note:

1. The information contained may be changed without prior notice before approval. It is therefore advisable to contact Chi MEI EL Corp. before designing your product.



Reversion History

Version	Date	Page	Description
Ver.1.0	2007/11/5	All	Specification was first issued
Ver.1.1	2007/11/5	13	CIE(Red_y) 0.34->0.33, CIE(Red_y) 0.28->0.29
Ver.1.2	2007/11/7	9	Add Image Data format (CPU Interface)
		11	Add RS expression
		13	Add Image Data format (RGB Interface)
		17~19	Add Capacitance Information
Ver.1.3	2007/11/9	20	Mod External Drawing
Ver.1.4	2007/11/22	22	Mod Packing Drawing
Ver.1.5	2007/11/28	14	Mod Electro-Optical Characteristic, Vgh/Vgl
Ver.1.6	2007/12/06	14	Mod Electro-Optical Characteristic
		21	Mod Reliability Test
		14	Mod Electro-Optical Characteristic, Vgh/Vgl
Ver1.8	2008/04/02	14	Mod Electro-Optical Characteristic(CIE: Ry, Gx)
		20	Mod External Drawing
		21	Mod Low Temp. Operation (-20C to -40C)
		14	Modify Electro-Optical Characteristic (CIE_Gx)
Ver.2.0	2008/05/30	4	Modify Absolute Maximum ratings
Ver.2.1	2008/11/05	4	Mod Absolute maximum ratings (Modify to the Panel Operating Condition)
		11	Instruction data => Parameter data
		13	Modify the timing chart of RGB
		14	Add Gamma Setting Group Code
		18	Mod Pin-46 to be Output Pin from IC
		18	Add Notice of Pin-45/46/47/48 that: SDI=SDIN、SDO=SDOUT CSB=CS=NCS、RW_WRB=SCL
		20	Add "Test and measurement conditions"
		21	Add Notice of "Handling & Storage"
		22	Add Label (Optional) ID Position on Drawing
		23	Mod Package by belt
Ver.2.2	2008/12/03	14	Mod Lifetime (From 20K to 30K)



1 Purpose:

This documentation defines general product specification for OLED module supplied by CMEL. The information described in this technical specification is tentative. Please Contact CMEL's representative while your product is modified.

2 General Description:

- Driving Mode: Active Matrix.
- Color Mode: Full Color (262K color)
- Driver IC: S6E63D6, COG Assembly
- Interface:
 1. MPU i80-system 18-/16-/9-/8-bit bus interface
 2. MPU i68-system 18-/16-/9-/8-bit bus interface
 3. Serial data transfer interface (SPI)
 4. RGB 18-/16-/6-bit bus interface (DOTCLK, VSYNC, HSYNC, DE, DB17-0)
- Application: Cell phone etc..
- RoHS Compatible

3 Mechanical Data:

No.	Items	Specification	Unit
1	Diagonal Size	2.83"	Inch
2	Resolution	240 x RGB x 320	
3	Pixel Pitch	0.060 × 0.180	mm
4	Active Area	43.2 x 57.6	mm
5	Outline Area	49.1 x 67.3	mm
6	Thickness	1.75 (Typ.), 1.9 (Max)	mm
7	Weight	16	g



4 Absolute Maximum ratings:

4.1 Absolute ratings of environment :

Item	Symbol	Value		Unit	Note
		Min.	Max.		
Storage Temperature	T _{ST}	-40	+80	°C	(1)
Operating Ambient Temperature	T _{OP}	-20	+60	°C	(2)

Note (1) The storage duration for both critical temperature (-40 & 80°C) meet reliability test criteria.

(2) The operating duration for both critical temperature (-20 & 60°C) meet reliability test criteria.

4.2 Electrical absolute ratings :

Item	Symbol	Unit	Value
Power supply voltage 1	AR_Vdd	V	+4.6V +/- 0.05
Power supply voltage 2	AR_Vss	V	-4.4V +/- 0.1
Power supply voltage 3	VCI	V	+2.5 ~ +3.3
Power supply voltage 4	VDD3 (IOVcc)	V	+1.65 ~ +3.3



5 Electrical Characteristic:

5.1 5.1 DC Characteristic

(Ta = -40℃ ~ 85℃, VSS = 0V)

Characteristic	Symbol	CONDITION	MIN	TYP	MAX	Unit	Note
Driving voltage	VGH	-	3.0	-	8.0	V	
	VGL	-	-8.0	-	-3.0	V	
	VINT	-	-4.0	-	-1.0	V	
Logic Operating Voltage	RVDD	-	1.45	1.5	1.55	V	
Operating frequency	fosc	Frame frequency = 60Hz Display line = 320 line	1161.1	1290.2	1419.3	kHz	
1st booster input voltage	VCI1	-	2.1	-	2.75	V	
1st booster output voltage	VLOUT1	Without load	+4.6	-	+5.5	V	
1st booster output efficiency	VLOUT1	I _{VLOUT1_LOAD} = 2.3mA	90	95	-	%	
2nd booster output voltage	VLOUT2	Without load		7.8		V	
2nd booster output efficiency	VLOUT2	I _{VLOUT2_LOAD} = 0.1mA	90	93	-	%	
3rd booster output voltage	VLOUT3	Without load	-	-10.6	-	V	
3rd booster output efficiency	VLOUT3	I _{VLOUT3_LOAD} = 0.1mA	90	93	-	%	
Source Output voltage deviation (channel to channel)	-	-	-	±5	-	mV	
Source Output voltage difference (nearest channel)	-	20 Gray Pattern	-	5	-	mV	
Output voltage deviation (Chip to Chip)	-	-	-	±15	-	mV	
Output voltage deviation (Chip to Chip)	-	-	-	±15	-	mV	
Source driver output voltage range	Vso	-	0.3	-	4.2	V	
Driving voltage	dVGH	voltage deviation	-	-	300	mV	
	dVGL	voltage deviation	-	-	300	mV	
Current consumption during normal operation	IVDD3	No load, Ta = 25 °C	-	1.0	5.0	uA	*1
	IVCI		-	3.5	4.0	mA	
Stand by mode current	IVDD3	Ta = 25 °C	-	0.1	5.0	uA	
	IVCI		-	10	20	uA	

Note

1. VDD3=1.8V, VCI=2.8V, fosc=1290.2KHz (320 display line), NL[5:0]="10_1000", SAP[2:0]="101", DC22[2:0]="100", DC12[2:0]="010", BT[1:0]=10, VC[3:0]="1000", VGH[4:0]="10100", VGL[4:0]="10100", VINT[3:0]="0101"



Characteristic	Symbol	CONDITION	MIN	TYP	MAX	Unit	Note
Power Supply Voltage	VCI	Operating Voltage	2.5	2.8	3.3	V	
Power Supply Voltage	VDD3	I/O supply Voltage	1.65	1.8	3.3	V	
Logic High level input voltage	V _{IH}		0.7*VDD3		VDD3	V	
Logic Low level input voltage	V _{IL}		0.0		0.3*VDD3	V	
Logic High level output voltage	V _{OH}	IOUT = -1mA	0.8*VDD3		VDD3	V	
Logic Low level output voltage	V _{OL}	IOUT = +1mA	0.0		0.2*VDD3	V	
Analog High level output voltage	EL_ON _{OH}	8uA	1.8		VCI	V	
Analog Low level output voltage	EL_ON _{OL}	8uA	0		0.3	V	

Table 81. DC Characteristics 3

(VDD3 = 1.65~3.3V, VCI = 2.5~3.3V, Ta = 25℃)

Characteristic	Symbol	CONDITION	MIN	TYP	MAX	Unit	Note
VREG1OUT			4.185	4.2	4.215	V	

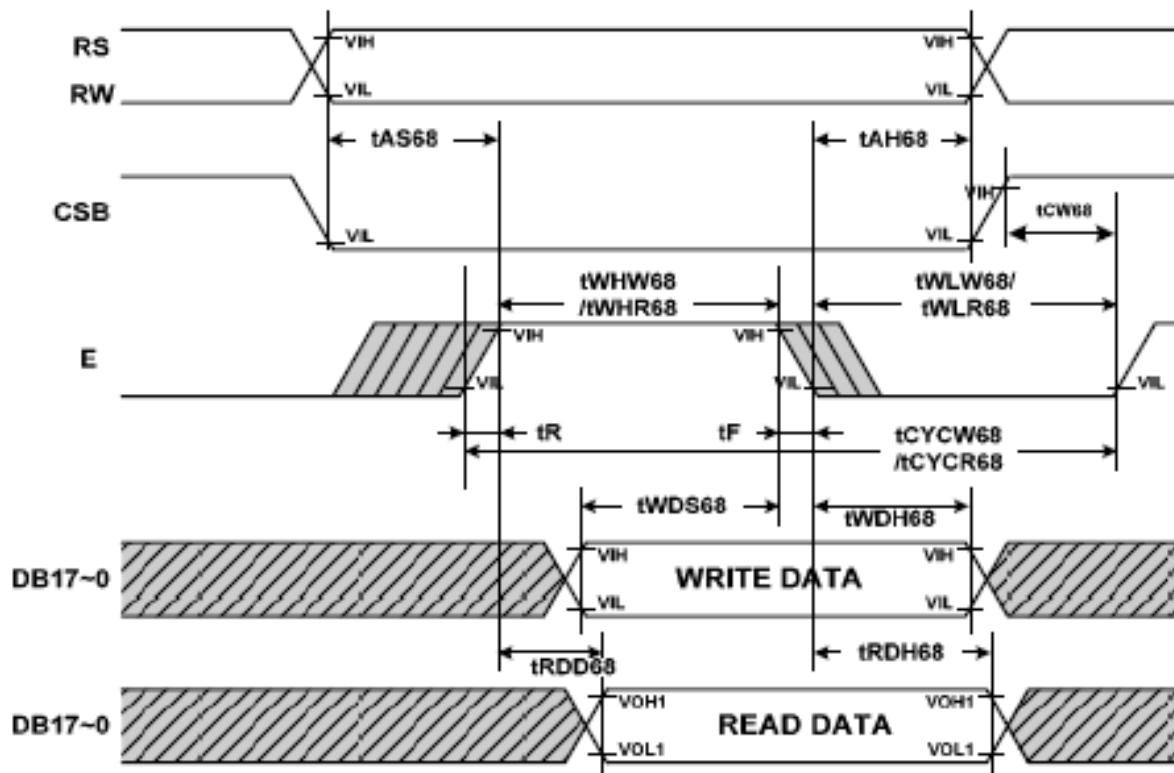


5.2 5.2 AC Characteristic

5.2.1 5.2.1 CPU interface M68

(VDD3 = 1.65 to 3.3V, TA = -40 to +85°C)

Characteristic		Symbol	Specification		Unit
			Min.	Max.	
Cycle time	Write	tCYCW68	85	-	ns
	Read	tCYCR68	500	-	ns
Pulse rise / fall time		tR, tF	-	15	ns
Pulse width low	Write	tWLW68	27.5	-	ns
	Read	tWLR68	250	-	ns
Pulse width high	Write	tWHW68	27.5	-	ns
	Read	tWHR68	250	-	ns
RS,RW to CSB, E setup time		tAS68	10	-	ns
RS,RW to CSB, E hold time		tAH68	2	-	ns
CSB to E time		tCW68	15	-	ns
Write data setup time		tWDS68	40	-	ns
Write data hold time		tWDH68	15	-	ns
Read data delay time		tRDD68	-	200	ns
Read data hold time		tRDH68	5	-	ns



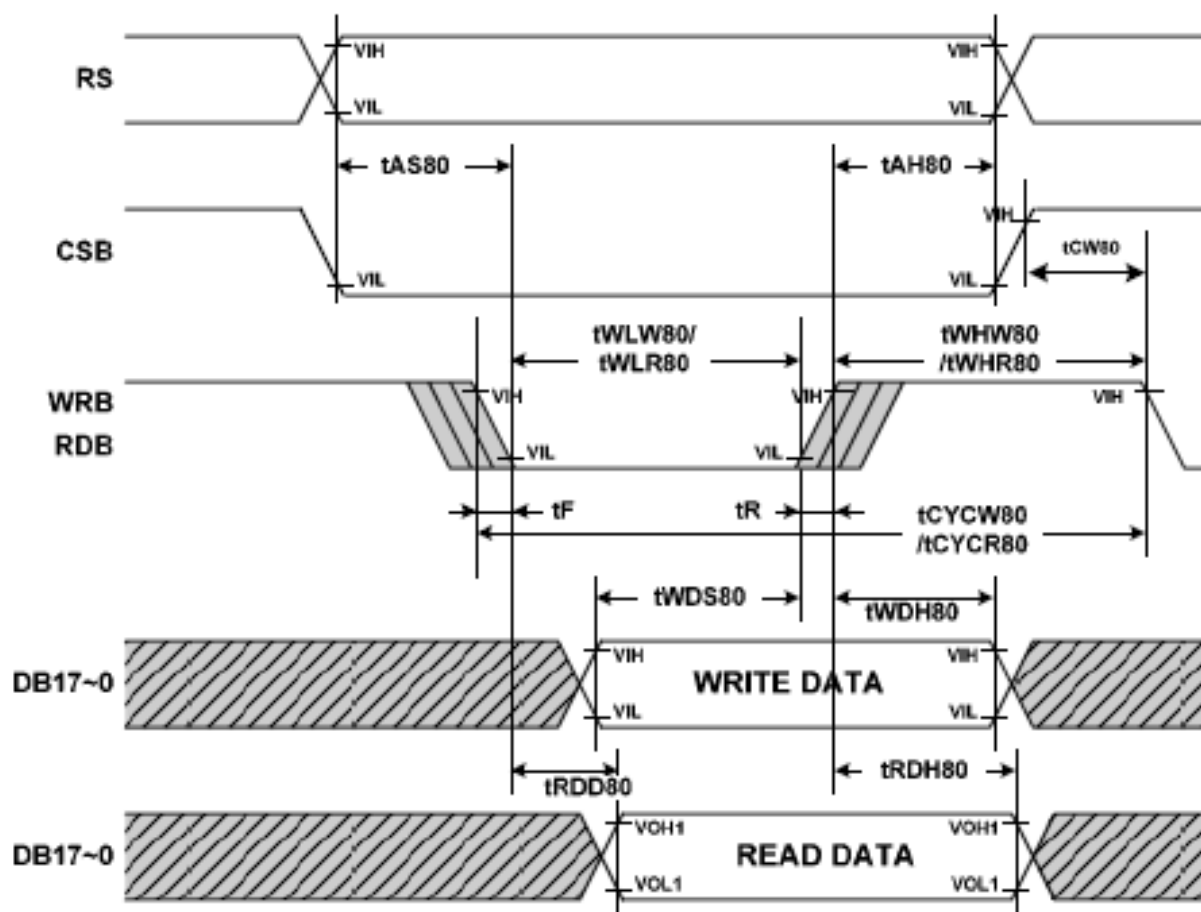
Note : tWHW68 and tWHR68 are determined by the overlap period of low CSB and high E



5.2.2 5.2.2 CPU interface M80

(VDD3 = 1.65 to 3.3V, TA = -40 to +85°C)

Characteristic		Symbol	Specification		Unit
			Min.	Max.	
Cycle time	Write	tCYCW80	85	-	ns
	Read	tCYCR80	500	-	ns
Pulse rise / fall time		tR, tF	-	15	ns
Pulse width low	Write	tWLW80	27.5	-	ns
	Read	tWLR80	250	-	ns
Pulse width high	Write	tWHW80	27.5	-	ns
	Read	tWHR80	250	-	ns
RS to CSB, WRB(RDB) setup time		tAS80	10	-	ns
RS to CSB, WRB(RDB) hold time		tAH80	2	-	ns
CSB to WRB(RDB) time		tCW80	15	-	ns
Write data setup time		tWDS80	40	-	ns
Write data hold time		tWDH80	15	-	ns
Read data delay time		tRDD80	-	200	ns
Read data hold time		tRDH80	5	-	ns



Note : tWLW80 and tWLR80 are determined by the overlap period of low CSB and low WRB or low CSB and low RDB



Image Data format for 18bit CPU interface (262k color)

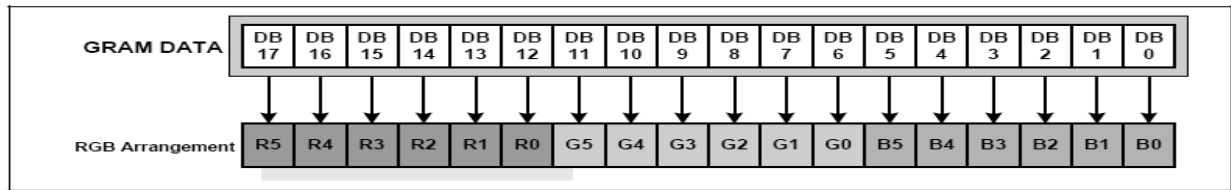


Image Data format for 16bit CPU interface (65k color)

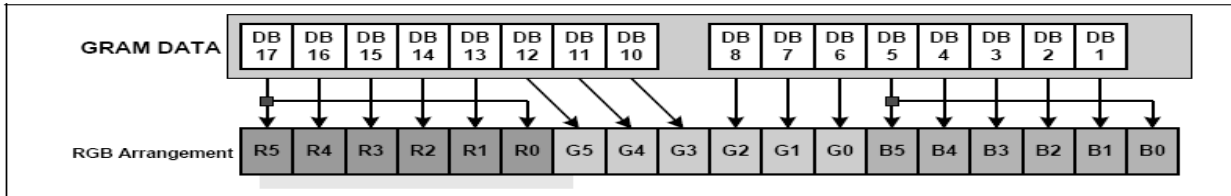


Image Data format for 9bit CPU interface (262k color)

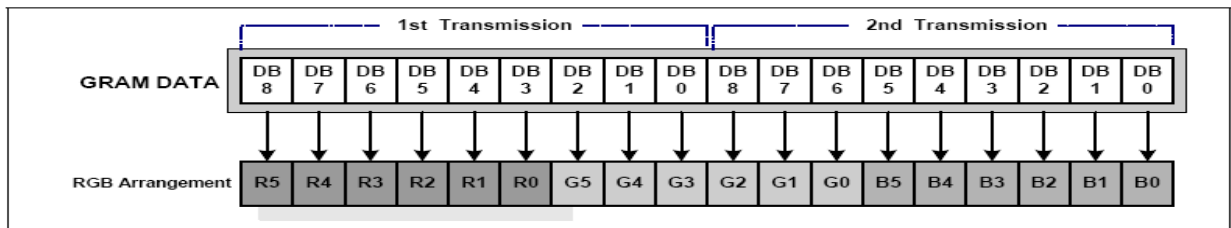
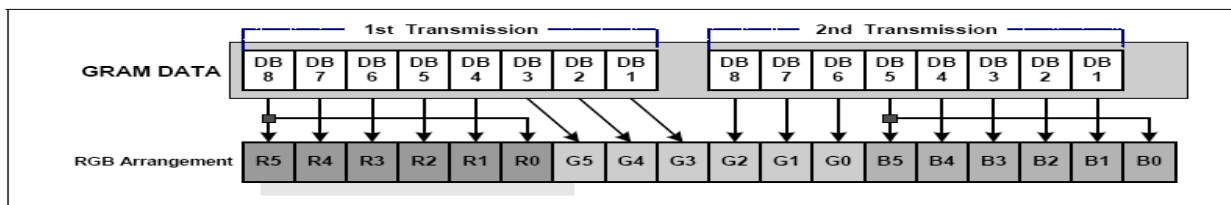


Image Data format for 8bit CPU interface (65K color)

Case 1:



Case 2:

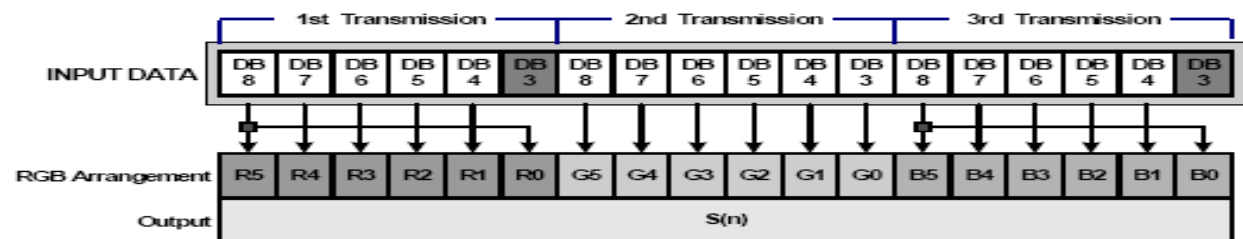
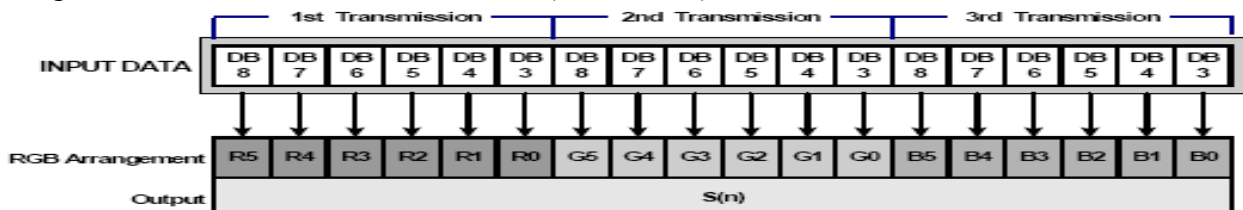


Image Data format for 8bit CPU interface (262K color)

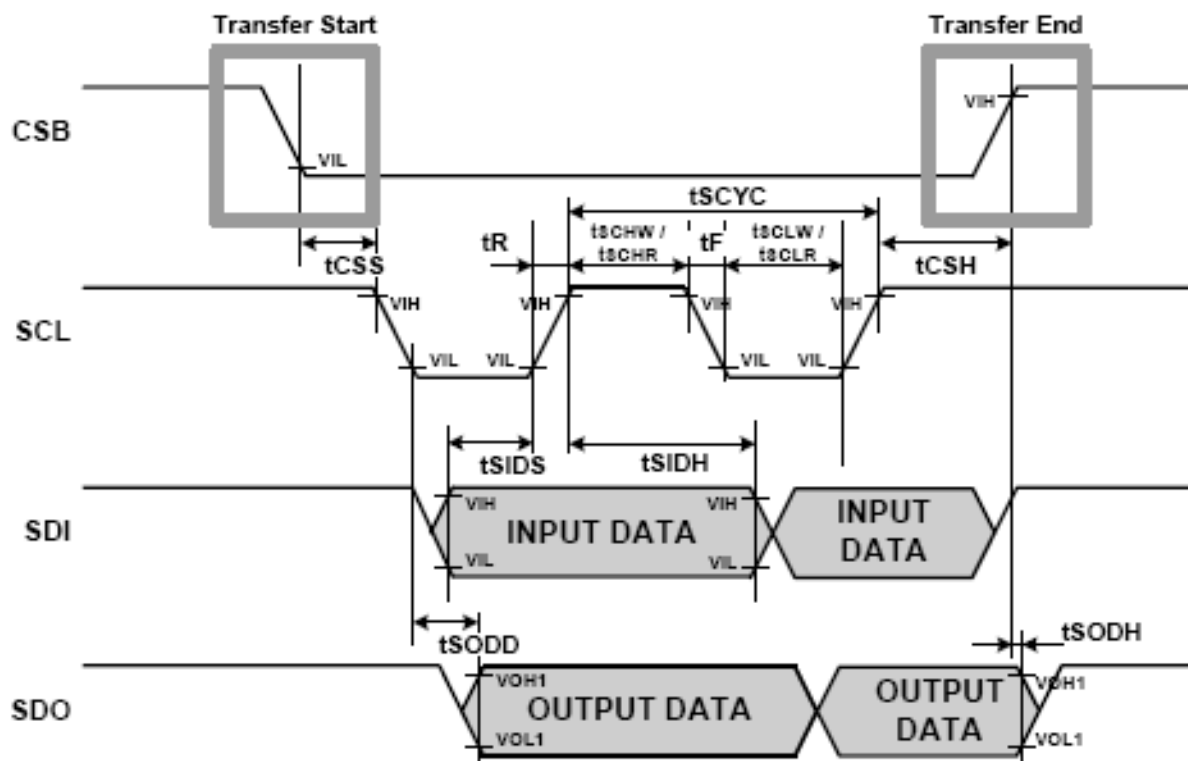


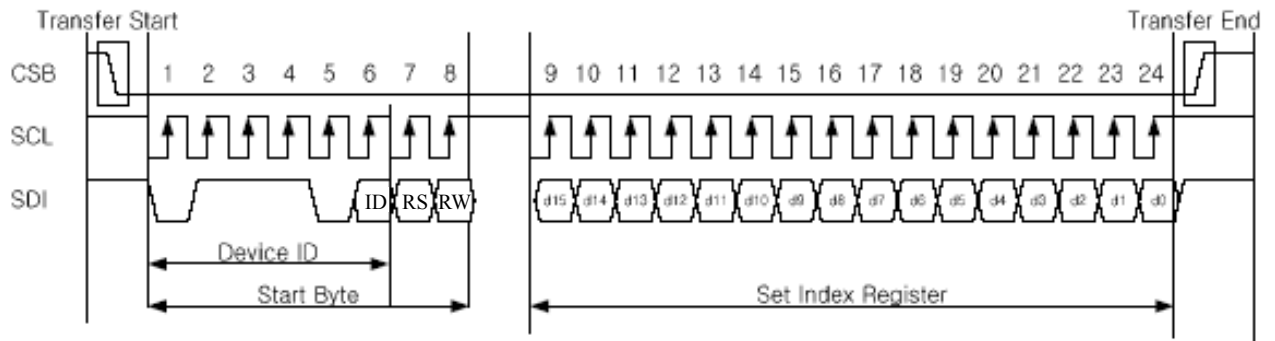


5.2.3 SPI Interface

(VDD3 = 1.65 to 3.3V, TA = -40 to +85°C)

Characteristic	Symbol	Specification		Unit
		Min.	Max.	
Serial clock write cycle time	tSCYC	130	-	ns
Serial clock read cycle time	tSCYC	250	-	ns
Serial clock rise / fall time	tR, tF	-	15	ns
Pulse width high for write	tSCHW	50	-	ns
Pulse width high for read	tSCHR	110	-	ns
Pulse width low for write	tSCLW	50	-	ns
Pulse width low for read	tSCLR	110	-	ns
Chip select setup time	tCSS	20	-	ns
Chip select hold time	tCSH	60	-	ns
Serial input data setup time	tSIDS	30	-	ns
Serial input data hold time	tSIDH	30	-	ns
Serial output data delay time	tSODD	-	130	ns
Serial output data hold time	tSODH	5	-	ns





(Note) RS = 0 : Index data
RS = 1 : Parameter data



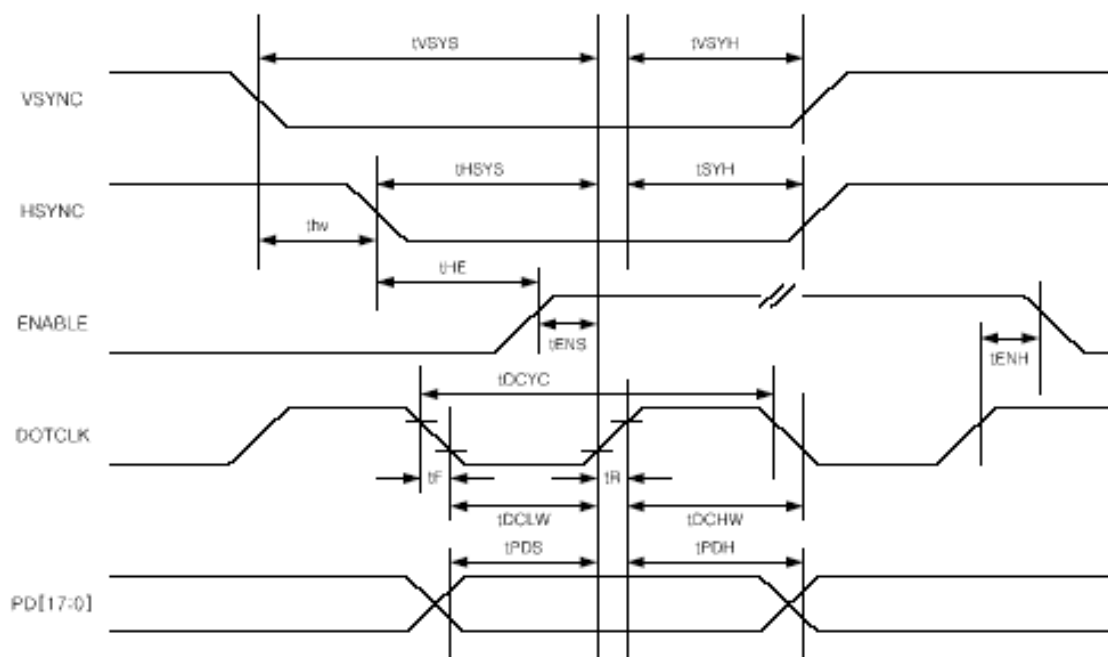
5.2.4 RGB Interface

(VDD3 = 1.65 to 3.3V, TA = -40 to +85°C)

Characteristic	Symbol	Specification		Unit		Unit
		Min.	Max.	Min.	Max.	
DOTCLK cycle time	tDCYC	100	-	55	-	ns
DOTCLK rise / fall time	tR, tF	-	15	-	15	ns
DOTCLK pulse width high	tDCHW	40	-	25	-	ns
DOTCLK pulse width low	tDCLW	40	-	25	-	ns
Vertical sync setup time	tVSYN	30	-	30	-	ns
Vertical sync hold time	tVSYH	30	-	30	-	ns
Horizontal sync setup time	tHSYS	30	-	30	-	ns
Horizontal sync hold time	tHSYH	30	-	30	-	ns
ENABLE setup time	tENS	30	-	30	-	ns
ENABLE hold time	tENH	20	-	20	-	ns
PD data setup time	tPDS	30	-	30	-	ns
PD data hold time	tPDH	20	-	20	-	ns
HSYNC-ENABLE time	tHE	1	HBP	1	HBP	tDCYC
VSYSN-HSYN time	tHV	1	175	1	527	tDCYC

Note

1. HBP is horizontal back-porch.



(When VSPL=0, HSPL=0, DPL=0, EPL=1)

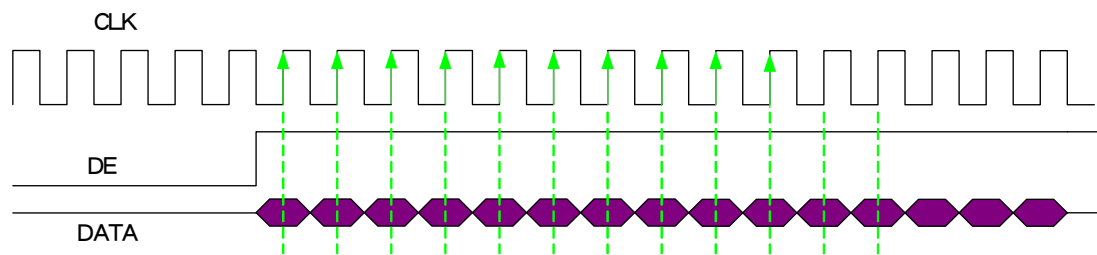
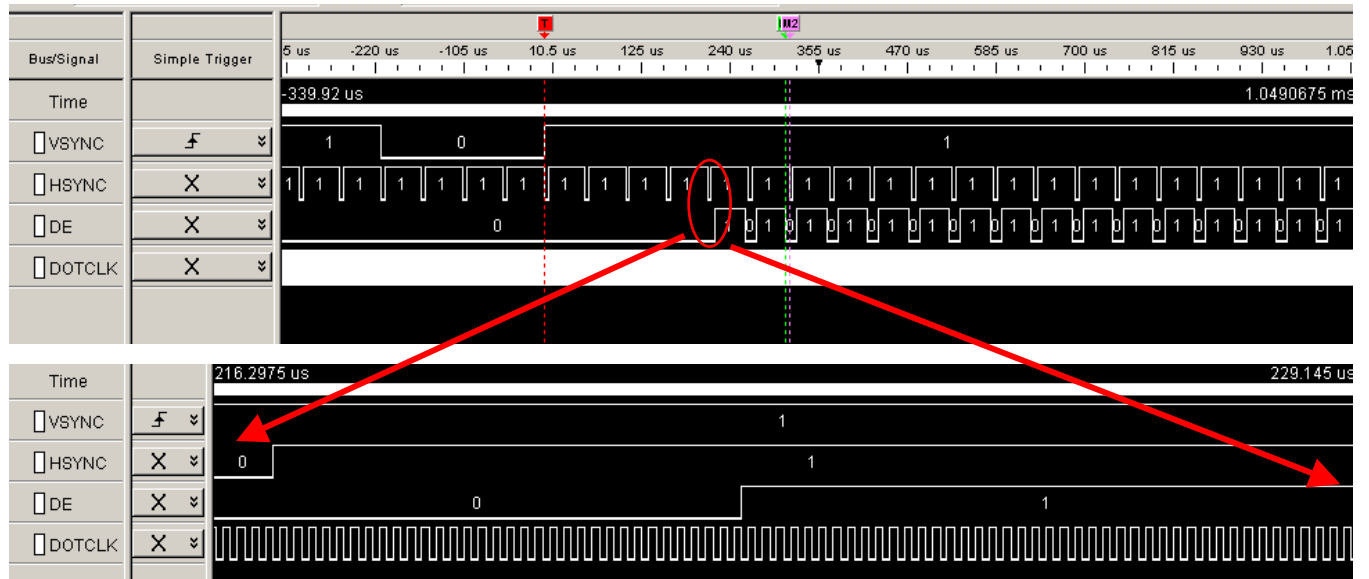


Image Data format for 18bit RGB interface (262k color)

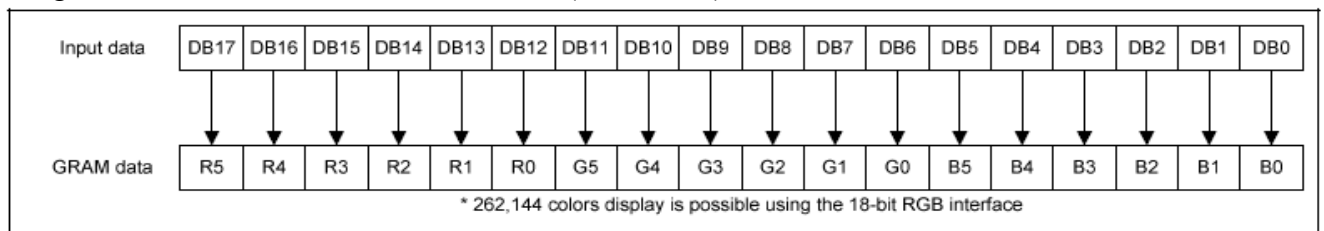


Image Data format for 16bit RGB interface (65k color)

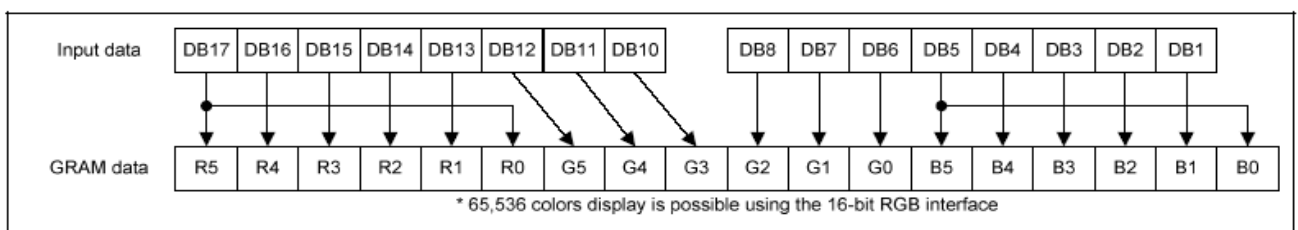
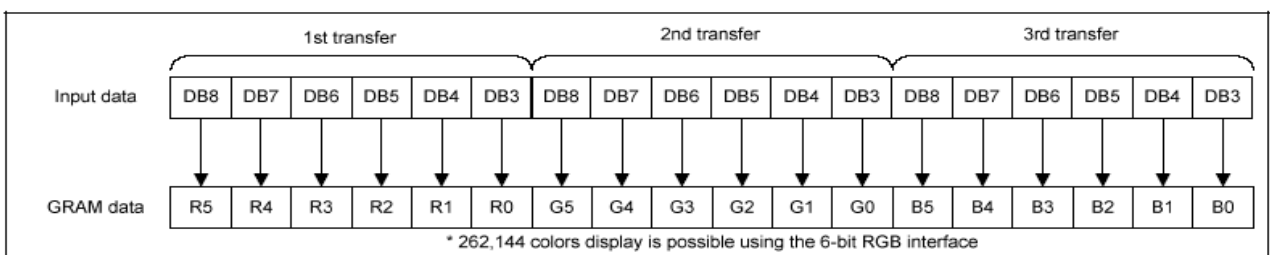


Image Data format for 6bit RGB interface (262k color)



6 Electro-Optical Characteristic:

Items	Symbol	Min	Typ.	Max	Unit	Remark
Operating Luminance	L	170	200	230	Cd/m ²	(1)(5)
Power Consumption	Pon	-	350	400	mW	30% pixels on (1)
Max. Current	Icc	-	-	162	mA	(1)
Response Time	Tres	-	-	50	us	(2)
CIE _x (White)	W _x	0.26	0.31	0.36	-	(5)
CIE _y (White)	W _y	0.28	0.33	0.38	-	(5)
CIE _x (Red)	R _x	0.62	0.66	0.70	-	(5)
CIE _y (Red)	R _y	0.30	0.34	0.38	-	(5)
CIE _x (Green)	G _x	0.25	0.29	0.33	-	(5)
CIE _y (Green)	G _y	0.62	0.66	0.70	-	(5)
CIE _x (Blue)	B _x	0.11	0.15	0.19	-	(5)
CIE _y (Blue)	B _y	0.12	0.16	0.20	-	(5)
Viewing Angle	VA	160	170	-	Degree	(3)
Contrast	CR	5000:1	10000:1	-		(4)
Operation Lifetime	LTop	30000	-	-	Hrs	(1)(6)

Note:

Measuring surrounding: Dark room

Surrounding temperature: 25°C

IOVCC = 1.65V ~ 3.3V

1. Test condition:

a. AR_VDD= 4.6V+/- 0.03V, AR_VSS= -4.4V+/- 0.03V

b. IC Initial Register Setting:

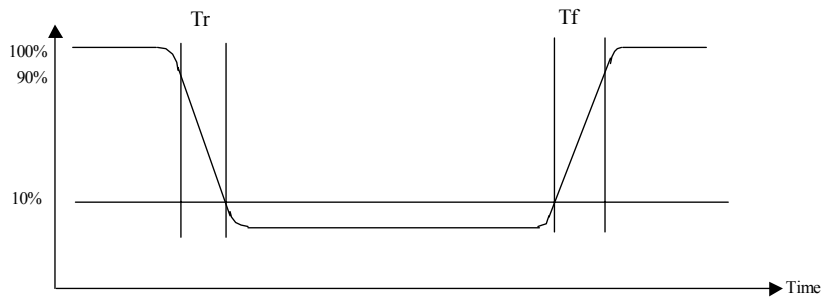
R03h: 0x0030 // 16bit mode
R10h: 0x0000 // IC standby off
R18h: 0x0028 // Frame Rate = 80 Hz
RF8h: 0x000F // VGH=+5V
RF9h: 0x000F // VGL=-5V
R05h: 0x0001 // display on

Gamma Register Setting: (Gamma Setting Code : A)

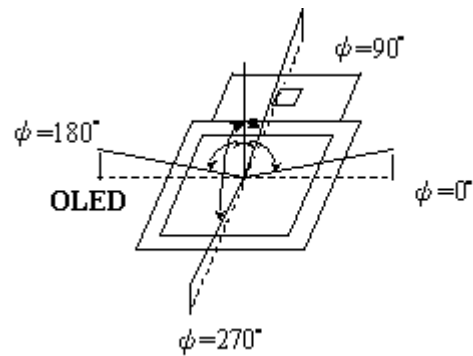
R70h: 0x2580
R71h: 0x2780
R72h: 0x3380
R73h: 0x1D18
R74h: 0x1F11
R75h: 0x2419
R76h: 0x1A14
R77h: 0x211A
R78h: 0x2013



2. Response Time test condition



3. Viewing angle test condition:



Viewing Angle= CR>10

4. Contrast

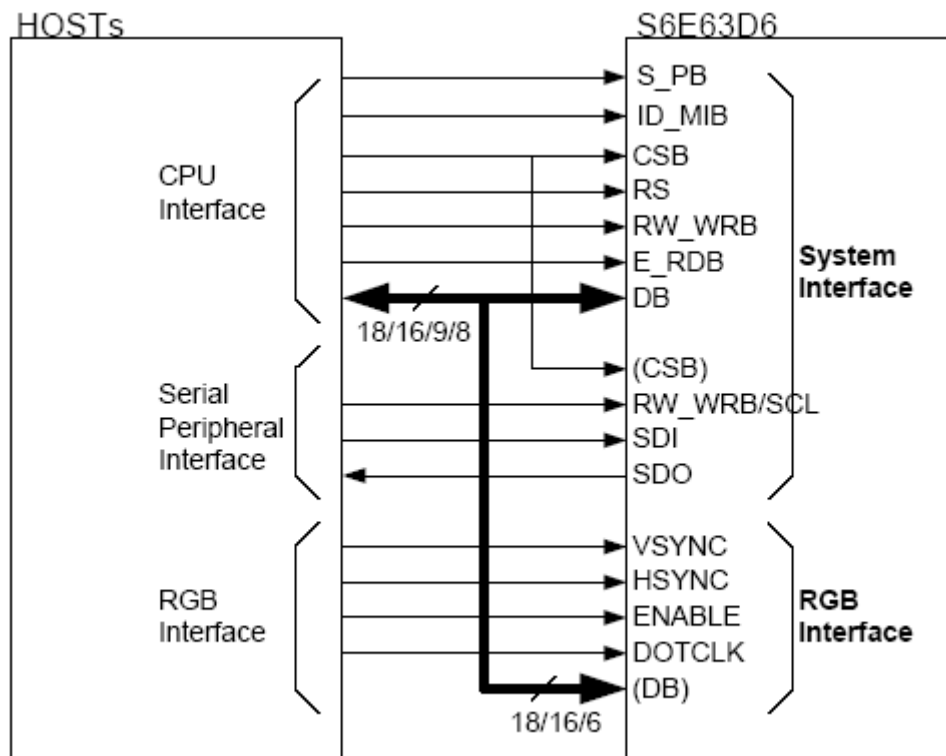
$$CR = \frac{\text{Luminance with all pixels white}}{\text{Luminance with all pixels black}}$$

5. Optical tester: CA210

6. Brightness of 30% power consumption. Operating Life Time is defined when the luminance has decayed to less than 50% of the initial measured luminance before life test.



7 System Diagram:





8 Pin Assignment:

PIN	Symbol	I/O	Description	Remarks
1	AR_VDD	I	Positive voltage for OLED(+4.6V)	
2	AR_VSS	I	Negative voltage for OLED(-4.4V)	
3	VCI	I	Power supply for analog circuit(2.5v~3.3v)	
4	VCI1	O	A reference voltage for 1 st booster(connect a 1u/10v capacitance to gnd)	
5	GND	I	Ground	
6	C12M	I	External capacitance connect pin between C12M and C12P (1u/10V)	
7	C12P	I		
8	C11M	I	External capacitance connect pin between C11M and C11P	
9	C11P	I		
10	VLOUT1	O	1 st booster output pin. (1u/10V)	
11	C31P	I	External capacitance connect pin between C31M and C31P (1u/10V)	
12	C31M	I		
13	C32P	I	External capacitance connect pin between C32M and C32P (1u/10V)	
14	C32M	I		
15	VLOUT3	O	3 rd booster output pin. (1u/16V)	
16	VLOUT2	O	2 nd booster output pin. (1u/16V)	
17	C21P	I	External capacitance connect pin between C21M and C21P. (1u/10V)	
18	C21M	I		
19	VGS	I	A reference level for the grayscale voltage generation circuit. (connect to gnd)	
20	IOVCC	I	I/O power supply	
21	SPB	I	Select the CPU interface mode. (0=parallel interface 1=serial interface)	
22	ID_MIB	I	Select the CPU type (0=intel 80x-system 1=motorola 68x-system)	
23	DB17	I/O	BI-directional data bus. When CPU I/F, 18-bit interface : DB 17-0 16-bit interface : DB 17-10 , DB 8-1 9-bit interface : DB 8-0 8-bit interface : DB 8-1	
24	DB16	I/O		
25	DB15	I/O		
26	DB14	I/O		
27	DB13	I/O	When RGB I/F 18-bit interface : DB 17-0 16-bit interface : DB 17-10, DB 8-1 6-bit interface : DB 8-3	
28	DB12	I/O		
29	DB11	I/O		
30	DB10	I/O		
31	DB9	I/O	Fix unused pin to the VSS level	
32	DB8	I/O		
33	DB7	I/O		



34	DB6	I/O		
35	DB5	I/O		
36	DB4	I/O		
37	DB3	I/O		
38	DB2	I/O		
39	DB1	I/O		
40	DB0	I/O		
41	VSYNC	I	Frame-synchronizing signal. (VSPL=0 Low active, VSPL=1 High active) FIX this pin at VSS level if the pin is not used	
42	HSYNC	I	Line-synchronizing signal. (HSPL=0 Low active, HSPL=1 High active) FIX this pin at VSS level if the pin is not used	
43	DOTCLK	I	Input pin for clock signal of external interface : dot clock. DPL=0 Display data is fetched at DOTCLK's rising edge DPL=1 Display data is fetched at DOTCLK's falling edge Fix this pin at VSS level if the pin is not used.	
44	ENABLE	I	Data enable signal pin for RGB interface.	
			EPL	ENABLE
			0	Valid
			0	Invalid
			1	Invalid
			1	Valid
45	SDI (SDIN)	I	For a serial peripheral interface (SPI), input data is fetched at the rising edge of the SCL signal, Fix SDI pin at VSS level if the pin is not used.	
46	SDO (SDOUT)	O	For a serial peripheral interface (SPI), serves as the serial data output pin (SDO), Successive bits are output at the falling edge of the SCL signal.	
47	CSB (CS/NCS)	I	Chip select signal input pin. 0= driver IC is selected and can be accessed. 1= driver IC is not selected and cannot be accessed.	
48	RW_WRB (SCL)	I	Pin function	CPU type
			RW	68-system
			WRB	80_system
			SCL	SPI
49	RS	I	Register select pin. 0=Index/status, 1=instruction parameter, GRAM data Must be fixed at VDD3 level when not used.	
50	E_RDB	I	Pin Function	CPU type
			E	68-system
			RDB	80_system
			When SPI mode is selected, fix this pin at VDD3 level	
51	RESETB	I	Reset pin initializes the IC when low. Should be reset after power-on.	
52	MVDD	O	Internal power for RAM. Connect a capacitance (1u/10v) to gnd.	
53	VREG1OUT	O	A reference level for the grayscale voltage. Connect a capacitance (1u/10v) to gnd.	
54	VCI	I	Power supply for analog circuit(2.5v~3.3v)	



55	VGH	O	The positive voltage used in the gate driver. Connect a capacitance(1u/10v) to gnd.	
56	VGL	O	The negative voltage used in the gate driver. Connect a capacitance(1u/10v) to gnd.	
57	GND		Ground	
58	X-		For touch screen	
59	Y-		For touch screen	
60	X+		For touch screen	
61	Y+		For touch screen	



9 Reliability Test:

No.	Items	Specification
1	High Temp. Storage	85°C, 240hrs
2	Low Temp. Storage	-40°C, 240hrs
3	High Temp. Operation	60°C, 240hrs
4	Low Temp. Operation	-40°C, 240hrs
5	High Temp / Humidity Storage	85°C, 85%RH, 240hrs
6	High Temp / Humidity Operation	60°C, 90%RH, 240hrs
7	Thermal shock	-40°C ~85°C (-40°C /30min; transit/3min; 85°C /30min; transit /3min) 1cycle: 66min, 100 cycles
8	Vibration	Frequency: 5~50HZ, 0.5G Scan rate : 1 oct/min Time : 2 hrs/axis Test axis : X, Y, Z
9	Drop	Height: 76cm Sequence : 1 angle 、3 edges and 6 faces Cycles: 1
10	ESD	Air discharge model, ±8kV, 10 times

Test and measurement conditions

- All measurements shall not be started until the specimens attain to temperature stability.
- The degradation of Polarizer is ignored for item 1, 5 & 6.
- The test pattern at operating condition is 30%P.C. alternating pictures.

Evaluation Criteria

- No damage to glass or encapsulation
- No drastic change to display
- Defects / Mura follow product specification
- Luminance: Within +/-50% of initial value
- Current consumption: within +/-50% of initial value



10 Handling:

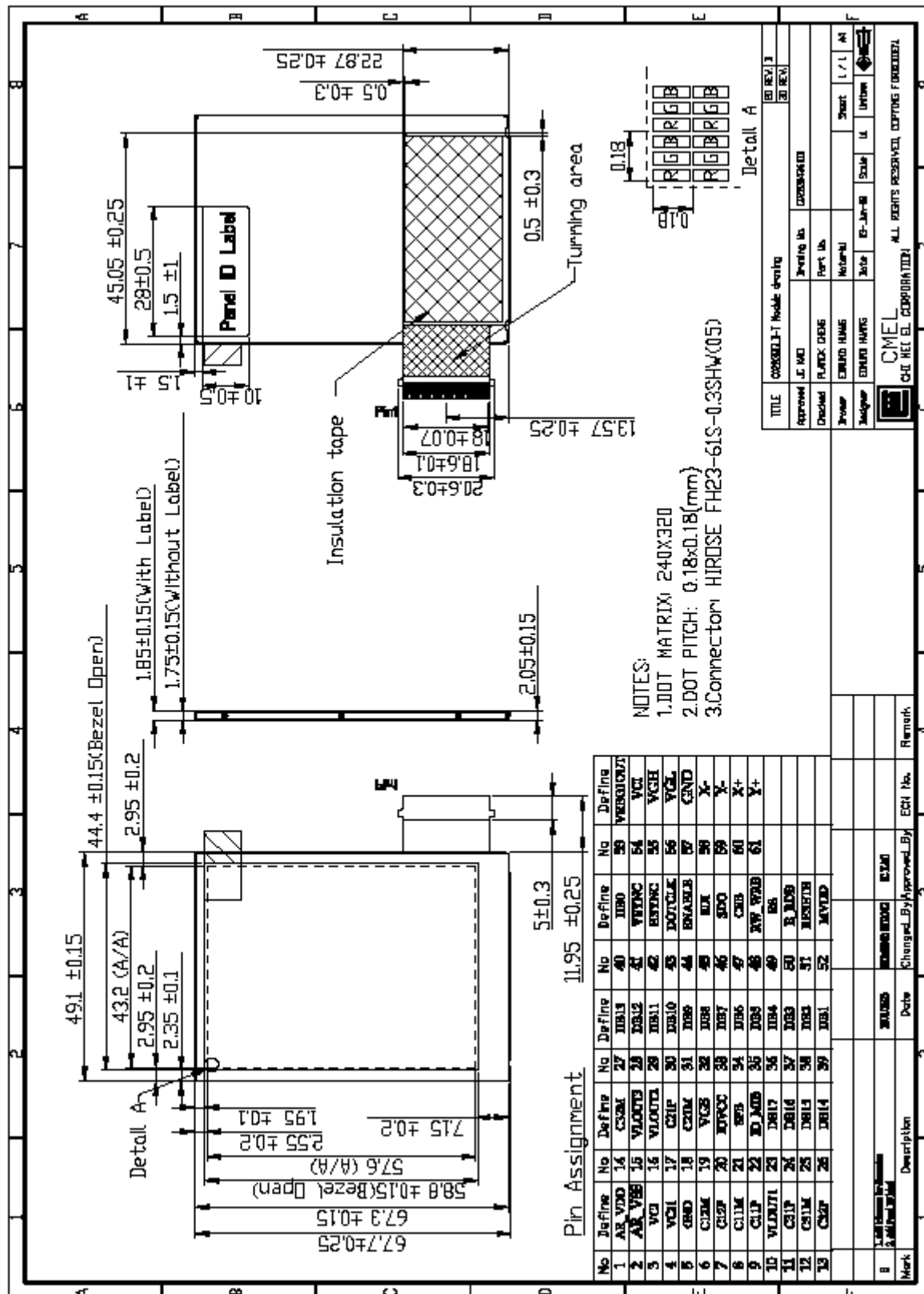
- 10.1 Do not scratch the surface of the polarizer film as it is easily damaged.
- 10.2 When cleaning the display surface, use soft cloth with solvent (as recommended below) and wipe lightly
 - Ethyl alcohol
 - Isopropyl alcohol
- 10.3 Do not wipe the display surface with dry or hard materials that damage the polarizer surface.
- 10.4 Since this OLED panel is made of glass, dropping the module or banging it against hard objects may cause cracks or fragmentation.
- 10.5 Do not disassemble the OLED module as it may cause permanent damage.
- 10.6 Hold OLED very carefully when placing OLED module into the system housing. Do not excessive stress or pressure to OLED module.

11 Storage

- 11.1 Storing in a polyethylene bag with the opening sealed.
- 11.2 Placing in a dark place where neither exposure to direct sunlight nor any fluorescent light is permitted and keep at room temperature & room humidity.
- 11.3 Storing with no contact with polarizer surface.
(It is recommended to store them in the inner container which we delivered.)



12 External Dimension:





13. Package:

1. One tray with 12 pcs panel module.

2. Take EPE sheet 1 pcs above the tray.

3. Take empty tray 1 pcs top of the substantial tray.

4. Circle the belt 1.5 loops around and fixed the trays by velcro(魔鬼沾).

5. Place one stack with a Drier into an anti-static bag.

6. Use clean tape to seal the bag.

7. Take EPE foam 2 pcs to hold one Bag.

8. Place three stacks into the carton.

9. One box package.

10. Final Hot Sealing

11. Carton Label

12. S/N Label

13. Interface Stack

14. x 10pcs(panel 120pcs)

15. Belt Stop

16. Belt Start

17. Belt

18. Drier

19. Anti-Static Vacuum Bag

20. S/N Label (Must align the corner mark)

21. EPE Foam

22. Carton Label(Must align the corner point)

23. Carton

24. Final Hot Sealing

25. Carton Label

26. S/N Label

27. Interface Stack

28. x 10pcs(panel 120pcs)

29. Belt Stop

30. Belt Start

31. Belt

32. Drier

33. Anti-Static Vacuum Bag

34. S/N Label (Must align the corner mark)

35. EPE Foam

36. Carton Label(Must align the corner point)

37. Carton

38. Final Hot Sealing

39. Carton Label

40. S/N Label

41. Interface Stack

42. x 10pcs(panel 120pcs)

43. Belt Stop

44. Belt Start

45. Belt

46. Drier

47. Anti-Static Vacuum Bag

48. S/N Label (Must align the corner mark)

49. EPE Foam

50. Carton Label(Must align the corner point)

51. Carton

52. Final Hot Sealing

53. Carton Label

54. S/N Label

55. Interface Stack

56. x 10pcs(panel 120pcs)

57. Belt Stop

58. Belt Start

59. Belt

60. Drier

61. Anti-Static Vacuum Bag

62. S/N Label (Must align the corner mark)

63. EPE Foam

64. Carton Label(Must align the corner point)

65. Carton

66. Final Hot Sealing

67. Carton Label

68. S/N Label

69. Interface Stack

70. x 10pcs(panel 120pcs)

71. Belt Stop

72. Belt Start

73. Belt

74. Drier

75. Anti-Static Vacuum Bag

76. S/N Label (Must align the corner mark)

77. EPE Foam

78. Carton Label(Must align the corner point)

79. Carton

80. Final Hot Sealing

81. Carton Label

82. S/N Label

83. Interface Stack

84. x 10pcs(panel 120pcs)

85. Belt Stop

86. Belt Start

87. Belt

88. Drier

89. Anti-Static Vacuum Bag

90. S/N Label (Must align the corner mark)

91. EPE Foam

92. Carton Label(Must align the corner point)

93. Carton

94. Final Hot Sealing

95. Carton Label

96. S/N Label

97. Interface Stack

98. x 10pcs(panel 120pcs)

99. Belt Stop

100. Belt Start

101. Belt

102. Drier

103. Anti-Static Vacuum Bag

104. S/N Label (Must align the corner mark)

105. EPE Foam

106. Carton Label(Must align the corner point)

107. Carton

108. Final Hot Sealing

109. Carton Label

110. S/N Label

111. Interface Stack

112. x 10pcs(panel 120pcs)

113. Belt Stop

114. Belt Start

115. Belt

116. Drier

117. Anti-Static Vacuum Bag

118. S/N Label (Must align the corner mark)

119. EPE Foam

120. Carton Label(Must align the corner point)

121. Carton

122. Final Hot Sealing

123. Carton Label

124. S/N Label

125. Interface Stack

126. x 10pcs(panel 120pcs)

127. Belt Stop

128. Belt Start

129. Belt

130. Drier

131. Anti-Static Vacuum Bag

132. S/N Label (Must align the corner mark)

133. EPE Foam

134. Carton Label(Must align the corner point)

135. Carton

136. Final Hot Sealing

137. Carton Label

138. S/N Label

139. Interface Stack

140. x 10pcs(panel 120pcs)

141. Belt Stop

142. Belt Start

143. Belt

144. Drier

145. Anti-Static Vacuum Bag

146. S/N Label (Must align the corner mark)

147. EPE Foam

148. Carton Label(Must align the corner point)

149. Carton

150. Final Hot Sealing

151. Carton Label

152. S/N Label

153. Interface Stack

154. x 10pcs(panel 120pcs)

155. Belt Stop

156. Belt Start

157. Belt

158. Drier

159. Anti-Static Vacuum Bag

160. S/N Label (Must align the corner mark)

161. EPE Foam

162. Carton Label(Must align the corner point)

163. Carton

164. Final Hot Sealing

165. Carton Label

166. S/N Label

167. Interface Stack

168. x 10pcs(panel 120pcs)

169. Belt Stop

170. Belt Start

171. Belt

172. Drier

173. Anti-Static Vacuum Bag

174. S/N Label (Must align the corner mark)

175. EPE Foam

176. Carton Label(Must align the corner point)

177. Carton

178. Final Hot Sealing

179. Carton Label

180. S/N Label

181. Interface Stack

182. x 10pcs(panel 120pcs)

183. Belt Stop

184. Belt Start

185. Belt

186. Drier

187. Anti-Static Vacuum Bag

188. S/N Label (Must align the corner mark)

189. EPE Foam

190. Carton Label(Must align the corner point)

191. Carton

192. Final Hot Sealing

193. Carton Label

194. S/N Label

195. Interface Stack

196. x 10pcs(panel 120pcs)

197. Belt Stop

198. Belt Start

199. Belt

200. Drier

201. Anti-Static Vacuum Bag

202. S/N Label (Must align the corner mark)

203. EPE Foam

204. Carton Label(Must align the corner point)

205. Carton

206. Final Hot Sealing

207. Carton Label

208. S/N Label

209. Interface Stack

210. x 10pcs(panel 120pcs)

211. Belt Stop

212. Belt Start

213. Belt

214. Drier

215. Anti-Static Vacuum Bag

216. S/N Label (Must align the corner mark)

217. EPE Foam

218. Carton Label(Must align the corner point)

219. Carton

220. Final Hot Sealing

221. Carton Label

222. S/N Label

223. Interface Stack

224. x 10pcs(panel 120pcs)

225. Belt Stop

226. Belt Start

227. Belt

228. Drier

229. Anti-Static Vacuum Bag

230. S/N Label (Must align the corner mark)

231. EPE Foam

232. Carton Label(Must align the corner point)

233. Carton

234. Final Hot Sealing

235. Carton Label

236. S/N Label

237. Interface Stack

238. x 10pcs(panel 120pcs)

239. Belt Stop

240. Belt Start

241. Belt

242. Drier

243. Anti-Static Vacuum Bag

244. S/N Label (Must align the corner mark)

245. EPE Foam

246. Carton Label(Must align the corner point)

247. Carton

248. Final Hot Sealing

249. Carton Label

250. S/N Label

251. Interface Stack

252. x 10pcs(panel 120pcs)

253. Belt Stop

254. Belt Start

255. Belt

256. Drier

257. Anti-Static Vacuum Bag

258. S/N Label (Must align the corner mark)

259. EPE Foam

260. Carton Label(Must align the corner point)

261. Carton

262. Final Hot Sealing

263. Carton Label

264. S/N Label

265. Interface Stack

266. x 10pcs(panel 120pcs)

267. Belt Stop

268. Belt Start

269. Belt

270. Drier

271. Anti-Static Vacuum Bag

272. S/N Label (Must align the corner mark)

273. EPE Foam

274. Carton Label(Must align the corner point)

275. Carton

276. Final Hot Sealing

277. Carton Label

278. S/N Label

279. Interface Stack

280. x 10pcs(panel 120pcs)

281. Belt Stop

282. Belt Start

283. Belt

284. Drier

285. Anti-Static Vacuum Bag

286. S/N Label (Must align the corner mark)

287. EPE Foam

288. Carton Label(Must align the corner point)

289. Carton

290. Final Hot Sealing

291. Carton Label

292. S/N Label

293. Interface Stack

294. x 10pcs(panel 120pcs)

295. Belt Stop

296. Belt Start

297. Belt

298. Drier

299. Anti-Static Vacuum Bag

300. S/N Label (Must align the corner mark)

301. EPE Foam

302. Carton Label(Must align the corner point)

303. Carton

304. Final Hot Sealing

305. Carton Label

306. S/N Label

307. Interface Stack

308. x 10pcs(panel 120pcs)

309. Belt Stop

310. Belt Start

311. Belt

312. Drier

313. Anti-Static Vacuum Bag

314. S/N Label (Must align the corner mark)

315. EPE Foam

316. Carton Label(Must align the corner point)

317. Carton

318. Final Hot Sealing

319. Carton Label

320. S/N Label

321. Interface Stack

322. x 10pcs(panel 120pcs)

323. Belt Stop

324. Belt Start

325. Belt

326. Drier

327. Anti-Static Vacuum Bag

328. S/N Label (Must align the corner mark)

329. EPE Foam

330. Carton Label(Must align the corner point)

331. Carton

332. Final Hot Sealing

333. Carton Label

334. S/N Label

335. Interface Stack

336. x 10pcs(panel 120pcs)

337. Belt Stop

338. Belt Start

339. Belt

340. Drier

341. Anti-Static Vacuum Bag

342. S/N Label (Must align the corner mark)

343. EPE Foam

344. Carton Label(Must align the corner point)

345. Carton

346. Final Hot Sealing

347. Carton Label

348. S/N Label

349. Interface Stack

350. x 10pcs(panel 120pcs)

351. Belt Stop

352. Belt Start

353. Belt

354. Drier

355. Anti-Static Vacuum Bag

356. S/N Label (Must align the corner mark)

357. EPE Foam

358. Carton Label(Must align the corner point)

359. Carton

360. Final Hot Sealing

361. Carton Label

362. S/N Label

363. Interface Stack

364. x 10pcs(panel 120pcs)

365. Belt Stop

366. Belt Start

367. Belt

368. Drier

369. Anti-Static Vacuum Bag

370. S/N Label (Must align the corner mark)

371. EPE Foam

372. Carton Label(Must align the corner point)

373. Carton

374. Final Hot Sealing

375. Carton Label

376. S/N Label

377. Interface Stack

378. x 10pcs(panel 120pcs)

379. Belt Stop

380. Belt Start

381. Belt

382. Drier

383. Anti-Static Vacuum Bag

384. S/N Label (Must align the corner mark)

385. EPE Foam

386. Carton Label(Must align the corner point)

387. Carton

388. Final Hot Sealing

389. Carton Label

390. S/N Label

391. Interface Stack

392. x 10pcs(panel 120pcs)

393. Belt Stop

394. Belt Start

395. Belt

396. Drier

397. Anti-Static Vacuum Bag

398. S/N Label (Must align the corner mark)

399. EPE Foam

400. Carton Label(Must align the corner point)

401. Carton

402. Final Hot Sealing

403. Carton Label

404. S/N Label

405. Interface Stack

406. x 10pcs(panel 120pcs)

407. Belt Stop

408. Belt Start

409. Belt

410. Drier

411. Anti-Static Vacuum Bag

412. S/N Label (Must align the corner mark)

413. EPE Foam

414. Carton Label(Must align the corner point)

415. Carton

416. Final Hot Sealing

417. Carton Label

418. S/N Label

419. Interface Stack

420. x 10pcs(panel 120pcs)

421. Belt Stop

422. Belt Start

423. Belt

424. Drier

425. Anti-Static Vacuum Bag

426. S/N Label (Must align the corner mark)

427. EPE Foam

428. Carton Label(Must align the corner point)

429. Carton

430. Final Hot Sealing

431. Carton Label

432. S/N Label

433. Interface Stack

434. x 10pcs(panel 120pcs)

435. Belt Stop

436. Belt Start

437. Belt

438. Drier

439. Anti-Static Vacuum Bag

440. S/N Label (Must align the corner mark)

441. EPE Foam

442. Carton Label(Must align the corner point)

443. Carton

444. Final Hot Sealing

445. Carton Label

446. S/N Label

447. Interface Stack

448. x 10pcs(panel 120pcs)

449. Belt Stop

450. Belt Start

451. Belt

452. Drier

453. Anti-Static Vacuum Bag

454. S/N Label (Must align the corner mark)

455. EPE Foam

456. Carton Label(Must align the corner point)

457. Carton

458. Final Hot Sealing

459. Carton Label

460. S/N Label

461. Interface Stack

462. x 10pcs(panel 120pcs)

463. Belt Stop

464. Belt Start

465. Belt

466. Drier

467. Anti-Static Vacuum Bag

468. S/N Label (Must align the corner mark)

469. EPE Foam

470. Carton Label(Must align the corner point)

471. Carton

472. Final Hot Sealing

473. Carton Label

474. S/N Label

475. Interface Stack

476. x 10pcs(panel 120pcs)

477. Belt Stop

478. Belt Start

479. Belt

480. Drier

481. Anti-Static Vacuum Bag

482. S/N Label (Must align the corner mark)

483. EPE Foam

484. Carton Label(Must align the corner point)

485. Carton

486. Final Hot Sealing

487. Carton Label

488. S/N Label

489. Interface Stack

490. x 10pcs(panel 120pcs)

491. Belt Stop

492. Belt Start

493. Belt

494. Drier

495. Anti-Static Vacuum Bag

496. S/N Label (Must align the corner mark)

497. EPE Foam

498. Carton Label(Must align the corner point)

499. Carton

500. Final Hot Sealing

501. Carton Label

502. S/N Label

503. Interface Stack

504. x 10pcs(panel 120pcs)

505. Belt Stop

506. Belt Start

507. Belt

508. Drier

509. Anti-Static Vacuum Bag

510. S/N Label (Must align the corner mark)

511. EPE Foam

512. Carton Label(Must align the corner point)

513. Carton

514. Final Hot Sealing

515. Carton Label

516. S/N Label

517. Interface Stack

518. x 10pcs(panel 120pcs)

519. Belt Stop

520. Belt Start

521. Belt

522. Drier

523. Anti-Static Vacuum Bag

524. S/N Label (Must align the corner mark)

525. EPE Foam

526. Carton Label(Must align the corner point)

527. Carton

528. Final Hot Sealing

529. Carton Label

530. S/N Label

531. Interface Stack

532. x 10pcs(panel 120pcs)

533. Belt Stop

534. Belt Start

535. Belt

536. Drier

537. Anti-Static Vacuum Bag

538. S/N Label (Must align the corner mark)

539. EPE Foam

540. Carton Label(Must align the corner point)

541. Carton

542. Final Hot Sealing

543. Carton Label

544. S/N Label

545. Interface Stack

546. x 10pcs(panel 120pcs)

547. Belt Stop

548. Belt Start

549. Belt

550. Drier

551. Anti-Static Vacuum Bag

552. S/N Label (Must align the corner mark)

553. EPE Foam

554. Carton Label(Must align the corner point)

555. Carton

556. Final Hot Sealing

557. Carton Label

558. S/N Label

559. Interface Stack

560. x 10pcs(panel 120pcs)

561. Belt Stop

562. Belt Start

563. Belt

564. Drier

565. Anti-Static Vacuum Bag

566. S/N Label (Must align the corner mark)

567. EPE Foam

568. Carton Label(Must align the corner point)

569. Carton

570. Final Hot Sealing

571. Carton Label

572. S/N Label

573. Interface Stack

574. x 10pcs(panel 120pcs)

575. Belt Stop

576. Belt Start

577. Belt

578. Drier

579. Anti-Static Vacuum Bag

580. S/N Label (Must align the corner mark)

581. EPE Foam

582. Carton Label(Must align the corner point)

583. Carton

584. Final Hot Sealing

585. Carton Label

586. S/N Label

587. Interface Stack

588. x 10pcs(panel 120pcs)

589. Belt Stop

590. Belt Start

591. Belt

592. Drier

593. Anti-Static Vacuum Bag

594. S/N Label (Must align the corner mark)

595. EPE Foam

596. Carton Label(Must align the corner point)

597. Carton

598. Final Hot Sealing

599. Carton Label

600. S/N Label

601. Interface Stack

602. x 10pcs(panel 120pcs)

603. Belt Stop

604. Belt Start

605. Belt

606. Drier

607. Anti-Static Vacuum Bag

608. S/N Label (Must align the corner mark)

609. EPE Foam

610. Carton Label(Must align the corner point)

611. Carton

612. Final Hot Sealing

613. Carton Label

614. S/N Label

615. Interface Stack

616. x 10pcs(panel 120pcs)

617. Belt Stop

618. Belt Start

619. Belt

620. Drier

621. Anti-Static Vacuum Bag

622. S/N Label (Must align the corner mark)

623. EPE Foam

624. Carton Label(Must align the corner point)

625. Carton

626. Final Hot Sealing

627. Carton Label

628. S/N Label

629. Interface Stack

630. x 10pcs(panel 120pcs)

631. Belt Stop

632. Belt Start

633. Belt

634. Drier

635. Anti-Static Vacuum Bag

636. S/N Label (Must align the corner mark)

637. EPE Foam

638. Carton Label(Must align the corner point)

639. Carton

640. Final Hot Sealing

641. Carton Label

642. S/N Label

643. Interface Stack

644. x 10pcs(panel 120pcs)

645. Belt Stop

646. Belt Start

647. Belt

648. Drier

649. Anti-Static Vacuum Bag

650. S/N Label (Must align the corner mark)

651. EPE Foam

652. Carton Label(Must align the corner point)

653. Carton

654. Final Hot Sealing

655. Carton Label

656. S/N Label

657. Interface Stack

658. x 10pcs(panel 120pcs)

659. Belt Stop

660. Belt Start

661. Belt

662. Drier

663. Anti-Static Vacuum Bag

664. S/N Label (Must align the corner mark)

665. EPE Foam

666. Carton Label(Must align the corner point)

667. Carton

668. Final Hot Sealing

669. Carton Label

670. S/N Label

671. Interface Stack

672. x 10pcs(panel 120pcs)

673. Belt Stop

674. Belt Start

675. Belt

676. Drier

677. Anti-Static Vacuum Bag

678. S/N Label (Must align the corner mark)

679. EPE Foam

680. Carton Label(Must align the corner point)

681. Carton

682. Final Hot Sealing

683. Carton Label

684. S/N Label

685. Interface Stack

686. x 10pcs(panel 120pcs)

687. Belt Stop

688. Belt Start

689. Belt

690. Drier

691. Anti-Static Vacuum Bag

692. S/N Label (Must align the corner mark)

693. EPE Foam

694. Carton Label(Must align the corner point)

695. Carton

696. Final Hot Sealing

697. Carton Label

698. S/N Label

699. Interface Stack

700. x 10pcs(panel 120pcs)

701. Belt Stop

702. Belt Start

703. Belt

704. Drier

705. Anti-Static Vacuum Bag

706. S/N Label (Must align the corner mark)

707. EPE Foam

708. Carton Label(Must align the corner point)

709. Carton

710. Final Hot Sealing

711. Carton Label

712. S/N Label

713. Interface Stack

714. x 10pcs(panel 120pcs)

715. Belt Stop

716. Belt Start

717. Belt

718. Drier

719. Anti-Static Vacuum Bag

720. S/N Label (Must align the corner mark)

721. EPE Foam

722. Carton Label(Must align the corner point)

723. Carton

724. Final Hot Sealing

725. Carton Label

726. S/N Label

727. Interface Stack

728. x 10pcs(panel 120pcs)

729. Belt Stop

730. Belt Start

731. Belt

732. Drier

733. Anti-Static Vacuum Bag

734. S/N Label (Must align the corner mark)

735. EPE Foam

736. Carton Label(Must align the corner point)

737. Carton

738. Final Hot Sealing

739. Carton Label

740. S/N Label

741. Interface Stack

742. x 10pcs(panel 120pcs)

743. Belt Stop

744. Belt Start

745. Belt

746. Drier

747. Anti-Static Vacuum Bag

748. S/N Label (Must align the corner mark)

749. EPE Foam

750. Carton Label(Must align the corner point)

751. Carton

752. Final Hot Sealing

753. Carton Label

754. S/N Label

755. Interface Stack

756. x 10pcs(panel 120pcs)

757. Belt Stop

758. Belt Start

759. Belt

760. Drier

761. Anti-Static Vacuum Bag

762. S/N Label (Must align the corner mark)

763. EPE Foam

764. Carton Label(Must align the corner point)

765. Carton

766. Final Hot Sealing

767. Carton Label

768. S/N Label

769. Interface Stack

770. x 10pcs(panel 120pcs)

771. Belt Stop

772. Belt Start

773. Belt

774. Drier

775. Anti-Static Vacuum Bag

776. S/N Label (Must align the corner mark)

777. EPE Foam

778. Carton Label(Must align the corner point)

779. Carton

780. Final Hot Sealing

781. Carton Label

782. S/N Label

783. Interface Stack

784. x 10pcs(panel 120pcs)

785. Belt Stop

786. Belt Start

787. Belt

788. Drier

789. Anti-Static Vacuum Bag

790. S/N Label (Must align the corner mark)

791. EPE Foam

792. Carton Label(Must align the corner point)

793. Carton

794. Final Hot Sealing

795. Carton Label

796. S/N Label

797. Interface Stack

798. x 10pcs(panel 120pcs)

799. Belt Stop

800. Belt Start

801. Belt

802. Drier

803. Anti-Static Vacuum Bag

804. S/N Label (Must align the corner mark)

805. EPE Foam

806. Carton Label(Must align the corner point)

807. Carton

808. Final Hot Sealing

809. Carton Label

810. S/N Label

811. Interface Stack

812. x 10pcs(panel 120pcs)

813. Belt Stop

814. Belt Start

815. Belt

816. Drier

817. Anti-Static Vacuum Bag

818. S/N Label (Must align the corner mark)

819. EPE Foam

820. Carton Label(Must align the corner point)

821. Carton

822. Final Hot Sealing

823. Carton Label

824. S/N Label

825. Interface Stack

826. x 10pcs(panel 120pcs)

827. Belt Stop

828. Belt Start

829. Belt

830. Drier

831. Anti-Static Vacuum Bag

832. S/N Label (Must align the corner mark)

833. EPE Foam

834. Carton Label(Must align the corner point)

835. Carton

836. Final Hot Sealing

837. Carton Label

838. S/N Label

839. Interface Stack

840. x 10pcs(panel 120pcs)

841. Belt Stop

842. Belt Start

843. Belt

844. Drier

845. Anti-Static Vacuum Bag

846. S/N Label (Must align the corner mark)

847. EPE Foam

848. Carton Label(Must align the corner point)

849. Carton

850. Final Hot Sealing

851. Carton Label

852. S/N Label

853. Interface Stack

854. x 10pcs(panel 120pcs)

855. Belt Stop

856. Belt Start

857. Belt

858. Drier

859. Anti-Static Vacuum Bag

860. S/N Label (Must align the corner mark)

861. EPE Foam

862. Carton Label(Must align the corner point)

863. Carton

864. Final Hot Sealing

865. Carton Label

866. S/N Label

867. Interface Stack

868. x 10pcs(panel 120pcs)

869. Belt Stop

870. Belt Start

871. Belt

872. Drier

873. Anti-Static Vacuum Bag

874. S/N Label (Must align the corner mark)

875. EPE Foam

876. Carton Label(Must align the corner point)

877. Carton

878. Final Hot Sealing

879. Carton Label

880. S/N Label

881. Interface Stack

882. x 10pcs(panel 120pcs)

883. Belt Stop

884. Belt Start

885. Belt

886. Drier

887. Anti-Static Vacuum Bag

888. S/N Label (Must align the corner mark)

889. EPE Foam

890. Carton Label(Must align the corner point)

891. Carton

892. Final Hot Sealing

893. Carton Label

894. S/N Label

895. Interface Stack

896. x 10pcs(panel 120pcs)

897. Belt Stop

898. Belt Start

899. Belt

900. Drier

901. Anti-Static Vacuum Bag

902. S/N Label (Must align the corner mark)

903. EPE Foam

904. Carton Label(Must align the corner point)

905. Carton

906. Final Hot Sealing

907. Carton Label

908. S/N Label

909. Interface Stack

910. x 10pcs(panel 120pcs)

911. Belt Stop

912. Belt Start

913. Belt

914. Drier

915. Anti-Static Vacuum Bag

916. S/N Label (Must align the corner mark)

917. EPE Foam

918. Carton Label(Must align the corner point)

919. Carton

920. Final Hot Sealing

921. Carton Label

922. S/N Label

923. Interface Stack

924. x 10pcs(panel 120pcs)

925. Belt Stop

926. Belt Start

927. Belt

928. Drier

929. Anti-Static Vacuum Bag

930. S/N Label (Must align the corner mark)

931. EPE Foam

932. Carton Label(Must align the corner point)

933. Carton

934. Final Hot Sealing

935. Carton Label

936. S/N Label

937. Interface Stack

938. x 10pcs(panel 120pcs)

939. Belt Stop

940. Belt Start

941. Belt

942. Drier

943. Anti-Static Vacuum Bag

944. S/N Label (Must align the corner mark)

945. EPE Foam

946. Carton Label(Must align the corner point)

947. Carton

948. Final Hot Sealing