### **SPECIFICATIONS**

CUSTOMER . CUS007

SAMPLE CODE . SE9664WRF-004-I02Q

MASS PRODUCTION CODE . PE9664WRF-004-I02Q

SAMPLE VERSION . 01

SPECIFICATIONS EDITION . 003

DRAWING NO. (Ver.) JLMD-PE9664WRF-004-I02Q\_001

PACKAGING NO. (Ver.) . JPKG-PE9664WRF-004-I02Q\_002

# **Customer Approved**

2011.05.09

JSRDAPPROVED

VERTIF

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☐ Preliminary specification for design input

Specification for sample approval

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# **History of Version**

Date (mm / dd / yyyy)	Ver.	Edi.	Description	Page	Design by
06/01/2010	01	001	New Drawing	-	Lori
07/27/2010	01	002	New Sample	-	Lori
05/05/2011	01	003	Change Packaging	Appendix	Lori
				<u></u>	
		X			

Total: 29 Page



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**Packaging** 



# 1. SPECIFICATIONS

### 1.1 Features

Item	Standard Value
Display Type	96*64 Dots
LCD Type	FSTN, Positive, Transmissive, Extended Temp.
Driver Condition	LCD Module: 1/68Duty, 1/9Bias
Viewing Direction	6 O'clock
Backlight	White LED B/L
Weight	5.7g
Interface	3/4Pin-SPI I/F, 6800/8080-series parallel I/F
Other(controller / driver IC)	ST7579
	THIS PRODUCT CONFORMS THE ROHS OF PTC
ROHS	Detail information please refer web side :
	http://www.powertip.com.tw/news/LatestNews.asp

1.2 Mechanical Specifications

Item	Standard Value	Unit
Outline Dimension	33.35(W)*41.64(L)*3.0(H)MAX	mm
Viewing Area	29.3 (W)* 29.9 (L)	mm
Active Area	27.34(W)*26.86(L)	mm
Dot Size	0.265(L)*0.400(W)	mm
Dot Pitch	0.285(L)*0.420(W)	mm

Note: For detailed information please refer to LCM drawing

1.3 Absolute Maximum Ratings

Item	Symbol	Condition	Min.	Max.	Unit
Power Supply Voltage	VDD	-	-0.3	3.6	V
LCD Driver Supply Voltage	$V_{LCD}$	-	-0.5	15.0	V
Operating Temperature	T <sub>OP</sub>	-	-20	70	$^{\circ}\!\mathbb{C}$
Storage Temperature	T <sub>ST</sub>	-	-30	80	$^{\circ}\mathbb{C}$
Storage Humidity	H <sub>D</sub>	Ta<60 °C	-	90	%RH



# 1.4 DC Electrical Characteristics

Ta = 25°℃

Item	Symbol	Condition	Min.	Тур.	Max.	Unit
Logic Supply Voltage	VDD	-	2.4	3.3	3.4	٧
"H" Input Voltage	V <sub>IH</sub>	-	0.7V <sub>DD</sub>	-	$V_{DD}$	٧
"L" Input Voltage	V <sub>IL</sub>	-	V <sub>SS</sub>	-	$0.3V_{DD}$	٧
"H" Output Voltage	V <sub>OH</sub>	-	0.8V <sub>DD</sub>	-	$V_{DD}$	V
"L" Output Voltage	V <sub>OL</sub>	-	V <sub>SS</sub>	-	$0.2V_{DD}$	٧
Supply Current	I <sub>DD</sub>	V <sub>DD</sub> =3.0V; V <sub>OP</sub> =8.4V; Pattern= Horizontal line*1	,	0.5	1	mA
		<b>-20</b> ℃	8.4	8.6	8.8	
LCM Driver Voltage	V <sub>OP</sub> *2	<b>25</b> ℃	8.2	8.4	8.6	V
		70℃	8.0	8.2	8.4	

NOTE: \*1 The Maximum current display

\*2 The VOP test point is V0-XV0 (C2's voltage).





# 1.5 Optical Characteristics

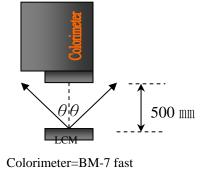
LCD Panel: 1/68Duty, 1/9Bias, VLCD=8.4V, Ta =25°C

Item		Symbol	Conditions	Min.	Тур.	Max.	Unit	Reference
Response Time	Rise	tr		-	120	180	ms	Note2
response fille	Fall	tf		ı	220	330	1113	NOIGZ
	Тор	⊖ <b>Y</b> +	C <u>&gt;</u> 2.0,	-	40	-		
Viewing angle	Bottom	⊖ <b>Y</b> -	Ø = 270°	-	40	-	Dog	Notes 1
range	Left	⊖ <b>X</b> -		-	35	-	Deg.	Notes 1
	Right	⊖ <b>X</b> +		-	35	-		
Contrast Ra	tio	С	θ = 0°, Ø = 270°	2.5	3.0	-	-	Note 3
Average Bright (with LCD)		IV		240	300	-	cd/m <sup>2</sup>	
CIE Color Coor	dinate	Χ	IF=40mA	0.25	0.30	0.35		Note 4
(With LCD)	*2	Y		0.27	0.32	0.37	_	
Uniformity <sup>3</sup>	<b>*</b> 1	∆B		70	-	-	%	

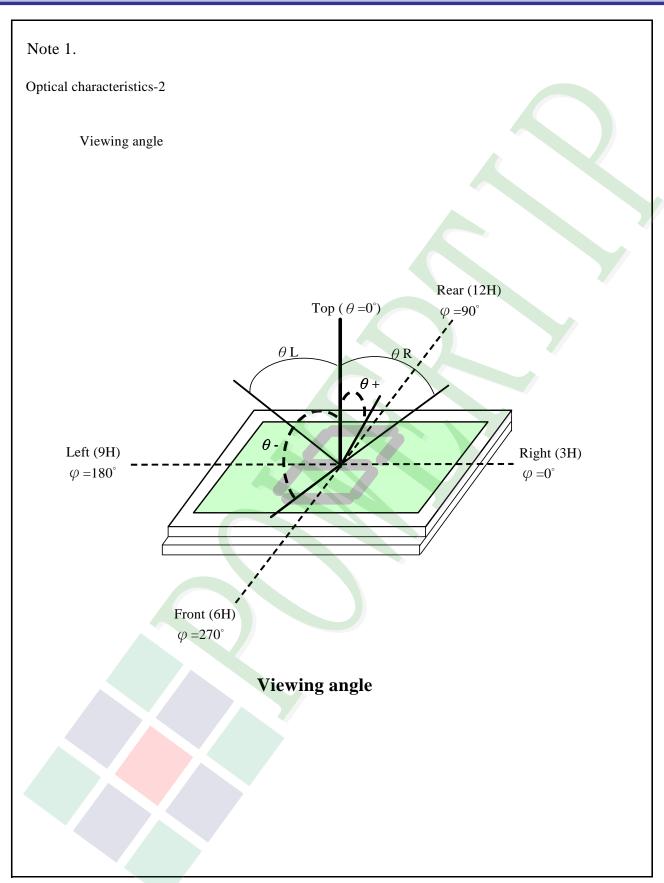
#### Note4:

- \*1 : △B=B(min) / B(max) \* 100%
- \*2 : Measurement Condition for Optical Characteristics:
  - a: Environment: 25°C±5°C / 60±20%R.H, no wind, dark room below 10 Lux at typical lamp current and typical operating frequency.
  - b : Measurement Distance:  $500 \pm 50 \text{ mm}$ ,  $(\theta = 0^\circ)$
  - c: Equipment: TOPCON BM-7 fast, (field 1°), after 10 minutes operation.
  - d: The uncertainty of the C.I.E coordinate measurement ±0.01, Average Brightness ± 4%

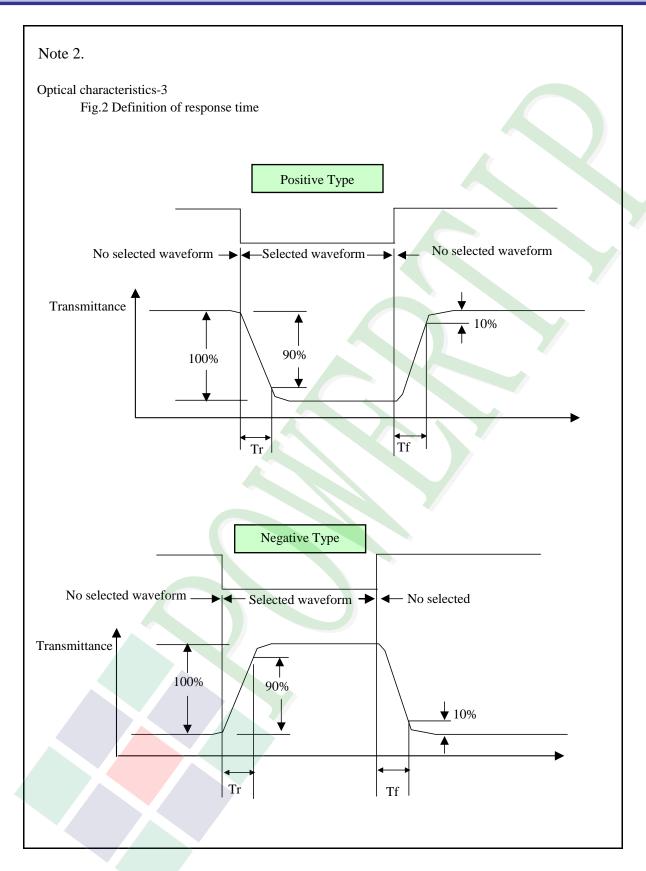














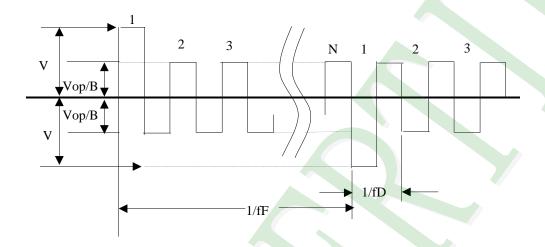
#### Electrical characteristics-2

**※**2 Drive waveform

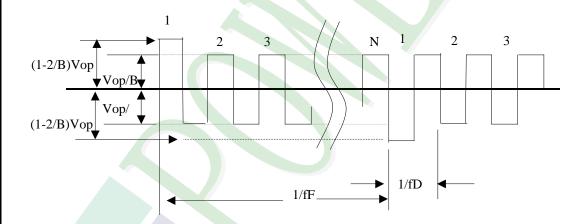
Vop: Drive voltage fF: Frame frequency 1/B: Bias fD: Drive frequency

N: Duty

#### (1) Selected waveform



#### (2) Non- Selected wave form

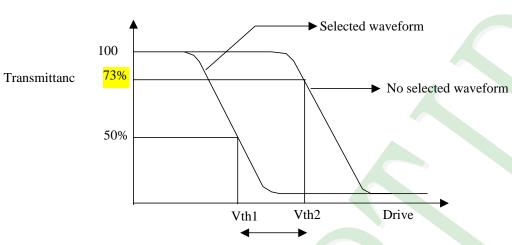


### Note:

Frame frequency is defined as follows: Common side supply voltage peak - to - peak /2 = 1 period







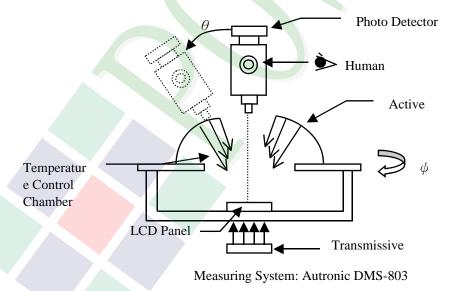
Active voltage range

	Vth1	Vth2
View direction	10°	$40\degree$
Drive waveform	(Selected waveform)	(No selected waveform)
Transmittance	50%	73%

**※**1 Contrast ratio

= (Brightness in OFF state) / (Brightness in ON state)

Outline of Electro-Optical Characteristics Measuring System





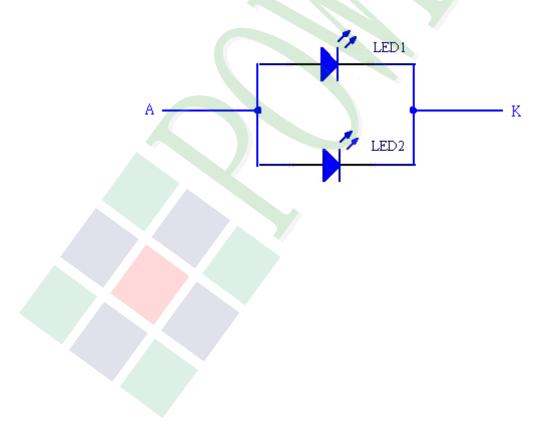
# 1.6 Backlight Characteristics

# Maximum Ratings

Item	Symbol	Conditions	Min.	Max.	Unit
Forward Current	IF	Ta =25°C	-	40	mA
Power Dissipation	PD	Ta =25°C	-	200	mW

Electrical / Optical Characteristics

Item	Symbol	Conditions	Min.	Тур.	Max.	Unit
Forward Voltage	VF		3.4	3.6	4.0	V
Average Brightness (without LCD)	IV	IF= 40mA	700	800	<b>)</b>	cd/m <sup>2</sup>
Color of CIE Coordinate	X		0.26	0.31	0.34	_
(Without LCD)	Y		0.26	0.31	0.34	-
Color			White			



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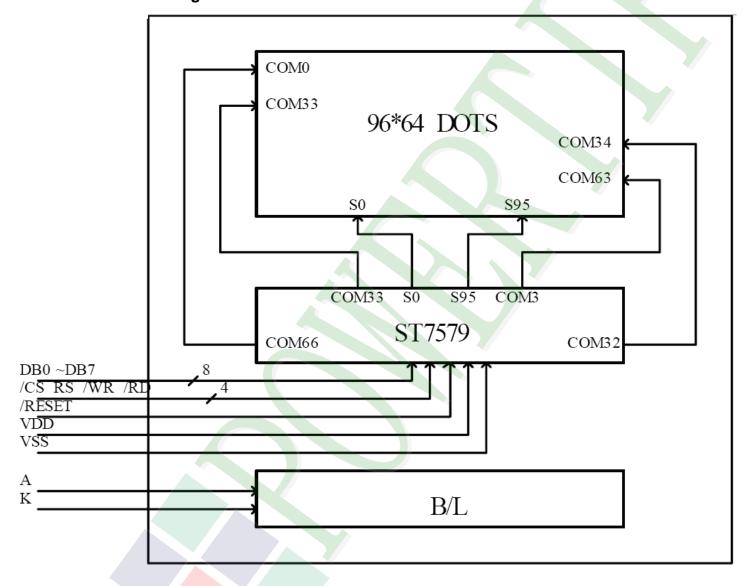
# 2. MODULE STRUCTURE

# 2.1 Counter Drawing

### 2.1.1 LCM Mechanical Diagram

\* See Appendix

## 2.1.2 Block Diagram





# 2.2 Interface Pin Description

Pin No.	Symbol	Function					
1	А	LED B/L Power supply(Anode).					
2	К	LED B/L Power supply(Cathode).					
3	VSS	System Ground.(0V)					
		PS2 PS1 Selected Interface					
4	PS2	"L" "L" 4 Pin-SPI MPU interface					
		"H" "L" 3 Pin-SPI MPU interface					
5	PS1	"L" "H" 8080-series parallel MPU interface					
5	F31	"H" "H" 6800-series parallel MPU interface					
6	/CS	Chip select signal .Active "L".					
7	/RESET	Reset input pin. When RESB is "L", internal initialization is executed.					
8	RS	It determines whether the access is related to data or command.  RS ="H": Indicates that D[7:0] are display data.  RS ="L": Indicates that D[7:0] are control data.  RS is not used in 3-line SPI interface and should fix to "H" by VDD.					
9	/WR	1.Read/Write control input pin in 6800-series parallel MPU interface.  /WR="H": read. /WR="L": write.  2.Write enable input pin in 8080-series parallel MPU interface.  Signals on D[7:0] will be latched at the rising edge of /WR signal.  Note: /WR is not used in serial interfaces and should fix to "H" by VDD.					
10	/RD	<ol> <li>Read/Write control input pin in 6800-series parallel MPU interface.         R/W="H": When E is "H", D[7:0] are in an output status.         R/W="L": Signals on D[7:0] are latched at the falling edge of E signal.     </li> <li>Read enable input pin in 8080-series parallel MPU interface.         When /RD is "L", D[7:0] are in output status.     </li> <li>Note: /RD is not used in serial interfaces and should fix to "H" by VDD.</li> </ol>					

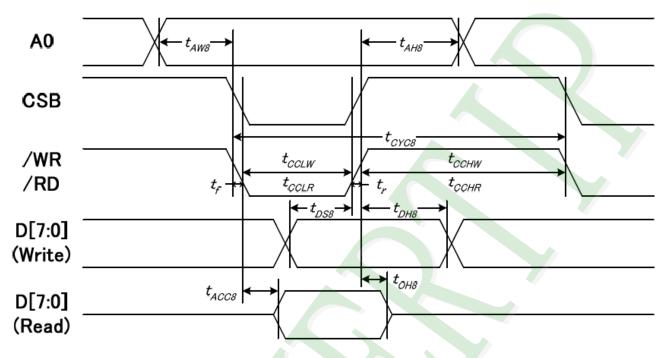


Pin No.	Symbol	Function
11	D0/SCLK	
12	D1/SDA	When using 8-bit parallel interface: 6800 or 8080 mode     8-bit bi-directional data bus. Connect to the data bus of 8-bit
13	D2/SDA	microprocessor.
14	D3/SDA	When CSB is non-active (CSB="H"), D[7:0] pins are high impedance.  2. When using serial interface: 4-LINE or 3-LINE
15	D4	D[7:4] : Not used and should fix to "H" by VDD.
16	D5	D[3:1] =SDA : Serial data input, must be connected together.  D0=SCLK : Serial clock input.
17	D6	When CSB is non-active (CSB="H"), D[7:0] pins are high impedance.
18	D7	
19	VSS	System Ground.(0V)
20	VDD	Power Supply.(3.3V)



# 2.3 Timing Characteristics

System Bus Read/Write Characteristics 1 (For the 8080 Series MPU)

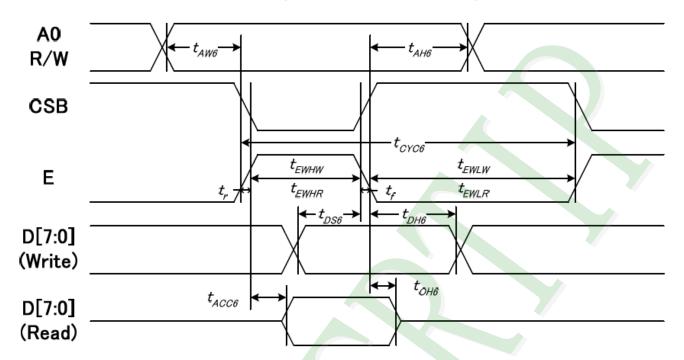


(VDD = 3.3V, Ta =-30~85°C)

Item	Signal	Symbol	Condition	Min.	Max.	Unit
Address setup time	A0	tAW8		80	_	
Address hold time	Αυ	tAH8		10	_	
System cycle time		tCYC8		350	_	
Enable L pulse width (WRITE)	WR	tCCLW		70	_	
Enable H pulse width (WRITE)		tCCHW		50	_	
Enable L pulse width (READ)	RD	tCCLR		120	_	ns
Enable H pulse width (READ)	KD.	tCCHR		50		
WRITE Data setup time		tDS8		60	_	
WRITE Data hold time	D(7:01	tDH8		10	_	
READ access time	D[7:0]	tACC8	CL = 16 pF	_	70	
READ Output disable time		tOH8	CL = 16 pF	10	50	



# System Bus Read/Write Characteristics 1 (For the 6800 Series MPU)

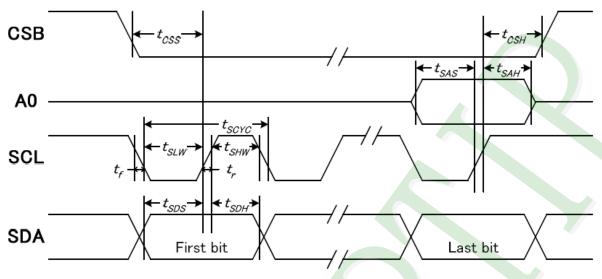


(VDD = 3.3V , Ta =-30~85°C)

Item	Signal	Symbol	Condition	Min.	Max.	Unit
Address setup time	A0	tAW6		80	_	
Address hold time	Αυ	tAH6		10	_	
System cycle time		tCYC6		240	_	
Enable L pulse width (WRITE)		tEWLW		70	_	
Enable H pulse width (WRITE)	E	tEWHW		50	_	
Enable L pulse width (READ)		tEWLR		70	_	ns
Enable H pulse width (READ)		tEWHR		130		
Write data setup time		tDS6		60	_	
Write data hold time	D(7:01	tDH6		10	_	
Read data access time	D[7:0]	tACC6	CL = 16 pF	_	70	
Read data output disable time		tOH6	CL = 16 pF	10	50	



# SERIAL INTERFACE (4-Line Interface)



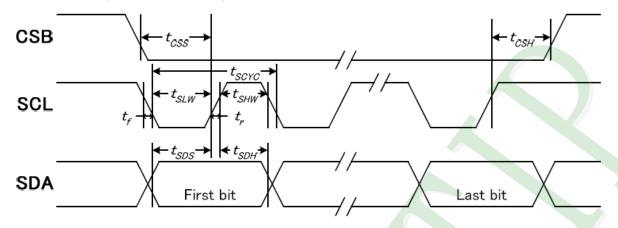
(VDD = 3.3V , Ta =-30~85°C)

Item	Signal	Symbol	Condition	Min.	Max.	Unit
Serial clock period		tSCYC		120	_	
SCLK "H" pulse width	SCLK	tSHW		60	_	
SCLK "L" pulse width		tSLW		60	_	
Address setup time	4.0	tSAS		20	_	
Address hold time	A0	tSAH		90	_	ns
Data setup time	SDA	tSDS		20	_	
Data hold time	SDA	tSDH		10	_	
CSB-SCLK time	CSB	tCSS		20	_	
CSB-SCLK time	CSB	tCSH		120	_	





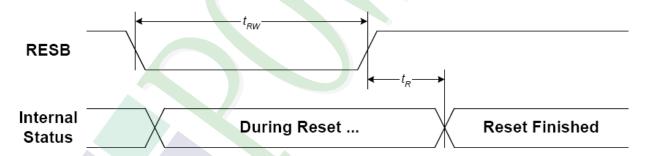
### SERIAL INTERFACE (3-Line Interface)



(VDD = 3.3V , Ta =-30~85°C)

Signal	Symbol	Condition	Min.	Max.	Unit
	tSCYC		120	_	
SCLK	tSHW		60	_	
	tSLW		60	_	
SD.	tSDS		20	_	ns
SDA	tSDH		10	_	
CSB	tcss		20	_	
CSB	tCSH		130	_	
		SCLK tSHW tSLW tSDS tSDH tCSS	tscyc   tshw   tslw   tsds   tsds   tsdh   tcss   tcss	SCLK         tSCYC         120           SCLK         tSHW         60           tSLW         60           SDA         tSDS         20           tSDH         10           CSB         tCSS         20	tSCYC         120         —           SCLK         tSHW         60         —           tSLW         60         —           SDA         tSDS         20         —           tSDH         10         —           CSB         tCSS         20         —

### **RESET TIMING**



(VDD = 3.3V , Ta =-30~85°C)

Item	Symbol	Condition	Min.	Max.	Unit
Reset time	tR		_	1.5	116
Reset "L" pulse width	tRW		1.5	_	us



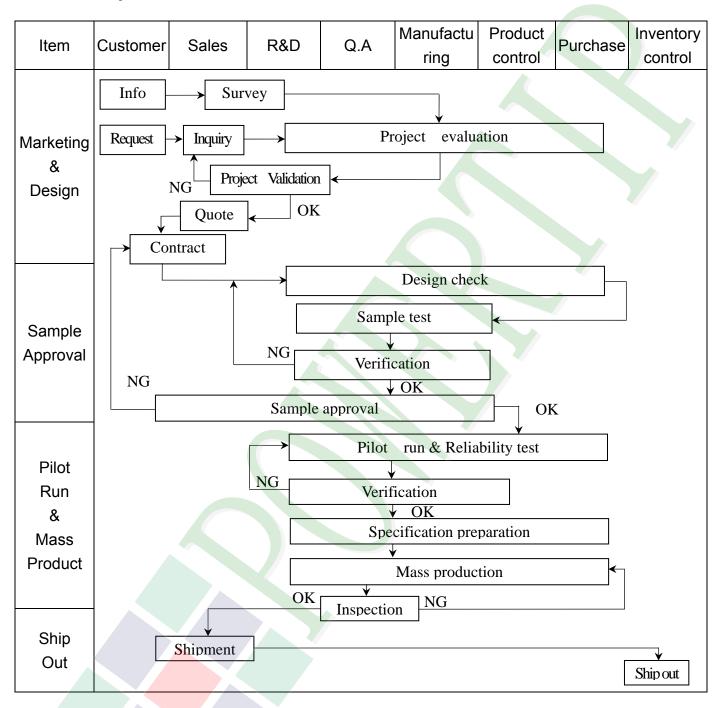
# **2.4** Display Command

INSTRUCTION	Α0	R/W			С	ОММА	ND BY1	Έ			DESCRIPTION
INSTRUCTION	Au	(RWR)	D7	D6	D5	D4	D3	D2	D1	D0	DESCRIPTION
H[1:0] Independent Ins	struct	ion						•			
NOP	0	0	0	0	0	0	0	0	0	0	No operation
Reserved	0	0	0	0	0	0	0	0	0	1 4	Do not use
Function Set	0	0	0	0	1	MX	MY	PD	H1	H0	Power down; entry mode; Select instruction table
Read Status	0	1	PD	0	0	D	Е	MX	MY	DO	Read status byte
Read Data	1	1	D7	D6	D5	D4	D3	D2	D1	D0	Read data to RAM
Write Data	1	0	D7	D6	D5	D4	D3	D2	D1	D0	Write data to RAM
H[1:0] = (0,0)											
Reserved	0	0	0	0	0	0	0	0	1	Х	Do not use
Set V0 Range	0	0	0	0	0	0	0	1	0	PRS	V0 range L/H select
END	0	0	0	0	0	0	0	1	1	0	Release read/modify/write
Read-modify-Write	0	0	0	0	0	0	0	1	1	1	RAM address at R:+0 , W:+1
Display Control	0	0	0	0	0	0	1	D	0	Е	Sets display configuration
Reserved	0	0	0	0	0	1	0	0	X	Х	Do not use
Set Y Address of RAM	0	0	0	1	0	0	Y3	Y2	Y1	Y0	Sets Y address of RAM 0≤Y≤9
Set X Address of RAM	0	0	1	X6	X5	X4	Х3	X2	X1	X0	Sets X address of RAM 0≤X≤101
H[1:0] = (0,1)											
Reserved	0	0	0	0	0	0	0	0	1	Х	Do not use
Display Configuration	0	0	0	0	0	0	1	DO	X	Х	Top/bottom row mode set data order
Bias System	0	0	0	0	0	1	0	BS2	BS1	BS0	Set bias system (BSx)
Set Start Line (high)	0	0	0	0	0	0	0	1	0	S6	Specify the initial display line S6
Set Start Line (low)	0	0	0	1	S5	S4	S3	S2	S1	S0	Specify the initial display line to realize vertical scrolling
Set V0	0	0	1	Vors	V <sub>OP5</sub>	V <sub>OP4</sub>	V <sub>OP3</sub>	V <sub>OP2</sub>	V <sub>OP1</sub>	Vopo	Set VoP parameter to register
H[1:0] = (1,0)		74									
Reserved	0	0	0	0	0	0	0	0	1	Χ	Do not use
Partial Screen Mode	0	0	0	0	0	0	0	1	0	PS	Partial screen enable
Partial Screen Size	0	0	0	0	0	0	1	0	0	WS	Set partial screen size
Display Part	0	0	0	0	0	1	0	DP2	DP1	DP0	Set display part for partial screen mode
H[1:0] = (1,1)											
Reserved	0	0	0	0	0	0	0	0	0	Х	Do not use
RESET	0	0	0	0	0	0	0	0	1	1	Software reset
Frame Control	0	0	0	0	0	0	1	FR2	FR1	FR0	Frame rate control
N-Line Inversion	0	0	0	1	0	NL4	NL3	NL2	NL1	NL0	Sets N-Line inversion
Booster Efficiency & Booster Stage	0	0	1	0	0	1	BE1	BE0	PC1	PC0	Booster Efficiency Set
Reserved	0	0	1	Х	Х	Х	Х	Х	Х	Х	Do not use

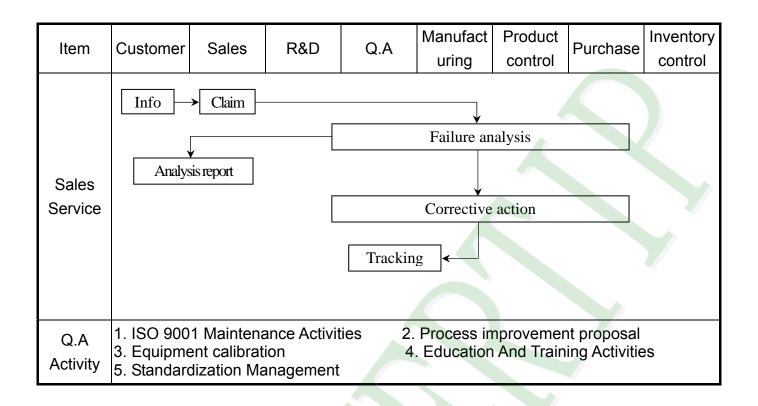


## 3. QUALITY ASSURANCE SYSTEM

# 3.1 Quality Assurance Flow Chart









## 3.2 Inspection Specification

◆Scope: The document shall be applied to LCD Module for Monotype and Color STN(Ver. B01).

◆Inspection Standard : MIL-STD-105E Table Normal Inspection Single Sampling Level Ⅱ.

◆Equipment : Gauge · MIL-STD · Powertip Tester · Sample

◆Defect Level: Major Defect AQL: 0, 4; Minor Defect: AQL: 1, 5.

**♦**OUT Going Defect Level : Sampling .

◆Manner of appearance test :

(1). The test be under 20W×2 fluorescent light 'and distance of view must be at 30 cm.

(2). Standard of inspection: (Unit: mm)

(3). The test direction is base on about around 45° of vertical line. (Fig. 1)

(4). Definition of area . (Fig. 2)

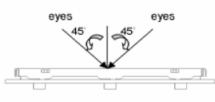


Fig.1

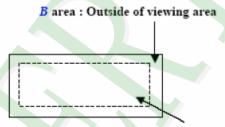


Fig. 2 A area: viewing area

### Specification:

NO	Item	Criterion	Level
		1. 1 The part number is inconsistent with work order of Production.	Major
01	Product condition	1. 2 Mixed production types.	Major
		1. 3 Assembled in inverse direction.	Major
02	Quantity	2. 1 The quantity is inconsistent with work order of production.	Major
03	Outline dimension	3. 1 Product dimension and structure must conform to Structure diagram.	Major
		4. 1 Missing line character and icon.	Major
		4. 2 No function or no display.	Major
04	Electrical Testing	4. 3 Output data is error.	Major
		4. 4 LCD viewing angle defect.	Major
		4. 5 Current consumption exceeds product specifications.	Major



### ◆Specification For Monotype and Color STN:

(Ver. B01)

NO	Item	C	riteri	on			Level
	Black or white dot \ scratch \ contamination	<ul> <li>5. 1 Round type:</li> <li>5. 1. 1 display only:</li> <li>• White and black spots on</li> <li>4 white or black spots pr</li> <li>• Densely spaced: NO more</li> </ul>	esent.				
	Round type	5. 1. 2 Non-display :  Dimension (diameter : Φ)		Acceptance A area	(Q't		
	⇒l√ <del> </del> ←⊥	Φ ≤ 0.10	Acce	ept no dense			
05	Ŷ Y	$0.10 < \Phi \leq 0.20$		3		gnore	Minor
00	<b>-</b>	$0.20 < \Phi \leq 0.30$		2	1	gnore	Willion
	$\Phi = (x+y)/2$	Total quantity		4			
		5. 1. 3 Line type:	V				
	Line type	Dimension Wildle (NO			otanc	e (Q'ty)	
	<b>+</b>	Length (L) Width (W) $ $		A area Accept no de	nse	B area	
	→ L ←	$L \le 3.0$ $0.03 < W \le 0$	0. 05	4		Ignore	
		$L \le 2.5 \qquad 0.05 < W \le 0.$ $W > 0$		As	roun	d type	
		Dimension (diameter : Φ)		Acceptano A area	ce (Q	P'ty) B area	
		$\Phi \leq 0.20$		cept no dense	+	D area	
0.6	Polarizer	$0.20 < \Phi \leq 0.50$		3			
06	Bubble	$0.50 < \Phi \le 1.00$		2		Ignore	Minor
		$\Phi > 1.00$		0			
		Total quantity		4			
		1					



# ◆Specification For Monotype and Color STN:

(Ver. B01)

NO	Item	Criterion		Level
		Z: The thickness of crack W:	The width of crack. terminal length LCD side length	
		7. 1 General glass chip: 7. 1. 1 Chip on panel surface and crack	7	
0.7	The crack of	SP Z	SP	
07	glass	Y (OK)	[NG]	Minor
		Seal width		
		X Y	z	
		≤ a Crack can't enter viewing area	≤1/2 t	
	X	≤ a Crack can't exceed the half of SP width.	1/2 t < Z ≤2 t	



## ♦ Specification For Monotype and Color STN: (Ver. B01)

NO	Item	Criterion Criterion	Level
		Symbols:  X: The length of crack Z: The thickness of crack t: The thickness of glass  7. 1. 2 Corner crack:	
07	The crack of glass	X $Y$ $Z$ $≤1/5$ a  Crack can't enter viewing area $≤1/5$ a  Crack can't exceed the half of SP width.  7. 2 Protrusion over terminal: 7. 2. 1 Chip on electrode pad: $X$ $X$ $Y$ $Y$ $X$ $Y$ $Y$ $X$ $Y$ $Y$ $X$ $Y$	Minor



# ◆Specification For Monotype and Color STN:

(Ver. B01)

NO	Item	Criterion	Level
		Symbols:  X: The length of crack Z: The thickness of crack t: The thickness of glass  Y: The width of crack. W: terminal length a: LCD side length	
07	The crack of glass	7. 2. 2 Non-conductive portion:    X	Minor



♦Specification For Monotype and Color STN:

(Ver. B01)

NO	Item	Criterion	Level
		8. 1 Backlight can't work normally.	Major
08	Backlight elements	8. 2 Backlight doesn't light or color is wrong.	Major
		8. 3 Illumination source flickers when lit.	Major
		9. 1 Pin type must match type in specification sheet.	Major
		9. 2 No short circuits in components on PCB or FPC.	Major
09	General appearance	9. 3 Product packaging must the same as specified on packaging specification sheet.	Minor
		9. 4 The folding and peeled off in polarizer are not acceptable.	Minor
		9. 5 The PCB or FPC between B/L assembled distance (PCB or FPC) is ≤1. 5 mm.	Minor



# **4. RELIABILITY TEST**

# 4.1 Reliability Test Condition

(Ver.B01)

7.1	Renability Test Colluition (Vel. Bot)		
NO.	TEST ITEM	TEST CONDITION	
1	High Temperature Storage Test	Keep in +80 ±2°C 96 hrs Surrounding temperature, then storage at normal condition 4hrs.	
2	Low Temperature Storage Test	Keep in −30 ±2°C 96 hrs Surrounding temperature, then storage at normal condition 4hrs.	
3	High Temperature / High Humidity Storage Test	Keep in +60 °C /90% R.H duration for 96 hrs Surrounding temperature, then storage at normal condition 4hrs. (Excluding the polarizer)	
4	Temperature Cycling Storage Test	$-30^{\circ}\text{C} \rightarrow +25^{\circ}\text{C} \rightarrow +80^{\circ}\text{C} \rightarrow +25^{\circ}\text{C}$ $(30\text{mins})  (5\text{mins})  (5\text{mins})$ $10 \text{ Cycle}$ Surrounding temperature, then storage at normal condition 4hrs.	
5	ESD Test	Air Discharge: Apply 2 KV with 5 times Discharge for each polarity +/-  1. Temperature ambiance: 15°C ~  2. Humidity relative: 30%~60%  3. Energy Storage Capacitance(C  4. Discharge Resistance(Rd): 330  5. Discharge, mode of operation: Single Discharge (time between some context of the output voltage incomes context.)	s+Cd): 150pF±10% Ω±10% uccessive discharges at least 1 sec)
6	Vibration Test (Packaged)	<ol> <li>Sine wave 10~55 Hz frequency (1 min/sweep)</li> <li>The amplitude of vibration :1. 5 mm</li> <li>Each direction (X \ Y \ Z) duration for 2 Hrs</li> </ol>	
7	Drop Test (Packaged)	Packing Weight (Kg)  0 ~ 45. 4  45. 4 ~ 90. 8  90. 8 ~ 454  Over 454  Drop Direction: %1 corner / 3 edge	122 76 61 46

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### 5. PRECAUTION RELATING PRODUCT HANDLING

#### **5.1 SAFETY**

- 5.1.1 If the LCD panel breaks, be careful not to get the liquid crystal to touch your skin.
- 5.1.2 If the liquid crystal touches your skin or clothes, please wash it off immediately by using soap and water.

#### **5.2 HANDLING**

- 5.2.1 Avoid any strong mechanical shock which can break the glass.
- 5.2.2 Avoid static electricity which can damage the CMOS LSI—When working with the module, be sure to ground your body and any electrical equipment you may be using.
- 5.2.3 Do not remove the panel or frame from the module.
- 5.2.4 The polarizing plate of the display is very fragile. So , please handle it very carefully ,do not touch , push or rub the exposed polarizing with anything harder than an HB pencil lead (glass , tweezers , etc.)
- 5.2.5 Do not wipe the polarizing plate with a dry cloth, as it may easily scratch the surface of plate.
- 5.2.6 Do not touch the display area with bare hands, this will stain the display area.
- 5.2.7 Do not use ketonics solvent & aromatic solvent. Use with a soft cloth soaked with a cleaning naphtha solvent.
- 5.2.8 To control temperature and time of soldering is 320±10°C and 3-5 sec.
- 5.2.9 To avoid liquid (include organic solvent) stained on LCM.

### **5.3 STORAGE**

- 5.3.1 Store the panel or module in a dark place where the temperature is  $25^{\circ}$ C  $\pm 5^{\circ}$ C and the humidity is below 65% RH.
- 5.3.2 Do not place the module near organics solvents or corrosive gases.
- 5.3.3 Do not crush, shake, or jolt the module.

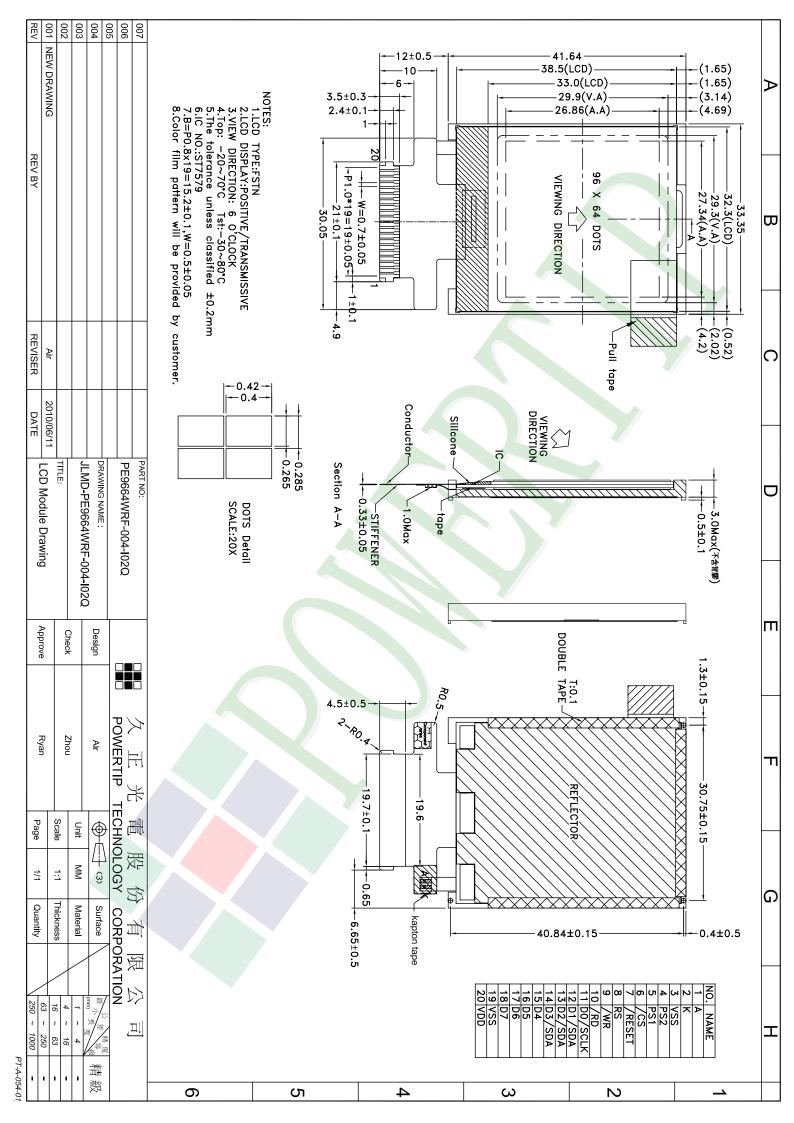
### **5.4 TERMS OF WARRANTY**

5.4.1 Applicable warrant period

The period is within thirteen months since the date of shipping out under normal using and storage conditions.

5.4.2 Unaccepted responsibility

This product has been manufactured to your company's specification as a part for use in your company's general electronic products. It is guaranteed to perform according to delivery specifications. For any other use apart from general electronic equipment, we cannot take responsibility if the product is used in nuclear power control equipment, aerospace equipment, fire and security systems or any other applications in which there is a direct risk to human life and where extremely high levels of reliability are required.



Approve Check Contact Ver.002 LCM包裝規格書 LCM Packaging Specifications Eddy Ryan Air Documents NO. JPKG-PE9664WRF-004-1020 (For Tray) 1.包裝材料規格表 (Packaging Material): (per carton) No. Item Model Dimensions (mm) 1Pcs Weight Quantity Total Weight 33.35 X 41.64 X 3.0 1 成品 (LCM) 768 4.3008 PE9664WRF-004-I02Q 0.0056 2 多層薄膜(1)POF 19"X350X0.015 6 OTFILM0BA03ABA 0.0017 0.0102 3 352 X 260 X 10.8 54 TRAY 盤 (2)Tray TYPE09606404BB 0.1 5.4 4 內盒(3)Product Box BX36627063ABBA 393 X 274 X 68 0.02 6 0.12 5 保力龍板(4)Polylon board OTPLB00PL08ABA 550 X 393 X 20 0.0028 2 0.0056 6 1 外紙箱(5)Carton 570 X 410 X 265 BX57041027CCBA 1.4208 1.4208 7 舒美墊(6)EPE OTFOAMPHD05ABA 304 X216 X 1 48 0.1056 0.0022 8 9 2. 一整箱總重量 (Total LCD Weight in carton ): 11.37 Kg±10% 3.單箱數量規格表 (Packaging Specifications and Quantity): (1)LCM quantity per box : no per tray x no of tray 8 16 128 (2)Total LCM quantity in carton: quantity per box 128 x no of boxes 768 6 Use empty tray 空盤 (4)保力龍板 (1)多層薄膜 Polylon board **POF** Put products into the tray (2)TRAY 盤 Tray Put EPE on products (5)外紙箱 Carton (3)內盒 Product Box Tray stacking 特 記 事 項 (REMARK) 3.可適用於單品包裝 1. Label Specifications: Detail B 斜角 It's also suitable to Panel MODEL: LOT NO: 4. 將OTFOAMPHD05ABA裁成304X216 QUANTITY: mm的小片,每層產品上放1pcs EPE. CHECK: 圓角 Tray 1 2.TRAY盤相疊時,需旋轉180度,請詳見B視圖 Rotate tray 180 degrees and place on top of stack. Check the tray stack using Fig. B.