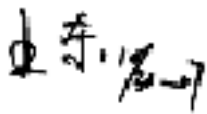

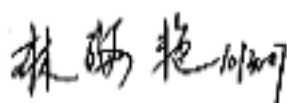


SPECIFICATIONS

CUSTOMER : POWERTIP TECHNOLOGY INC
SAMPLE CODE (Ver.) : PS320240FRF-DBAH02 (Ver.0)
MASS PRODUCTION CODE (Ver.) : PG320240FRFDBAHS3Q(VER.B)
DRAWING NO. (Ver.) : PG-03100-125(VER.0)

Customer Approved

Date:

Approved	QC Confirmed	Designer
		

- Approval For Specifications Only.
- * This specification is subject to change without notice.
- Please contact Powertip or it's representative before designing your product based on this specification.
- Approval For Specifications and Sample.

POWERTIP TECH. CORP.

Headquarters:

No.8, 6 th Road, Taichung Industrial Park,	TEL: 886-4-2355-8168	E-mail: sales@powertip.com.tw
Taichung, Taiwan	FAX: 886-4-2355-8166	Http://www.powertip.com.tw
台中市 407 工業區六路 8 號		

RECORDS OF REVISION

Date	Ver.	Description	Page	Design by
2006/10/23	0	NEW SAMPLE		程胤富
2006/11/14	A	Update the VDD=3.3V(typ)	5	程胤富
2007/10/9	B	Update PACKING SPECIFICATION	27	

Total : 27 Page

Contents

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- 1.2 Mechanical Specifications
- 1.3 Absolute Maximum Ratings
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- 2.2 Interface Pin Description
- 2.3 Timing Characteristics
- 2.4 Display Command
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- 4.1 Reliability Test Condition

5. PRECAUTION RELATING PRODUCT HANDLING

- 5.1 Safety
- 5.2 Handling
- 5.3 Storage
- 5.4 Terms of Warranty

6. PACKING Specification

Note : For detailed information please refer to IC data sheet : RAIO RA8835P3N

1. SPECIFICATIONS

1.1 Features

Item	Standard Value
Display Type	320 * 240 Dots
LCD Type	FSTN ,Positive Transflctive,extended temp
Driver Condition	LCD Module: 1/240 Duty, 1/15 Bias
Viewing Direction	6 O'clock
Backlight	White CCFL B/L
Weight	280 g
Interface	8 bit parallel data input
ROHS	THIS PRODUCT CONFORMS THE ROHS OF PTC Detail information please refer web side : http://www.powertip.com.tw/news/LatestNews.asp

1.2 Mechanical Specifications

Item	Standard Value	Unit
Outline Dimension	148.02(L) * 120.24 (w) * 22.4 (H)(Max)	mm
Viewing Area	120.14 (L) * 92.14 (w)	mm
Active Area	115.18 (L) * 86.38 (w)	mm
Dot Size	0.34 (L) * 0.34 (w)	mm
Dot Pitch	0.36 (L) * 0.36 (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	V_{DD}	—	-0.3	+7.0	V
LCD Driver Supply Voltage	$V_{DD}-V_{EE}$	—	-0.3	32	V
Input Voltage	V_{IN}	—	-0.3	$V_{DD}+0.3$	V
Operating Temperature	T_{OP}	—	-20	70	°C
Storage Temperature.	T_{ST}	—	-30	80	°C
Storage Humidity	H_D	$T_a < 40\text{ °C}$	20	90	%RH

1.4 DC Electrical Characteristics

$V_{DD} = 3.3 \pm 0.3V, V_{SS} = 0V, T_a = 25^\circ C$

Item	Symbol	Condition	Min.	Typ.	Max.	Unit
Logic Supply Voltage	V_{DD}	—	3.0	3.3	3.6	V
“H” Input Voltage	V_{IH}	—	$0.8 V_{DD}$	-	V_{DD}	V
“L” Input Voltage	V_{IL}	—	V_{SS}	-	$0.2 V_{DD}$	V
“H” Output Voltage	V_{OH}	—	$V_{DD} - 0.4$	-	-	V
“L” Output Voltage	V_{OL}	—	-	-	$V_{SS} + 0.4$	V
Supply Current	I_{DD}	$V_{DD} = 3.0V; V_{OP} = 22V;$ Pattern= Full display	-	70	-	mA
		$V_{DD} = 3.0V; V_{OP} = 22V;$ Pattern= Horizontal line	-	68	120	mA
LCM driving voltage	V_{OP} ($V_{OP+} \sim V_{OP-}$)	$-20^\circ C$				V
		$25^\circ C^*1$	21.8	22.0	22.2	
		$70^\circ C$				

NOTE:*1 The VOP test point is $V_{OP+} - V_{OP-}$

1.5 Optical Characteristics

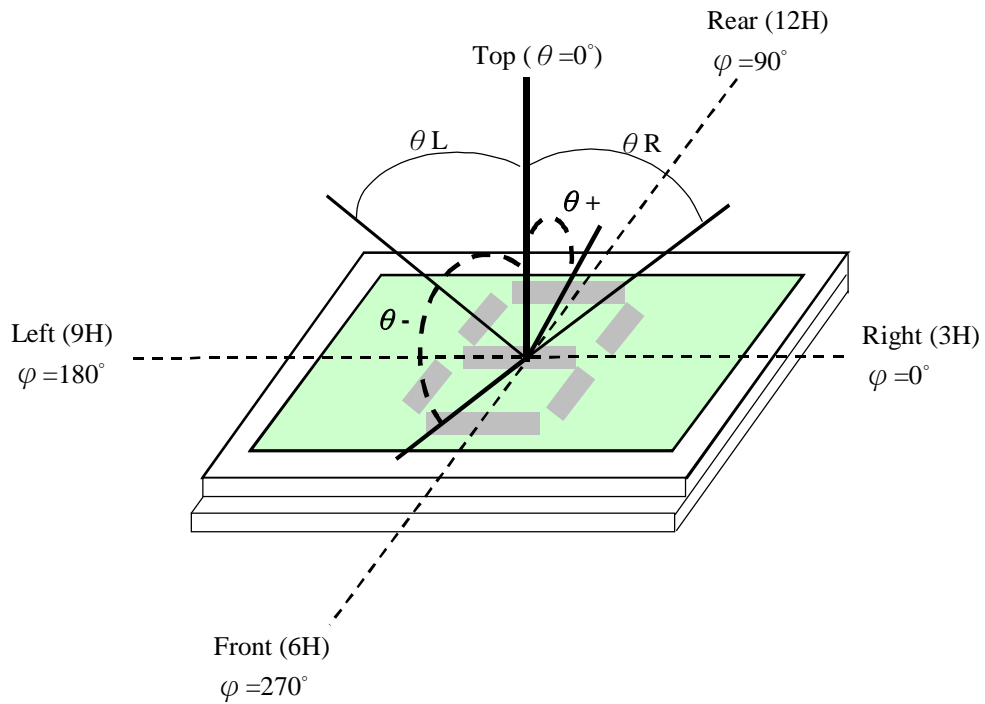
LCD Panel: 1/240 Duty, 1/15 Bias, $V_{LCD} = 22.0V, T_a = 25^\circ C$

Item	Symbol	Conditions	Min.	Typ.	Max.	Reference
View Angle	θ	$C \geq 2.0, \varnothing = 270^\circ$	0°	-	40°	Notes 1&2
Contrast Ratio	C	$\theta = -5^\circ, \varnothing = 270^\circ$	6	8	-	Note 3
Response Time(rise)	t_r	$\theta = -5^\circ, \varnothing = 270^\circ$	-	120 ms	180 ms	Note 4
Response Time(fall)	t_f	$\theta = -5^\circ, \varnothing = 270^\circ$	-	290 ms	435 ms	

Note 1.

Optical characteristics-2

Viewing angle

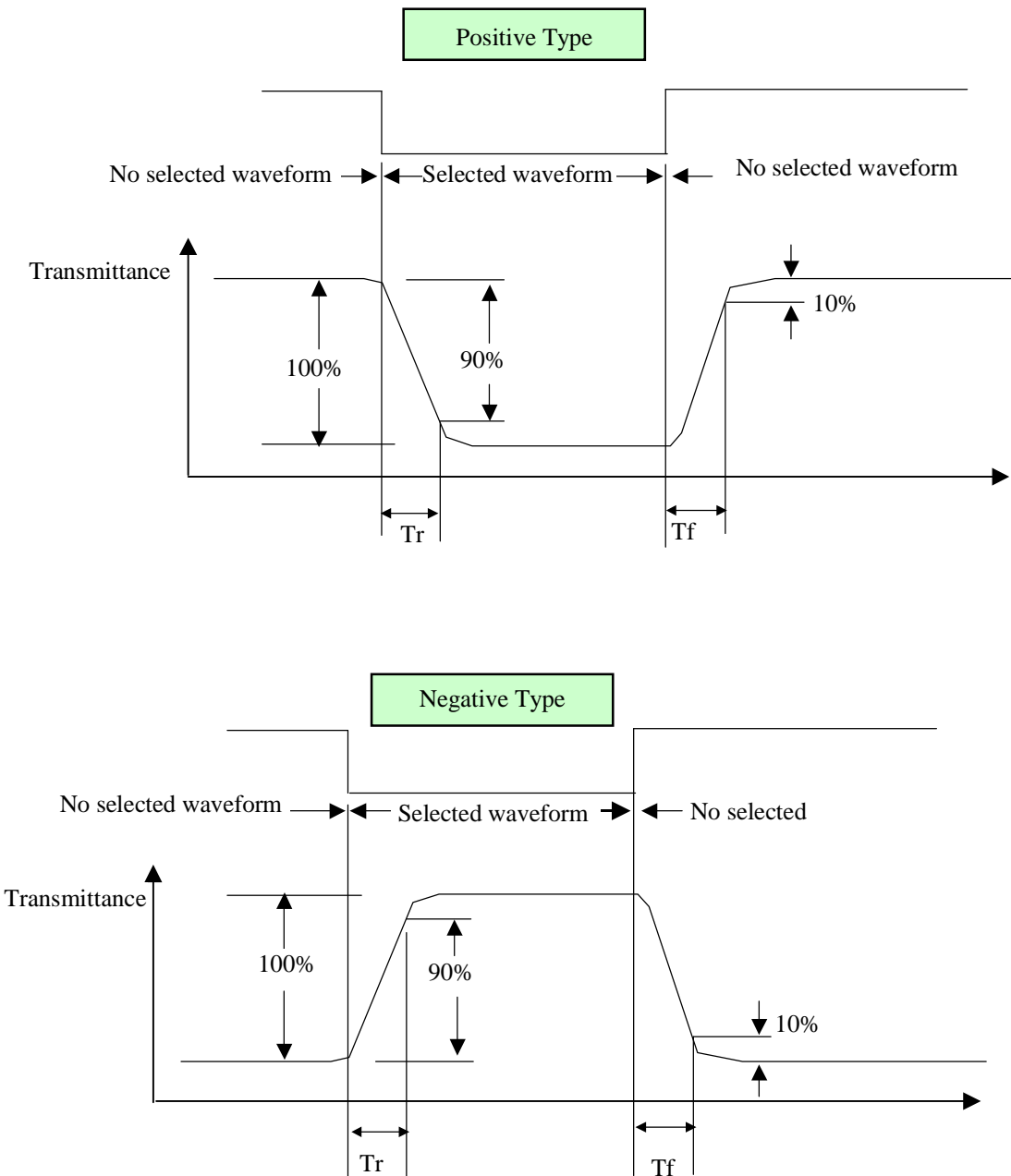


Viewing angle

Note 2.

Optical characteristics-3

Fig.2 Definition of response time



Electrical characteristics-2

※2 Drive waveform

V_{op} : Drive voltage

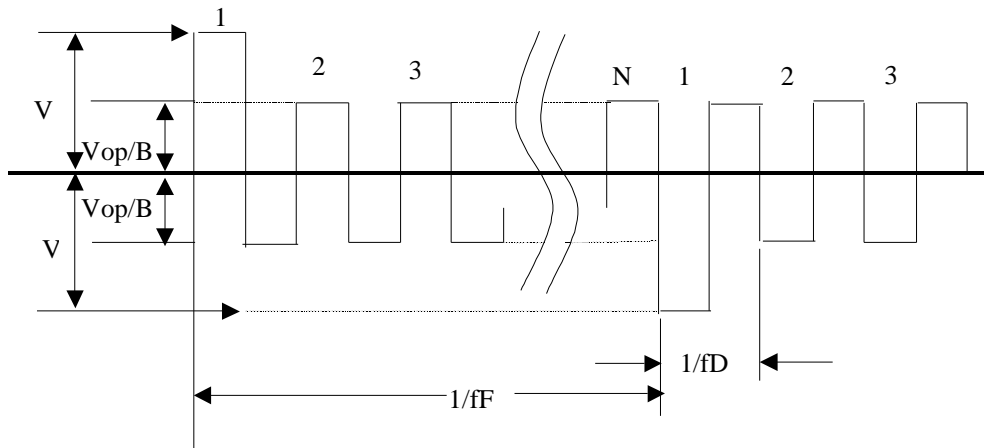
f_F : Frame frequency

$1/B$: Bias

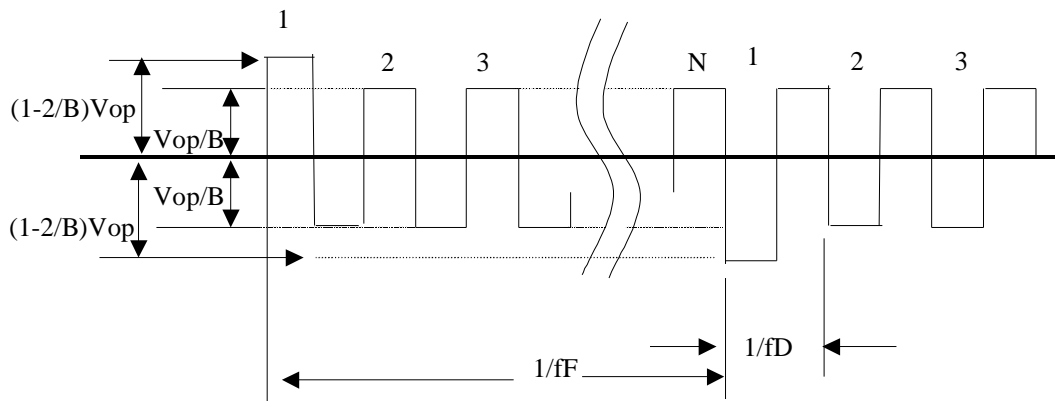
f_D : Drive frequency

N : Duty

(1) Selected waveform



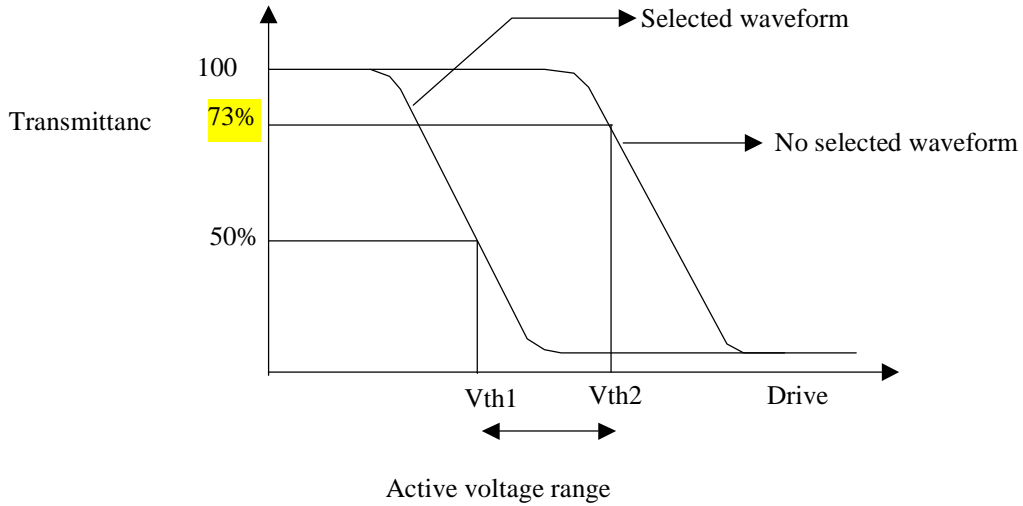
(2) Non- Selected waveform



Note:

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

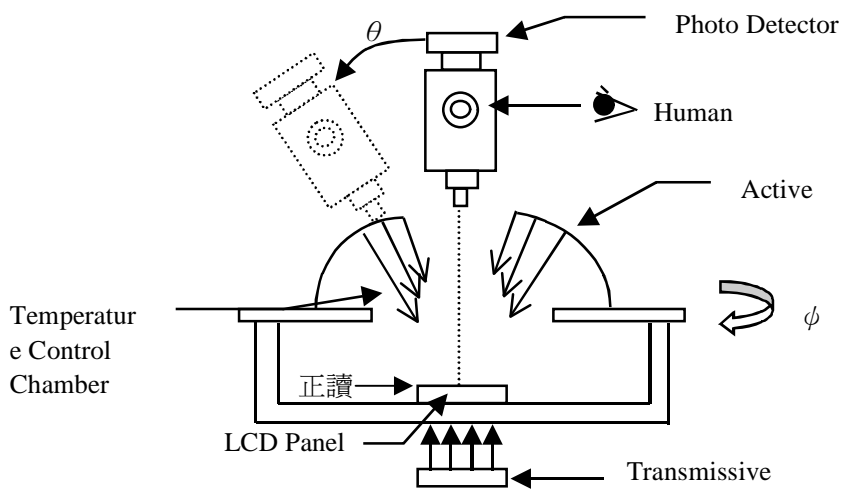
Note 3. : Definition of Vth



	Vth1	Vth2
View direction	10°	40°
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



Measuring System: Autronic DMS-803

1.6 Backlight Characteristics

THE LCD Module with CCFL Backlight

Electrical Characteristics

Item	Symbol	Conditions	Spec.	Unit
Lamp current	I_L	Ta=25°C	5.0	mA
Lamp voltage	V_L	Ta=25°C	240	V _{rms}
Lamp Frequency	F_L	Ta=25°C	30 ± 5	KHz
Lamp Power	P_L	Ta=25°C	1.8	W _(Max)
Lamp Life Time	Hr	> 50000Hour		

Optical Characteristics

Item	Symbol	Condition	Min.	Typ.	Max.	Unit
Average Brightness (With LCD)	IV	Note1	20	30	—	cd/m ²
CIE Color Coordinate (With LCD)	X		0.44	0.46	0.48	—
	Y		0.46	0.48	0.50	
Uniformity *1	ΔB		70%	—	—	Note2
Color	White					

Note1 : Inverter use TDK CXA-L10A (Power Supply 5.0 V) at Ta=25°C

Note2 : $\Delta B = B(\text{min}) / B(\text{max})\%$

1.7 Touch Screen Characteristics

1. Input Method and Activation Force

Stylus < 50 grams and Finger < 50 grams

2. Typical Optical characteristics

Visible Light transmission > 78% @ Wave length 550nm

Haze: 5% ± 2% through hard coated PET only

3. Electrical Specifications

1. Operating Voltage 5.5V or less.

2. Contact Current 20mA (MAX)

3. Circuit close resistance down 400~950 Ω up: 200~600 Ω

4. Circuit open resistance $\geq 20M\Omega$ at 25V DC

5. Contact bounce $\leq 30ms$

6. Linear test specification 1.5% (max)

4. Linearity tolerance 1.5% (max)

5. Environment specification

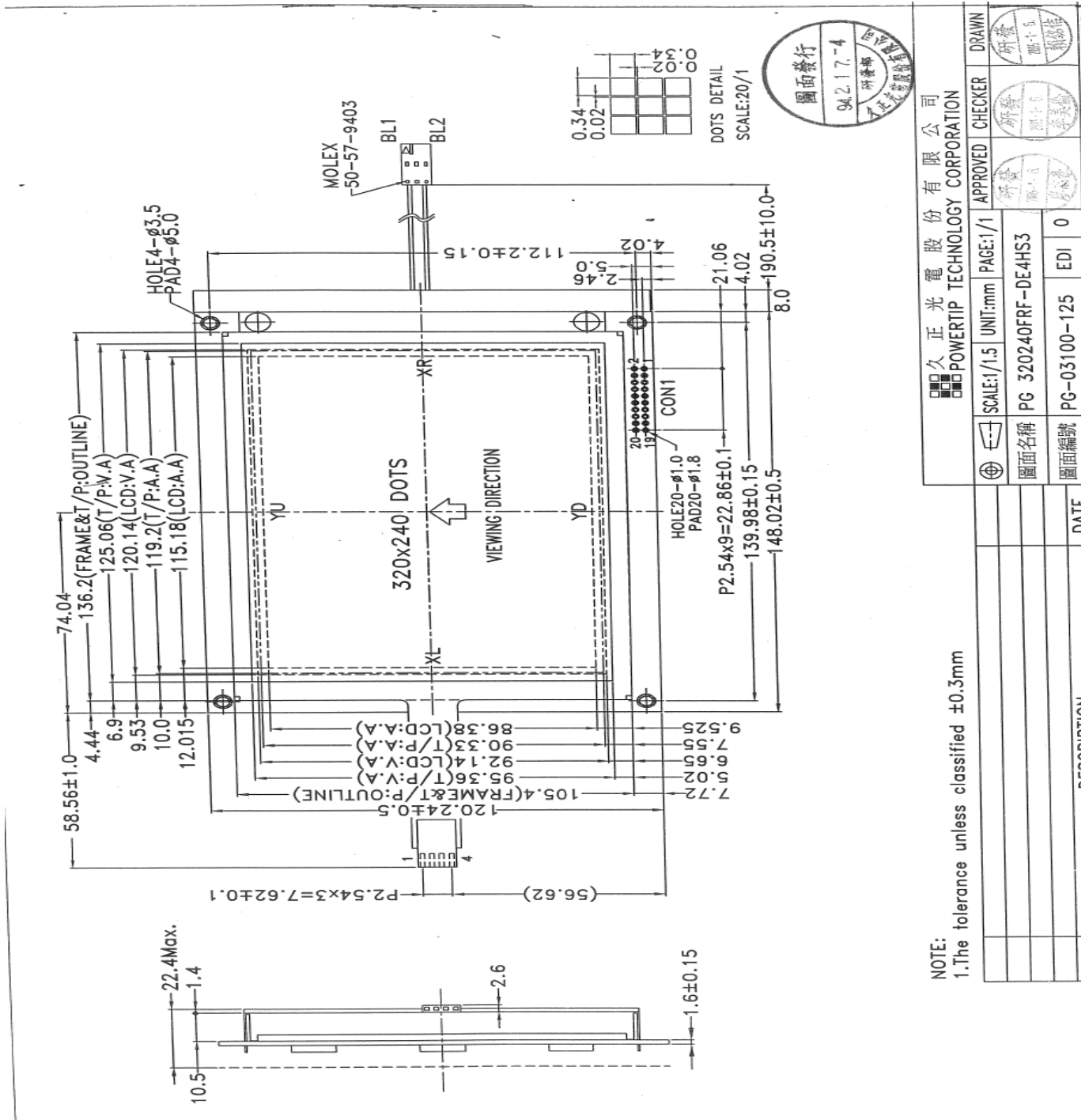
Operating Temperature 0°C ~ 50°C (Humidity range 20%RH ~ 85%RH)

Storage Temperature -20°C ~ 70°C (Humidity range 10%RH ~ 90%RH)

2. MODULE STRUCTURE

2.1 Counter Drawing

2.1.1 LCM Mechanical Diagram



久正光電股份有限公司
POWER TIP TECHNOLOGY CORPORATION

SCALE:1/1.5 UNIT:mm PAGE:1/1

圖面名稱 PG 320240FRF-DE4HS3

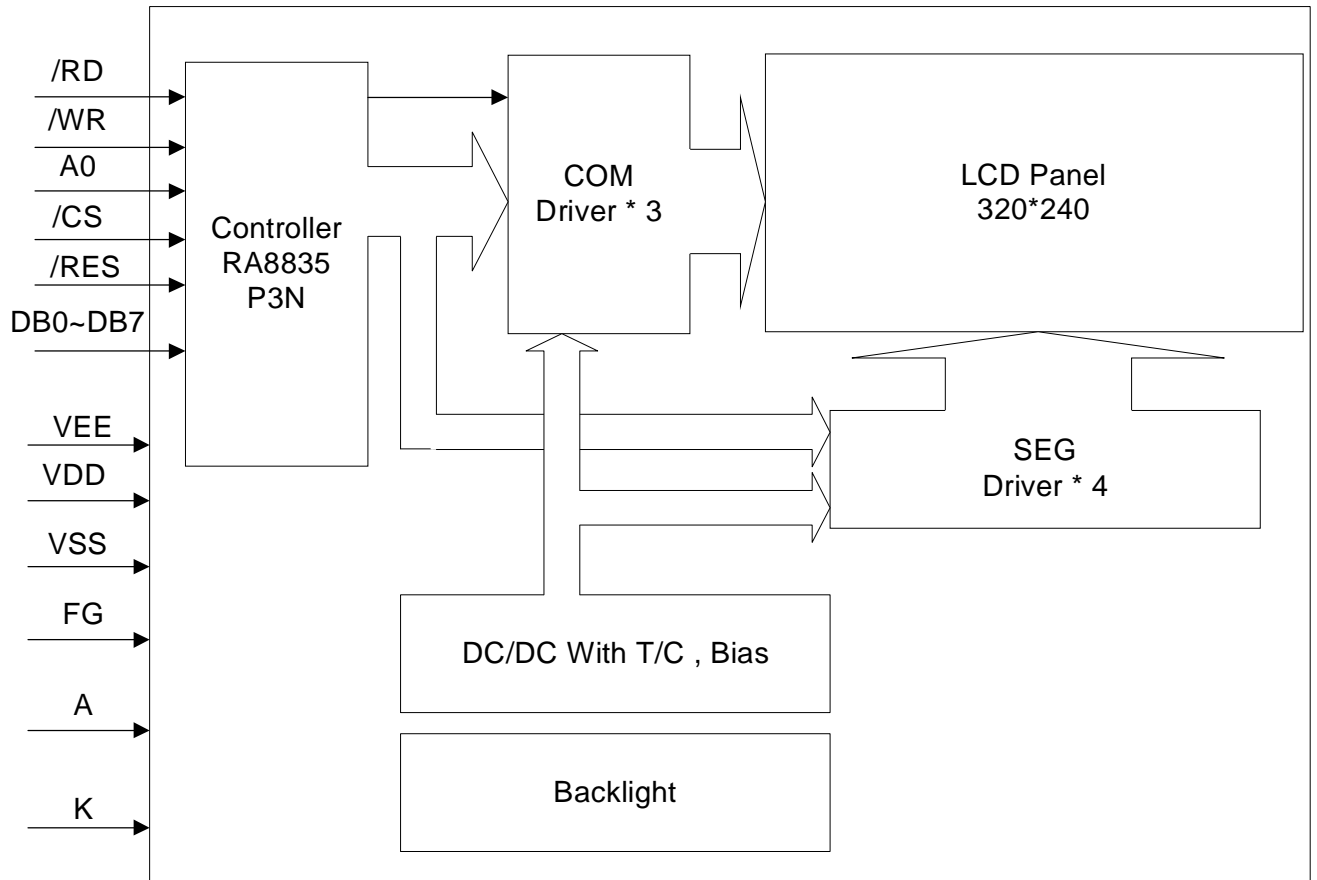
圖面編號 PG-03100-125 EDI 0

DATE

NOTE:
1.The tolerance unless classified ±0.3mm

圖面發行	圖面審核	圖面核准	圖面發行
9A.2.17-4			

2.1.2 Block Diagram



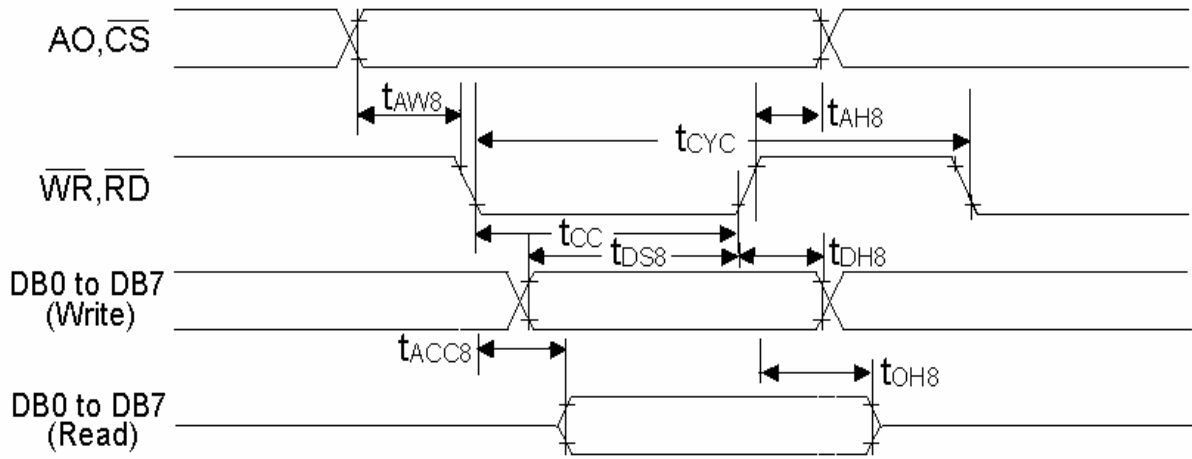
2.2 Interface Pin Description

Pin No.	Symbol	Function
1	V _{SS}	Ground (V _{SS} =0 V)
2	V _{DD}	Power Supply (V _{DD} = 5.0 V)
3	V _{LCD}	Operating voltage for LCD.No connection (Must be open)
4	/RD	Data read (read data from the module at "L")
5	/WR	Data write (write data to the module at "L")
6	A0	Command / Data read or write select (H : command L : data)
7	DB0	Data bus bit 0
8	DB1	Data bus bit 1
9	DB2	Data bus bit 2
10	DB3	Data bus bit 3
11	DB4	Data bus bit 4
12	DB5	Data bus bit 5
13	DB6	Data bus bit 6
14	DB7	Data bus bit 7
15	/CS	Chip select , active "L"
16	/RES	Reset input , active "L"
17	V _{EE}	Negative voltage out .No connection (Must be open)
18	FG	Frame ground (connected to metal bezel)
19	NC	Not connection
20	NC	Not connection

Built in negative voltage generator circuit and temperature compensation circuit.
 Built in Timing mode for 8080 family.

2.3 Timing Characteristics

8080 family interface timing



Signal	Symbol	Parameter	Min	Max	Unit
AO , /CS	t_{AH8}	Address hold time	10	-	ns
	t_{AW8}	Address setup time	0	-	ns
/WR , /RD	t_{CYC8}	System cycle time	See note	-	ns
	t_{CC}	Strobe pulse width	120	-	ns
DB0 to DB7	t_{DS8}	Data setup time	120	-	ns
	t_{DH8}	Data hold time	5	-	ns
	t_{ACC8}	RD access time	-	50	ns
	t_{OH8}	Output disable time	10	50	ns

Note : For memory control and system control command:

$$t_{CYC8} = 2t_c + t_{CC} + t_{CEA} + 75 > t_{ACV} + 245$$

For all other commands:

$$t_{CYC8} = 4t_c + t_{CC} + 30$$

2.4 Display Command

Class	Command	Code											Hex	Command description
		RD	WR	A0	D7	D6	D5	D4	D3	D2	D1	D0		
System control	SYSTEM SET	1	0	1	0	1	0	0	0	0	0	0	40	Initialize device and display
	SLEEP IN	1	0	1	0	1	0	1	0	0	1	1	53	Enter standby mode
Display control	DISP ON/OFF	1	0	1	0	1	0	1	1	0	0	D	58.59	Enable and disable display and display flashing
	SCROLL	1	0	1	0	1	0	0	0	1	0	0	44	Set display start address and display regions
	CSRFORM	1	0	1	0	1	0	1	1	1	0	1	5D	Set cursor type
	CGRAM ADR	1	0	1	0	1	0	1	1	1	0	0	5C	Set start address of character generator RAM
	CSRDIR	1	0	1	0	1	0	0	1	1	CD 1	CD 0	4C to 4F	Set direction of cursor movement
	HDOT SCR	1	0	1	0	1	0	1	1	0	1	0	5A	Set horizontal scroll position
	OVLAY	1	0	1	0	1	0	1	1	0	1	1	5B	Set display overlay format
Drawing control	CSRW	1	0	1	0	1	0	0	0	1	1	0	46	Set cursor address
	CSRR	1	0	1	0	1	0	0	0	1	1	1	47	Read cursor address
Memory control	MWRITE	1	0	1	0	1	0	0	0	0	1	0	42	Write to display memory
	MRAD	1	0	1	0	1	0	0	0	0	1	1	43	Read from display memory

Notes

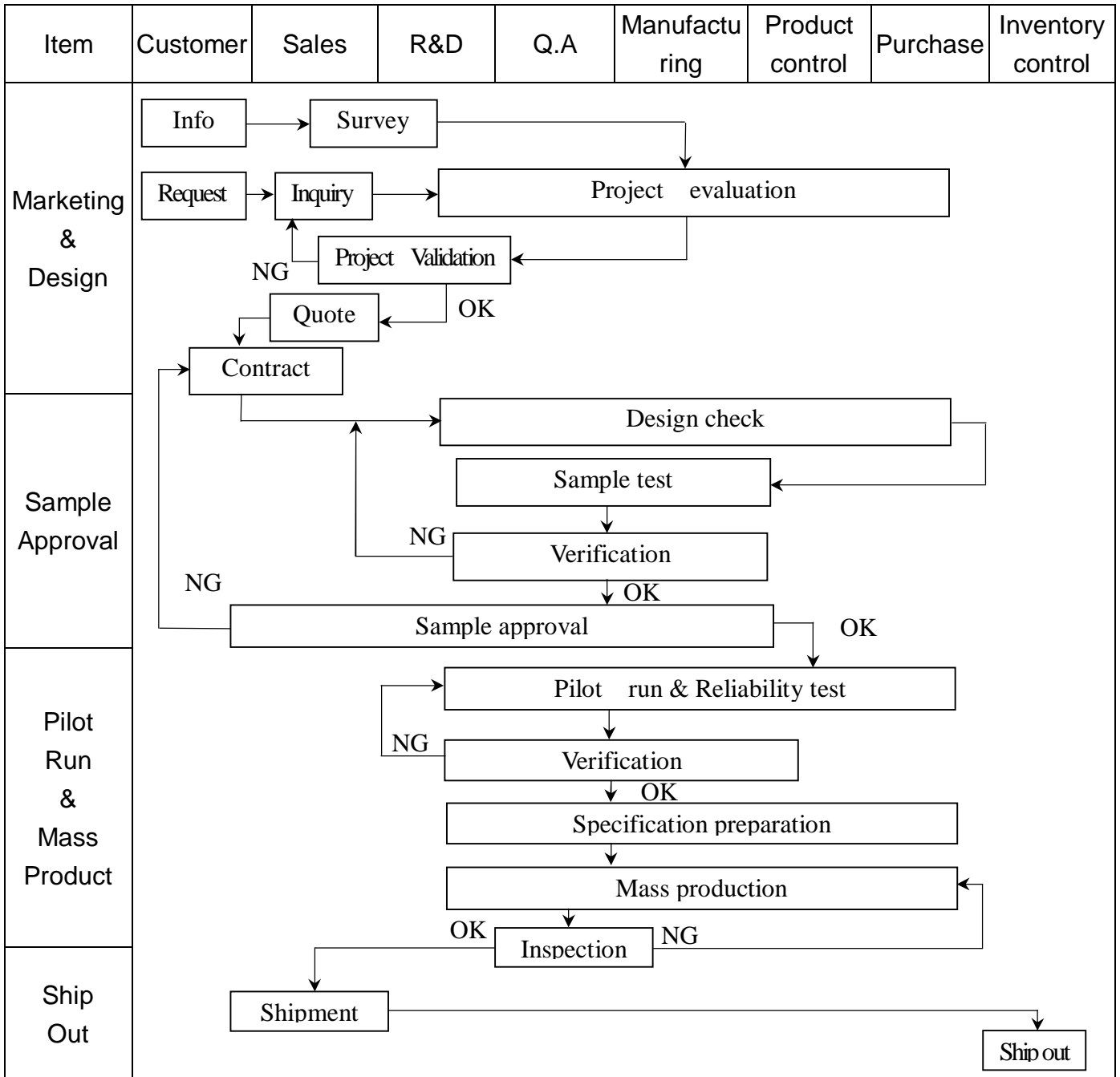
- In general, the internal registers of the RA8835 series are modified as each command parameter is input. However, the microprocessor does not have to set all the parameters of a command and may send a new input will have been changed but the remaining parameter registers are unchanged.
 - 2-byte parameters (where two bytes are treated as 1 data item) are handled as follows:
 - CSRW, CSRR: Each byte is processed individually. The microprocessor may read or write just the low byte of the cursor address.
 - SYSTEM SET, SCROLL, CGRAM ADR: Both parameter bytes are processed together. If the command is changed after half of the parameter has been input, the single byte is ignored.
- APL and APH are 2-byte parameters, but are treated as two 1-byte parameters.

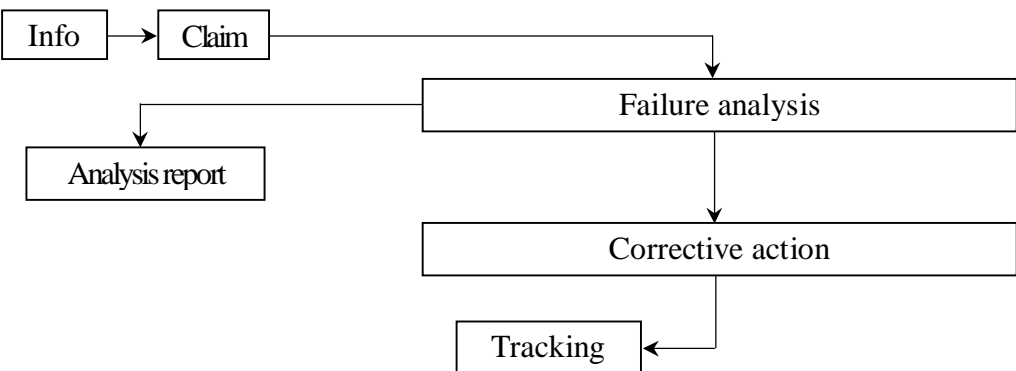
2.5 Jumper(Setting different use)

- 2.5.1: Short : JP(3-2), JDS(1-3), JMS(3-2), JF /JE1/JE2
- 2.5.2: open others unnoted

3. QUALITY ASSURANCE SYSTEM

3.1 Quality Assurance Flow Chart



Item	Customer	Sales	R&D	Q.A	Manufacturing	Product control	Purchase	Inventory control
Sales Service	 <pre> graph TD Info[Info] --> Claim[Claim] Claim --> FA[Failure analysis] Claim --> AR[Analysis report] FA --> CA[Corrective action] CA --> Tracking[Tracking] </pre>							
Q.A Activity	1. ISO 9001 Maintenance Activities 3. Equipment calibration 5. Standardization Management				2. Process improvement proposal 4. Education And Training Activities			

3.2 Inspection Specification

- ◆ Scope : The document shall be applied to LCD Module for Monotype and Color STN(Ver. 01).
- ◆ 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)

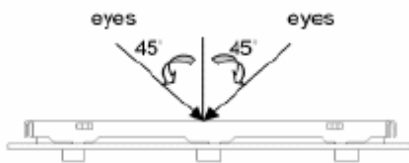


Fig.1

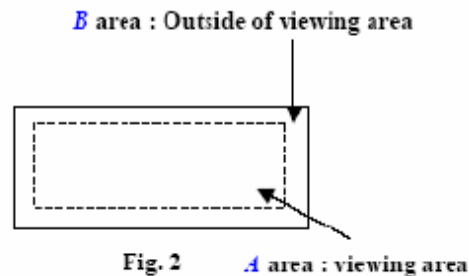


Fig. 2

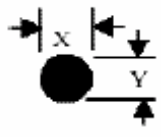
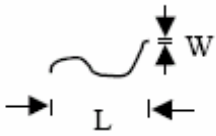
A area : viewing area

◆ Specification:

NO	Item	Criterion	level
01	Product condition	1. 1 The part number is inconsistent with work order of Production.	Major
		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
04	Electrical Testing	4. 1 Missing line character and icon.	Major
		4. 2 No function or no display.	Major
		4. 3 Output data is error.	Major
		4. 4 LCD viewing angle defect.	Major
		4. 5 Current consumption exceeds product specifications.	Major

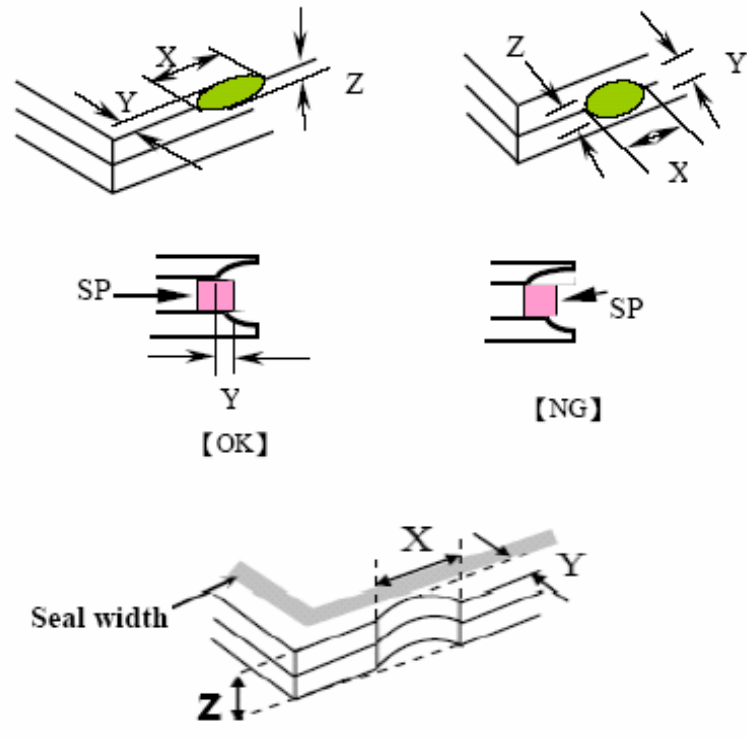
◆ Specification For Monotype and Color STN :

(Ver. 01)

NO	Item	Criterion	level																																	
05	<p>Black or white dot、scratch、contamination</p> <p>Round type</p>  <p>$\Phi = (x+y)/2$</p> <p>Line type</p> 	<p>5. 1 Round type:</p> <p>5. 1. 1 display only :</p> <ul style="list-style-type: none"> • White and black spots on display ≤ 0.30 mm , no more than 4 white or black spots present. • Densely spaced : NO more than two spots or lines within 3 mm. <p>5. 1. 2 Non-display :</p> <table border="1"> <thead> <tr> <th>Dimension (diameter : Φ)</th> <th>Acceptance (Q'ty)</th> </tr> </thead> <tbody> <tr> <td>$\Phi \leq 0.10$</td> <td>Accept no dense</td> </tr> <tr> <td>$0.10 < \Phi \leq 0.20$</td> <td>3</td> </tr> <tr> <td>$0.20 < \Phi \leq 0.30$</td> <td>2</td> </tr> <tr> <td>Total quantity</td> <td>4</td> </tr> </tbody> </table> <p>5. 1. 3 Line type:</p> <table border="1"> <thead> <tr> <th colspan="2">Dimension</th> <th colspan="2">Acceptance (Q'ty)</th> </tr> <tr> <th>Length (L)</th> <th>Width (W)</th> <th>A area</th> <th>B area</th> </tr> </thead> <tbody> <tr> <td>---</td> <td>$W \leq 0.03$</td> <td>Accept no dense</td> <td>Don't count</td> </tr> <tr> <td>$L \leq 3.0$</td> <td>$0.03 < W \leq 0.05$</td> <td rowspan="2">4</td> <td>Don't count</td> </tr> <tr> <td>$L \leq 2.5$</td> <td>$0.05 < W \leq 0.075$</td> <td>Don't count</td> </tr> <tr> <td>---</td> <td>$W > 0.075$</td> <td colspan="2">As round type</td> </tr> </tbody> </table>	Dimension (diameter : Φ)	Acceptance (Q'ty)	$\Phi \leq 0.10$	Accept no dense	$0.10 < \Phi \leq 0.20$	3	$0.20 < \Phi \leq 0.30$	2	Total quantity	4	Dimension		Acceptance (Q'ty)		Length (L)	Width (W)	A area	B area	---	$W \leq 0.03$	Accept no dense	Don't count	$L \leq 3.0$	$0.03 < W \leq 0.05$	4	Don't count	$L \leq 2.5$	$0.05 < W \leq 0.075$	Don't count	---	$W > 0.075$	As round type		Minor
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06	<p>Polarizer Bubble</p>	<table border="1"> <thead> <tr> <th rowspan="2">Dimension (diameter : Φ)</th> <th colspan="2">Acceptance (Q'ty)</th> </tr> <tr> <th>A area</th> <th>B area</th> </tr> </thead> <tbody> <tr> <td>$\Phi \leq 0.20$</td> <td>Accept no dense</td> <td>Don't count</td> </tr> <tr> <td>$0.20 < \Phi \leq 0.50$</td> <td>3</td> <td>Don't count</td> </tr> <tr> <td>$0.50 < \Phi \leq 1.00$</td> <td>2</td> <td>Don't count</td> </tr> <tr> <td>$\Phi > 1.00$</td> <td>0</td> <td>Don't count</td> </tr> <tr> <td>Total quantity</td> <td>4</td> <td>Don't count</td> </tr> </tbody> </table>	Dimension (diameter : Φ)	Acceptance (Q'ty)		A area	B area	$\Phi \leq 0.20$	Accept no dense	Don't count	$0.20 < \Phi \leq 0.50$	3	Don't count	$0.50 < \Phi \leq 1.00$	2	Don't count	$\Phi > 1.00$	0	Don't count	Total quantity	4	Don't count	Minor													
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$0.50 < \Phi \leq 1.00$	2	Don't count																																		
$\Phi > 1.00$	0	Don't count																																		
Total quantity	4	Don't count																																		

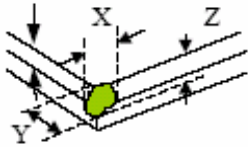
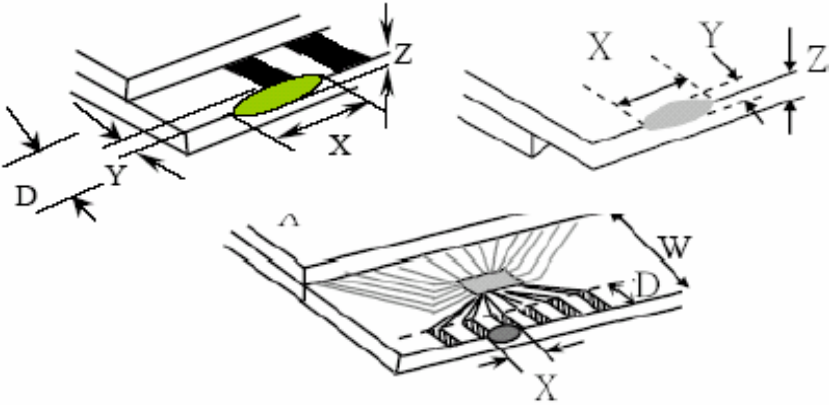
◆ Specification For Monotype and Color STN :

(Ver. 01)

NO	Item	Criterion	Level									
07	The crack of glass	<p>Symbols :</p> <p>X : The length of crack Z : The thickness of crack t : The thickness of glass</p> <p>Y : The width of crack. D : terminal length a : LCD side length</p> <hr/> <p>7.1 General glass chip : 7.1.1 Chip on panel surface and crack between panels:</p>  <p>The diagrams illustrate various crack and chip scenarios. The top row shows two 3D views of a chip on the panel surface with dimensions X (length), Y (width), and Z (thickness). The middle row shows two cross-sectional views of a crack between panels, labeled 'SP' for sealant, with dimension Y for crack width. The left view is labeled '[OK]' and the right view is labeled '[NG]'. The bottom diagram shows a cross-section of a panel with a crack, labeled 'Seal width', with dimensions X, Y, and Z.</p> <table border="1" data-bbox="454 1680 1244 1971"> <thead> <tr> <th>X</th> <th>Y</th> <th>Z</th> </tr> </thead> <tbody> <tr> <td>$\leq a$</td> <td>Crack can't enter viewing area</td> <td>$\leq 1/2 t$</td> </tr> <tr> <td>$\leq a$</td> <td>Crack can't exceed the half of SP width.</td> <td>$1/2 t < Z \leq 2 t$</td> </tr> </tbody> </table>	X	Y	Z	$\leq a$	Crack can't enter viewing area	$\leq 1/2 t$	$\leq a$	Crack can't exceed the half of SP width.	$1/2 t < Z \leq 2 t$	Minor
X	Y	Z										
$\leq a$	Crack can't enter viewing area	$\leq 1/2 t$										
$\leq a$	Crack can't exceed the half of SP width.	$1/2 t < Z \leq 2 t$										

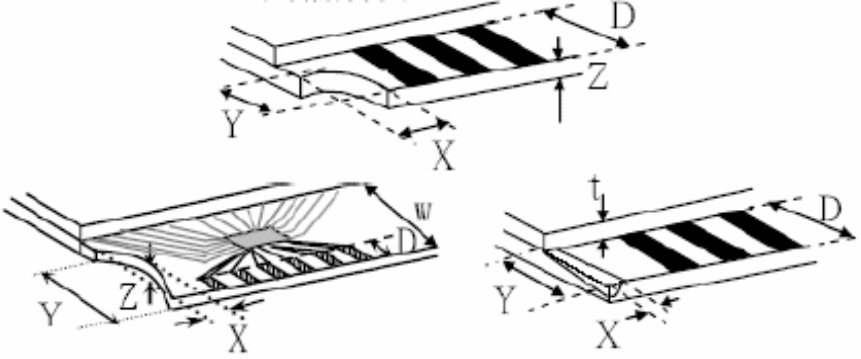
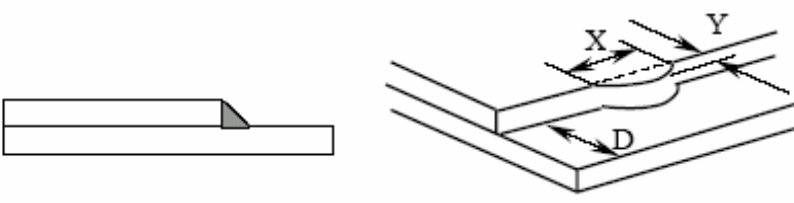
◆ Specification For Monotype and Color STN :

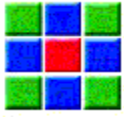
(Ver. 01)

NO	Item	Criterion	Level										
07	The crack of glass	<p>Symbols :</p> <p>X : The length of crack Z : The thickness of crack t : The thickness of glass</p> <p>Y : The width of crack. D : terminal length a : LCD side length</p> <hr/> <p>7.1.2 Corner crack :</p>  <table border="1" data-bbox="501 902 1311 1189"> <thead> <tr> <th>X</th> <th>Y</th> <th>Z</th> </tr> </thead> <tbody> <tr> <td>$\leq 1/5 a$</td> <td>Crack can't enter viewing area</td> <td>$Z \leq 1/2 t$</td> </tr> <tr> <td>$\leq 1/5 a$</td> <td>Crack can't exceed the half of SP width.</td> <td>$1/2 t < Z \leq 2 t$</td> </tr> </tbody> </table>	X	Y	Z	$\leq 1/5 a$	Crack can't enter viewing area	$Z \leq 1/2 t$	$\leq 1/5 a$	Crack can't exceed the half of SP width.	$1/2 t < Z \leq 2 t$	Minor	
		X	Y	Z									
$\leq 1/5 a$	Crack can't enter viewing area	$Z \leq 1/2 t$											
$\leq 1/5 a$	Crack can't exceed the half of SP width.	$1/2 t < Z \leq 2 t$											
<p>7.2 Protrusion over terminal :</p> <p>7.2.1 Chip on electrode pad :</p>  <table border="1" data-bbox="469 1798 1251 1966"> <thead> <tr> <th></th> <th>X</th> <th>Y</th> <th>Z</th> </tr> </thead> <tbody> <tr> <td>Front</td> <td>$\leq a$</td> <td>$\leq 1/2 D$</td> <td>$\leq t$</td> </tr> <tr> <td>Back</td> <td colspan="3">Neglect</td> </tr> </tbody> </table>		X	Y	Z	Front	$\leq a$	$\leq 1/2 D$	$\leq t$	Back	Neglect			
	X	Y	Z										
Front	$\leq a$	$\leq 1/2 D$	$\leq t$										
Back	Neglect												

◆ Specification For Monotype and Color STN :

(Ver. 01)

NO	Item	Criterion	Level										
07	The crack of glass	<p>Symbols :</p> <p>X : The length of crack Y : The width of crack. Z : The thickness of crack D : terminal length t : The thickness of glass a : LCD side length</p>	Minor										
		<p>7.2.2 Non-conductive portion :</p>  <table border="1" data-bbox="571 1227 1193 1377"> <thead> <tr> <th>X</th> <th>Y</th> <th>Z</th> </tr> </thead> <tbody> <tr> <td>$\leq 1/3 a$</td> <td>$\leq D$</td> <td>$\leq t$</td> </tr> </tbody> </table> <p>7.2.3 Glass remain :</p>  <table border="1" data-bbox="491 1825 1173 1966"> <thead> <tr> <th>X</th> <th>Y</th> <th>Z</th> </tr> </thead> <tbody> <tr> <td>$\leq a$</td> <td>$\leq 1/3 D$</td> <td>$\leq t$</td> </tr> </tbody> </table>		X	Y	Z	$\leq 1/3 a$	$\leq D$	$\leq t$	X	Y	Z	$\leq a$
X	Y	Z											
$\leq 1/3 a$	$\leq D$	$\leq t$											
X	Y	Z											
$\leq a$	$\leq 1/3 D$	$\leq t$											



◆ Specification For Monotype and Color STN :

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NO	Item	Criterion	Level
08	Backlight elements	8. 1 Backlight can't work normally.	Major
		8. 2 Backlight doesn't light or color is wrong.	Major
		8. 3 Illumination source flickers when lit.	Major
09	General appearance	9. 1 Pin type must match type in specification sheet.	Major
		9. 2 No short circuits in components on PCB or FPC.	Major
		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

NO	Item	Test Condition	
1	High Temperature Storage	Storage at 80 ±2°C 96~100 hrs Surrounding temperature, then storage at normal condition 4hrs	
2	Low Temperature Storage	Storage at -30 ±2°C 96~100 hrs Surrounding temperature, then storage at normal condition 4hrs	
3	High Temperature /Humidity Storage	1.Storage 96~100 hrs 60±2°C , 90~95%RH surrounding temperature, then storage at normal condition 4hrs. (Excluding the polarizer). or 2.Storage 96~100 hrs 40±2°C , 90~95%RH surrounding temperature, then storage at normal condition 4 hrs.	
4	Temperature Cycling	$-20^{\circ}\text{C} \rightarrow 25^{\circ}\text{C} \rightarrow 70^{\circ}\text{C} \rightarrow 25^{\circ}\text{C}$ $\xleftarrow{(30\text{mins}) (5\text{mins}) (30\text{mins}) (5\text{mins})}$ <p style="text-align: center;">10 Cycle</p>	
5	Vibration	10~55Hz (1 minute) 1.5mm X,Y and Z direction * (each 2hrs)	
6	ESD Test	Air Discharge: Apply 6 KV with 5 times discharge for each polarity +/-	Contact Discharge: Apply 250V with 5 times discharge for each polarity +/-
		Testing location: Around the face of LCD	Testing location: 1.Apply to bezel. 2.Apply to Vdd, Vss.
7	Drop Test	Packing Weight (Kg)	Drop Height (cm)
		0 ~ 45.4	122
		45.4 ~ 90.8	76
		90.8 ~ 454	61
		Over 454	46

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 $320\pm 10^{\circ}\text{C}$ and 3-5 sec.


5.3 STORAGE

- 5.3.1 Store the panel or module in a dark place where the temperature is $25^{\circ}\text{C} \pm 5^{\circ}\text{C}$ 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.

6. PACKING Specification

LCM Model	PG320240FRFDBAHS3Q	LCM包裝規格書 LCM Packaging Specifications	Approve	Check	Contact
Drawing NO.	DPK-07298		 DATE 07'09'26	 初版 07'09'26	 版次Ver A

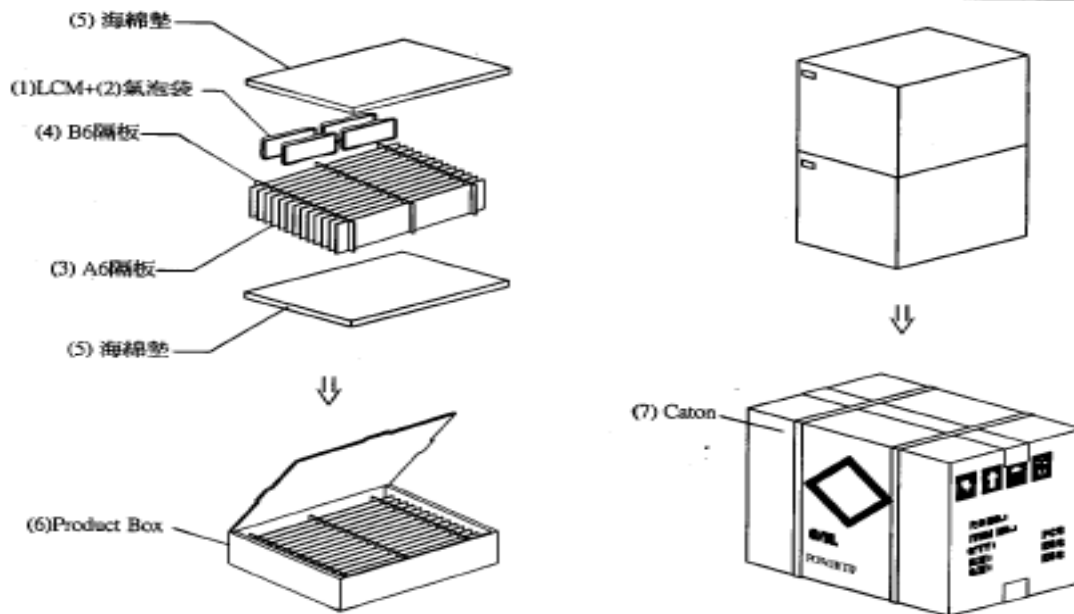
1. 包裝材料規格表 (Packaging Material) : (per carton)

No.	Item	Model	Dimensions (mm)	Quantity
1	成品(1) (LCM)	PG320240FRFDBAHS3Q	(148.02 X 120.24)	28
2	氣泡袋(2)	BAG170150BRABA	170 X 150	28
3	A6隔板(3)	BX33800012BZBA	338 X 125 X3	16
4	B6隔板(4)	BX29800012BZBA	293 X 125 X3	6
5	海綿墊(5)	OTFOAM00005ABA	330 X 290 X 10	4
6	C4內盒(6)Product Box	BX36031014AABA	360 X 310 X 142	2
7	外紙箱(7)Carton	BX39432432CCBA	394 X 324 X 321	1
8				
9				

2. 單箱數量規格表 (Packaging Specifications and Quantity) :

(1)Quantity Of Spacer : A6隔板 X 8 , B6隔板 X 3

(2)Total LCM quantity in carton : quantity per box 14 x no. of boxes 2 = 28



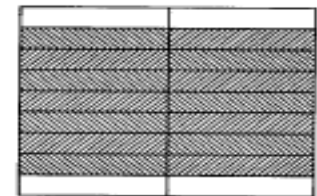
特 記 事 項 (REMARK)

1. Label Specifications :

MODEL:
LOT NO:
QUANTITY:
CHECK:

1. 每個間隔放1片模組，前後間隔不放置模組。(如示意圖)

放置格示意圖:



1. [shaded] 模組 2. [white] 空格