MULTI-INNO TECHNOLOGY CO., LTD.

www.multi-inno.com

LCD MODULE SPECIFICATION

Model : MI0430J5T-1

This module uses ROHS material

For Customer's Acceptance:

Customer	
Approved	
Comment	

Revision	1.0
Engineering	
Date	2014-03-17
Our Reference	

REVISION RECORD

REV NO.	REV DATE	CONTENTS	REVISED PAGE NO.
1.0	2014-03-17	First Release	

CONTENTS

■ GENERAL INFORMATION

Item	Contents	Unit
LCD type	CPT TFT/Transmissive/Normally white	/
Size	4.3	Inch
Viewing direction	12:00(without image inversion and least brightness change)	O' Clock
Gray scale inversion direction	6:00 (contrast peak located at)	O' Clock
LCM (W × H × D)	105.5×67.2×3.1	mm^3
Active area (W×H)	95.04×53.856	mm^2
Pixel pitch (W×H)	0.066×0.198	mm^2
Number of dots	480 (RGB) × 272	/
Driver IC	OTA5180A	/
Backlight type	10 LEDs	/
Interface type	24-bits RGB	/
Color depth	16.7M	/
Pixel arrangement	R.G.B delta stripe	/
Input voltage	3.3	V
With/Without TSP	Without TSP	/
Weight	TBD	g

Note 1: RoHS compliant;
Note 2: LCM weight tolerance: ± 5% .

■ EXTERNAL DIMENSIONS

NOTES:
1. DISPLAY TYPE: CPT TFT,TRANSMISSIVE,NORMALLY WHITE.
2. LOGIC VOLTAGE: VDD=3.3V
3. VIEWING DIRECTION: 12 O'CLOCK.
4. IC DRIVER: OTA5180A
5. OPERATING TEMP: -20°C ~ 70°C.
6. STORAGE TEMP: -30°C ~ 80°C.
7. LED BACKLIGHT: 10-WHITE LED, IL=40mA,VL=16V.
8. GENERAL TOLERANCE: ±0.2.
9. RoHS COMPLIANT.

Circuit

480*RGB*272 DOTS
View Direction

MULTI-INNO TECHNOLOGY CO.,LTD.

CUSTOMER APVL		
DRAWN		
DFTG CHK	SCALE	
ENGR CHK	UNIT	mm
APPROVAL		

DATE		
TITLE		
MODEL	MI0430J5T-1	
DWG NO		PAGE
		1/1

Pin	Symbol
1	LED+
2	LED-
3	GND
4	VDD
5	R0
6	R1
7	R2
8	R3
9	R4
10	R5
11	R6
12	R7
13	G0
14	G1
15	G2
16	G3
17	G4
18	G5
19	G6
20	G7
21	B0
22	B1
23	B2
24	B3
25	B4
26	B5
27	B6
28	B7
29	CLK
30	PCLK
31	DISP
32	VSYNC
33	HSYNC
34	DE
35	GND
36	NC
37	NC
38	NC
39	NC
40	NC

■**ABSOLUTE MAXIMUM RATINGS**

Parameter	Symbol	Min	Max	Unit
Supply voltage for logic	VDD	-0.3	3.3	V
Input voltage for logic	VIN	-0.5	VCC+0.3	V
Supply current(one LED)	I_{LED}	-	30	mA
Operating temperature	T_{OP}	-20	70	°C
Storage temperature	T_{ST}	-30	80	°C

■**ELECTRICAL CHARACTERISTICS**

Parameter	Symbol	Min	Typ	Max	Unit
Supply voltage for logic	VDD	3.0	3.3	3.6	V
Input voltage ' H ' level	V_{IH}	0.8VDD	-	VDD	V
Input voltage ' L ' level	V_{IL}	-0.3	-	0.2VDD	V
Input leakage current	I_{LKG}	-1.0	-	1.0	μA
LED forward voltage	V_{F}	-	3.2	-	V
Input backlight current(with one LED)	I_{LED}	-	20	-	mA

■ **BACKLIGHT CHARACTERISTICS**

Item	Symbol	Min.	Typ.	Max.	Unit	Condition
Voltage for LED backlight	VL	-	16.0	-	V	
Current for LED backlight	IL	-	40	-	mA	
LED life time	-	20000	-	-	Hrs	

■ELECTRO-OPTICAL CHARACTERISTICS

Item		Symbol	Condition	Min	Typ	Max	Unit	Remark	Note
Response time		Tr+Tf	θ=0° ∅=0° Ta=25℃	-	30	45	ms	FIG 1.	4
Contrast ratio		Cr		250	350	-	---	FIG 2.	1
Luminance uniformity		δ WHITE		80	85	-	%	FIG 2.	3
Surface Luminance		Lv		-	500	-	cd/m²	FIG 2.	2
Viewing angle range		θ	∅ = 90°	45	55	-	deg	FIG 3.	6
			∅ = 270°	45	55	-	deg	FIG 3.	
			∅ = 0°	55	65	-	deg	FIG 3.	
			∅ = 180°	55	65	-	deg	FIG 3.	
CIE (x, y) chromaticity	Red	x	θ=0° ∅=0° Ta=25℃	-	-	-		FIG 2.	5
		y		-	-	-			
	Green	x		-	-	-			
		y		-	-	-			
	Blue	x		-	-	-			
		y		-	-	-			
	White	x		0.27	0.29	0.31			
		y		0.32	0.34	0.36			

Note 1. Contrast Ratio(CR) is defined mathematically as For more information see FIG 2.

$$\text{Contrast Ratio} = \frac{\text{Average Surface Luminance with all white pixels (P1, P2, P3, P4, P5)}}{\text{Average Surface Luminance with all black pixels (P1, P2, P 3, P4, P5)}}$$

Note 2. Surface luminance is the LCD surface from the surface with all pixels displaying white. For more information see FIG 2.

$$Lv = \text{Average Surface Luminance with all white pixels (P1, P2, P 3, P4, P5)}$$

Note 3. The uniformity in surface luminance ， δ WHITE is determined by measuring luminance at each test position 1 through 5, and then dividing the maximum luminance of 5 points luminance by minimum luminance of 5 points luminance. For more information see FIG 2.

$$\delta \text{ WHITE} = \frac{\text{Minimum Surface Luminance with all white pixels (P1, P2, P 3, P4, P5)}}{\text{Maximum Surface Luminance with all white pixels (P1, P2, P 3, P4, P5)}}$$

Note 4. Response time is the time required for the display to transition from White to black(Rise Time, Tr) and from black to white(Decay Time, Tf). For additional information see FIG 1. The test equipment is Autronic-Melchers's ConoScope. Series.

Note 5. CIE (x, y) chromaticity，The x, y value is determined by measuring luminance at each test position 1 through 5,and then make average value.

Note 6. Viewing angle is the angle at which the contrast ratio is greater than 2. For TFT module the conrast ratio is greater than 10. The angles are determined for the horizontal or x axis and the vertical or y axis with respect to the z axis which is normal to the LCD surface. For more information see FIG 3.

Note 7. For viewing angle and response time testing, the testing data is base on Autronic-Melchers's ConoScope. Series Instruments For contrast ratio, Surface Luminance, Luminance uniformity, CIE The test data is base on TOPCON's BM-5 photo detector.

FIG. 1 The definition of Response Time

The response time is defined as the following figure and shall be measured by switching the input signal for "black" and "white".
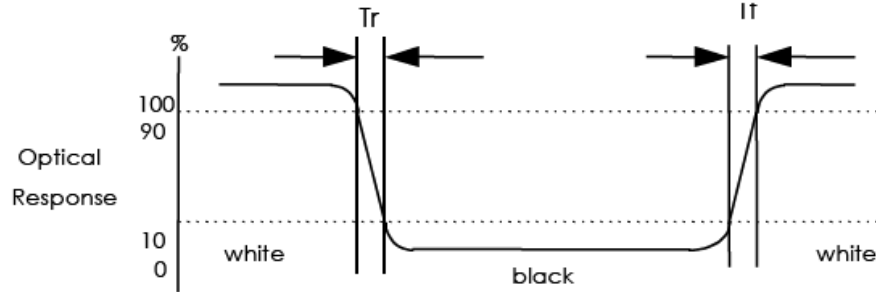

FIG. 2 Measuring method for Contrast ratio, surface luminance, Luminance uniformity , CIE (x, y) chromaticity
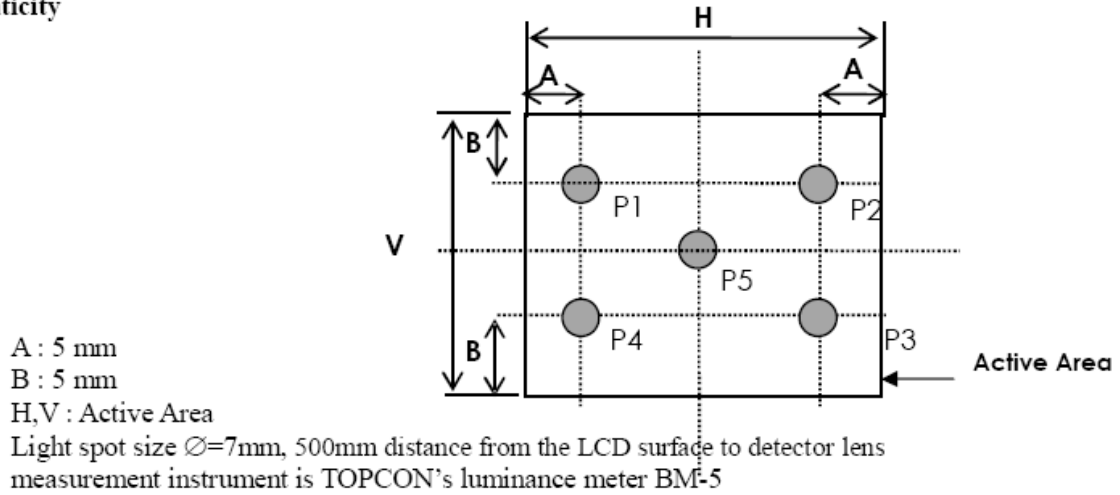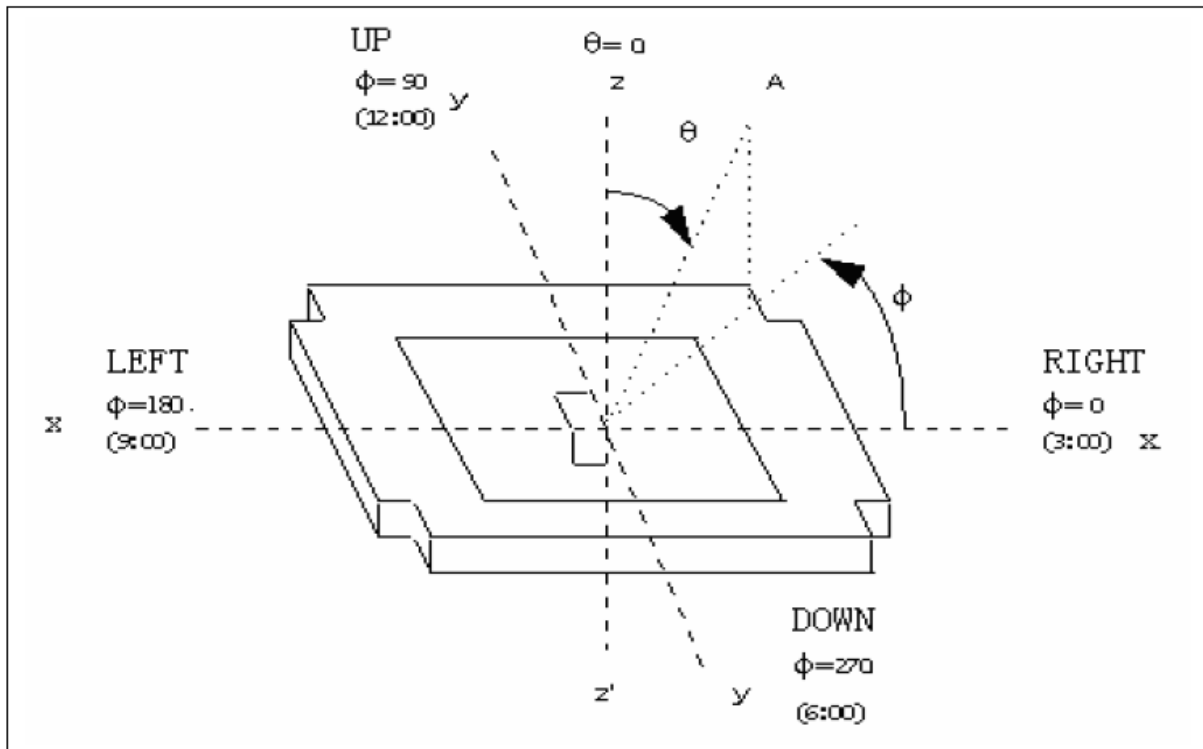

A : 5 mm
B : 5 mm
H,V : Active Area
Light spot size ∅=7mm, 500mm distance from the LCD surface to detector lens
measurement instrument is TOPCON's luminance meter BM-5

FIG. 3 The definition of viewing angle

■INTERFACE DESCRIPTION

NO.	SYMBOL	Description
1	VLED-	Power for LED backlight cathode
2	VLED+	Power for LED backlight anode
3	GND	Ground
4	VDD	Power supply
5	R0	Data bus
6	R1	Data bus
7	R2	Data bus
8	R3	Data bus
9	R4	Data bus
10	R5	Data bus
11	R6	Data bus
12	R7	Data bus
13	G0	Data bus
14	G1	Data bus
15	G2	Data bus
16	G3	Data bus
17	G4	Data bus
18	G5	Data bus
19	G6	Data bus
20	G7	Data bus
21	B0	Data bus
22	B1	Data bus
23	B2	Data bus
24	B3	Data bus
25	B4	Data bus
26	B5	Data bus
27	B6	Data bus
28	B7	Data bus
29	GND	Ground

30	PCLK	Pixel clock
31	DISP	Display on/off
32	HSYNC	Horizon YNC signal
33	VSYNC	Vertical YNC signal
34	DE	Data enable
35	NC	No connect
36	GND	Ground
37	NC	No connect
38	NC	No connect
39	NC	No connect
40	NC	No connect

■ BLOCK DIAGRAM

Driver IC: OTA5180A or Compatible
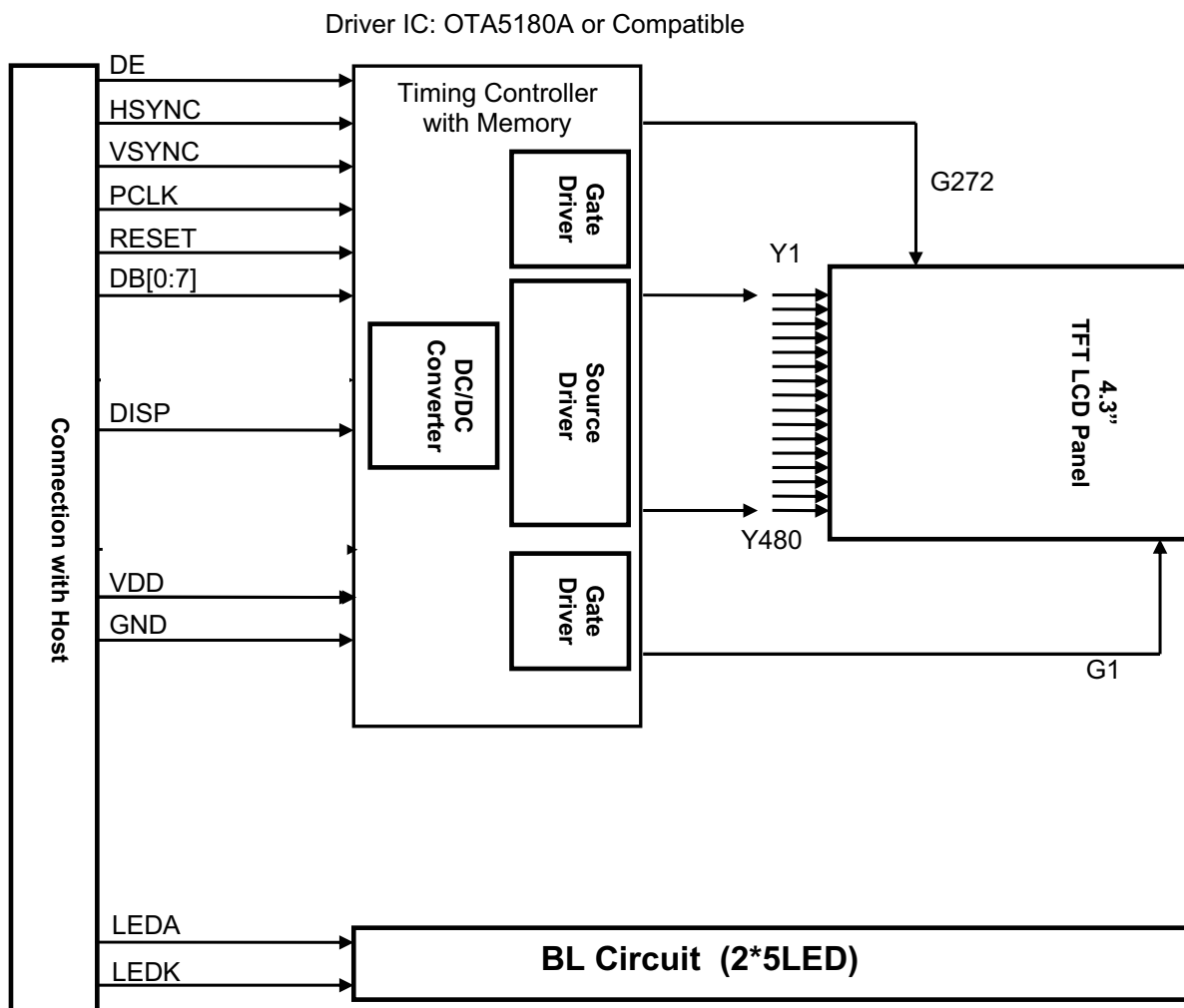
■ APPLICATION NOTES

1 Vertical Timing

Item	Min.	Typ.	Max.	Unit
V display t_{VD}		272		
V blanking t_{VB}		12		
V front porch t_{VFP}		3		H
VSYNC width t_{VSW}		10		
1 frame		287		
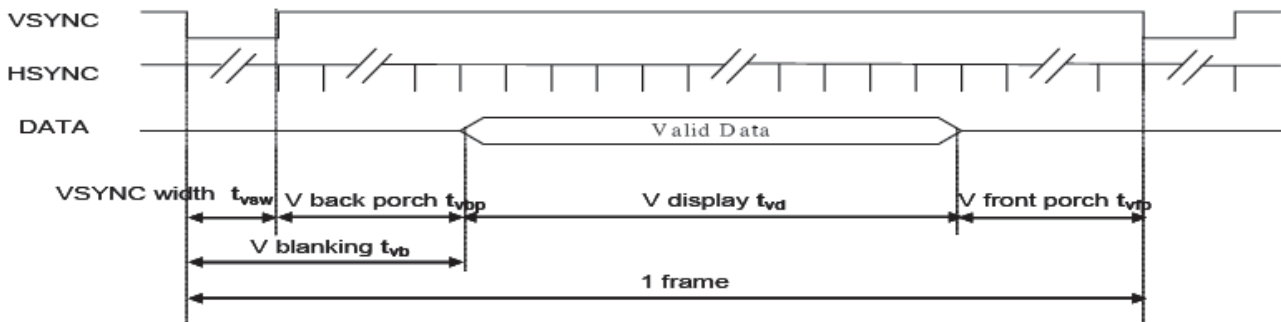
2 Horizontal Timing

640x240 mode	Min	Min	Max	UNIT
H display t_{hd}		480		
1 H t_H		576		
H blanking t_{hb} (*)		88		DCLK
H front porch t_{hfp}		8		
HSYNC width t_{hsw}		41		
Frequency		9.0		MHz

3 SYNC-DE MODE

first
line

last
line

VSYNC

Blanking Time

Active Area

HSYNC
DE

DCLK

R[7:0]

G[7:0]

B[7:0]
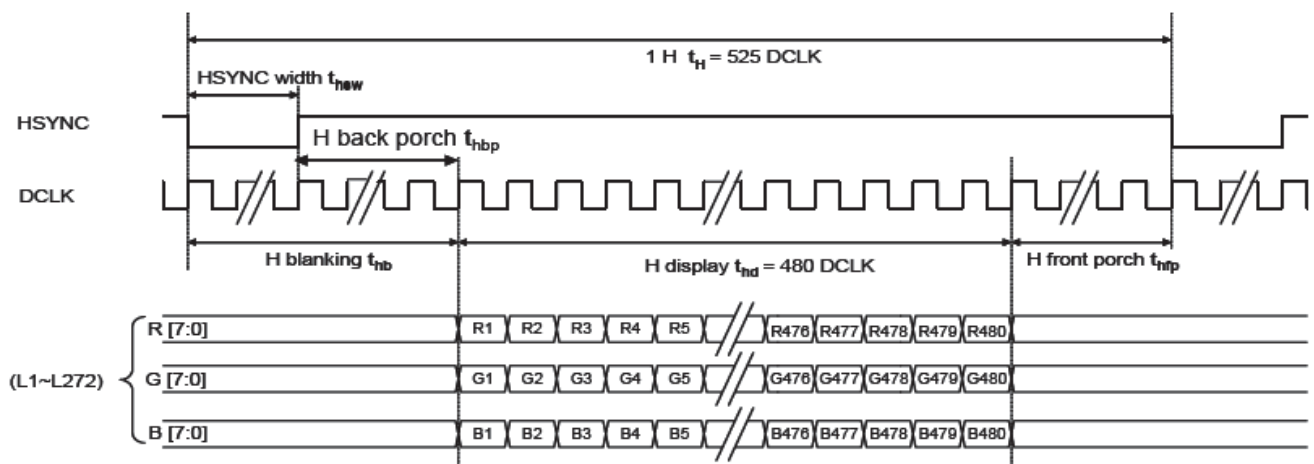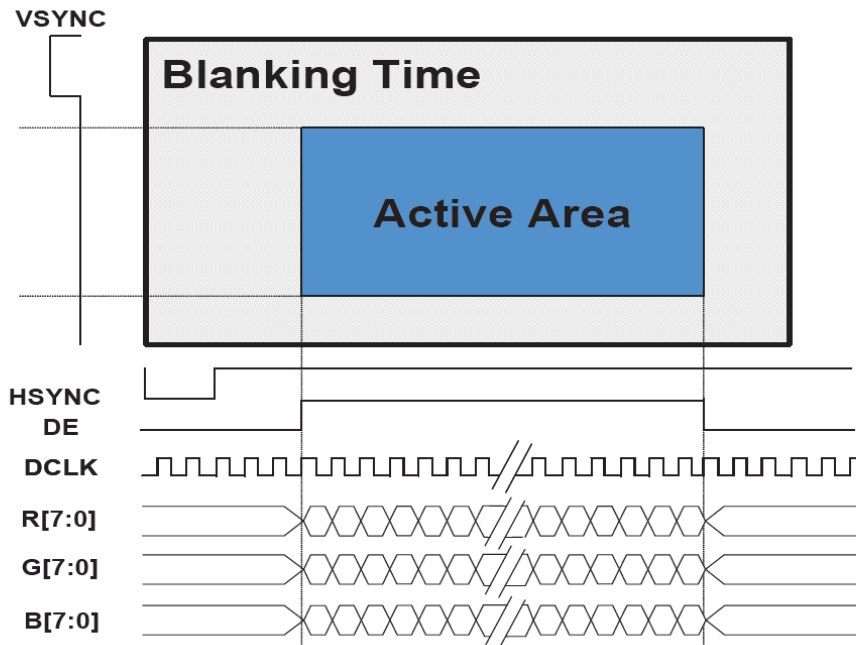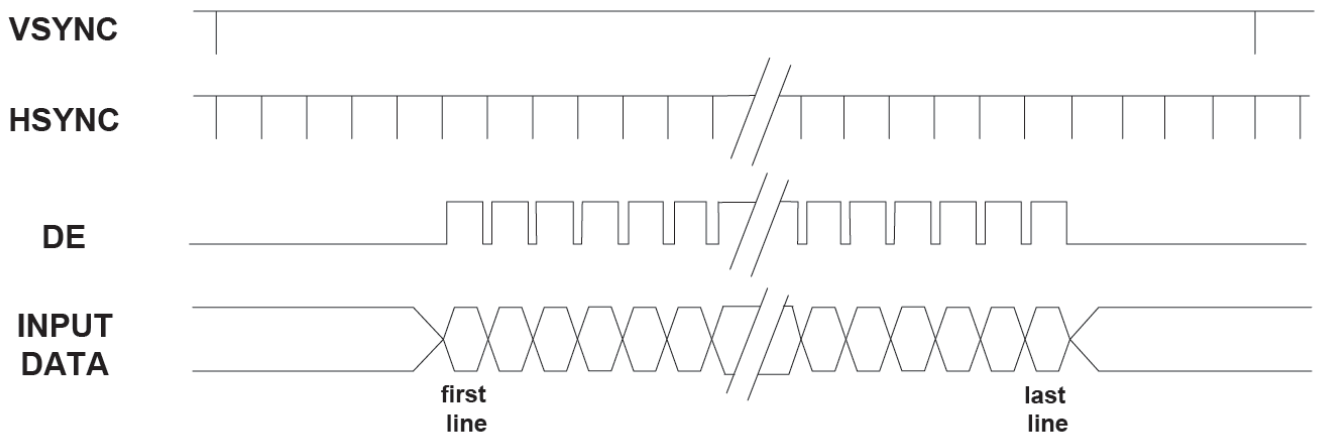
■ RELIABILITY TEST

No.	Test Item	Test Condition	Inspection after test
1	High Temperature Storage	70±2℃/12hours	1. Functional test is OK. Missing Segment, short, unclear segment, non-display, display abnormally and liquid crystal leak are un-allowed.
2	Low Temperature Storage	-20±2℃/12hours	
3	High Temperature Operating	60±2℃/12hours	
4	Low Temperature Operating	-10±2℃/12hours	
5	Temperature Cycle	-20±2℃~25~70±2℃×10cycles (30min.)　(5min.)　(30min.)	2. No low temperature bubbles, end seal loose and fall, frame rainbow.
6	Damp Proof Test	40℃±5℃×90%RH/12hours	
7	Vibration Test	Frequency：10Hz~55Hz Amplitude：1.0mm, Each direction on X,Y axe 0.5 houre, circle 2 hours	1. Function test is OK. 2. No glass crack,chipped glass, end seal loose and fall, epoxy frame crack 3. No structure loose and fall.
8	Dropping test	Drop to the ground from 80cm height, one time, every side of carton.	

■ **INSPECTION CRITERION**

 OUTGOING QUALITY STANDARD	P A G E 1　O F 5
TITLE:FUNCTIONAL TEST & INSPECTION CRITERIA	

This specification is made to be used as the standard acceptance/rejection criteria for Color mobile phone LCM.

1 Sample plan

　Sampling plan according to GB/T2828.1-2003/ISO 2859-1：1999 and ANSI/ASQC Z1.4-1993, normal level 2 and based on:

　　　Major defect: AQL 0.65

　　　Minor defect: AQL 1.5

2. Inspection condition

　Viewing distance for cosmetic inspection is about 30cm with bare eyes, and under an environment of 20~40W light intensity, all directions for inspecting the sample should be within 45° against perpendicular line.

3. Definition of inspection zone in LCD.
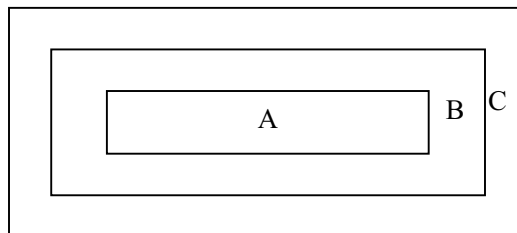
Zone A: character/Digit area

Zone B: viewing area except Zone A (ZoneA+ZoneB=minimum Viewing area)

Zone C: Outside viewing area (invisible area after assembly in customer's product)
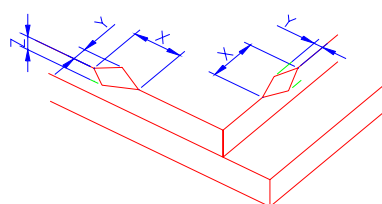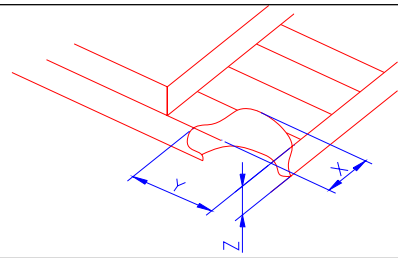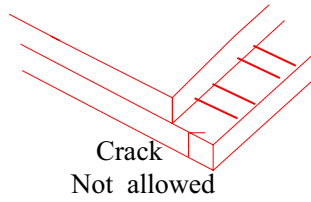
Fig.1 Inspection zones in an LCD.
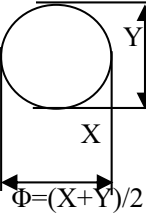
Note: As a general rule, visual defects in Zone C are permissible, when it is no trouble for
　　　quality and assembly of customer's product.
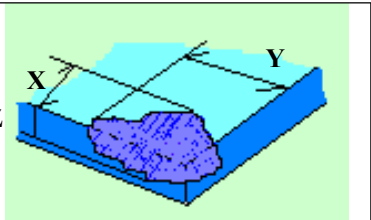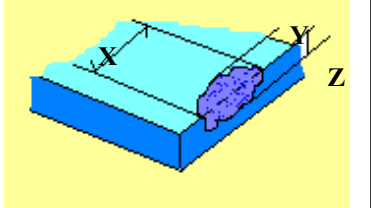
4. Inspection standards

No	Items to be inspected	Criteria	Classification of defects
1	Functional defects	1) No display, Open or miss line 2) Display abnormally, Short 3) Backlight no lighting, abnormal lighting. 4) TP no function	Major
2	Missing	Missing component	
3	Outline dimension	Overall outline dimension beyond the drawing is not allowed	
4	Color tone	Color unevenness, refer to limited sample	Minor
5	Soldering appearance	Good soldering , Peeling off is not allowed.	
6	LCD/Polarizer/TP	Black/White spot/line, scratch, crack, etc.	

4.1 Criteria (Visual)

Number	Items	Criteria(mm)
1.0 LCD Crack/Broken NOTE: X: Length Y: Width Z: Height L: Length of ITO, T: Height of LCD	(1) The edge of LCD broken	 | X	Y	Z
≤3.0mm	<Inner border line of the seal	≤T	
	(2)LCD corner broken	 | X	Y	Z
≤3.0mm	≤L	≤T	
	(3) LCD crack	 Crack Not allowed

Number	Items	Criteria (mm)			
2.0	Spot defect	① light dot（LCD/TP/Polarizer black/white spot , light dot, pinhole, dent, stain）				

Φ=(X+Y)/2

① light dot（LCD/TP/Polarizer black/white spot , light dot, pinhole, dent, stain）

Zone / Size (mm)	Acceptable Qty		
	A	B	C
Φ≤0.10	Ignore		Ignore
0.10<Φ≤0.15	3(distance≧10mm)		
0.15<Φ≤0.2	1		
0.2<Φ	0		

②Dim spot（LCD/TP/Polarizer dim dot, light leakage、dark spot）

Zone / Size (mm)	Acceptable Qty		
	A	B	C
Φ≤0.1	Ignore		Ignore
0.1<Φ≤0.2	2(distance≧10mm)		
0.2<Φ≤0.3	1		
Φ＞0.3	0		

③ Polarizer accidented spot

Zone / Size (mm)	Acceptable Qty		
	A	B	C
Φ≤0.2	Ignore		Ignore
0.2<Φ≤0.5	2(distance≧10mm)		
Φ>0.5	0		

Line defect (LCD/TP /Polarizer black/white line, scratch, stain)					
Width(mm)	Length(mm)	Acceptable Qty			
		A	B	C	
Φ≤0.03	Ignore	Ignore		Ignore	
0.03<W≤0.05	L≤3.0	N≤2			
0.05<W≤0.08	L≤2.0	N≤2			
0.08<W	Define as spot defect				

3.0	Polarizer Bubble	Size (mm) \ Zone	Acceptable Qty		
			A	B	C
		Φ≤0.2	Ignore		Ignore
		0.2<Φ≤0.4	2(distance ≧ 10mm)		
		0.4<Φ≤0.6	1		
		0.6<Φ	0		

4.0	SMT	According to IPC-A-610C class Ⅱ standard . Function defect and missing part are major defect ,the others are minor defect.

5.0	TP Related	TP bubble/ accidented spot	Size Φ(mm)	Acceptable Qty		
				A	B	C
			Φ≤0.1	Ignore		Ignore
			0.1<Φ≤0.2	2		
			0.2<Φ≤0.3	1		
			0.3<Φ	0		
		Assembly deflection	beyond the edge of backlight ≤0.15mm			
		Newton Ring	Newton Ring area>1/3 TP area NG Newton Ring area≤1/3 TP area OK			

		TP corner broken X：length Y：width Z：height		X	Y	Z	
			*	X≤3.0mm	Y≤3.0mm	Z<LCD thickness	
			Circuitry broken is not allowed.				
		TP edge broken X：length Y：width Z：height		X	Y	Z	
				X≤6.0mm	Y≤2.0mm	Z<LCD thickness	
			* Circuitry broken is not allowed.				

Criteria (functional items)

Number	Items	Criteria (mm)
1	No display	Not allowed
2	Missing segment	Not allowed
3	Short	Not allowed
4	Backlight no lighting	Not allowed
5	TP no function	Not allowed

■ PRECAUTIONS FOR USING LCD MODULES

1　Handing Precautions

1.1　The display panel is made of glass and polarizer. As glass is fragile. It tends to become or chipped during handling especially on the edges. Please avoid dropping or jarring. Do not subject it to a mechanical shock by dropping it or impact.

1.2　If the display panel is damaged and the liquid crystal substance leaks out, be sure not to get any in your mouth. If the substance contacts your skin or clothes, wash it off using soap and water.

1.3　Do not apply excessive force to the display surface or the adjoining areas since this may cause the color tone to vary. Do not touch the display with bare hands. This will stain the display area and degraded insulation between terminals (some cosmetics are determined to the polarizer).

1.4　The polarizer covering the display surface of the LCD module is soft and easily scratched. Handle this polarizer carefully. Do not touch, push or rub the exposed polarizers with anything harder than an HB pencil lead (glass, tweezers, etc.). Do not put or attach anything on the display area to avoid leaving marks on it. Condensation on the surface and contact with terminals due to cold will damage, stain or dirty the polarizer. After products are tested at low temperature they must be warmed up in a container before coming in to　contact with room temperature air.

1.5　If the display surface becomes contaminated, breathe on the surface and gently wipe it with a soft dry cloth. If it is heavily contaminated, moisten cloth with one of the following solvents
　　　　　　- Isopropyl alcohol
　　　　　　- Ethyl alcohol
　　　Do not scrub hard to avoid damaging the display surface.

1.6　Solvents other than those above-mentioned may damage the polarizer. Especially, do not use the following.
　　　　　　- Water
　　　　　　- Ketone
　　　　　　- Aromatic solvents
　　　Wipe off saliva or water drops immediately, contact with water over a long period of time may cause deformation or color fading. Avoid contact with oil and fats.

1.7　Exercise care to minimize corrosion of the electrode. Corrosion of the electrodes is accelerated by water droplets, moisture condensation or a current flow in a high-humidity environment.

1.8　Install the LCD Module by using the mounting holes. When mounting the LCD module make sure it is free of twisting, warping and distortion. In particular, do not forcibly pull or bend the I/O cable or the backlight cable.

1.9　Do not attempt to disassemble or process the LCD module.

1.10　NC terminal should be open. Do not connect anything.

1.11　If the logic circuit power is off, do not apply the input signals.

1.12　Electro-Static Discharge Control，Since this module uses a CMOS LSI, the same careful attention should be paid to electrostatic discharge as for an ordinary CMOS IC. To prevent destruction of the elements by static electricity, be careful to maintain an optimum work environment.
　　　　　- Before removing LCM from its packing case or incorporating it into a set, be sure the module and your body have the same electric potential. Be sure to ground the body when handling the LCD modules.
　　　　　- Tools required for assembling, such as soldering irons, must be properly grounded. Make certain the AC power source for the soldering iron does not leak. When using an electric screwdriver to attach LCM, the screwdriver should be of ground potentiality to minimize as much as possible any transmission of electromagnetic waves produced sparks coming from the commutator of the motor.
　　　　　- To reduce the amount of static electricity generated, do not conduct assembling

and other work under dry conditions. To reduce the generation of static electricity be careful that the air in the work is not too dry. A relative humidity of 50%-60% is recommended. As far as possible make the electric potential of your work clothes and that of the work bench the ground potential.

     - The LCD module is coated with a film to protect the display surface. Exercise care when peeling off this protective film since static electricity may be generated.

1.13 Since LCM has been assembled and adjusted with a high degree of precision, avoid applying excessive shocks to the module or making any alterations or modifications to it.

     - Do not alter, modify or change the shape of the tab on the metal frame.

     - Do not make extra holes on the printed circuit board, modify its shape or change the positions of components to be attached.

     - Do not damage or modify the pattern writing on the printed circuit board.

     - Absolutely do not modify the zebra rubber strip (conductive rubber) or heat seal connector.

     - Except for soldering the interface, do not make any alterations or modifications with a soldering iron.

     - Do not drop, bend or twist the LCM.

2   Handling precaution for LCM
2.1   LCM is easy to be damaged. Please note below and be careful for handling.
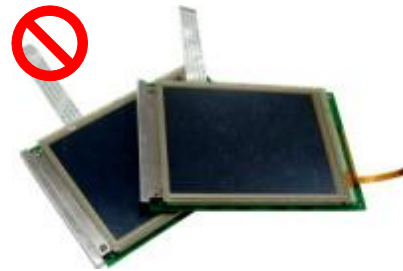**2.2   Correct handling:**

As above picture, please handle with anti-static gloves around LCM edges.
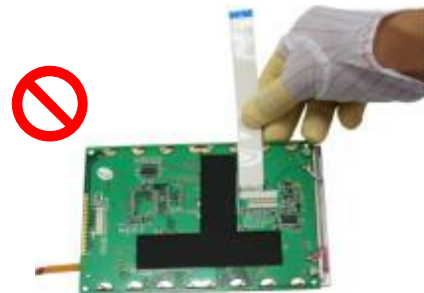
2.3   Incorrect handling:

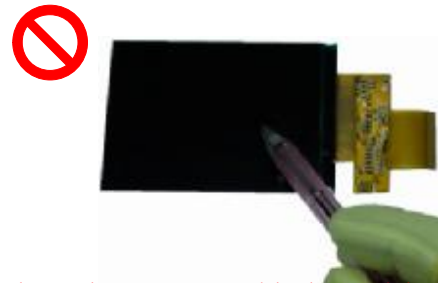Please don't touch IC directly.

Please don't stack LCM.

Please don't hold the surface of panel.

Please don't stretch interface of output, such as FPC cable.

Please don't hold the surface of IC.

Please don't operate with sharp stick such as pens.

3　Storage Precautions
　3.1　When storing the LCD modules, the following precaution are necessary.
　　3.1.1 Store them in a sealed polyethylene bag. If properly sealed, there is no need for the desiccant.
　　3.1.2 Store them in a dark place. Do not expose to sunlight or fluorescent light, keep the temperature between 0°C and 35°C, and keep the relative humidity between 40%RH and 60%RH.
　　3.1.3 The polarizer surface should not come in contact with any other objects (We advise you to store them in the anti-static electricity container in which they were shipped).

　3.2　Others 其它
　　3.2.1 Liquid crystals solidify under low temperature (below the storage temperature range) leading to defective orientation or the generation of air bubbles (black or white). Air bubbles may also be generated if the module is subject to a low temperature.
　　3.2.2 If the LCD modules have been operating for a long time showing the same display patterns, the display patterns may remain on the screen as ghost images and a slight contrast irregularity may also appear. A normal operating status can be regained by suspending use for some time. It should be noted that this phenomenon does not adversely affect performance reliability.
　　3.2.3 To minimize the performance degradation of the LCD modules resulting from destruction caused by static electricity etc., exercise care to avoid holding the following sections when handling the modules.
　　　3.2.3.1 - Exposed area of the printed circuit board.
　　　3.2.3.2 -Terminal electrode sections.

4　USING LCD MODULES
　4.1　Installing LCD Modules
　　　　The hole in the printed circuit board is used to fix LCM as shown in the picture below. Attend to the following items when installing the LCM.
　　4.1.1 Cover the surface with a transparent protective plate to protect the polarizer and LC cell.
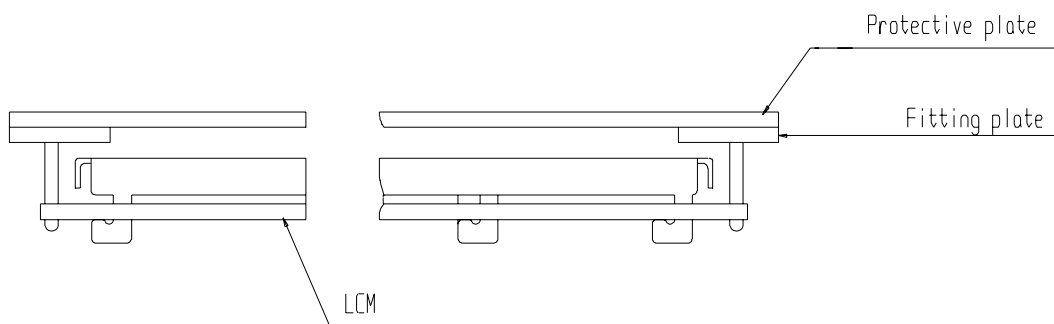
　　4.1.2 When assembling the LCM into other equipment, the spacer to the bit between the LCM and the fitting plate should have enough height to avoid causing stress to the module surface, refer to the individual specifications for measurements. The measurement tolerance should be ±0.1mm.

4.2 Precaution for assemble the module with BTB connector:
Please note the position of the male and female connector position, don't assemble or assemble like the method which the following picture shows
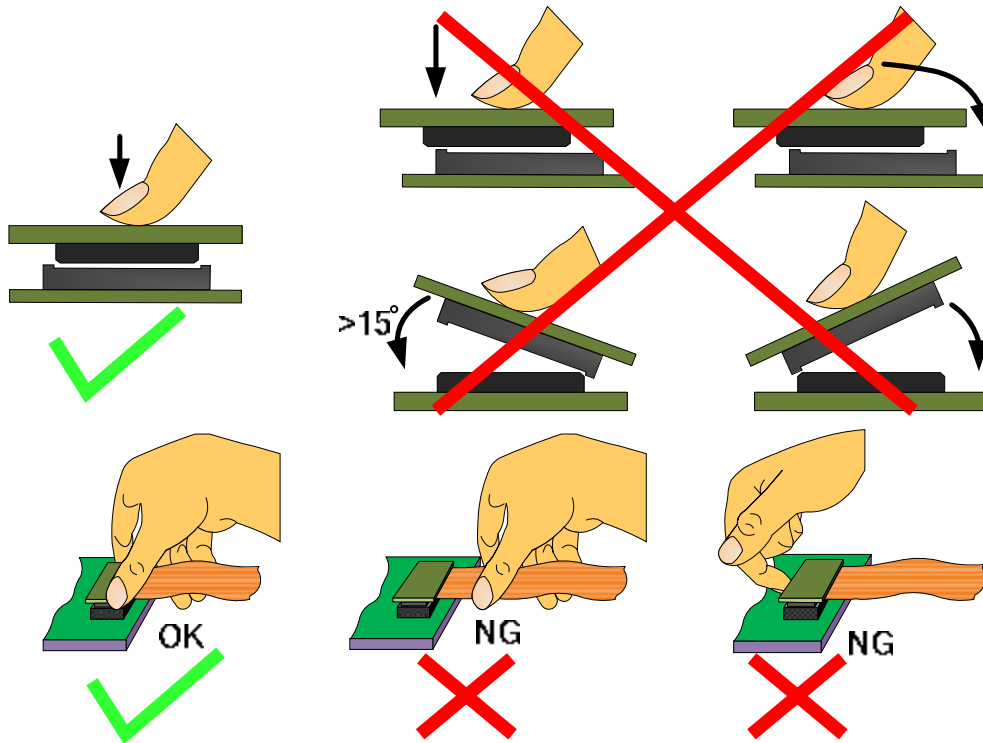
4.3　Precaution for soldering the LCM

	Manual soldering	Machine drag soldering	Machine press soldering
No RoHS Product	290°C ~350°C. Time : 3-5S.	330°C ~350°C. Speed : 15-17 mm/s.	300°C ~330°C. Time : 3-6S. Press: 0.8~1.2Mpa
RoHS Product	340°C ~370°C. Time : 3-5S.	350°C ~370°C. Speed : 15-17 mm/s.	330°C ~360°C. Time : 3-6S. Press: 0.8~1.2Mpa

4.3.1 If soldering flux is used, be sure to remove any remaining flux after finishing to soldering operation (This does not apply in the case of a non-halogen type of flux). It is recommended that you protect the LCD surface with a cover during soldering to prevent any damage due to flux spatters.

4.3.2 When soldering the electroluminescent panel and PC board, the panel and board should not be detached more than three times. This maximum number is determined by the temperature and time conditions mentioned above, though there may be some variance depending on the temperature of the soldering iron.

4.3.3 When remove the electroluminescent panel from the PC board, be sure the solder has completely melted, the soldered pad on the PC board could be damaged.

4.4　Precautions for Operation

4.4.1 Viewing angle varies with the change of liquid crystal driving voltage (VLCD). Adjust VLCD to show the best contrast.

4.4.2 It is an indispensable condition to drive LCD's within the specified voltage limit since the higher voltage then the limit cause the shorter LCD life. An electrochemical reaction due to direct current causes LCD's undesirable deterioration, so that the use of direct current drive should be avoided.

4.4.3 Response time will be extremely delayed at lower temperature than the operating temperature range and on the other hand at higher temperature LCD's show dark color in them. However those phenomena do not mean malfunction or out of order with LCD's, which will come back in the specified operating temperature.

4.4.4 If the display area is pushed hard during operation, the display will become abnormal. However, it will return to normal if it is turned off and then back on.

4.4.5 A slight dew depositing on terminals is a cause for electro-chemical reaction resulting in terminal open circuit. Usage under the maximum operating temperature, 50%RH or less is required.

4.4.6 Input logic voltage before apply analog high voltage such as LCD driving voltage when power on. Remove analog high voltage before logic voltage when power off the module. Input each signal after the positive/negative voltage becomes stable.

4.4.7 Please keep the temperature within the specified range for use and storage. Polarization degradation, bubble generation or polarizer peel-off may occur with high temperature and high humidity.

4.5　Safety

4.5.1 It is recommended to crush damaged or unnecessary LCDs into pieces and wash them off with solvents such as acetone and ethanol, which should later be burned.

4.5.2 If any liquid leaks out of a damaged glass cell and comes in contact with the hands, wash off thoroughly with soap and water.

4. 6   Limited Warranty

Unless agreed between Multi-Inno and customer, Multi-Inno will replace or repair any of its LCD modules which are found to be functionally defective when inspected in accordance with Multi-Inno LCD acceptance standards (copies available upon request) for a period of one year from date of production. Cosmetic/visual defects must be returned to Multi-Inno within 90 days of shipment. Confirmation of such date shall be based on data code on product. The warranty liability of Multi-Inno limited to repair and/or replacement on the terms set forth above. Multi-Inno will not be responsible for any subsequent or consequential events.

4.7   Return LCM under warranty
4.7.1 No warranty can be granted if the precautions stated above have been disregarded. The typical examples of violations are :

4.7.1.1 - Broken LCD glass.

4.7.1.2 - PCB eyelet is damaged or modified.

4.7.1.3 - PCB conductors damaged.

4.7.1.4 - Circuit modified in any way, including addition of components.

4.7.1.5 - PCB tampered with by grinding, engraving or painting varnish.

4.7.1.6 - Soldering to or modifying the bezel in any manner.

4.7.2 Module repairs will be invoiced to the customer upon mutual agreement. Modules must be returned with sufficient description of the failures or defects. Any connectors or cable installed by the customer must be removed completely without damaging the PCB eyelet, conductors and terminals.

■ PACKING SPECIFICATION

Please consult our technical department for detail information.

■ PRIOR CONSULT MATTER

1.①For Multi-Inno standard products, we keep the right to change material, process ... for improving the product property without notice on our customer.
 ②For OEM products, if any change needed which may affect the product property, we will consult with our customer in advance.
2. If you have special requirement about reliability condition, please let us know before you start the test on our samples.