

MCCOG240128A6W-BNMLW	240 x 128	N/A	LCD Module
Specification			
Version: 1		Date: 10/02/2013	
Revision			
1	09/2011	Initial Issue	All All
2	01/2013	Modify Backlight Information	11 11/17
3	02/2013	Modify Display Command	8 8/17
		Correct VLCD	10 10/17
		Correct Pin Description	6 6/17

Display Features			
Resolution	240 x 128		
Appearance	White on Blue		
Logic Voltage	3V		
Interface	Parallel / SPI		
Font Set	N/A		
Display Mode	Transmissive		
LC Type	STN Blue		
Module Size	98.70 x 67.70 x 9.50		
Operating Temperature	-20°C ~ +70°C		
Construction	COB	Box Quantity	Weight / Display
LED Backlight	White	---	---

* - For full design functionality, please use this specification in conjunction with the UC1608 specification. (Provided Separately)

Display Accessories	
Part Number	Description

Optional Variants	
Appearances	Voltage



General Specification

The Features of the Module is description as follow:

- Module dimension: 98.7x 67.7 x 9.5 (max.) mm³
- View area: 92.0 x 53.0 mm²
- Active area: 83.975 x 44.775mm²
- Number of Dots: 240 x 128
- Dot size: 0.325 x 0.325 mm²
- Dot pitch: 0.35 x 0.35 mm²
- LCD type: STN Negative, Blue Transmissive
- Duty: 1/128
- View direction: 6 o'clock
- Backlight Type: LED White

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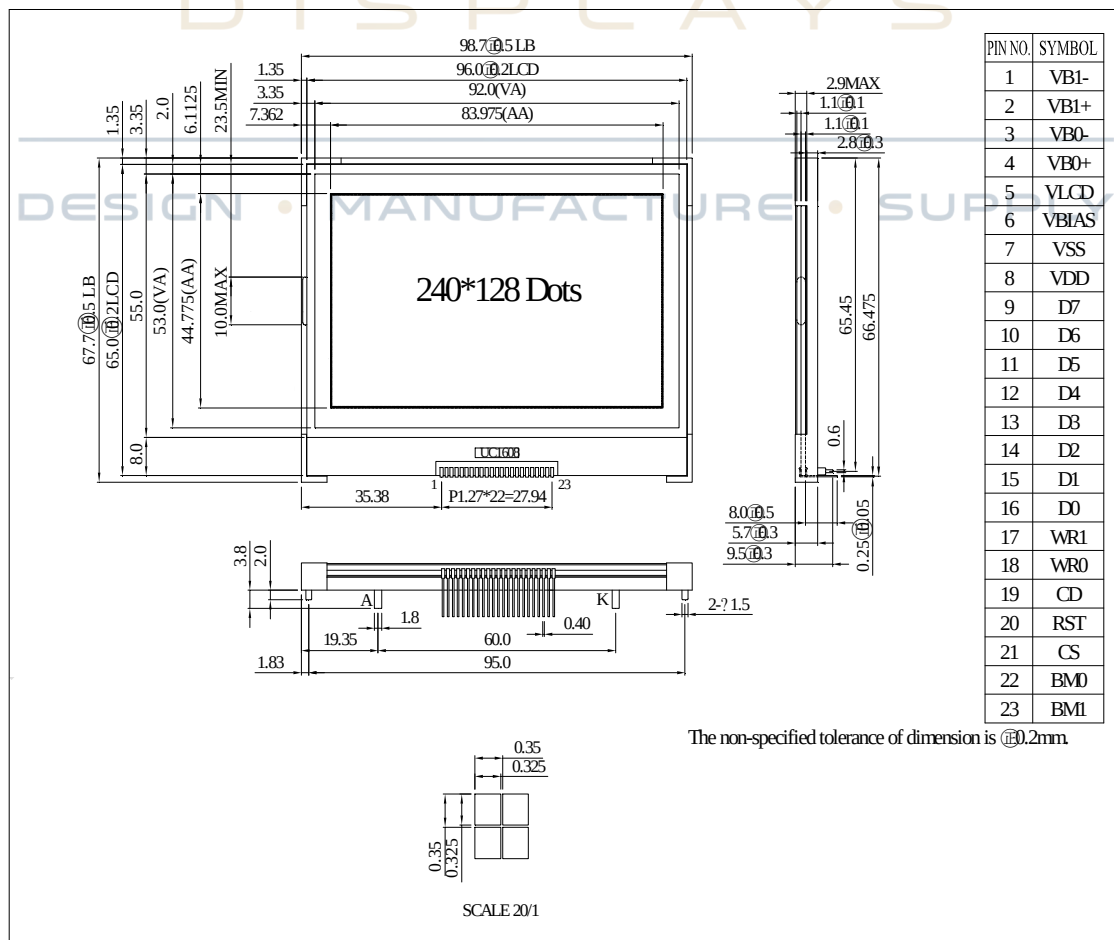
Interface Pin Function

Pin No.	Symbol	Type	Description																																													
1	VB1-	PWR	LCD Bias Voltages. These are the voltage source to provide SEG driving currents. These voltages are generated internally. Connect capacitors of CBX between VBX+ and VBX-. The resistance of these four traces directly affects the SEG driving strength of the resulting LCD module. Minimize the trace resistance is critical in achieving high quality image.																																													
2	VB1+																																															
3	VB0-																																															
4	VB0+																																															
5	V _{LCD}	PWR	Main LCD Power Supply.																																													
6	V _{BIAS}	I	This is the reference voltage to generate the actual SEG driving voltage. VBIAS can be used to fine tune VLCD by external variable resistors. Internal resistor network has been provided to simplify external trimming circuit. In COF application, connect a small bypass capacitor between VBIAS and VSS to reduce noise.																																													
7	V _{SS}	PWR	Ground																																													
8	V _{DD}	PWR	Supply Voltage for logic																																													
9	D7	I/O	Bi-directional bus for both serial and parallel host interfaces. In serial modes, connect D[0] to SCK, D[3] to SDA, <table><tr><td></td><td>BM=1x (Parallel)</td><td>BM=0x (Parallel)</td><td>BM=01 (S9)</td><td>BM=00 (S8/S8uc)</td></tr><tr><td>D0</td><td>D0</td><td>D0/D4</td><td>SCK</td><td>SCK</td></tr><tr><td>D1</td><td>D1</td><td>D1/D5</td><td>-</td><td>-</td></tr><tr><td>D2</td><td>D2</td><td>D2/D6</td><td>-</td><td>-</td></tr><tr><td>D3</td><td>D3</td><td>D3/D7</td><td>SDA</td><td>SDA</td></tr><tr><td>D4</td><td>D4</td><td>-</td><td>-</td><td>-</td></tr><tr><td>D5</td><td>D5</td><td>-</td><td>-</td><td>-</td></tr><tr><td>D6</td><td>D6</td><td>-</td><td>S9</td><td>S8/S8uc</td></tr><tr><td>D7</td><td>D7</td><td>0</td><td>1</td><td>1</td></tr></table> Connect unused pins to VDD or VSS.		BM=1x (Parallel)	BM=0x (Parallel)	BM=01 (S9)	BM=00 (S8/S8uc)	D0	D0	D0/D4	SCK	SCK	D1	D1	D1/D5	-	-	D2	D2	D2/D6	-	-	D3	D3	D3/D7	SDA	SDA	D4	D4	-	-	-	D5	D5	-	-	-	D6	D6	-	S9	S8/S8uc	D7	D7	0	1	1
	BM=1x (Parallel)			BM=0x (Parallel)	BM=01 (S9)	BM=00 (S8/S8uc)																																										
D0	D0			D0/D4	SCK	SCK																																										
D1	D1			D1/D5	-	-																																										
D2	D2			D2/D6	-	-																																										
D3	D3			D3/D7	SDA	SDA																																										
D4	D4			-	-	-																																										
D5	D5			-	-	-																																										
D6	D6	-	S9	S8/S8uc																																												
D7	D7	0	1	1																																												
10	D6																																															
11	D5																																															
12	D4																																															
13	D3																																															
14	D2																																															
15	D1																																															
16	D0																																															
17	WR1	I	WR[1:0] controls the read/write operation of the host interface. See Host Interface section for more detail. In parallel mode, WR[1:0] meaning depends on whether the interface is in the 6800 mode or the 8080 mode. In serial interface modes, these two pins are not used, connect them to VSS.																																													
18	WR0																																															
19	CD	I	Select Control data or Display data for read/write operation. In S9 mode, CD pin is not used. Connect CD to VSS when not used. "L": Control data "H": Display data																																													

20	RST	I	When RST="L", all control registers are re-initialized by their default states. Since UC1608x has built-in Power-ON-Reset and Software Reset command, RST pin is not required for proper chip operation. When RST is not used, connect the pin to VDD.
21	CS	I	Chip Select. The chip is selected when CS="H". When the chip is not selected, D[7:0] will be high impedance.
22	BM0	I	Bus mode: The interface bus mode is determined by BM[1:0] and D[7:6] by the following relationship:
23	BM1		

BM[1:0]	D[7:6]	Mode
11	Data	6800/8-bit
10	Data	8080/8-bit
01	0X	6800/4-bit
00	0X	8080/4-bit
01	10	3-wire SPI w/ 9-bit token (S9: conventional)
00	10	4-wire SPI w/ 8-bit token (S8: conventional)
00	11	3- or 4-wire SPI w/ 8-bit token (S8uc: Ultra-Compact)

Outline Dimension & Block Diagram



Display Command

The following is a list of host commands support by UC1608

C/D: 0: Control, 1: Data

W/R: 0: Write Cycle, 1: Read Cycle

Useful Data bits

– Don't Care

	Command	C/D	W/R	D7	D6	D5	D4	D3	D2	D1	D0	Action	Default
1	Write Data Byte	1	0	#	#	#	#	#	#	#	#	Write 1 byte	N/A
2	Read Data Byte	1	1	#	#	#	#	#	#	#	#	Read 1 byte	N/A
3	Get Status	0	1	BZ	MX	DE	RS	WA	GN1	GN0	1	Get Status	N/A
4	Set Column Address LSB	0	0	0	0	0	0	#	#	#	#	Set CA[3:0]	0
	Set Column Address MSB	0	0	0	0	0	1	#	#	#	#	Set CA[7:4]	0
5	Set Mux Rate and temperature compensation.	0	0	0	0	1	0	0	#	#	#	Set {MR, TC[1:0]}	MR: 1b TC: 00b
6	Set Power Control	0	0	0	0	1	0	1	#	#	#	Set PC[2:0]	101b
7	Set Adv. Program Control. (double byte command)	0	0	0	0	1	1	0	0	0	R	For UltraChip only. Do not use.	N/A
		0	0	#	#	#	#	#	#	#	#		
8	Set Start Line	0	0	0	1	#	#	#	#	#	#	Set SL[5:0]	0
9	Set Gain and Potentiometer (double-byte command)	0	0	1	0	0	0	0	0	0	1	Set {GN[1:0], PM[5:0]}	GN=3 PM=0
		0	0	#	#	#	#	#	#	#	#		
10	Set RAM Address Control	0	0	1	0	0	0	1	#	#	#	Set AC[2:0]	001b
11	Set All-Pixel-ON	0	0	1	0	1	0	0	1	0	#	Set DC[1]	0=disable
12	Set Inverse Display	0	0	1	0	1	0	0	1	1	#	Set DC[0]	0=disable
13	Set Display Enable	0	0	1	0	1	0	1	1	1	#	Set DC[2]	0=disable
14	Set Fixed Lines	0	0	1	0	0	1	#	#	#	#	Set FL[3:0]	0
15	Set Page Address	0	0	1	0	1	1	#	#	#	#	Set PA[3:0]	0
16	Set LCD Mapping Control	0	0	1	1	0	0	#	#	#	#	Set LC[3:0]	0
17	System Reset	0	0	1	1	1	0	0	0	1	0	System Reset	N/A
18	NOP	0	0	1	1	1	0	0	0	1	1	No operation	N/A
19	Set LCD Bias Ratio	0	0	1	1	1	0	1	0	#	#	Set BR[1:0]	10b=12
20	Reset Cursor Mode	0	0	1	1	1	0	1	1	1	0	AC[3]=0, CA=CR	N/A
21	Set Cursor Mode	0	0	1	1	1	0	1	1	1	1	AC[3]=1, CR=CA	N/A
22	Set Test Control (double byte command)	0	0	1	1	1	0	0	1	TT		For UltraChip only. Do not use.	N/A
		0	0	#	#	#	#	#	#	#	#		

* All bit patterns other than the commands listed above may result in undefined behavior.

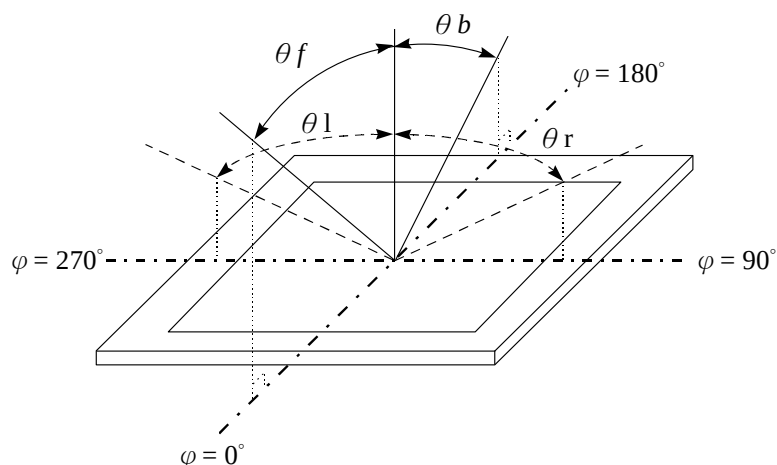
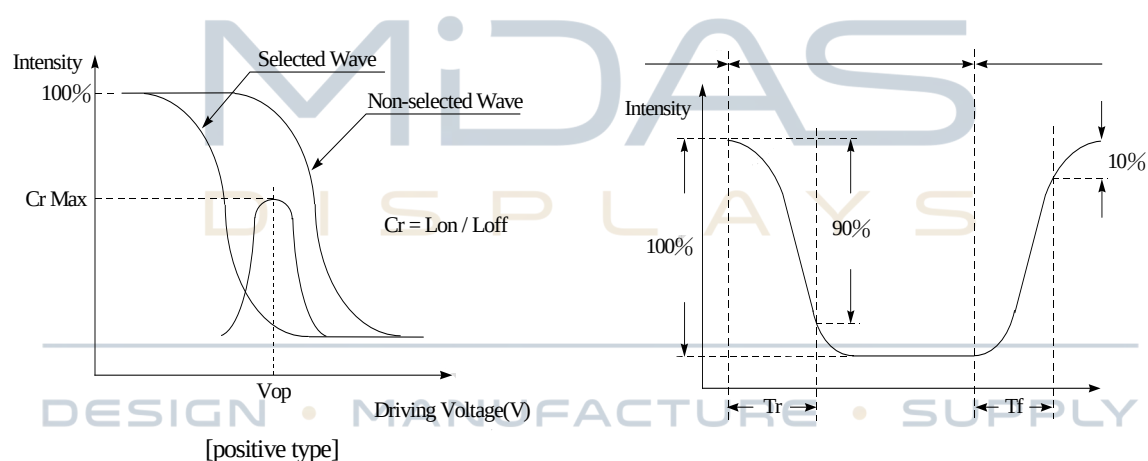
Optical Characteristics

Ta=25°C

Item	Symbol	Condition	Min	Typ	Max	Unit
View Angle	(V) θ	$CR \geq 2$	20	—	40	deg
	(H) ϕ	$CR \geq 2$	-30	—	30	deg
Contrast Ratio	CR	—	—	3	—	—
Response Time	T rise	—	—	200	300	ms
	T fall	—	—	250	350	ms

Definition of Operation Voltage (Vop)

Definition of Response Time (Tr, Tf)



Absolute Maximum Ratings

Item	Symbol	Min	Typ	Max	Unit
Operating Temperature	T_{OP}	-20	—	+70	°C
Storage Temperature	T_{ST}	-30	—	+80	°C
Input Voltage	V_{IN}/V_{OUT}	-0.3	—	$V_{DD}+0.3$	V
Supply Voltage For Logic	$V_{DD}-V_{SS}$	-0.3		4.0	V
LCD Driver Supply Voltage	V_{LCD}	-0.3		+17.0	V

Electrical Characteristics

Item	Symbol	Condition	Min	Typ	Max	Unit
Supply Voltage For Logic	$V_{DD}-V_{SS}$	—	2.7	2.8~3.3	3.6	V
Supply Voltage For LCM	V_{LCD}	$T_a=-20^{\circ}\text{C}$	14.7	15.0	15.3	V
		$T_a=25^{\circ}\text{C}$	15.2	15.5	15.8	V
		$T_a=70^{\circ}\text{C}$	15.4	15.7	16.0	V
Supply Current(No include LED Backlight)	I_{DD}	$V_{DD}=3.0\text{V}$		1.1		mA



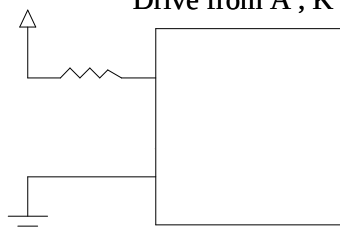
Backlight Information

Specification

PARAMETER	SYMBOL	MIN	TYP	MAX	UNIT	TEST CONDITION
Supply Current	I _{LED}	86.4	96	120	mA	V=3.5V
Supply Voltage	V	3.4	3.5	3.6	V	
Reverse Voltage	V _R	—	—	5	V	—
Luminous Intensity (Without LCD)	I _V	400	500	—	CD/M2	I _{LED} =96mA
Wave Length	X	0.28	0.3	0.32		I _{LED} =96mA
	Y	0.28	0.3	0.32		
LED Life Time (For Reference only)	—	—	50K	—	Hr.	I _{LED} ≤ 96mA 25°C, 50-60%RH, (Note 1)
Color	White					

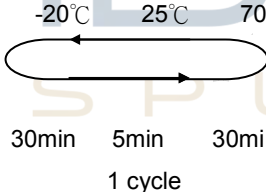
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LED B/L Drive Method
Drive from A , K



Reliability

Content of Reliability Test (wide temperature, -20℃~70℃)

Environmental Test			
Test Item	Content of Test	Condition	Note
High Temperature storage	Endurance test applying the high storage temperature for a long time.	80℃ 200hrs	2
Low Temperature storage	Endurance test applying the low storage temperature for a long time.	-30℃ 200hrs	1,2
High Temperature Operation	Endurance test applying the electric stress (Voltage & Current) and the thermal stress to the element for a long time.	70℃ 200hrs	-
Low Temperature Operation	temperature for a long time.	-20℃ 200hrs	1
High Temperature/ Humidity Operation	The module should be allowed to stand at 60℃,90%RH max For 96hrs under no-load condition excluding the polarizer, Then taking it out and drying it at normal temperature.	60℃,90%RH 96hrs	1,2
Thermal shock resistance	The sample should be allowed stand the following 10 cycles of operation 	-20℃/70℃ 10 cycles	-
Vibration test	Endurance test applying the vibration during transportation and using.	fixed amplitude: 15mm Vibration. Frequency: 10~55Hz. One cycle 60 seconds to 3 directions of X,Y,Z for Each 15 minutes	3
Static electricity test	Endurance test applying the electric stress to the terminal.	VS=800V,RS= 1.5kΩ CS=100pF 1 time	—

Note1: No dew condensation to be observed.

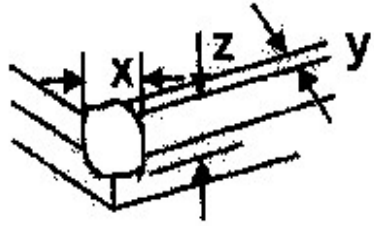
Note2: The function test shall be conducted after 4 hours storage at the normal temperature and humidity after remove from the test chamber.

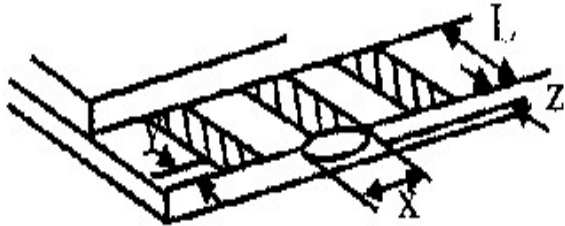
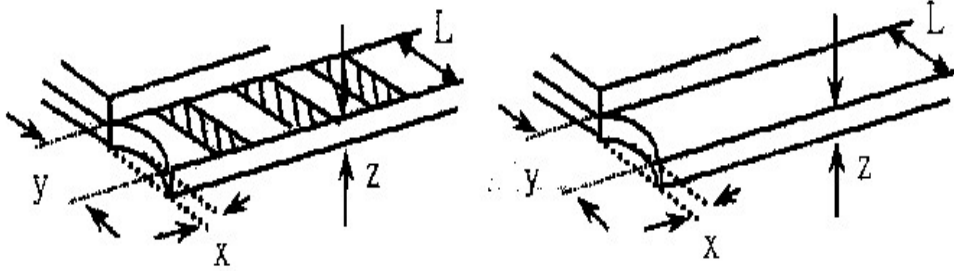
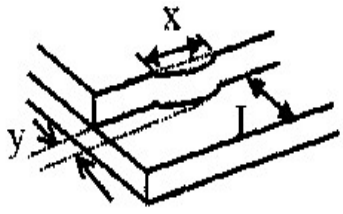
Note3: The packing have to including into the vibration testing.

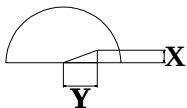
Inspection specification

NO	Item	Criterion	AQL												
01	Electrical Testing	1.1 Missing vertical, horizontal segment, segment contrast defect. 1.2 Missing character, dot or icon. 1.3 Display malfunction. 1.4 No function or no display. 1.5 Current consumption exceeds product specifications. 1.6 LCD viewing angle defect. 1.7 Mixed product types. 1.8 Contrast defect.	0.65												
02	Black or white spots on LCD (display only)	2.1 White and black spots on display $\leq 0.25\text{mm}$, no more than three white or black spots present. 2.2 Densely spaced: No more than two spots or lines within 3mm	2.5												
03	LCD black spots, white spots, contamination (non-display)	3.1 Round type : As following drawing $\Phi = (x + y) / 2$	2.5												
		3.2 Line type : (As following drawing)  <table><tr><th>Length</th><th>Width</th><th>Acceptable QTY</th></tr><tr><td>---</td><td>$W \leq 0.02$</td><td>Accept no dense</td></tr><tr><td>$L \leq 3.0$</td><td>$0.02 < W \leq 0.03$</td><td rowspan="2">2</td></tr><tr><td>$L \leq 2.5$</td><td>$0.03 < W \leq 0.05$</td></tr><tr><td>---</td><td>$0.05 < W$</td><td>As round type</td></tr></table>	Length	Width	Acceptable QTY	---	$W \leq 0.02$	Accept no dense	$L \leq 3.0$	$0.02 < W \leq 0.03$	2	$L \leq 2.5$	$0.03 < W \leq 0.05$	---	$0.05 < W$
Length	Width	Acceptable QTY													
---	$W \leq 0.02$	Accept no dense													
$L \leq 3.0$	$0.02 < W \leq 0.03$	2													
$L \leq 2.5$	$0.03 < W \leq 0.05$														
---	$0.05 < W$	As round type													
04	Polarizer bubbles	If bubbles are visible, judge using black spot specifications, not easy to find, must check in specify direction. <table><tr><th>Size Φ</th><th>Acceptable QTY</th></tr><tr><td>$\Phi \leq 0.20$</td><td>Accept no dense</td></tr><tr><td>$0.20 < \Phi \leq 0.50$</td><td>3</td></tr><tr><td>$0.50 < \Phi \leq 1.00$</td><td>2</td></tr><tr><td>$1.00 < \Phi$</td><td>0</td></tr><tr><td>Total QTY</td><td>3</td></tr></table>	Size Φ	Acceptable QTY	$\Phi \leq 0.20$	Accept no dense	$0.20 < \Phi \leq 0.50$	3	$0.50 < \Phi \leq 1.00$	2	$1.00 < \Phi$	0	Total QTY	3	2.5
Size Φ	Acceptable QTY														
$\Phi \leq 0.20$	Accept no dense														
$0.20 < \Phi \leq 0.50$	3														
$0.50 < \Phi \leq 1.00$	2														
$1.00 < \Phi$	0														
Total QTY	3														



NO	Item	Criterion	AQL																		
05	Scratches	Follow NO.3 LCD black spots, white spots, contamination																			
06	Chipped glass	Symbols Define: x: Chip length y: Chip width z: Chip thickness k: Seal width t: Glass thickness a: LCD side length L: Electrode pad length: 6.1 General glass chip : 6.1.1 Chip on panel surface and crack between panels:  <table> <tr> <th>z: Chip thickness</th> <th>y: Chip width</th> <th>x: Chip length</th> </tr> <tr> <td>$Z \leq 1/2t$</td> <td>Not over viewing area</td> <td>$x \leq 1/8a$</td> </tr> <tr> <td>$1/2t < z \leq 2t$</td> <td>Not exceed $1/3k$</td> <td>$x \leq 1/8a$</td> </tr> </table> ⊙ If there are 2 or more chips, x is total length of each chip. 6.1.2 Corner crack:  <table> <tr> <th>z: Chip thickness</th> <th>y: Chip width</th> <th>x: Chip length</th> </tr> <tr> <td>$Z \leq 1/2t$</td> <td>Not over viewing area</td> <td>$x \leq 1/8a$</td> </tr> <tr> <td>$1/2t < z \leq 2t$</td> <td>Not exceed $1/3k$</td> <td>$x \leq 1/8a$</td> </tr> </table> ⊙ If there are 2 or more chips, x is the total length of each chip.	z: Chip thickness	y: Chip width	x: Chip length	$Z \leq 1/2t$	Not over viewing area	$x \leq 1/8a$	$1/2t < z \leq 2t$	Not exceed $1/3k$	$x \leq 1/8a$	z: Chip thickness	y: Chip width	x: Chip length	$Z \leq 1/2t$	Not over viewing area	$x \leq 1/8a$	$1/2t < z \leq 2t$	Not exceed $1/3k$	$x \leq 1/8a$	2.5
		z: Chip thickness	y: Chip width	x: Chip length																	
$Z \leq 1/2t$	Not over viewing area	$x \leq 1/8a$																			
$1/2t < z \leq 2t$	Not exceed $1/3k$	$x \leq 1/8a$																			
z: Chip thickness	y: Chip width	x: Chip length																			
$Z \leq 1/2t$	Not over viewing area	$x \leq 1/8a$																			
$1/2t < z \leq 2t$	Not exceed $1/3k$	$x \leq 1/8a$																			

NO	Item	Criterion	AQL																
06	Glass crack	Symbols : x: Chip length y: Chip width z: Chip thickness k: Seal width t: Glass thickness a: LCD side length L: Electrode pad length 6.2 Protrusion over terminal : 6.2.1 Chip on electrode pad :  <table> <tr> <td>y: Chip width</td> <td>x: Chip length</td> <td>z: Chip thickness</td> </tr> <tr> <td>$y \leq 0.5\text{mm}$</td> <td>$x \leq 1/8a$</td> <td>$0 < z \leq t$</td> </tr> </table> 6.2.2 Non-conductive portion:  <table> <tr> <td>y: Chip width</td> <td>x: Chip length</td> <td>z: Chip thickness</td> </tr> <tr> <td>$y \leq L$</td> <td>$x \leq 1/8a$</td> <td>$0 < z \leq t$</td> </tr> </table> ⊙ If the chipped area touches the ITO terminal, over 2/3 of the ITO must remain and be inspected according to electrode terminal specifications. ⊙ If the product will be heat sealed by the customer, the alignment mark not be damaged. 6.2.3 Substrate protuberance and internal crack.  <table> <tr> <td>y: width</td> <td>x: length</td> </tr> <tr> <td>$y \leq 1/3L$</td> <td>$x \leq a$</td> </tr> </table>	y: Chip width	x: Chip length	z: Chip thickness	$y \leq 0.5\text{mm}$	$x \leq 1/8a$	$0 < z \leq t$	y: Chip width	x: Chip length	z: Chip thickness	$y \leq L$	$x \leq 1/8a$	$0 < z \leq t$	y: width	x: length	$y \leq 1/3L$	$x \leq a$	2.5
		y: Chip width	x: Chip length	z: Chip thickness															
		$y \leq 0.5\text{mm}$	$x \leq 1/8a$	$0 < z \leq t$															
		y: Chip width	x: Chip length	z: Chip thickness															
$y \leq L$	$x \leq 1/8a$	$0 < z \leq t$																	
y: width	x: length																		
$y \leq 1/3L$	$x \leq a$																		

NO	Item	Criterion	AQL
07	Cracked glass	The LCD with extensive crack is not acceptable.	2.5
08	Backlight elements	8.1 Illumination source flickers when lit. 8.2 Spots or scratched that appear when lit must be judged. Using LCD spot, lines and contamination standards. 8.3 Backlight doesn't light or color wrong.	0.65 2.5 0.65
09	Bezel	9.1 Bezel may not have rust, be deformed or have fingerprints, stains or other contamination. 9.2 Bezel must comply with job specifications.	2.5 0.65
10	PCB 、 COB	10.1 COB seal may not have pinholes larger than 0.2mm or contamination. 10.2 COB seal surface may not have pinholes through to the IC. 10.3 The height of the COB should not exceed the height indicated in the assembly diagram. 10.4 There may not be more than 2mm of sealant outside the seal area on the PCB. And there should be no more than three places. 10.5 No oxidation or contamination PCB terminals. 10.6 Parts on PCB must be the same as on the production characteristic chart. There should be no wrong parts, missing parts or excess parts. 10.7 The jumper on the PCB should conform to the product characteristic chart. 10.8 If solder gets on bezel tab pads, LED pad, zebra pad or screw hold pad, make sure it is smoothed down. 10.9 The Scraping testing standard for Copper Coating of PCB  $X * Y \leq 2\text{mm}^2$	2.5 2.5 0.65 2.5 2.5 0.65 0.65 2.5 2.5
11	Soldering	11.1 No un-melted solder paste may be present on the PCB. 11.2 No cold solder joints, missing solder connections, oxidation or icicle. 11.3 No residue or solder balls on PCB. 11.4 No short circuits in components on PCB.	2.5 2.5 2.5 0.65

NO	Item	Criterion	AQL
12	General appearance	12.1 No oxidation, contamination, curves or, bends on interface Pin (OLB) of TCP.	2.5
		12.2 No cracks on interface pin (OLB) of TCP.	0.65
		12.3 No contamination, solder residue or solder balls on product.	2.5
		12.4 The IC on the TCP may not be damaged, circuits.	2.5
		12.5 The uppermost edge of the protective strip on the interface pin must be present or look as if it causes the interface pin to sever.	2.5
		12.6 The residual rosin or tin oil of soldering (component or chip component) is not burned into brown or black color.	2.5
		12.7 Sealant on top of the ITO circuit has not hardened.	0.65
		12.8 Pin type must match type in specification sheet.	0.65
		12.9 LCD pin loose or missing pins.	0.65
		12.10 Product packaging must the same as specified on packaging specification sheet.	0.65
		12.11 Product dimension and structure must conform to product specification sheet.	

MIDAS
DISPLAYS

Precautions in use of LCD Modules

DESIGN • MANUFACTURE • SUPPLY

1. Avoid applying excessive shocks to the module or making any alterations or modifications to it.
2. Don't make extra holes on the printed circuit board, modify its shape or change the components of LCD module.
3. Don't disassemble the LCM.
4. Don't operate it above the absolute maximum rating.
5. Don't drop, bend or twist LCM.
6. Soldering: only to the I/O terminals.
7. Storage: please storage in anti-static electricity container and clean environment.
8. Midas Components have the right to change the passive components
(Resistors, capacitors and other passive components will have different appearance and color caused by the different supplier.)
9. Midas Components have the right to change the PCB Rev.



Material List of Components for RoHs

1. Midas Components Ltd. hereby declares that all of or part of products, including, but not limited to, the LCM, accessories or packages, manufactured and/or delivered to your company (including your subsidiaries and affiliated company) directly or indirectly by our company (including our subsidiaries or affiliated companies) do not intentionally contain any of the substances listed in all applicable EU directives and regulations, including the following substances.

Exhibit A : The Harmful Material List

Material	(Cd)	(Pb)	(Hg)	(Cr6+)	PBBs	PBDEs
Limited Value	100 ppm	1000 ppm	1000 ppm	1000 ppm	1000 ppm	1000 ppm
Above limited value is set up according to RoHS.						

2. Process for RoHS requirement :

(1) Use the Sn/Ag/Cu soldering surface ; the surface of Pb-free solder is rougher than we used before.

(2) Heat-resistance temp. :

Reflow : 250°C, 30 seconds Max. ;

Connector soldering wave or hand soldering : 320°C, 10 seconds max.

(3) Temp. curve of reflow, max. Temp. : 235±5°C ;

Recommended customer's soldering temp. of connector : 280°C, 3 seconds.

Recommendable storage

1. Place the panel or module in the temperature 25°C±5°C and the humidity below 65% RH
2. Do not place the module near organics solvents or corrosive gases.
3. Do not crush, shake, or jolt the module