Address: Midas Components Limited, Electra House, 32 Southdown Road, Great Yarmouth, Norfolk, NR31 0DU
Telephone: +44 (0)1493 602602
Fax: +44 (0)1493 665111
Email: sales@midascomponents.co.uk
Website: www.midascomponents.co.uk

Specification

MCCOG128064G6W-SPTLY

Contents

1. Revision History

DATE	VERSION	REVISED PAGE NO.	Note
2009/5/11	1		First issue

2. General Specification

The Features is described as follow:

- Module dimension: 60.1x44.5 x5.01 (max.) mm^3
- View area: 54.6 x32.0 mm^2
- Active area: 49.89 x27.49 mm^2
- Number of dots: 128 x64
- Dot size: 0.36 x0.4 mm^2
- Dot pitch: 0.39 x0.43 mm^2
- LCD type: STN Positive, Yellow Green Transflective,
- Duty: 1/64 , 1/9 Bias
- View direction: 6 o'clock
- Backlight Type: LED, Yellow Green

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Midas LCD Part Number System

MC	COG	132033	A	*	6	W	*	*	-	S	N	T	L	W	*	*
1	2	3	4	5	6	7	8	9	-	10	11	12	13	14	15	16

1 = **MC:** Midas Components

2 = **Blank:** COB (chip on board) **COG**: chip on glass

3 = **No of dots** (e.g. 240064 = 240 x 64 dots) (e.g. 21605 = 2 x 16 5mm C.H.)

4 = **Series**

5 = **Series Variant:** A to Z – see addendum

6 = **3:** 3 o'clock **6:** 6 o'clock **9**: 9 o'clock **12**: 12 o'clock

7 = **S**: Normal (0 to + 50 deg C) **W:** Wide temp. (-20 to + 70 deg C) **X:** Extended temp (-30 + 80 Deg C)

8 = **Character Set**

Blank: Standard (English/Japanese)
C: Chinese Simplified (Graphic Displays only)
CB: Chinese Big 5 (Graphic Displays only)
H: Hebrew
K: European (std) (English/German/French/Greek)
L: English/Japanese (special)
M: European (English/Scandinavian)
R: Cyrillic
W: European (English/Greek)
U: European (English/Scandinavian/Icelandic)

9 = **Bezel Height** (where applicable / available)

	Top of Bezel to Top of PCB	Common (via pins 1 and 2)	Array or Edge Lit
Blank	9.5mm / not applicable	Common	Array
2	8.9 mm	Common	Array
3	7.8 mm	Separate	Array
4	7.8 mm	Common	Array
5	9.5 mm	Separate	Array
6	7 mm	Common	Array
7	7 mm	Separate	Array
8	6.4 mm	Common	Edge
9	6.4 mm	Separate	Edge
A	5.5 mm	Common	Edge
B	5.5 mm	Separate	Edge
D	6.0mm	Separate	Edge
E	5.0mm	Separate	Edge
F	4.7mm	Common	Edge
G	3.7mm	Separate	EL

10 = **T:** TN **S**: STN **B:** STN Blue **G:** STN Grey **F:** FSTN **F2:** FFSTN

11 = **P:** Positive **N**: Negative

12 = **R:** Reflective **M**: Transmissive **T:** Transflective

13 = **Backlight: Blank:** Reflective **L:** LED

14 = **Backlight Colour: Y:** Yellow-Green **W:** White **B:** Blue **R:** Red **A:** Amber **O:** Orange **G:** Green **RGB:** R.G.B.

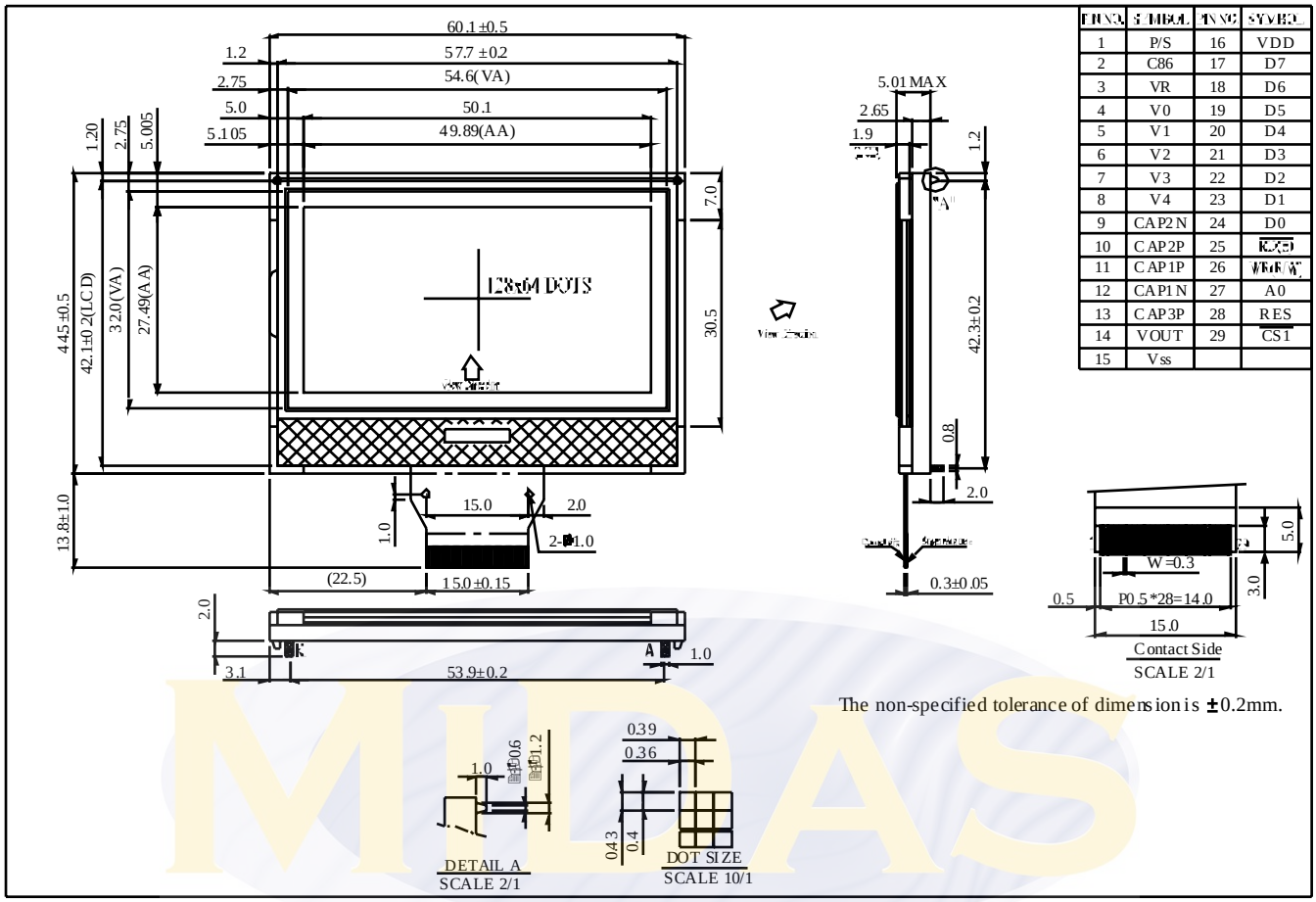
15 = **Driver Chip: Blank:** Standard **I:** I²C **T:** Toshiba T6963C **A:** Avant SAP1024B **R:** Raio RA8835

16 = **Voltage Variant**: e.g. **3** = 3v

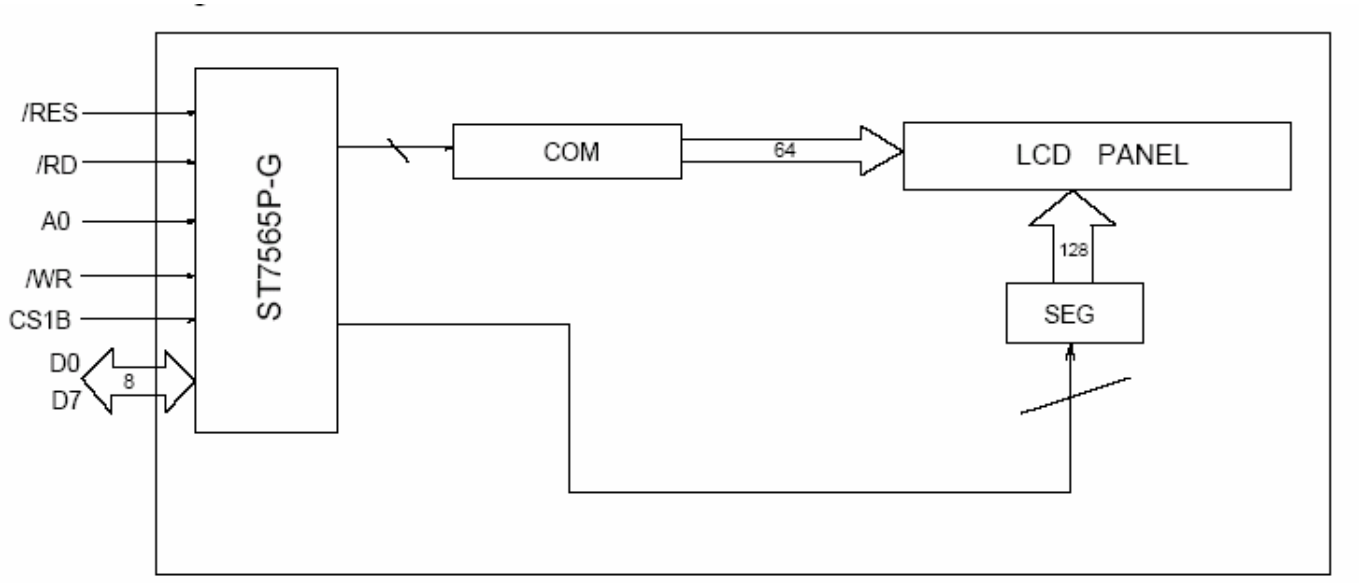
4. Interface Pin Function

Pin No.	Symbol	Level	Description
1	P/S	I	This is the parallel data input/serial data input switch terminal.
2	C86	I	This is the MPU interface switch terminal.
3	VR	I	Output voltage regulator terminal. Provides the voltage between VSS and V0 through a resistive voltage divider.
4~8	V0~V4	Power supply	This is a multi-level power supply for the liquid crystal drive.
9	CAP2N	O	DC/DC voltage converter. Connect a capacitor between this terminal and the CAP2P terminal.
10	CAP2P	O	DC/DC voltage converter. Connect a capacitor between this terminal and the CAP2N terminal.
11	CAP1P	O	DC/DC voltage converter. Connect a capacitor between this terminal and the CAP1N terminal.
12	CAP1N	O	DC/DC voltage converter. Connect a capacitor between this terminal and the CAP1P terminal.
13	CAP3P	O	DC/DC voltage converter. Connect a capacitor between this terminal and the CAP1N terminal.
14	VOUT	O	DC/DC voltage converter. Connect a capacitor between this terminal and vss or VDD
15	VSS	Power supply	Ground
16	VDD	Power supply	Power supply
17~24	D7~ D0	I/O	This is an 8-bit bi-directional data bus that connects to an 8-bit or 16-bit standard MPU data bus.
25	/RD(E)	I	The data bus is in output status when this signal is “L”
26	/WR(R/W)	I	The data bus are latched at the rising edge of the WR signal
27	A0	I	This is connect to the least significant bit of the Norman MPU address bus, and it determines whether the data bits are data or a command.
28	/RES	I	When RES is set to “L”, the setting are initialized.
29	/CS1	I	This is the chip select signal.

5. Outline Dimension & Block Diagram



PIN NO.	SYMBOL	PIN NO.	SYMBOL
1	P/S	16	VDD
2	C86	17	D7
3	VR	18	D6
4	V0	19	D5
5	V1	20	D4
6	V2	21	D3
7	V3	22	D2
8	V4	23	D1
9	CAP2N	24	D0
10	CAP2P	25	E(/RD)
11	CAP1P	26	R/W(/WR)
12	CAP1N	27	A0
13	CAP3P	28	RES
14	VOUT	29	CS1
15	Vss		

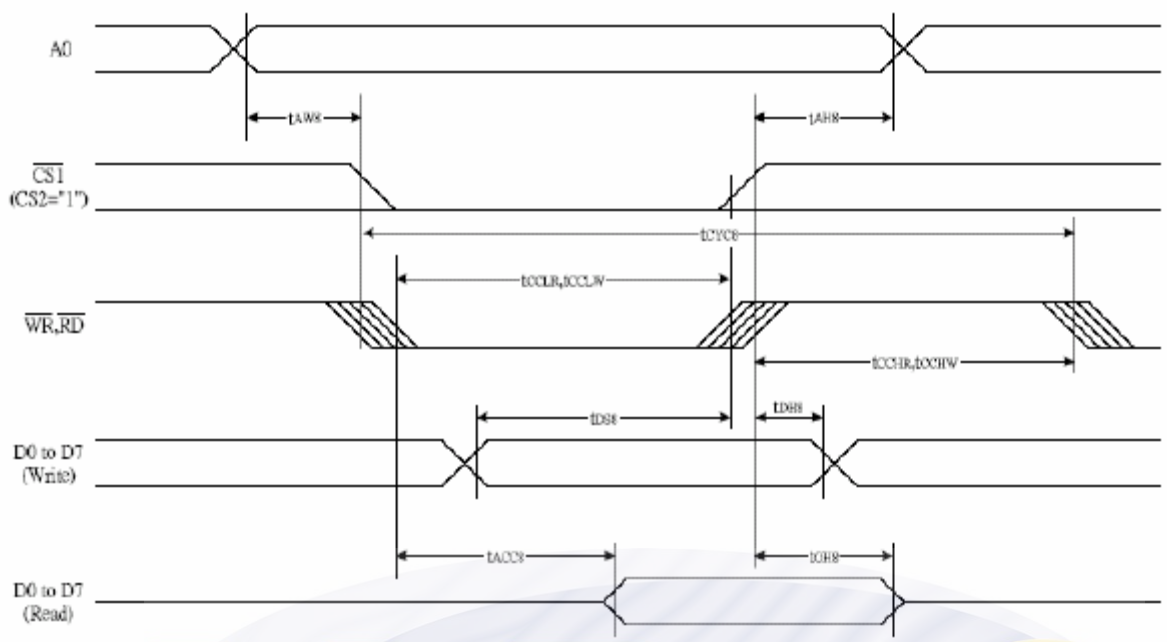


6. Display Command

Command	Command Code										Function
	A0	/RD	/WR	D7	D6	D5	D4	D3	D2	D1	D0	
(1) Display ON/OFF	0	1	0	1	0	1	0	1	1	1	0 1	LCD display ON/OFF 0: OFF, 1: ON
(2) Display start line set	0	1	0	0	1	Display start address						Sets the display RAM display start line address
(3) Page address set	0	1	0	1	0	1	1	Page address				Sets the display RAM page address
(4) Column address set upper bit Column address set lower bit	0 0	1 1	0 0	0 0	0 0	0 0	1 0	Most significant column address Least significant column address				Sets the most significant 4 bits of the display RAM column address. Sets the least significant 4 bits of the display RAM column address.
(5) Status read	0	0	1	Status				0	0	0	0	Reads the status data
(6) Display data write	1	1	0	Write data								Writes to the display RAM
(7) Display data read	1	0	1	Read data								Reads from the display RAM
(8) ADC select	0	1	0	1	0	1	0	0	0	0	0 1	Sets the display RAM address SEG output correspondence 0: normal, 1: reverse
(9) Display normal/ reverse	0	1	0	1	0	1	0	0	1	1	0 1	Sets the LCD display normal/ reverse 0: normal, 1: reverse
(10) Display all points ON/OFF	0	1	0	1	0	1	0	0	1	0	0 1	Display all points 0: normal display 1: all points ON
(11) LCD bias set	0	1	0	1	0	1	0	0	0	1	0 1	Sets the LCD drive voltage bias ratio 0: 1/9 bias, 1: 1/7 bias (ST7565P)
(12) Read/modify/write	0	1	0	1	1	1	0	0	0	0	0	Column address increment At write: +1 At read: 0
(13) End	0	1	0	1	1	1	0	1	1	1	0	Clear read/modify/write
(14) Reset	0	1	0	1	1	1	0	0	0	1	0	Internal reset
(15) Common output mode select	0	1	0	1	1	0	0	0 1	*	*	*	Select COM output scan direction 0: normal direction 1: reverse direction
(16) Power control set	0	1	0	0	0	1	0	1	Operating mode			Select internal power supply operating mode
(17) Vo voltage regulator internal resistor ratio set	0	1	0	0	0	1	0	0	Resistor ratio			Select internal resistor ratio(Rb/Ra) mode
(18) Electronic volume mode set Electronic volume register set	0	1	0	1 0	0 0	0 Electronic volume value	0	0	0	0	1	Set the Vo output voltage electronic volume register
(19) Static indicator ON/OFF Static indicator register set	0	1	0	1 0	0 0	1 0	0 0	1 0	1 0	0 0	0 1 Mode	0: OFF, 1: ON Set the flashing mode
(20) Booster ratio set	0	1	0	1 0	1 0	1 0	1 0	1 0	0 0	0 step-up value	0	select booster ratio 00: 2x,3x,4x 01: 5x 11: 6x
(21) Power saver												Display OFF and display all points ON compound command
(22) NOP	0	1	0	1	1	1	0	0	0	1	1	Command for non-operation
(23) Test	0	1	0	1	1	1	1	*	*	*	*	Command for IC test. Do not use this command

7. Timing Characteristics

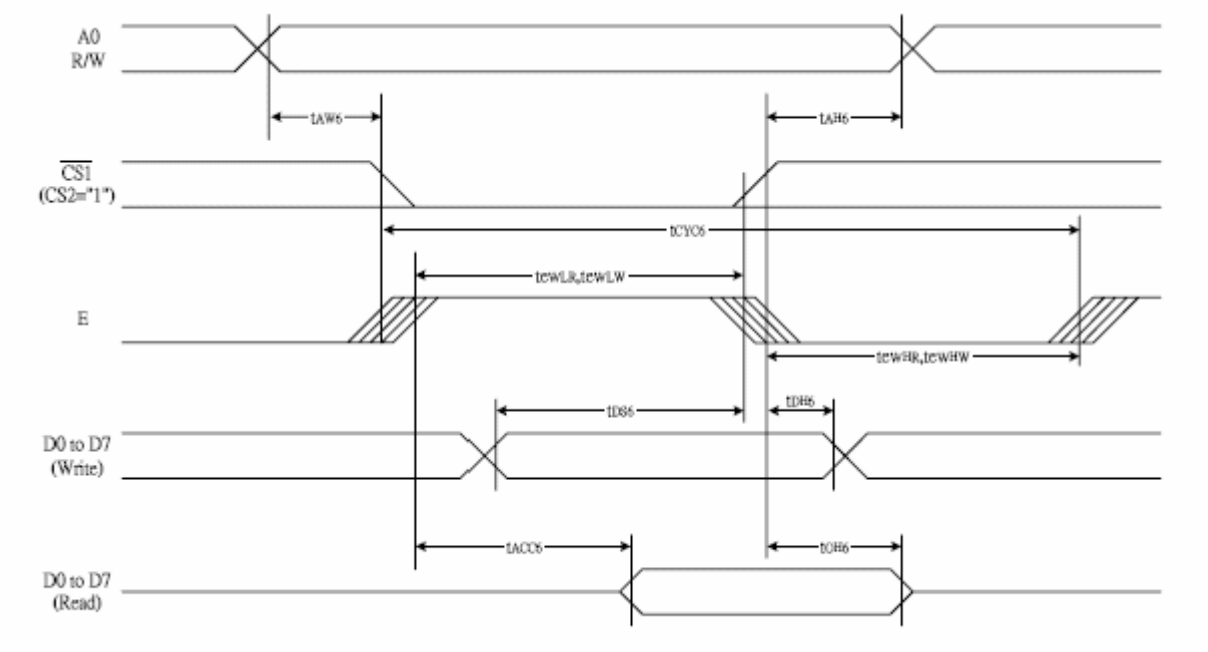
7-1 8080 Series MPU



(VDD = 3.3V , Ta =25°C)

Item	Signal	Symbol	Condition	Rating		Units
				Min.	Max.	
Address hold time	A0	t_{AH8}		0	—	Ns
Address setup time		t_{AW8}		0	—	
System cycle time		t_{CYC8}		240	—	
Enable L pulse width (WRITE)	WR	t_{CCLW}		80	—	
Enable H pulse width (WRITE)		t_{CCHW}		80	—	
Enable L pulse width (READ)	RD	t_{CCLR}		140	—	
Enable H pulse width (READ)		t_{CCHR}		80		
WRITE Data setup time	D0 to D7	t_{DS8}		40	—	
WRITE Address hold time		t_{DH8}		0	—	
READ access time		t_{ACC8}	CL = 100 pF	—	70	
READ Output disable time		t_{OH8}	CL = 100 pF	5	50	

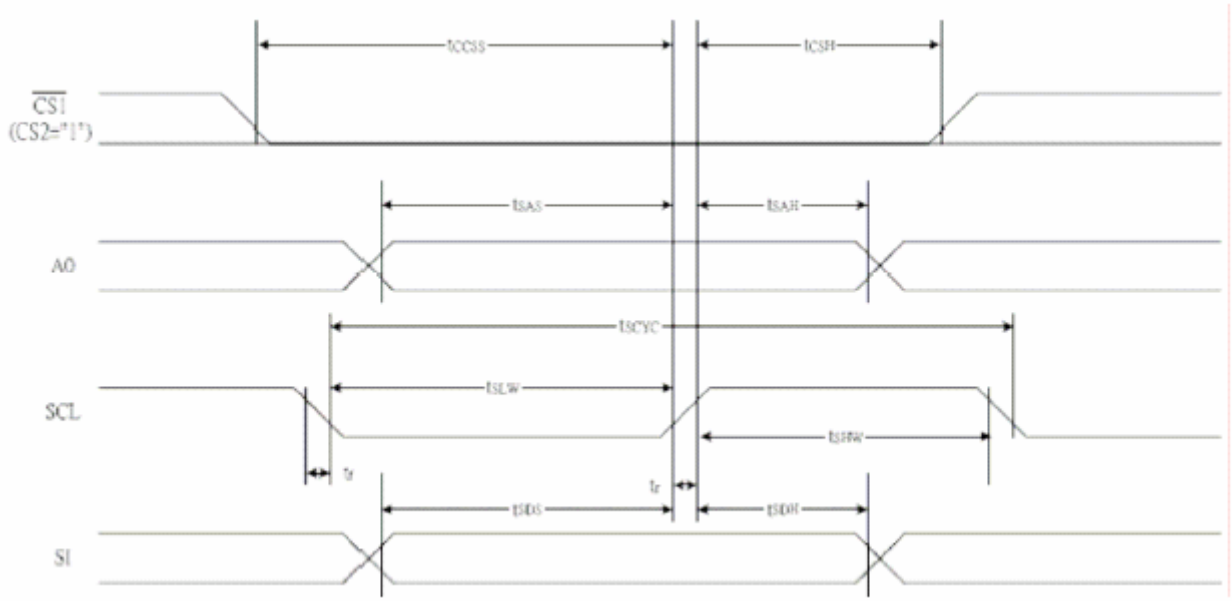
7-2 6800-Series MPU



(VDD = 3.3 V , Ta = 25°C)

Item	Signal	Symbol	Condition	Rating		Units
				Min.	Max.	
Address hold time	A0	t_{AH6}		0	—	ns
Address setup time		t_{AW6}		0	—	
System cycle time		t_{CYC6}		240	—	
Enable L pulse width (WRITE)	WR	t_{EWLW}		80	—	
Enable H pulse width (WRITE)		t_{EWHW}		80	—	
Enable L pulse width (READ)	RD	t_{EWLR}		80	—	
Enable H pulse width (READ)		t_{EWHR}		140		
WRITE Data setup time	D0 to D7	t_{DS6}		40	—	
WRITE Address hold time		t_{DH6}		0	—	
READ access time		t_{ACC6}	C_L = 100 pF	—	70	
READ Output disable time		t_{OH6}	C_L = 100 pF	5	50	

7-3. The Serial Interface



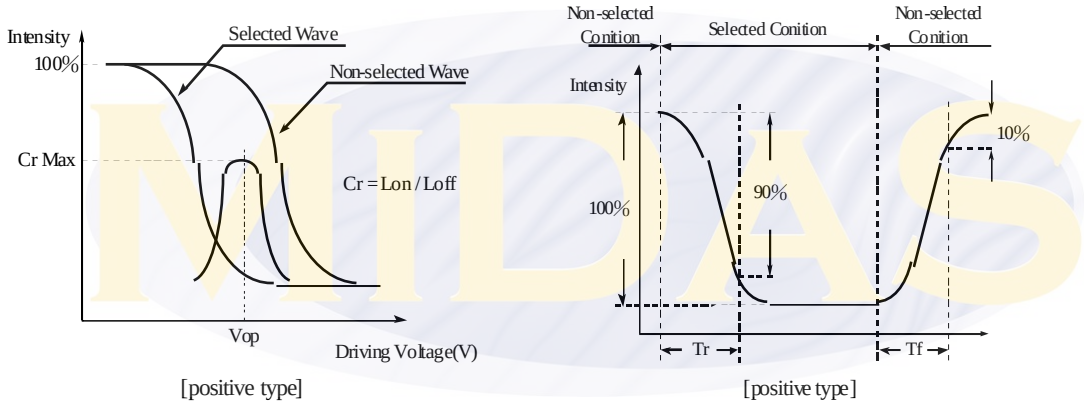
(VDD = 3.3V, Ta =25°C)

Item	Signal	Symbol	Condition	Rating		Units
				Min.	Max.	
Serial Clock Period	SCL	T_{scyc}		50	—	ns
SCL "H" pulse width		T_{shw}		25	—	
SCL "L" pulse width		T_{SLW}		25	—	
Address setup time	A0	T_{SAS}		20	—	
Address hold time		T_{sah}		10	—	
Data setup time	SI	T_{sds}		20	—	
Data hold time		T_{SDH}		10	—	
CS-SCL time	CS	T_{css}		20	—	
CS-SCL time		T_{csh}		40	—	

8. Optical Characteristics

Item	Symbol	Condition	Min	Typ	Max	Unit
View Angle	(V)θ	CR≧2	20	—	30	deg
	(H)φ	CR≧2	-30	—	30	deg
Contrast Ratio	CR	—	—	4	—	—
Response Time	T rise	—	—	100	280	ms
	T fall	—	—	150	330	ms

Definition of Operation Voltage, Vop. **Definition of Response Time, Tr and Tf.**

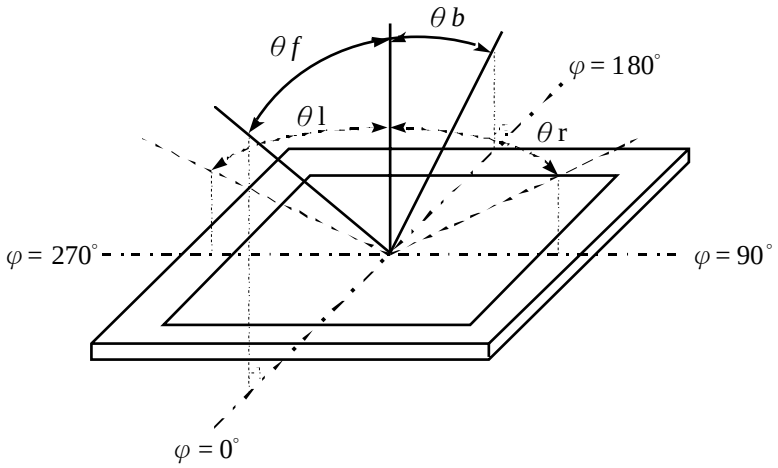


Conditions:

Operating Voltage : Vop Viewing Angle(θ，φ) : 0°， 0°

Frame Frequency: 64 HZ Driving Waveform: 1/N duty, 1/a bias

Definition of viewing angle (CR≧2)



9. Absolute Maximum Ratings

Item	Symbol	Min	Typ	Max	Unit
Operating Temperature	T_{OP}	-20	—	+70	℃
Storage Temperature	T_{ST}	-30	—	+80	℃
Supply voltage for Logic	V_{DD}	-0.3	—	5.0	V
LCD Driver Supply Voltage	V_{OUT} , V0	0		18.0	V

10. Electrical Characteristics

Item	Symbol	Condition	Min	Typ	Max	Unit
Supply Voltage For Logic	V_{DD}-V_{SS}	—	2.7	3.0	3.3	V
Supply Voltage For LCM *Note	VR-V_{SS}	Ta=-20℃	9.43	9.73	10.03	V
		Ta=25℃	9.20	9.45	9.7	V
		Ta=70℃	8.87	9.17	9.47	V
Input High Volt.	V_{IH}	—	0.8 V_{DD}	—	V_{DD}	V
Input Low Volt.	V_{IL}	—	Vss	—	0.2 V_{DD}	V
Output High Volt.	V_{OH}	I_{OUT}=-0.5mA	0.8 V_{DD}	—	V_{DD}	V
Output Low Volt.	V_{OL}	I_{OUT}=0.5mA	Vss	—	0.2V_{DD}	V
Supply Current(No include LED Backlight)	I_{DD}	V_{DD}=3.0V		0.10	2.0	mA

11.Backlight Information

Specification

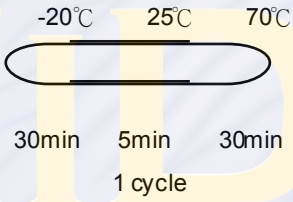
PARAMETER	SYMBOL	MIN	TYP	MAX	UNIT	TEST CONDITION
Supply Current	ILED	45.6	57	89.1	mA	V=3.5V
Supply Voltage	V	3.4	3.5	3.6	V	
Reverse Voltage	VR	—	—	5	V	—
Luminous Intensity (Without LCD)	IV	22	27.5	—	CD/M^2	ILED=57mA
LED Life Time (For Reference only)	—	—	50K	—	Hr.	$I_{LED} \leqq 57mA$ 25℃,50-60%RH, (Note 1)
Color	Yellow Green					

Note: The LED of B/L is drive by current only；driving voltage is only for reference To make driving current in safety area (waste current between minimum and maximum).

Note 1:50K hours is only an estimate for reference.

12. Reliability

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

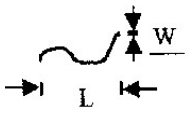
Environmental Test			
Test Item	**Content of Test**	**Condition**	**Note**
High Temperature storage	Endurance test applying the high storage temperature for a long time.	80℃ 200hrs	2
Low Temperature storage	Endurance test applying the high storage temperature for a long time.	-30℃ 200hrs	1,2
High Temperature 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	Endurance test applying the electric stress under low 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: Vibration test will be conducted to the product itself without putting it in a container.

13. Inspection specification

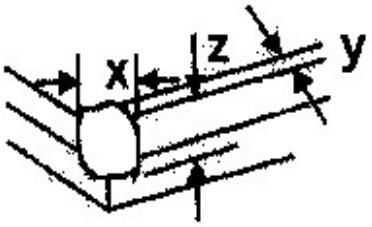
<table>
<tr><th>NO</th><th>Item</th><th>Criterion</th><th>AQL</th></tr>
<tr><td>01</td><td>Electrical Testing</td><td>1.1 Missing vertical, horizontal segment, segment contrast defect.
1.2 Missing character, dot or icon.
1.3 Display malfunction.
1.4 No function or no display.
1.5 Current consumption exceeds product specifications.
1.6 LCD viewing angle defect.
1.7 Mixed product types.
1.8 Contrast defect.</td><td>0.65</td></tr>
<tr><td>02</td><td>Black or white spots on LCD (display only)</td><td>2.1 White and black spots on display ≦0.25mm, no more than three white or black spots present.
2.2 Densely spaced: No more than two spots or lines within 3mm</td><td>2.5</td></tr>
<tr><td rowspan="2">03</td><td rowspan="2">LCD black spots, white spots, contamination (non-display)</td><td>3.1 Round type : As following drawing
Φ=(x + y) / 2</td><td>2.5</td></tr>
<tr><td>3.2 Line type : (As following drawing)
 

<table>
<tr><th>Length</th><th>Width</th><th>Acceptable Q TY</th></tr>
<tr><td>---</td><td>W≦0.02</td><td>Accept no dense</td></tr>
<tr><td>L≦3.0</td><td>0.02＜W≦0.03</td><td rowspan="2">2</td></tr>
<tr><td>L≦2.5</td><td>0.03＜W≦0.05</td></tr>
<tr><td>---</td><td>0.05＜W</td><td>As round type</td></tr>
</table></td><td>2.5</td></tr>
<tr><td>04</td><td>Polarizer bubbles</td><td>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 Q TY</th></tr>
<tr><td>Φ≦0.20</td><td>Accept no dense</td></tr>
<tr><td>0.20＜Φ≦0.50</td><td>3</td></tr>
<tr><td>0.50＜Φ≦1.00</td><td>2</td></tr>
<tr><td>1.00＜Φ</td><td>0</td></tr>
<tr><td>Total Q TY</td><td>3</td></tr>
</table></td><td>2.5</td></tr>
</table>

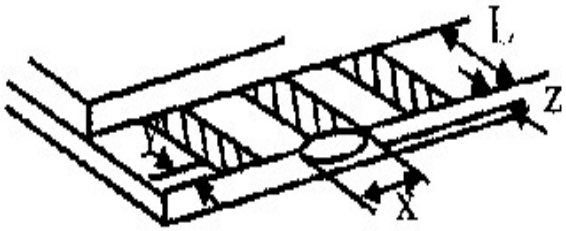
<table>
<tr><th>NO</th><th>Item</th><th>Criterion</th><th>AQL</th></tr>
<tr><td>05</td><td>Scratches</td><td>Follow NO.3 LCD black spots, white spots, contamination</td><td></td></tr>
<tr><td>06</td><td>Chipped glass</td><td>
Symbols Define:
x: Chip length y: Chip width z: Chip thickness
k: Seal width t: Glass thickness a: LCD side length
L: Electrode pad length:

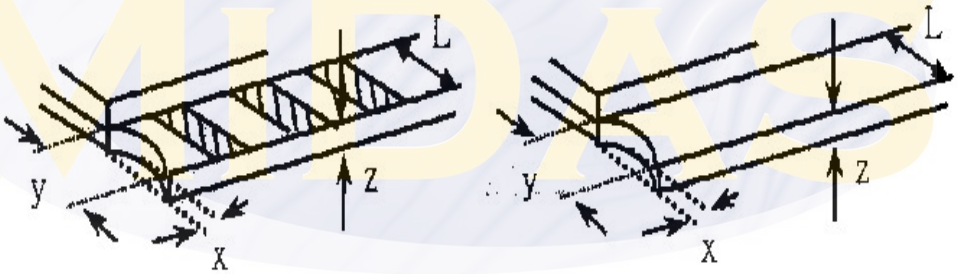
6.1 General glass chip :
6.1.1 Chip on panel surface and crack between panels:

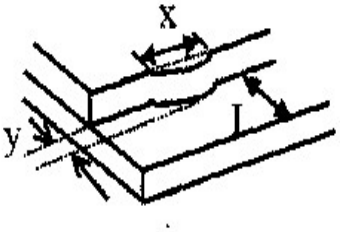

<table>
<tr><th>z: Chip thickness</th><th>y: Chip width</th><th>x: Chip length</th></tr>
<tr><td>Z≦1/2t</td><td>Not over viewing area</td><td>x≦1/8a</td></tr>
<tr><td>1/2t＜z≦2t</td><td>Not exceed 1/3k</td><td>x≦1/8a</td></tr>
</table>
⊙If there are 2 or more chips, x is total length of each chip.

6.1.2 Corner crack:


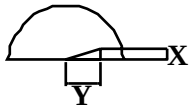
<table>
<tr><th>z: Chip thickness</th><th>y: Chip width</th><th>x: Chip length</th></tr>
<tr><td>Z≦1/2t</td><td>Not over viewing area</td><td>x≦1/8a</td></tr>
<tr><td>1/2t＜z≦2t</td><td>Not exceed 1/3k</td><td>x≦1/8a</td></tr>
</table>
⊙If there are 2 or more chips, x is the total length of each chip.
</td><td>2.5</td></tr>
</table>

<table>
<tr><th>NO</th><th>Item</th><th>Criterion</th><th>AQL</th></tr>
<tr><td>06</td><td>Glass crack</td><td>
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><th>y: Chip width</th><th>x: Chip length</th><th>z: Chip thickness</th></tr>
<tr><td>y≦0.5mm</td><td>x≦1/8a</td><td>0 ＜ z ≦ t</td></tr>
</table>
6.2.2 Non-conductive portion:


<table>
<tr><th>y: Chip width</th><th>x: Chip length</th><th>z: Chip thickness</th></tr>
<tr><td>y≦ L</td><td>x≦1/8a</td><td>0 ＜ z ≦ 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><th>y: width</th><th>x: length</th></tr>
<tr><td>y≦1/3L</td><td>x ≦ a</td></tr>
</table>
</td><td>2.5</td></tr>
</table>

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<=2mm^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 icide. 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. 12.2 No cracks on interface pin (OLB) of TCP. 12.3 No contamination, solder residue or solder balls on product. 12.4 The IC on the TCP may not be damaged, circuits. 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. 12.6 The residual rosin or tin oil of soldering (component or chip component) is not burned into brown or black color. 12.7 Sealant on top of the ITO circuit has not hardened. 12.8 Pin type must match type in specification sheet. 12.9 LCD pin loose or missing pins. 12.10 Product packaging must the same as specified on packaging specification sheet. 12.11 Product dimension and structure must conform to product specification sheet.	2.5 0.65 2.5 2.5 2.5 2.5 2.5 0.65 0.65 0.65 0.65

14. Precautions in use of LCD Modules

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.

15. 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℃, 30 seconds Max.；
   Connector soldering wave or hand soldering：320℃, 10 seconds max.
   (3) Temp. curve of reflow, max. Temp.：235±5℃；
   Recommended customer's soldering temp. of connector：280℃, 3 seconds.