

**Specifications for Approval**

Customer : Mc'Tronic

Model name : GX1602110129FRN6G01 REV: A

Description : LCM (X1602110129FRN601-E9512-B1020A )

LCD Specification: LCD (SE9512 – 70 – 8693 – 111018 – 1)

ISSUE	ENG	QA	APPROVAL
Lily Li	Bose Xie	Wallace	Michael

<p><b>Customer Approval</b></p>	<p><input type="checkbox"/> Accept</p> <p><input type="checkbox"/> Reject</p> <p>Comment:</p>          <p style="text-align: right;">Approved by: _____</p>
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**REVISION RECORD (MODEL NO.: GX1602110129FRN6G01)**

Revision	Revision Date	Page	Contents
A	2011/10/25		Initial Release and Issue Full Specification.



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- ※ 1. REVISION RECORD  
2. SAMPLE OUTGOING INSPECTION REPORT

<b>MODEL</b>	<b>GX1602110129FRN6G01</b>	<b>1/19</b>	<b>PRODUCT SPECIFICATIONS</b>	<b>REV: A</b>
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### 1. FEATURES

The features of LCD are as follows

- \* Display mode : FSTN, Positive, Reflective
- \* Color : Display dot : Black  
Background: White
- \* Display Format : 16 Character X 2 Line
- \* IC : SITRONIX ST7038i-0B
- \* Interface Input Data : I<sup>2</sup>C Interface MPU
- \* Driving Method : 1/17 Duty, 1/5 Bias
- \* Viewing Direction : 6 O'clock
- \* Backlight : N / A
- \* LCM technological conditions: **RoHS**

### 2. MECHANICAL SPECIFICATIONS

Item	Specification	Unit
Module Size	66.0(W) x 26.7(H) x 2.1MAX(T)	mm
Viewing Area	61.0MIN(W) x 15.7MIN(H)	mm
Effective Display Area	54.7(W) X 10.78(H)	mm
Dot Size	0.566(W) x 0.6175(H)	mm
Dot Pitch	0.596 (W) x 0.6475(H)	mm

### 3. ELECTRICAL SPECIFICATIONS

#### 3-1. Absolute Maximum Ratings (V<sub>SS</sub>=0V)

Item	Symbol	Standard Value			Unit
		Min.	Typ.	Max.	
Supply Voltage For Logic	V <sub>DD</sub>	-0.3	-	+3.6	V
Supply Voltage For LCD Drive	V <sub>OUT</sub>	-0.3	-	+12.0	V
Input Voltage	V <sub>IN</sub>	-0.3	-	V <sub>DD</sub> +0.5	V
Operating Temp.	T <sub>OP</sub>	-20	-	+70	°C
Storage Temp.	T <sub>ST</sub>	-40	-	+80	°C

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### 3. ELECTRICAL SPECIFICATIONS (Continued)

#### 3-2. Electrical Characteristics (V<sub>SS</sub>=0V)

Item	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Logic Supply Voltage	V <sub>DD</sub>	-	2.1	3.0	3.3	V
LCD Drive Voltage (Recommended Voltage)	V <sub>OP</sub> =V <sub>O</sub> -V <sub>SS</sub>	Ta=0~50°C	3.41	3.71	4.01	V
Input Voltage	“H” Level	-	0.8V <sub>DD</sub>	-	V <sub>DD</sub>	V
	“L” Level		V <sub>IL</sub>	-	-	0.2V <sub>DD</sub>
Output Voltage	“H” Level	I <sub>OH</sub> = -1.5 mA	1.4	-	-	V
	“L” Level	I <sub>OL</sub> = 2.0mA	-	-	0.66	V
Current Consumption	I <sub>DD</sub>	V <sub>op</sub> =3.71V V <sub>DD</sub> =3.0V	-	-	2.0	mA

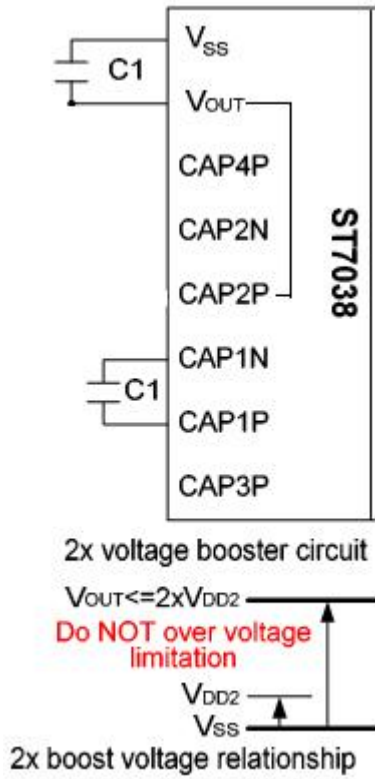
NOTE: 1) Duty Ratio=1/17, Bias Ratio=1/5

2) Measuring in Dots ON-state

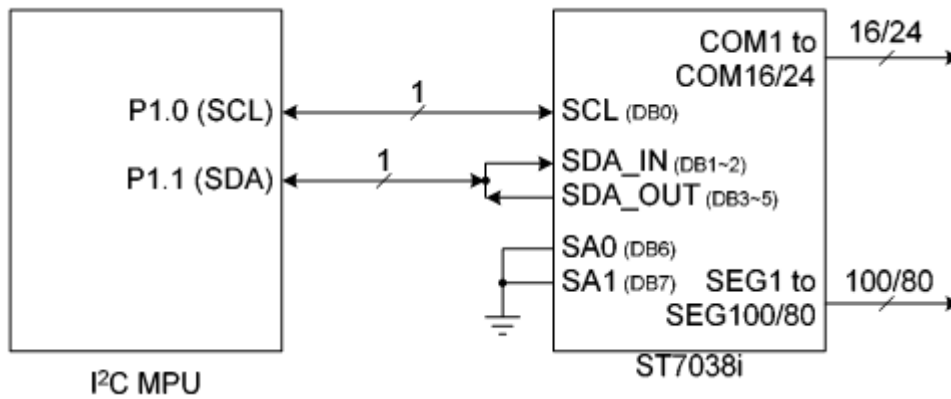
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## 4. POWER SUPPLY AND BLOCK DIAGRAM

### 4-1. Power supply

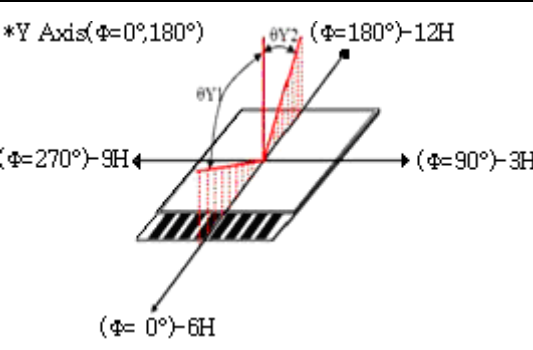
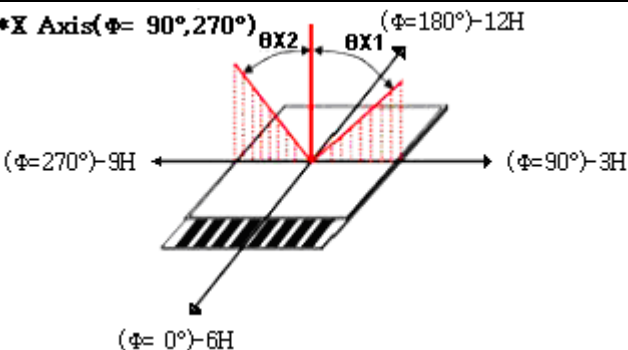
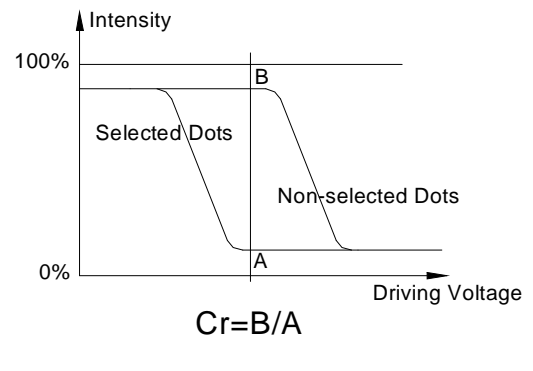
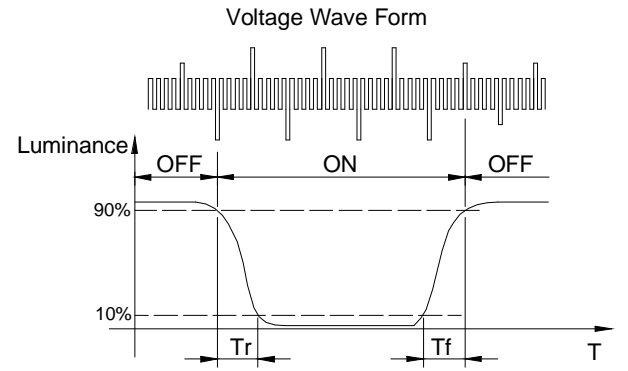


### 4-2. Block Diagram



### 5. ELECTRO – OPTICAL CHARACTERISTICS

Item	Symbol	Temp.	Min.	Typ.	Max.	Unit	Conditions	Note	
Viewing Angle Cr <sub>≥</sub> 2	Φ=0°	25°C	--	45	--	Deg.	-	1,2	
	Φ=180°		Θ1	--	40				--
	Φ=90°		Θ2	--	35				--
	Φ=270°		Θ3	--	35				--
Viewing Direction		6O'clock							
Contrast Ratio	Cr	25°C	2.0	11.38	12.13	-	Θ = 0° Φ = 0°	3	
Response Time(rise)	Tr	25°C	-	186	300	ms	Θ = 0° Φ = 0°	4	
		0°C	-	950	1150				
Response Time(fall)	Tf	25°C	-	258	300	ms	Θ = 0° Φ = 0°	4	
		0°C	-	950	1150				

<p>Note1. Definition of Angle ΘY1&amp;ΦY2</p> 	<p>Note2. Definition of Viewing Angle ΘX1&amp;ΘX2</p> 
<p>Note3. Definition of Contrast Cr</p> 	<p>Note4. Definition of Optical Response</p> 

## 6. TERMINAL PIN FUNCTION

Pin NO.	Symbol	I / O	Functions
1	CAP1N	Power Supply	For voltage booster circuit (VDD-VSS). External capacitor about 0.1u ~ 4.7uF.
2	CAP1P		
3	VOUT	Power Supply	DC/DC voltage converter. Connect a capacitor between this terminal and VIN when the built-in booster is used.
4	VDD	Power Supply	2.1V to 3.3V.
5	VSS	Power Supply	0V.
6	SDA	I	Serial data input.
7	SCL	I	Serial clock input.
8	/RST	I	External reset pin. Low active.



## 7. INSTRUCTION DESCRIPTION (ST7038-0B)

b7-b4 b3-b0	0000	0001	0010	0011	0100	0101	0110	0111	1000	1001	1010	1011	1100	1101	1110	1111
0000	1	2	3	4	5	6	7	8	9	0	-	.	/	~	^	^
0001	J	k	l	1	Q	a	9	0	a	e	.	7	7	G	i	~
0010	w	s	"	2	B	R	b	r	e	e	r	y	u	x	o	°
0011	P	7	#	3	C	S	c	s	A	a	u	U	T	E	U	~
0100	4	P	\$	4	D	T	d	t	A	a	v	I	t	R	C	~
0101	↑	Δ	%	5	E	U	e	u	A	a	.	*	*	I	E	U
0110	↓	θ	&	6	F	V	f	v	A	a	7	0	2	3	*	U
0111	→	Λ	^	7	G	W	g	w	S	U	7	†	×	7	R	×
1000	←	E	<	8	H	X	h	x	e	9	4	7	*	U	f	~
1001	Γ	Π	>	9	I	Y	i	y	e	0	5	7	U	U	i	Σ
1010	Π	Σ	*	:	J	Z	j	z	e	0	e	0	n	U	E	Σ
1011	L	P	+	:	K	L	k	l	i	R	*	7	E	0	3	×
1100	U	θ	.	<	L	%	l	l	i	N	r	U	7	7	8	×
1101	.	ψ	-	=	M	I	m	i	1	3	u	×	^	U	8	*
1110	0	0	.	>	N	^	n	^	A	0	3	E	7	^	0	†
1111	0	0	/	?	0	L	0	+	A	0	u	U	7	"	0	~

## 7. INSTRUCTION DESCRIPTION

Instruction	Instruction Code										Description	Execution Time			
	A0	R/W	DB7	DB6	DB5	DB4	DB3	DB2	DB1	DB0		OSC= 260.4K Hz	OSC= 284.1K Hz	OSC= 531.1K Hz	
<b>Default Instruction Table (IS[1:0]: Don't Care)</b>															
Clear Display	0	0	0	0	0	0	0	0	0	0	1	Write "20H" to clear DDRAM and set AC to "00H".	1.8 ms	1.6 ms	1ms
Return Home	0	0	0	0	0	0	0	0	0	1	X	Set AC to "00H". It will return cursor to the original position if shifted. The contents in DDRAM are not changed.	93 us	85 us	70 us
Set Entry Mode	0	0	0	0	0	0	0	0	1	I/D	S	Set cursor move direction and display shift direction. The effects are performed after each data access (write or read).	93 us	85 us	70 us
Display Control	0	0	0	0	0	0	0	1	D	C	B	D=1: Entire display on; C=1: Cursor on; B=1: Cursor position on.	93 us	85 us	70 us
Function Set	0	0	0	0	1	DL	X	X	IS1	IS0		DL: Interface data is 8/4 bits; IS[1:0]: select instruction table.	93 us	85 us	70 us
Set DDRAM Address	0	0	1	AC6	AC5	AC4	AC3	AC2	AC1	AC0		Set DDRAM address into AC (address counter).	93 us	85 us	70 us
Read Status	0	1	BF	AC6	AC5	AC4	AC3	AC2	AC1	AC0		Before next access, Check BF will know if the internal operation is finished or not. The contents of AC (address counter) can also be read.	0	0	0
Write Data	1	0	D7	D6	D5	D4	D3	D2	D1	D0		Write data into internal RAM (DDRAM/CGRAM/ICONRAM)	93 us	85 us	70 us
Read Data	1	1	D7	D6	D5	D4	D3	D2	D1	D0		Read data from internal RAM (DDRAM/CGRAM/ICONRAM)	93 us	85 us	70 us
<b>Instruction table 0: IS[1:0]=(0,0)</b>															
Cursor or Display Shift	0	0	0	0	0	1	S/C	R/L	X	X		S/C and R/L: Immediately move cursor or shift display by 1.	93 us	85 us	70 us
Set CGRAM Address	0	0	0	1	AC5	AC4	AC3	AC2	AC1	AC0		Set CGRAM address into AC (address counter)	93 us	85 us	70us

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## 7.INSTRUCTION DESCRIPTION(Continued)

**Instruction table 1: IS[1:0]=(0,1)**

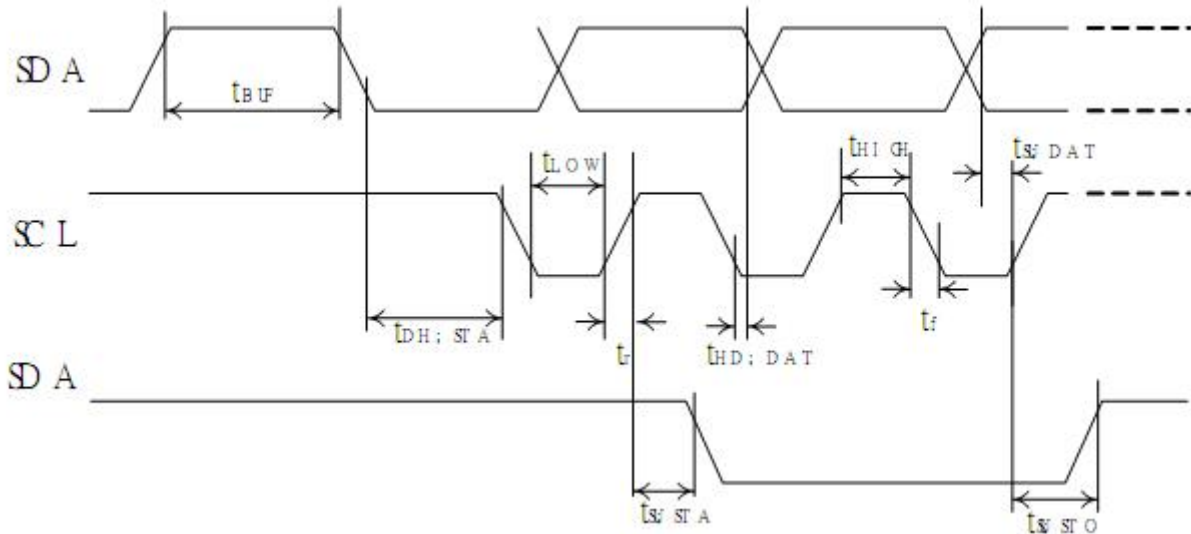
Follower Control	0	0	0	0	0	1	BS2	BS1	OPF2	OPF1	BS2~1: Bias select; OPF2~1: Select built-in voltage follower circuit.	93 us	85 us	70 us
Set ICON RAM Address	0	0	0	1	0	0	AC3	AC2	AC1	AC0	Set ICON address into AC (address counter).	93 us	85 us	70 us
V0 Control 1	0	0	0	1	0	1	PD	VC6	VC5	VC4	PD: Power down; VC6~4: Set V0 (High-nibble).	93us	85us	70us
ICON/Power Control	0	0	0	1	1	0	Ion	Bon	Ron	Fon	Ion: ICON display on/off; Bon: Set booster circuit on/off; Ron: Set regulator circuit on/off; Fon: Set follower circuit on/off.	93 us	85 us	70 us
V0 Control 2	0	0	0	1	1	1	VC3	VC2	VC1	VC0	Set V0 (Low-nibble).	93 us	85 us	70 us

**Instruction table 2: IS[1:0]=(1,0)**

Set Display Mode	0	0	0	0	0	1	UD	DH	N2	N1	UD: Double Height Position (DHu or DHd); DH: Double Height; N2, N1: Display line number.	93 us	85 us	70 us
Select CGRAM & COM/SEG direction	0	0	0	1	0	0	OPR2	OPR1	SHLS	SHLC	OPR2~1: CGRAM mapping select SHLS: Set SEG scan direction SHLC: Set COM scan direction	93 us	85 us	70 us
Set Frame Rate	0	0	0	1	0	1	0	FR2	FR1	FR0	FRC2~0: Select Frame Rate	93 us	85 us	70 us

## 8. AC Characteristics

### I2C Interface



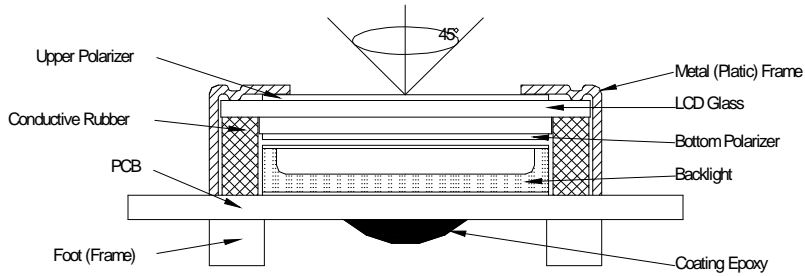
Item	Signal	Symbol	Condition	VDD=1.8V Rating		VDD=2.5V Rating		VDD=3.3V Rating		Units
				Min.	Max.	Min.	Max.	Min.	Max.	
SCL clock frequency	SCL	$f_{SCLK}$	—	DC	400	DC	400	DC	400	KHz
SCL clock low period		$t_{LOW}$		1.3	—	1.3	—	1.3	—	us
SCL clock high period		$t_{HIGH}$		0.6	—	0.6	—	0.6	—	us
Data set-up time	SI	$t_{SU:DAT}$	—	300	—	200	—	100	—	ns
Data hold time		$t_{HD:DAT}$		0	0.9	0	0.9	0	0.9	us
SCL,SDA rise time	SCL, SDA	$t_r$	—	—	300	—	300	—	300	ns
SCL,SDA fall time	$t_f$	—		300	—	300	—	300		
Capacitive load represent by each bus line	—	$C_b$	—	—	400	—	400	—	400	pf
Setup time for a repeated START condition	SI	$t_{SU:STA}$	—	0.7	—	0.6	—	0.6	—	us
Start condition hold time		$t_{HD:STA}$	—	0.6	—	0.6	—	0.6	—	us
Setup time for STOP condition	—	$t_{SU:STO}$	—	0.6	—	0.6	—	0.6	—	us
Bus free time between a Stop and START condition	SCL	$t_{BUF}$	—	1.3	—	1.3	—	1.3	—	us

Note: All timing is specified using 20% and 80% of VDD as the reference.

**9. QUALITY SPECIFICATIONS**

9 - 1. LCM Appearance and Electric inspection Condition

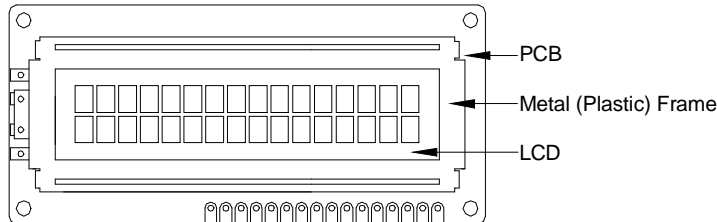
1. Inspection will be done by placing LCM 30cm away from inspector's eyeballs under normal illumination.



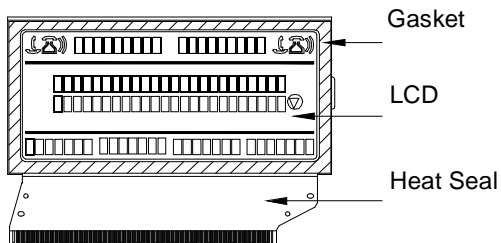
2. View Angle: with in 45° around perpendicular line.

9 - 2. Definition

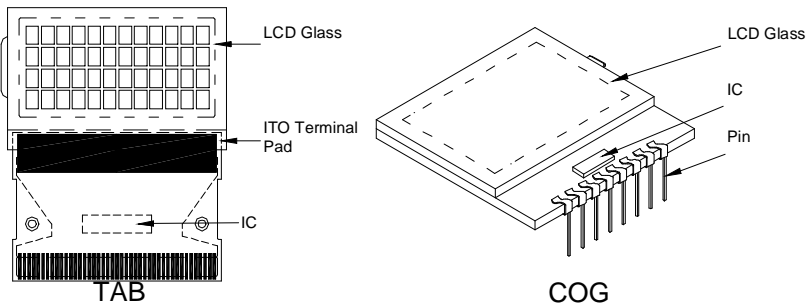
1. COB



2. Heat Seal



3. TAB and COG



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## 9. QUALITY SPECIFICATIONS (Continued)

### 9-3. Sampling Plan and Acceptance

#### 1. Sampling Plan

MIL - STD - 105E ( || ) ordinary single inspection is used.

#### 2. Acceptance

Major defect: AQL = 0.25

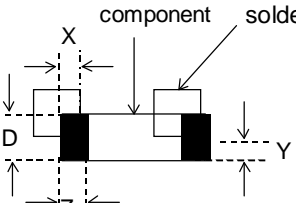
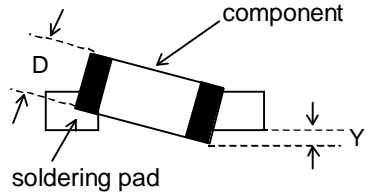
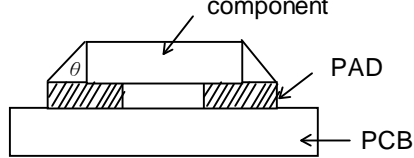
Minor defect: AQL = 0.65

### 9-4. Criteria

#### 1. COB

Defect	Inspection Item	Inspection Standards	
Major	PCB copper flakes peeling off	Any copper flake in viewing Area should be greater than 1.0mm <sup>2</sup>	Reject
Major	Height of coating epoxy	Exceed the dimension of drawing	Reject
Major	Void or hole of coating epoxy	Expose bonding wire or IC	Reject
Major	PCB cutting defect	Exceed the dimension of drawing	Reject

#### 2. SMT

Defect	Inspection Item	Inspection Standards	
Minor	Component marking not readable		Reject
Minor	Component height	Exceed the dimension Of drawing	Reject
Major	Component solder defect (missing , extra, wrong component or wrong orientation)		Reject
Minor	Component position shift 	$X < 3/4Z$ $Y > 1/3D$	Reject Reject
Minor	Component tilt 	$Y > 1/3D$	Reject
Minor	Insufficient solder 	$\theta \leq 20^\circ$	Reject

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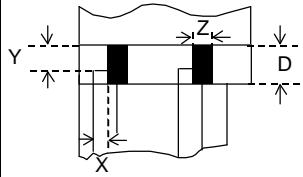
### 9. QUALITY SECIFICATIONS (Continued)

#### 9-4. Criteria (Continued)

#### 3. Metal (Plastic) Frame

Defect	Inspection Item	Inspection Standards		
Major	Crack / breakage	Anywhere		Reject
Minor	Frame Scratch	W	L	Acceptable of Scratch
		w<0.1mm	Any	Ignore
		0.1≤w<0.2mm	L≤5.0mm	2
		0.2≤w<0.3mm	L≤3.0mm	1
		w≥0.3mm	Any	0
		Note : 1. Above criteria applicable to scratch lines with distance greater than 5mm. 2. Scratch on the back side of frame (not visible) can be ignored .		
Minor	Frame Dent , Prick $\Phi = \frac{L + W}{2}$			Acceptable of Dents / Pricks
		$\Phi \leq 1.0\text{mm}$		2
		$1.0 < \Phi \leq 1.5\text{mm}$		1
		$1.5\text{mm} < \Phi$		0
		Note : 1. Above criteria applicable to any two dents / pricks with distance greater than 5mm 2. Dent / prick on the back side of frame (not visible) can be ignored		
Minor	Frame Deformation	Exceed the dimension of drawing		
Minor	Metal Frame Oxidation	Any rust		

#### 4. Flexible Film Connector (FFC)

Defect	Inspection Item	Inspection Standards	
Minor	Tilted soldering	Within the angle +5°	Acceptable
Minor	Uneven solder joint /bump		Reject
Minor	Hole $\Phi = \frac{L + W}{2}$	Expose the conductive line	Reject
		$\Phi > 1.0\text{mm}$	Reject
Minor	Position shift 	$Y > 1/3D$	Reject
		$X > 1/2Z$	Reject

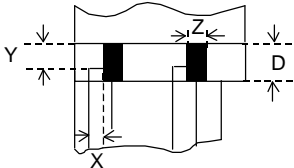
## 9. QUALITY SPECIFICATIONS (Continued)

### 9-4. Criteria (Continued)

#### 5. Screw

Defect	Inspection Item	Inspection Standards	
Major	Screw missing/loosen		Reject
Minor	Screw oxidation	Any rust	Reject
Minor	Screw deformation	Difficult to accept screw driver	Reject

#### 6. Heatseal 、TCP 、FPC

Defect	Inspection Item	Inspection Standards	
Major	Scratch expose conductive layer		Reject
Minor	HS Hole $\Phi = \frac{L+W}{2}$	$\Phi > 0.5\text{mm}$	Reject
Major	Adhesion strength	Less than the specification	Reject
Minor	Position shift 	$Y > 1/3D$	Reject
		$X > 1/2Z$	Reject
Major	Conductive line break		Reject

#### 7. LED Backing Protective Film and Others

Defect	Inspection Item	Inspection Standards	
Minor	LED dirty, prick	Acceptable number of units	
		$\Phi \leq 0.10\text{mm}$	Ignore
		$0.10 < \Phi \leq 0.15\text{mm}$	2
		$0.15 < \Phi \leq 0.2\text{mm}$	1
		$\Phi > 0.2\text{mm}$	0
The distance between any two spots should be $\geq 5\text{mm}$ Any spot/dot/void outside of viewing area is acceptable			
Minor	Protective film tilt	Not fully cover LCD	Reject
Major	COG coating	Not fully cover ITO circuit	Reject

#### 8. Electric Inspection

Defect	Inspection Item	Inspection Standards	
Major	Short		Reject
Major	Open		Reject

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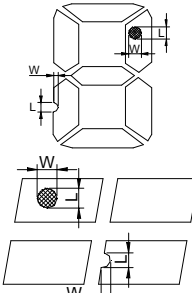
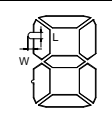
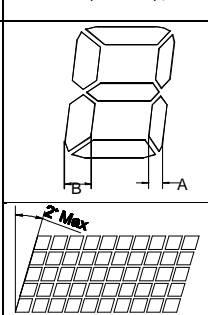
REV: A



### 9. QUALITY SPECIFICATIONS (Continued)

#### 9-4. Criteria (Continued)

#### 9. Inspection Specification of LCD

Defect	Inspect Item	Inspection Standards					
		W	$W \leq 0.03$	$0.03 < W \leq 0.05$	$W > 0.05$		
Minor	Linear Defect	* Glass Scratch * Polarizer Scratch * Fiber and Linear material	L	$L < 5$	$L < 3$	Any	
			ACC. NO.	1	1	Reject	
			Note	L is the length and W is the width of the defect			
Minor	Black Spot and Polarizer Pricked	* Foreign material between glass and polarizer or glass and glass * Polarizer hole or protuberance by external force	$\Phi$	$\Phi \leq 0.1$	$0.1 < \Phi \leq 0.15$	$0.15 < \Phi \leq 0.2$	$\Phi > 0.2$
			ACC. NO.	3EA / 100mm <sup>2</sup>	2	1	0
			Note	$\Phi$ is the average diameter of the defect. Distance between two defects > 10mm.			
Minor	White Spot and Bubble in polarizer	* Unobvious transparent foreign material between glass and glass or glass and polarizer * Air protuberance between polarizer and glass	$\Phi$	$\Phi \leq 0.3$	$0.3 < \Phi \leq 0.5$	$0.5 < \Phi$	
			ACC. NO.	3EA / 100mm <sup>2</sup>	1	0	
			Note	$\Phi$ is the average diameter of the defect. Distance between two defects > 10mm.			
Minor	Segment Defect		$\Phi$	$\Phi \leq 0.10$	$0.10 < \Phi \leq 0.20$	$0.20 < \Phi \leq 0.25$	$\Phi > 0.25$
			ACC. NO.	3EA / 100mm <sup>2</sup>	2	1	0
			Note	W is more than 1/2 segment width $\Phi = \frac{L + W}{2}$ Distance between two defect is 10mm			
Minor	Protuberant Segment	 $\Phi = (L + W) / 2$	$\Phi$	$\Phi \leq 0.10$	$0.10 < \Phi \leq 0.20$	$0.20 < \Phi \leq 0.25$	$\Phi > 0.25$
			W	Glue	$W \leq 1/2$ Seg $W \leq 0.2$	$W \leq 1/2$ Seg $W \leq 0.2$	Ignore
			ACC. NO.	3EA / 100mm <sup>2</sup>	2	1	0
Minor	Assembly Mis-alignment		1. Segment				
			B	$B \leq 0.4\text{mm}$	$0.4 < B \leq 1.0\text{mm}$	$B > 1.0\text{mm}$	
			B-A	$B-A < 1/2B$	$B-A < 0.2$	$B-A < 0.25$	
			Judge	Acceptable	Acceptable	Acceptable	
			2. Dot Matrix				
		Deformation > 2°		Reject			
Minor	Stain on LCD Panel Surface		Accept when stains can be wiped lightly with a soft cloth or a similar one. Otherwise, judged according to the above items: "Black spot" and "White Spot"				

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**10. RELIABILITY**

NO.	Item	Condition	Criterion
1	High Temperature Operating	70°C , 96Hrs	No defect in cosmetic and operational function allowable.
2	Low Temperature Operating	-20°C , 96Hrs	
3	High Humidity	50°C , 90%RH, 96Hrs	
4	High Temperature Storage	80°C , 96Hrs	
5	Low Temperature Storage	-40°C , 96Hrs	
6	Vibration	Random wave 10 ~ 100Hz Acceleration: 2G 60 Minute	Total current Consumption should be below double of initial value.
7	Thermal Shock	-10°C to 25°C to 60°C (60Min) (15Min) (60Min) 10Cycles	
8	ESD Testing	Contract Discharge Voltage: +1 ~ 5kV and -1 ~ -5kV	There will be discharged ten times at every discharging voltage cycle. The voltage gap is 1kV.
		Air Discharge Voltage: +1 ~ 8kV and -1 ~ -8kV	

Note: 1) Above conditions are suitable for GOLDENTEK standard products.  
2) For restrict products, the test conditions listed as above must be revised.

## 11. HANDLING PRECAUTIONS

### (1) Mounting Method

The panel of the LCD Module consists of two thin glass plates with polarizers which easily get damaged since the Module is fixed by utilizing fitting holes in the printed circuit board. Extreme care should be taken when handling the LCD Modules.

### (2) Caution of LCD handling & cleaning

When cleaning the display surface, use soft cloth with solvent (recommended below) and wipe lightly.

- Isopropyl alcohol
- Ethyl alcohol
- Trichlorotrifluoroethane

Do not wipe the display surface with dry or hard materials that will damage the polarizer surface.

Do not use the following solvent:

- Water
- Ketone
- Aromatics

### (3) Caution against static charge

The LCD Module use C-MOS LSI drivers, so we recommend that you connect any unused input terminal to VDD or VSS, do not input any signals before power is turned on. And ground your body, Work/assembly table. And assembly equipment to protect against static electricity.

### (4) Packaging

- Modules use LCD elements, and must be treated as such. Avoid intense shock and falls from a height.
- To prevent modules from degradation. Do not operate or store them exposed directly to sunshine or high temperature/humidity.

### (5) Caution for operation

- It is indispensable to drive LCD's within the specified voltage limit since the higher voltage than the limit shorten LCD life. An electrochemical reaction due to direct current causes LCD deterioration, Avoid the use of direct current drive.

**11. HANDLING PRECAUTIONS (Continued)**

- 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 range.

- If the display area is pushed hard during operation, some font will be abnormally displayed but it resumes normal condition after turning off once.
- A slight dew depositing on terminals is a cause for electro-chemical reaction resulting in terminal open circuit.

Usage under the relative condition of 40°C, 80%RH or less is required.

**(6) Storage**

In the case of storing for a long period of time (for instance ,for years) for the purpose or replacement use, The following ways are recommended.

- Storage in a polyethylene bag with sealed so as not to enter fresh air outside in it, And with no desiccant.
- Placing in a dark place where neither exposure to direct sunlight nor light is. Keeping temperature in the specified storage temperature range.
- Storing with no touch on polarizer surface by the anything else. (It is recommended to store them as they have been contained in the inner container at the time of delivery)

**(7) Safety**

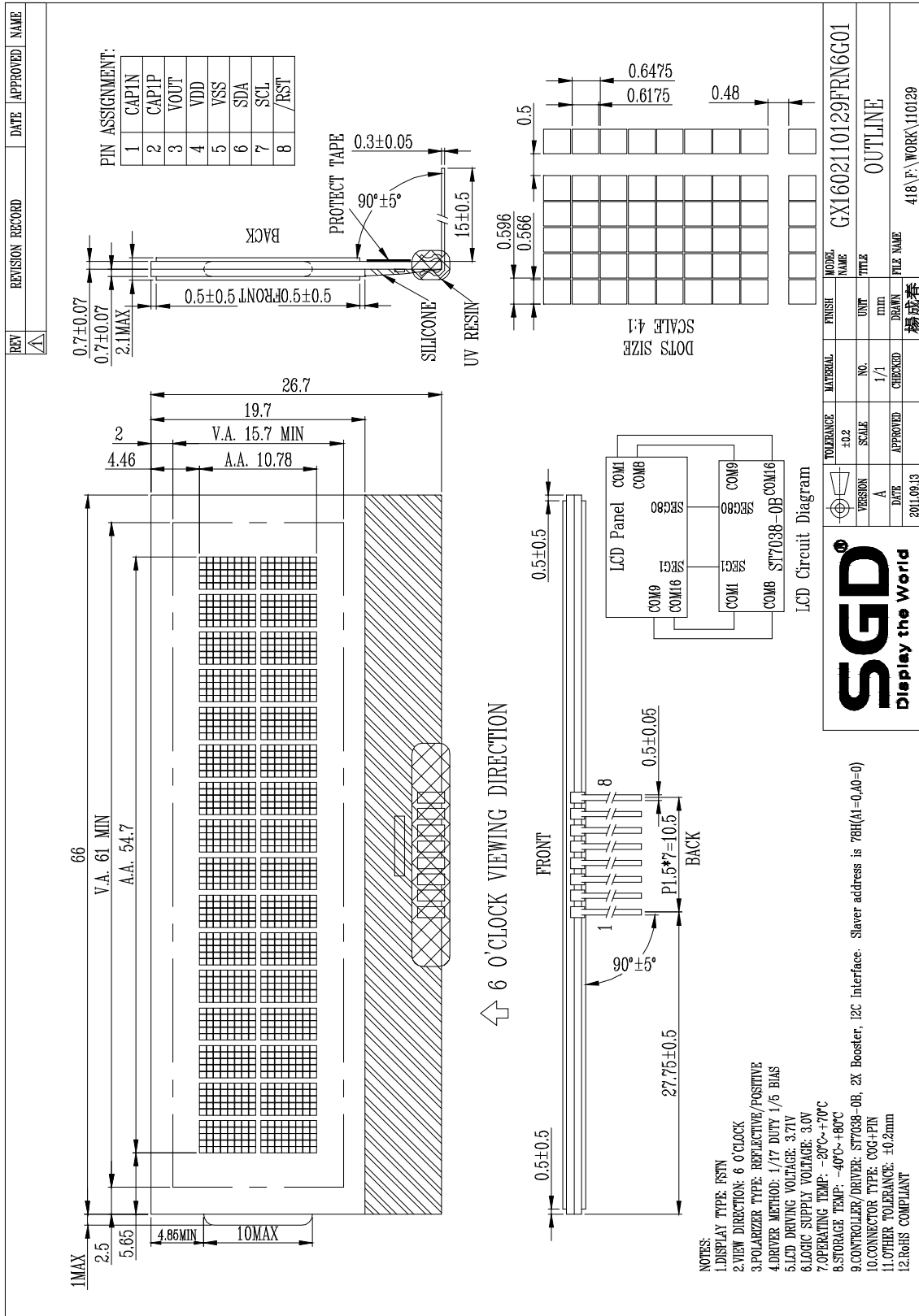
- It is recommendable to crash damaged or unnecessary LCD into pieces and wash off liquid crystal by using solvents such as acetone and ethanol.

Which should be burned up later.

- When any liquid crystal leaked out of a damaged glass cell comes in contact with your hands, please wash it off well with soap and water.

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## 12. OUTLINE DIMENSION



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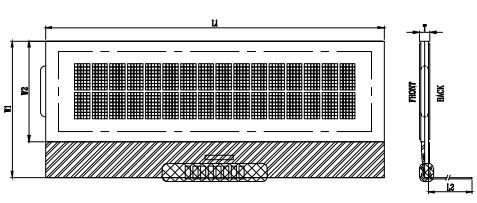
PRODUCT SPECIFICATIONS

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## SAMPLE OUTGOING INSPECTION REPORT (LCM)

Data: 2011/10/25

NO. : QAB10018

Customer	Product NO.	Driving Voltage	Testing Condition	Quantity					
Mectronic	GX1602110129FRN6G01	V <sub>OP</sub> =3.71V	25°C	25Pcs					
<b>Inspection Result</b>									
Items	Specification								
Display Mode	<input checked="" type="radio"/> W / B Mode <input type="radio"/> B / W Mode <input type="radio"/> Yellow Mode <input type="radio"/> Blue Mode <input type="radio"/> Gray Mode								
Polarizer Type	<input checked="" type="radio"/> Reflective <input type="radio"/> Transflective <input type="radio"/> Transmissive								
Viewing direction	<input type="radio"/> 3 O'clock <input checked="" type="radio"/> 6 O'clock <input type="radio"/> 9 O'clock <input type="radio"/> 12 O'clock								
<b>Electrical / Appearance</b>									
Item	Inspection Method	Specification	Inspection Result						
Appearance	Spot Gauge Caliper	Final Inspection Criteria	<input checked="" type="radio"/> OK	<input type="radio"/> NG					
Electrical	LCM Tester	Product Specification	<input checked="" type="radio"/> OK	<input type="radio"/> NG					
Pattern	LCM Tester	Drawing	<input checked="" type="radio"/> OK	<input type="radio"/> NG					
<b>Dimension / Supply Current</b>									
Item	Spec.(mm)	NO.1	NO.2	NO.3	NO.4	NO.5	Result	Fig.	
L1	66.0±0.2	65.95	65.91	66.03	65.96	65.91	<input checked="" type="radio"/> OK <input type="radio"/> NG		
L2	15.0±0.5	14.98	14.81	15.12	14.96	14.96	<input checked="" type="radio"/> OK <input type="radio"/> NG		
W1	26.7±0.2	26.53	26.59	26.67	26.66	26.62	<input checked="" type="radio"/> OK <input type="radio"/> NG		
W2	19.7±2.0	19.63	19.70	19.70	19.65	19.69	<input checked="" type="radio"/> OK <input type="radio"/> NG		
T	2.1 Max	2.03	2.03	2.02	2.03	2.05	<input checked="" type="radio"/> OK <input type="radio"/> NG		
<b>Designed</b>	Joan		<b>Checked</b>	/		<b>Approved</b>	Wallace		